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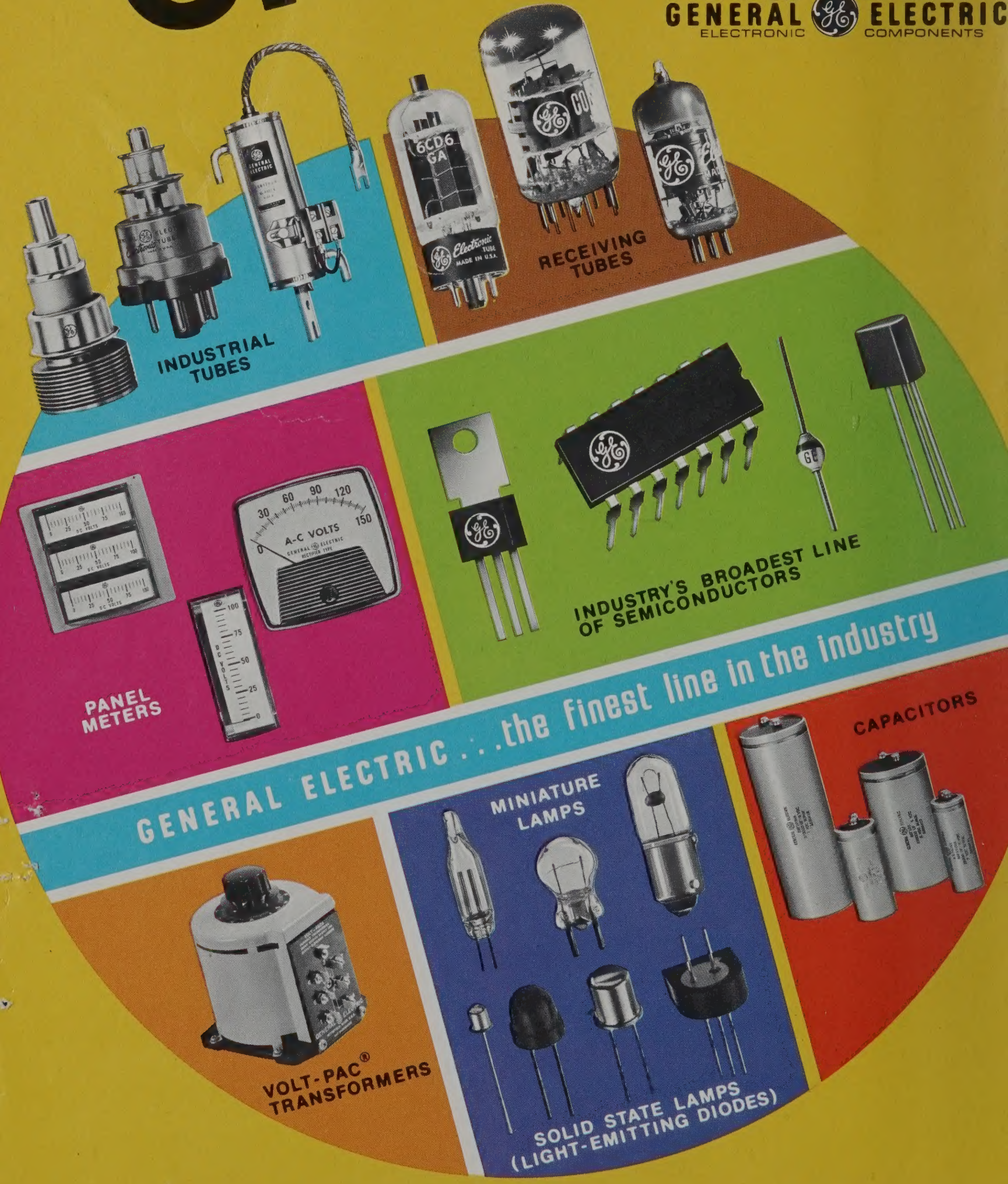
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All prices and terms apply only to the U.S., Puerto Rico, and Canada. Note: We will adjust to current exchange rates all remittances made in Canadian funds.

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CRAMER ELECTRONICS, INC. • 85 WELLS AVENUE, NEWTON, MASS. 02159

T. X. CRONIN
PRESIDENT

Dear Cramer Customer,

This 1972 Cramer's Buyer's Guide is the finest catalog of electronic components ever compiled. All the quality products listed here are stocked by one or more of 33 locations through the United States and Canada.

Each location is a separate Cramer division, in business to serve local customer requirements. Each is staffed with a team of distribution professionals, specially trained to meet your needs.

Our 33 stocking locations are supported by the most modern distribution facility in the world. Our headquarters in Newton is 80,000 square feet big and uses the most up to date equipment and methods to make sure you get the best service possible.

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T. X. Cronin
President

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Not only that, we can extend to you the best possible payment terms merited by your organization, including in many cases, payment in local currency. No need for letter of credit, sight draft, payment in advance or other strict and costly payment terms.

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Abgesehen davon können wir Ihnen auch die bestmöglichen Zahlungsbedingungen gewähren, die Ihre Firma verdient, und oft kann die Bezahlung in Ihrer eigenen Währung gemacht werden. Akkreditive, Sichtwechsel, Vorausbezahlung und andere kostspielige und rigorose Zahlungsweisen sind nicht erforderlich.

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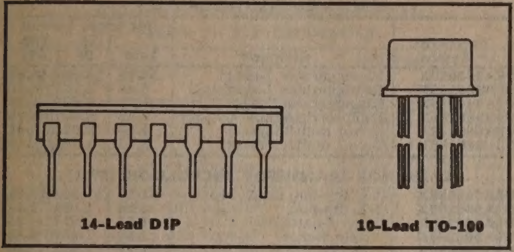
# ELECTRONIC ARRAYS MOS Integrated Circuits



## STATIC SHIFT REGISTERS

Operating temp., −55° C to +85° C. Suffix **D** (e.g., EA1003**D**) indicates 14-lead dual inline package; all others 10-lead, TO-100 package.

| EA Number | Description | Max. Oper. MHz | Typ. PD† mW/bit | Clock Phases | Clock Swing V | Net Ea., 1-24* |
|---|---|---|---|---|---|---|
| **EA1003D** | Dual 32-bit* | 1.5 | 1.9 | 1 | 9 | **$17.00** |
| **EA1007** | Dual 32 bit | 1.5 | 1.9 | 1 | 9 | **12.00** |
| **EA1004** | Dual 100 bit | 3.0 | 0.8 | 2 | 24 | **12.00** |
| **EA1005** | Dual 100 bit | 1.0 | 0.9 | 1 | 9 | **12.00** |
| **EA1008** | Dual 80 bit | 3.0 | 0.8 | 2 | 24 | **12.00** |
| **EA1009** | Dual 80 bit | 1.5 | 1.0 | 1 | 9 | **12.00** |
| **EA1012** | Dual 50 bit | 3.0 | 0.9 | 2 | 24 | **9.20** |
| **EA1013** | Dual 50 bit | 1.5 | 1.0 | 1 | 9 | **9.20** |

## DYNAMIC SHIFT REGISTERS

Operating temp., −55° C to +85° C. Suffix **D** (e.g., EA1200**D**) indicates 14-lead dual inline package; suffix **X**, 8-lead, TO-99 package; all others, 10-lead TO-100 package.

| | | | | | | |
|---|---|---|---|---|---|---|
| **EA1200D** | Quad 32 bit | 3.0 | 0.6 | 2 | 24 | **$16.00** |
| **EA1201D** | Quad 32 bit | 1.0 | 1.0 | 1 | 9 | **16.00** |
| **EA1202D** | Variable 1–64 bit | 3.0 | 1.2 | 2 | 24 | **15.00** |
| **EA1203D** | Variable 1–64 bit | 1.0 | 1.4 | 1 | 9 | **15.00** |
| **EA1204** | 256 bit | 3.0 | 0.2 | 2 | 24 | **20.00** |
| **EA1205** | 256 bit | 1.0 | 0.6 | 1 | 9 | **20.00** |
| **EA1205D** | 256 bit | 1.0 | 0.6 | 1 | 9 | **22.00** |
| **EA1206** | 512 bit* | 5.0 | 0.1 | 2 | 24 | **17.00** |
| **EA1208D** | Quad 16 bit | 3.0 | 1.2 | 2 | 24 | **12.00** |
| **EA1210** | Dual 256 bit | 3.0 | 0.2 | 2 | 24 | **15.00** |
| **EA1212** | Single 512 bit | 3.0 | 0.3 | 2 | 24 | **11.00** |
| **EA1214D** | Quad 80 bit | 3.0 | ....... | 2 | 24 | **12.00** |
| **EA1221X** | 200 bit | 1.0 | 0.6 | 1 | 9 | **20.00** |
| **EA1221D** | 200 bit | 1.0 | 0.6 | 1 | 9 | **22.00** |
| **EA1223X** | 20 bit | 1.0 | 4.4 | 1 | 9 | **10.00** |
| **EA1225X** | 40 bit | 1.0 | 2.2 | 1 | 9 | **10.00** |

*With recirculate. †At 1 MHz.

## SILICONE PACKAGED MOS SHIFT REGISTERS

The following products are available in a silicone molded 14-lead dual-in-line package. Same electrical characteristics as above hermetically sealed devices with the exception of operating temperature range of 0° C to +70° C.

### STATIC SHIFT REGISTERS

| EA Number | Description | Net Each, Lots of 1-24 | 25-99 | 100-249 |
|---|---|---|---|---|
| **EA1003SD** | Dual 32 bit—one phase clock | **$6.60** | **$5.30** | **$4.40** |
| **EA1004SD** | Dual 100 bit—two phase clock | **7.50** | **6.00** | **5.00** |
| **EA1005SD** | Dual 100 bit—one phase clock | **7.50** | **6.00** | **5.00** |
| **EA1008SD** | Dual 80 bit—two phase clock | **7.50** | **6.00** | **5.00** |
| **EA1009SD** | Dual 80 bit—one phase clock | **7.50** | **6.00** | **5.00** |
| **EA1012SD** | Dual 50 bit—two phase clock | **6.90** | **5.50** | **4.60** |
| **EA1013SD** | Dual 50 bit—one phase clock | **6.90** | **5.50** | **4.60** |

### DYNAMIC SHIFT REGISTERS

| | | | | |
|---|---|---|---|---|
| **EA1200SD** | Quad 32 bit—two phase clock | **$7.35** | **$5.90** | **$4.90** |
| **EA1201SD** | Quad 32 bit—one phase clock | **7.35** | **5.90** | **4.90** |
| **EA1202SD** | Variable 64 bit—two phase clock | **6.60** | **5.30** | **4.40** |
| **EA1203SD** | Variable 64 bit—one phase clock | **6.60** | **5.30** | **4.40** |
| **EA1204SD** | 256 bit—two phase clock | **7.35** | **5.90** | **4.90** |
| **EA1205SD** | 256 bit—one phase clock | **7.35** | **5.90** | **4.90** |
| **EA1206SD** | 512 bit with recirculate—two phase clock | **9.50** | **7.60** | **6.35** |
| **EA1210SD** | Dual 256 bit—two phase clock | **7.90** | **6.30** | **5.25** |
| **EA1212SD** | Single 512 bit—two phase clock | **7.50** | **6.00** | **5.00** |
| **EA1214SD** | Quad 80 bit—two phase clock | **7.90** | **6.30** | **5.25** |

## EA1400 128 BIT READ-WRITE RANDOM ACCESS MEMORY (RAM)

Requires a single phase clock strobe pulse which is used to refresh the data stored in the memory cells simultaneously and to change the data stored in a cell in the write mode. PD=300 mW. In 16-lead metal-ceramic hermetic DIP.

**EA1400 128 Bit Read-Write RAM**—Net Ea., 1-24.... **$36.00***

Electronic Arrays is a leading supplier of standard, high quality MOS products. They have been selected and designed to provide compatible, off-the-shelf MOS products for a broad range of digital systems applications including computer terminal, peripheral equipment, calculators, business machines, machine tool controls, instrumentation, minicomputers and checkout equipment, both military and industrial.

## READ ONLY MEMORIES (ROM)

### DYNAMIC 2-PHASE

All are supplied in 24-lead dual inline package. Clock voltage swing, 24 volts. Total typical PDISS, 90 mW except as otherwise noted.

| EA Number | Description | Total No. Bits | Max. Oper. MHz | Net Each, 1-24* |
|---|---|---|---|---|
| **EA3100*** | 256 word, 10 bits/word ROM | 2560 | 1.0 | **$40.00** |
| **EA3101** | Selectric Line Code/ASCII conv. | 2560 | 1.0 | **40.00** |
| **EA3132** | Selectric ball/ASCII converter | 2560 | 1.0 | **40.00** |
| **EA3500*** | 512 word, 5 bits/word ROM | 2560 | 1.2 | **30.00** |
| **EA3501** | ASCII 5x7 char. row generator | 2560 | 1.2 | **30.00** |
| **EA3513** | ASCII 5x7 lower case char. gen. | 2560 | 1.2 | **30.00** |
| **EA3300*†** | 512 word, 8 bits/word ROM | 4096 | 0.67 | **60.00** |
| **EA3307†** | EBCDIC/ASCII code converter | 4096 | 0.67 | **60.00** |
| **EA3701** | ASCII 7x5 char. column gen. | 2240 | 0.67 | **38.00** |
| **EA3517** | Alpha 102 input/ASCII character row generator | 2560 | 1.2 | **30.00** |

### STATIC

Supplied in 24-lead dual inline package. Total typical PDISS, 300 mW.

| | | | | |
|---|---|---|---|---|
| **EA4000*** | 512 word, 10 bits/word ROM | 5120 | 1.3 | **$60.00** |
| **EA4001** | ASCII 7x9 char. column gen. | 5120 | 1.3 | **60.00** |
| **EA4004** | ASCII 5x7 char. row generator; full 128 character set | 5120 | 1.6 | **60.00** |
| **EA4015** | EBCDIC/ASCII code converter | 5120 | 1.3 | **60.00** |
| **EA4016** | EBCDIC input Katakana char. generator | 5120 | 1.6 | **60.00** |
| **EA4501** | ABCII 5x7 char. row generator | 2240 | 1.3 | **30.00** |
| **EA4034** | EBCDIC/Compressed Hollerick code converter | 5120 | 1.3 | **60.00** |
| **EA4035** | ASCII/Compressed Hollerick code converter | 5120 | 1.3 | **60.00** |

*Requires specialized bit pattern; mask charges on request. †Total typical PDISS, 100 mW.

## STANDARD CALCULATOR CIRCUIT SETS

Electronic Arrays is the leading supplier of standard calculator circuit sets. Designed specifically for desk top use, these sets are ideal for instrumentation and data handling systems. Used to their fullest capability, the sets can perform the functions of add, subtract, multiply, divide, square and square-root. The circuits are provided in 24-pin dual inline, hermetic and silicone molded packages.

### ALGEBRAIC ENTRY SEQUENCE

Decimal point system is selectable fixed input and output; set by keyboard. Models EAS-110 and EAS-111 offer 6 functions: +, −, ×, ÷, N² and square root of N. All others offer 4 functions: +, −, × and ÷. **Stored Constant:** 1.

| Set Model No. | No. of MOS/LSI Chips | Digits Entry | Digits Displayed | Memory | Net per Set 1-10* |
|---|---|---|---|---|---|
| **EAS-100** | 6 | 8 | 8/16 alternate or 16 simultaneous | 0 | **$ 90.00** |
| **EAS-101** | 4 | 8 | | 0 | **60.00** |
| **EAS-113** | 6 | 16 | | 0 | **90.00** |
| **EAS-114** | 4 | 16 | | 0 | **60.00** |
| **EAS-115** | 7 | 16 | 16 2 output chips | | **105.00** |
| **EAS-116** | 5 | 16 | | 0 | **75.00** |
| **EAS-110** | 8 | 14 | 14; 2 out. chips | 1 M+M− | **120.00** |
| **EAS-111** | 6 | 14 | 14 | | **90.00** |
| **EAB-100** | PC board with six 24-lead DIP sockets† | | | | **40.00** |

### ADDING MACHINE ENTRY SEQUENCE

Model EA7001: Adding machine sequence entry with +, − and × functions only; handles whole numbers, no decimals. All others: Adding machine entry for + and −; math entry of × and ÷; floating input with selectable fixed output, thumbwheel set. **Stored Constant:** 1.

| | | | | | |
|---|---|---|---|---|---|
| **EAS-120** | 6 | 16 | 8/16 alternate or 16 simultaneous | 1 (AM) | **$ 90.00** |
| **EAS-121** | 5 | 16 | | 1 (AM) | **75.00** |
| **EAS-122** | 7 | 16 | 16 2 output chips | 1 (AM) | **105.00** |
| **EAS-123** | 6 | 16 | | 1 (AM) | **90.00** |

†Input-output and power via std. 22-position PC edge connector; use also as test jig.

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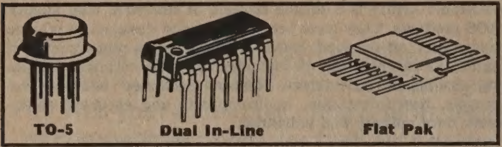
# MICROLOGIC® DIGITAL INTEGRATED CIRCUITS



Fairchild Micrologic elements are a set of compatible, integrated logic building blocks. Elements are manufactured using the Fairchild Planar Epitaxial Process by which all the necessary transistors and resistors are diffused into a single silicon wafer.

## DIGITAL INTEGRATED CIRCUITS

Fairchild offers a broad line of digital integrated circuits, including CUL, DTL, ECL, RTL and TTL. The TTL family consists of logic, memory and interface functions—a unique blend of Fairchild proprietary circuits and a large number of second source devices which have achieved wide market acceptance. DTL and TTL products are available in two operating temperature ranges: 59X (7400) for 0° C to +75° C or 51X (5400) for −55° C to +125° C. The series listed below are in ceramic Dual In-Line™ packages except as otherwise noted. Also available in 14-, 16- and 24-pin flatpacks and Cerpaks.

### SERIES 93L LOW POWER TTL/MSI

Series 93L low power TTL/MSI product line features low power (one-fourth that of standard TTL) at 10 MHz clock frequencies. Functional and pin-compatible with standard 93 TTL/MSI.

| Fairchild Type | Element (Low Power) | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| U7B93L0059X | 4-bit shift register | $ 4.30 | $ 3.95 | $ 3.45 |
| U7B93L0159X | One-of-ten decoder | 4.30 | 3.95 | 3.45 |
| U6N93L0859X | 8-bit latch | 6.05 | 5.60 | 4.85 |
| U6B93L0959X | Dual 4-input multiplexer | 3.10 | 2.80 | 2.45 |
| U7B93L1059X | BCD decade counter | 7.50 | 6.90 | 6.00 |
| U6N93L1159X | 1-of-16 decoder | 6.05 | 5.60 | 4.85 |
| U7B93L1259X | 8-input multiplexer | 3.10 | 2.80 | 2.45 |
| U7B93L1459X | Quad latch | 3.10 | 2.80 | 2.45 |
| U7B93L1659X | 4-bit binary counter | 7.50 | 6.90 | 6.00 |
| U7B93L1859X | 8-input priority encoder | 7.50 | 6.90 | 6.00 |
| U7B93L2159X | Dual 1-of-4 decoder | 5.75 | 5.30 | 4.60 |
| U7B93L2259X | Quad 2-input multiplexer | 3.10 | 2.80 | 2.45 |
| U7B93L2459X | 5-bit comparator | 7.35 | 6.80 | 5.90 |
| U7B93L2859X | Dual 8-bit shift register | 9.30 | 8.55 | 7.45 |
| U6N93L4059X | 4-bit arithmetic logic unit | 17.50 | 16.10 | 14.00 |

### SERIES 9L LOW POWER TTL/SSI

| Fairchild Type | Element | 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| U6A9L0059X | Quad 2-input NAND gate | $0.50 | $0.46 | $0.40 |
| U6A9L0459X | Hex inverter | .63 | .58 | .50 |
| U7B9L2459X | Dual J-K flip-flop | 1.32 | 1.20 | 1.05 |
| U6A9L5459X | 4-wide, 2-input AOI gate | .50 | .46 | .40 |
| U6A9L8659X | Quad exclusive OR | .90 | .83 | .72 |

### SERIES 93 STANDARD TTL/MSI

| Fairchild Type | Element | 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| U7B930059X | 4-bit universal register | $ 4.30 | $ 3.95 | $ 3.45 |
| U7B930159X | One-of-ten decoder | 4.30 | 3.95 | 3.45 |
| U6B930459X | Dual full adder | 9.35 | 8.60 | 7.50 |
| U7A930559X | Variable modulo counter | 4.30 | 3.95 | 3.45 |
| U6N930659X | BCD up/down counter | 16.55 | 15.20 | 13.25 |
| U6B930759X | BCD to 7-segment decoder | 6.55 | 6.05 | 5.25 |
| U6N930859X | 8-bit latch | 6.05 | 5.60 | 4.85 |
| U6B930959X | Dual 4-input multiplexer | 3.10 | 2.80 | 2.45 |
| U7B931059X | BCD decade counter | 7.50 | 6.90 | 6.00 |
| U6N931159X | 1-of-16 digital decoder | 6.05 | 5.60 | 4.85 |
| U7B931259X | 8-input multiplexer | 3.10 | 2.80 | 2.45 |
| U7B931459X | Quad latch | 3.10 | 2.80 | 2.45 |
| U6B931559X | One-of-ten decoder driver | 6.05 | 5.60 | 4.85 |
| U7B931659X | Up binary counter | 7.50 | 6.90 | 6.00 |
| U7B9317593 | 7-segment decoder/driver | 7.50 | 6.90 | 6.50 |
| U7B931859X | 8-input priority encoder | 7.50 | 6.90 | 6.00 |
| U7B932159X | Dual 1-of-4 decoder | 5.75 | 5.30 | 4.60 |
| U7B932259X | Quad 2-input multiplexer | 3.10 | 2.80 | 2.45 |
| U7B932459X | 5-bit comparator | 7.35 | 6.80 | 5.90 |
| U7B9327592 | 7-segment decoder/driver | 10.00 | 9.20 | 8.00 |
| U7B932859X | Dual 8-bit shift register | 9.30 | 8.55 | 7.45 |
| U7B933459X | 8-bit addressable latch | 6.05 | 5.60 | 4.85 |
| U7B933759X | 7-segment decoder/driver | 5.60 | 5.20 | 4.50 |
| U7B933859X | 8-bit multiple port. register | 7.35 | 6.80 | 5.90 |
| U6N934059X | 4-bit arithmetic logic unit | 17.50 | 16.10 | 14.00 |
| U7B934859X | 12-bit parity generator/ checker | 4.95 | 4.55 | 3.95 |
| U7A935059X | Decade counter | 3.10 | 2.80 | 2.45 |
| U6B935259X | One-of-ten decoder | 5.15 | 4.15 | 3.45 |
| U6B935359X | Excess 3 to decoder/driver | 8.05 | 6.40 | 5.35 |
| U6B935459X | Excess 3 gray to dec./driver | 8.05 | 6.40 | 5.35 |
| U7A935659X | Binary counter | 3.10 | 2.80 | 2.45 |
| U6B9357592 | BCD to 7-segment decoder | 8.90 | 7.15 | 5.95 |
| U6B935859X | BCD to 7-segment decoder | 7.90 | 6.30 | 5.25 |
| U7B936059X | Up/down decade counter | 7.50 | 6.90 | 6.00 |
| U7B936659X | Up/down binary counter | 7.50 | 6.90 | 6.00 |
| U6B937559X | Quad latch | 3.70 | 2.95 | 2.45 |
| U9A938059X | Gated full adder | 1.98 | 1.58 | 1.32 |
| U6A938259X | 2-bit binary full adder | 4.80 | 3.85 | 3.20 |
| U6A938359X | 4-bit binary full adder | 7.60 | 6.05 | 5.05 |
| U6A939059X | Decade counter | 3.70 | 2.95 | 2.45 |
| U6A939159X | 8-bit shift register | 6.70 | 5.35 | 4.45 |
| U6A939259X | Divide-by-12 counter | 3.70 | 2.95 | 2.45 |
| U6A939359X | 4-bit binary counter | 3.70 | 2.95 | 2.45 |
| U6B939459X | 4-bit shift register | 5.75 | 4.60 | 3.85 |
| U6A939559X | 4-bit R/L shift register | 5.75 | 4.60 | 3.85 |
| U6B939659X | 5-bit shift register | 8.10 | 6.50 | 5.40 |

### SERIES 96 TTL/ONE SHOTS

| Fairchild Type | Element | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| U6A960059X | Retriggerable 1-shot† | $5.65 | $5.20 | $4.50 |
| U6A960159X | Retriggerable 1-shot | 5.65 | 5.20 | 4.50 |
| U9A960159X* | Retriggerable 1-shot | 1.65 | 1.50 | 1.30 |
| U6B960259X | Dual retriggerable 1-shot† | 7.15 | 6.60 | 5.75 |
| U6A960359X | 1-shot multivibrator | 4.50 | 3.60 | 3.00 |
| U9A960359X* | 1-shot multivibrator | 1.65 | 1.30 | 1.10 |

### TRANSISTOR-TRANSISTOR MICROLOGIC (TTμL)

| Fairchild Type | Element | 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| U6A900059X | J-K flip-flop multi-input | $1.95 | $1.56 | $1.31 |
| U6A900159X | J-K flip-flop | 2.10 | 1.68 | 1.41 |
| U6A900259X | Quad 2-gate | 1.27 | 1.01 | .85 |
| U6A900359X | Triple 3-gate | 2.10 | 1.65 | 1.40 |
| U6A900459X | Dual 4-gate | 1.27 | 1.01 | .85 |
| U6A900559X | Dual exclusive OR | 1.27 | 1.01 | .85 |
| U6A900659X | Dual 4-extender | 1.27 | 1.01 | .85 |
| U6A900759X | 8-input gate | 1.27 | 1.01 | .85 |
| U6A900859X | AND-NOR gate | 1.27 | 1.01 | .85 |
| U6A900959X | Dual buffer | 1.45 | 1.16 | .97 |
| U6A901259X | Quad 2-input NAND GOC | 3.80 | 3.05 | 2.55 |
| U6B901459X | Quad exclusive OR | 2.40 | 1.95 | 1.60 |
| U6B901559X | Quad NOR | 1.45 | 1.16 | .95 |
| U6A901659X | Hex inverter | 1.60 | 1.28 | 1.07 |
| U6A901759X | Hex inverter—OC | 1.60 | 1.28 | 1.07 |
| U7B902059X | Dual J-K flip-flop | 3.20 | 2.56 | 2.15 |
| U7B902259X | Dual flip-flop | 3.40 | 2.72 | 2.28 |
| U7B902459X | Dual J-K flip-flop | 2.80 | 2.24 | 1.88 |
| U9A902659X* | Dual J-K M-S flip-flop | 1.50 | 1.20 | .98 |

*Silicone Dual In-Line package. †With reset.

### SERIES 74H HIGH SPEED TTL

Available in Dual In-Line package and temperature range listed (0° C to +75° C) only.

| Fairchild Type | Element | Net Ea., Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| U6A74H0059X | Quad 2-input gate | $0.60 | $0.48 | $0.40 |
| U6A74H0159X | Quad 2 gate/open collector | .60 | .48 | .40 |
| U6A74H0459X | Hex inverter | .75 | .60 | .50 |
| U6A74H0559X | Hex inverter/open collector | .75 | .60 | .50 |
| U6A74H1059X | Triple 3-input gate | .60 | .48 | .40 |
| U6A74H2059X | Dual 4-input NAND gate | .60 | .48 | .40 |
| U6A74H2259X | Dual 4-input NAND gate with OC | .60 | .48 | .40 |
| U6A74H3059X | 8-input gate | .60 | .48 | .40 |
| U6A74H4059X | Dual 4-input buffer | .60 | .48 | .40 |
| U6A74H5059X | Dual 2 W/2-input AOI expander | .60 | .48 | .40 |
| U6A74H5159X | Dual 2 W/2-input AOI | .60 | .48 | .40 |
| U6A74H5259X | 4 wide, 2-2-2-3-input AOI | .60 | .48 | .40 |
| U6A74H6059X | Dual 4-input expander | .60 | .48 | .40 |
| U6A74H6159X | Triple 3-input expander | .60 | .48 | .40 |
| U6A74H7259X | J-K flip-flop w/AND inputs | 1.05 | .85 | .72 |
| U6A74H7359X | Dual J-K flip-flop | 1.55 | 1.25 | 1.05 |
| U6A74H7459X | Dual D type flip-flop | 1.35 | 1.10 | .90 |
| U6B74H7659X | Dual J-K M-S flip-flop | 1.75 | 1.40 | 1.15 |
| U6A74H7859X | Dual J-K flip-flop | 1.75 | 1.40 | 1.15 |
| U6A74H10259X | 50 MHz J-K flip-flop | 1.20 | .95 | .78 |

### SERIES 74 TTL

Operating Temperature Range: 0° C to +75° C. In 6A Dual In-Line package except as otherwise noted.

| Fairchild Type | Element | Net Ea., Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| 7400 | Quad 2-input gate | $0.75 | $0.60 | $0.50 |
| 7401 | Quad 2-input gate w/OC | .75 | .60 | .50 |
| 7402 | Quad 2-input NOR gate | .75 | .60 | .50 |
| 7403 | Quad 2-input gate w/OC | .75 | .60 | .50 |
| 7404 | Hex inverter | .93 | .74 | .62 |
| 7405 | Hex inverter/open collector | .93 | .74 | .62 |
| 7408 | Quad 2-input AND gate | .98 | .78 | .65 |
| 7409 | Quad 2-input AND gate w/OC | .98 | .78 | .65 |
| 7410 | Triple 3-input gate | .75 | .60 | .50 |
| 7411 | Triple 3-input AND gate | .98 | .78 | .65 |
| 7420 | Dual 4-input gate | .75 | .60 | .50 |
| 7426 | Quad 2-input high voltage gate | .98 | .78 | .65 |
| 7430 | Single 8-input gate | .75 | .60 | .50 |
| 7440 | Dual 4-input buffer | .75 | .60 | .50 |
| 7441* | BCD-DEC decoder/driver | 6.05 | 5.60 | 4.85 |
| 7442* | One-of-ten decoder | 5.15 | 4.15 | 3.45 |
| 7443* | Excess 3 to DEC decoder | 8.05 | 6.40 | 5.35 |
| 7444* | Excess 3 gray to decoder/driver | 8.05 | 6.40 | 5.35 |
| 7446† | BCD to 7-segment decoder | 9.75 | 7.80 | 6.50 |
| 7447† | BCD to 7-segment driver | 8.90 | 7.15 | 5.95 |
| 7448† | BCD to 7-segment decoder | 7.90 | 6.30 | 5.25 |
| 7450 | Dual 2-wide, 2-input AOI/ | .75 | .60 | .50 |
| 7451 | expander | .75 | .60 | .50 |
| 7453 | 4-wide, 2-input AOI/expander | .75 | .60 | .50 |
| 7454 | 4-wide, 2-input AOI/expander | .75 | .60 | .50 |
| 7460 | Dual 4-input expander | .75 | .60 | .50 |
| 7470 | J-K flip-flop | 1.25 | 1.00 | .84 |
| 7472 | J-K M-S flip-flop, AND inputs | 1.15 | .92 | .77 |
| 7473 | Dual J-K M-S flip-flop | 1.95 | 1.55 | 1.30 |
| 7474 | Dual D type flip-flop | 1.65 | 1.30 | 1.10 |
| 7475* | Quad latch | 3.70 | 2.95 | 2.45 |
| 7476* | Dual J-K M-S/P and C | 2.05 | 1.62 | 1.35 |
| 7480 | Gated full adder | 3.20 | 2.60 | 2.15 |

*In 6B Dual In-Line package. †In 7B Dual In-Line package.

SERIES 74 TTL CONTINUED ON FOLLOWING PAGE

# FAIRCHILD SEMICONDUCTOR MICROLOGIC® INTEGRATED CIRCUITS

## DIGITAL INTEGRATED CIRCUITS

### SERIES 74 TTL (CONTINUED)

| Fairchild Type | Element | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| 7482 | 2-bit binary full adder | $4.80 | $3.85 | $3.20 |
| 7483* | 4-bit binary full adder | 7.60 | 6.05 | 5.05 |
| 7486 | Quad exclusive OR | 1.10 | .86 | .72 |
| 7490 | Decade counter | 3.70 | 2.95 | 2.45 |
| 7491 | 8-bit shift register | 6.70 | 5.35 | 4.45 |
| 7492 | Divide-by-12 counter | 3.70 | 2.95 | 2.45 |
| 7493 | 4-bit binary counter | 3.70 | 2.95 | 2.45 |
| 7494* | 4-bit shift register | 5.75 | 4.60 | 3.85 |
| 7495 | 4-bit R/L shift register | 5.75 | 4.60 | 3.85 |
| 7496* | 5-bit shift register | 8.10 | 6.50 | 5.40 |
| 74107 | Dual J-K M-S flip-flop | 1.95 | 1.55 | 1.30 |
| 74121 | One-shot multivibrator | 4.50 | 3.60 | 3.00 |
| 74181† | 4-bit arithmetic logic unit | 9.70 | 8.95 | 7.77 |
| 74182* | Carry look ahead | 2.78 | 2.56 | 2.22 |
| 74192‡ | Up/down decade counter | 7.50 | 6.90 | 6.00 |
| 74193‡ | Up/down binary counter | 7.50 | 6.90 | 6.00 |

*In 6B; †In 6N; ‡In 7B Dual In-Line™ package.

## LOW-POWER DIODE-TRANSISTOR LOGIC (LPDμL)

Operating Temperature Range: −55° C to +125° C. Noise immunity 0.7 V typ. at 25° C. Specify 3I Cerpak or 6A Dual In-Line package.

| Fairchild Type | Element | $t_{pd}$ nsec | $P_D$ mW | Fan-out | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| 9040 | Clocked flip-flop | 90 | 3 | 10 | $36.00 | $28.80 | $24.00 |
| 9041 | Dual 3-input NAND gate | 60 | 1.5 | 10 | 30.00 | 24.00 | 20.00 |
| 9042 | Dual 3-input NAND gate with expander inputs | 60 | 1.5 | 10 | 30.00 | 24.00 | 20.00 |
| 9043* | 3 and 4-input NAND gate | ..... | ..... | .... | 30.00 | 24.00 | 20.00 |
| 9044 | Dual 4-input NAND gate | ..... | ..... | .... | 30.00 | 24.00 | 20.00 |
| 9046 | Quad 2-input NAND gate | ..... | ..... | .... | 30.00 | 24.00 | 20.00 |
| 9047 | Triple 3-input NAND gate | ..... | ..... | .... | 30.00 | 24.00 | 20.00 |

*Dual In-Line not available.

Same as above except Operating Temperature Range: −20° C to +100° C. Specify 3I Cerpak or 6A Dual In-Line package.

| Fairchild Type | Net Each, Lots of 1-24 | 25-99 | 100-999 | Fairchild Type | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| 9040 | $21.00 | $16.75 | $14.10 | 9044 | $12.30 | $9.85 | $8.25 |
| 9041 | 12.30 | 9.85 | 8.25 | 9046 | 12.30 | 9.85 | 8.25 |
| 9042 | 12.30 | 9.85 | 8.25 | 9047 | 12.30 | 9.85 | 8.25 |
| 9043 | 12.30 | 9.85 | 8.25 | | | | |

## COUNTING MICROLOGIC IC's (CμL)

| Fairchild Type | Element | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| U6A995879X* | Decade counter | $11.20 | $ 9.00 | $ 7.50 |
| U6B995979X | Buffer decoder | 10.95 | 8.00 | 6.75 |
| U6B996079X | Decade counter display driver | 15.70 | 12.55 | 10.50 |
| U6A998979X* | MOD 16 counter | 11.20 | 9.00 | 7.50 |

*Available in 5B TO-99 package at same price.

## DUAL DIODE-TRANSISTOR LOGIC (DTμL)

9093, 9094: Internally connected J-K flip-flops; separate clocks, J and K inputs, direct set inputs and no direct clear input. 9097, 9099: Internally connected J-K flip-flops; separate J and K inputs, direct set inputs, common clock input pin and direct clear input pin. Operating Temperature Range: −55° C to +125° C. Available in 3I Cerpak or 6A Dual In-Line package.

| Fairchild Type | Element | 3I Cerpak, Net Each, Lots of 1-24 | 25-99 | 100-999 | 6A Dual In-Line, Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| 9093, 4 | Dual J-K flip-flop | $7.75 | $6.20 | $5.20 | $7.05 | $5.65 | $4.75 |
| 9097, 9 | | 7.75 | 6.20 | 5.20 | 7.05 | 5.65 | 4.75 |

Same as above except Operating Temperature 0° C to +75° C.

| Fairchild Type | Element | 3I Cerpak, Net Each, Lots of 1-24 | 25-99 | 100-999 | 6A Dual In-Line, Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| 9093, 4 | Dual J-K flip-flop | $6.10 | $4.85 | $4.05 | $1.65 | $1.32 | $1.10 |
| 9097, 9 | | 6.10 | 4.85 | 4.05 | 1.65 | 1.32 | 1.10 |

Same as above except in silicone 9A Dual In-Line package.

| Fairchild Type | Element | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| 9093, 4 | Dual J-K flip-flop | $1.30 | $1.05 | $0.88 |
| 9097, 9 | | 1.30 | 1.05 | .88 |

## DIODE-TRANSISTOR LOGIC (DTμL)

Operating Temperature: 0° C to +75° C. In 6A Dual In-Line pkg.

| Fairchild Type | Element | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| 9109 | High level hex inverter | $5.40 | $4.30 | $3.60 |
| 9110 | High level hex inverter | 5.40 | 4.30 | 3.60 |
| 9111 | Parallel gated clocked flip-flop | 4.10 | 3.30 | 2.75 |
| 9112 | High level hex inverter | 5.40 | 4.30 | 3.60 |
| 9135 | Hex inverter | .82 | .66 | .55 |
| 9157 | Quad buffer | .82 | .66 | .55 |
| 9158 | Quad power gate | .82 | .66 | .55 |
| 9930 | Dual 4-input gate | .68 | .54 | .45 |
| 9931 | Clocked flip-flop | 3.20 | 2.60 | 2.15 |
| 9932 | Dual buffer | .82 | .66 | .55 |
| 9933 | Dual 4-input extender | .68 | .54 | .45 |
| 9935 | Hex inverter w/o input diodes | .82 | .66 | .55 |
| 9936 | Hex inverter gate | .82 | .66 | .55 |
| 9937 | Hex inverter gate | .82 | .66 | .55 |
| 9941 | One-shot monostable | 7.25 | 5.80 | 4.85 |
| 9944 | Dual power gate | .82 | .66 | .55 |
| 9945 | R-S clocked flip-flop | 1.12 | .90 | .75 |
| 9946 | Quad 2-input gate | .75 | .60 | .50 |
| 9948 | Clocked flip-flop | 1.12 | .90 | .75 |
| 9949 | Quad 2-input gate | .75 | .60 | .50 |
| 9950 | Binary | 7.25 | 5.80 | 4.85 |
| 9951 | One-shot multivibrator | 7.25 | 5.80 | 4.85 |
| 9961 | Dual 4-input gate w/expander | .75 | .60 | .50 |
| 9962 | Triple 3-input gate | .75 | .60 | .50 |
| 9963 | Triple 3-input gate | .75 | .60 | .50 |

Same as above except in 9A Dual In-Line package.

| Fairchild Type | Net Each, Lots of 1-24 | 25-99 | 100-999 | Fairchild Type | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| 9135 | $0.75 | $0.60 | $0.50 | 9945 | $0.93 | $0.75 | $0.62 |
| 9157 | .75 | .60 | .50 | 9946 | .66 | .54 | .44 |
| 9158 | .75 | .60 | .50 | 9948 | .93 | .75 | .62 |
| 9930 | .60 | .48 | .40 | 9949 | .66 | .54 | .44 |
| 9932 | .75 | .60 | .50 | 9950 | 6.50 | 5.20 | 4.35 |
| 9933 | .60 | .48 | .40 | 9951 | 6.50 | 5.20 | 4.35 |
| 9935 | .75 | .60 | .50 | 9961 | .66 | .54 | .44 |
| 9936 | .75 | .60 | .50 | 9962 | .66 | .54 | .46 |
| 9937 | .75 | .60 | .50 | 9963 | .66 | .54 | .46 |
| 9944 | .75 | .60 | .50 | | | | |

## RESISTOR-TRANSISTOR LOGIC (RTμL)

Operating Temperature Range: 0° C to +70° C. In TO-5 package. Also available in other operating temperature ranges and package types. Complete data and pricing available on request.

### MEDIUM POWER

| Fairchild Type | Element | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| 9900 | Buffer | $ 3.25 | $ 2.60 | $ 1.95 |
| 9901* | Counter adapter | 47.00 | 37.50 | 31.50 |
| 9902 | Flip-flop | 3.25 | 2.60 | 1.95 |
| 9903 | 3-input gate | 4.55 | 3.65 | 3.00 |
| 9904 | Half adder | 3.90 | 3.10 | 2.60 |
| 9905 | Half shift register | 6.45 | 5.15 | 3.85 |
| 9906 | Half shift without inverter | 5.15 | 4.25 | 3.20 |
| 9907 | 4-input gate | 3.25 | 2.60 | 1.95 |
| 9914 | Dual 2-input gate | 3.25 | 2.60 | 1.95 |
| 9915 | Dual 3-input gate | 4.55 | 3.65 | 3.00 |
| 9927 | Quad inverter | 4.55 | 3.65 | 3.00 |
| 9974 | J-K flip-flop | 5.20 | 4.60 | 3.85 |

*Temperature Range: 0° C to +100° C.

### LOW POWER

| Fairchild Type | Element | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| 9908 | Adder | $ 4.55 | $ 3.65 | $3.00 |
| 9909 | Buffer | 4.25 | 3.25 | 2.80 |
| 9910 | Dual 2-input gate | 3.25 | 2.60 | 1.95 |
| 9911* | 4-input gate | 12.65 | 10.15 | 8.40 |
| 9912 | Half adder | 4.55 | 3.65 | 3.00 |
| 9913 | Type D flip-flop | 7.65 | 6.10 | 5.15 |
| 9921 | Expander | 2.65 | 2.15 | 1.80 |
| 9923 | J-K flip-flop | 5.70 | 4.60 | 3.85 |
| 9926 | J-K flip-flop | 5.70 | 4.60 | 3.85 |

*Temperature Range: 0° C to +100° C.

## SPECIAL INTERFACE PRODUCTS

| Fairchild Type | Element | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| U7B961459X | Dual differential line driver | $11.40 | $ 9.10 | $7.50 |
| U7B961559X | Dual differential line receiver | 14.30 | 11.40 | 9.55 |
| U6A962059X | | 5.90 | 4.70 | 3.95 |
| U6A962159X | Dual line driver | 4.75 | 3.80 | 3.20 |
| U6A962259X | Dual line receiver | 6.20 | 4.95 | 4.15 |
| U6A962459X | Dual CCSL to MOS interface | 4.10 | 3.25 | 2.75 |
| U6A962559X | Dual MOS to CCSL level converter | 3.30 | 2.65 | 2.20 |
| U7B964459X | Dual Hi-V Hi-C driver | 7.40 | 5.90 | 4.95 |

# FAIRCHILD SEMICONDUCTOR Integrated Circuits

## TTL MEMORIES

Fairchild TTL memory product line includes a variety of high speed memory devices suitable for use in all types of data processing equipment. Three general types of memory products are included in the TTL line: Read Only Memories (ROM), Random Access Read/Write Memories (RAM) and Associative or Content Addressable Memories (CAM). All are widely used in the industry and system oriented for the best possible speed/power ratios available today.

| Fairchild Type | Element | Typ. Speed nsec | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|
| A7B9340059X | 256W x 1B | 70 | $28.50 | $22.80 | $19.00 |
| A7B9340059B | (partially decoded) | 100 | 18.90 | 15.00 | 12.50 |
| A7B9340159X | 3 of 6 decoder for above 93400 | 20 | 5.60 | 4.55 | 3.80 |
| A6N9340259X | 4W x 4B (linear select) | 20 | 37.50 | 30.00 | 25.00 |
| A7B9340359X | 16W x 4B (fully decoded) | 40 | 10.50 | 8.40 | 7.00 |
| A6A93407592 | 16W x 1B | 18 | 7.20 | 5.75 | 4.80 |
| A6A93433592 | scratch pad | 18 | 7.20 | 5.75 | 4.80 |
| A6P9343559X | 16W x 4B (linear select) | 22 | 43.50 | 35.00 | 29.00 |

## SERIES 9500 HIGH SPEED LOGIC ECL

Fairchild ECL offers both maximum speed performance and optimum logic flexibility in the design of high speed systems. Temperature compensated; logic levels remain constant across range of 0° C to +75° C. The series features high input/low output impedance, complementary outputs/wire-OR capability, high noise margin, low edge speed and constant supply current drain. In 6B Dual In-Line™ package.

| Fairchild Type | Element | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| 9502 | Dual 4-input OR-NOR gate | $ 2.00 | $ 1.85 | $ 1.70 |
| 95H02 | High speed 9502 | 3.15 | 2.85 | 2.50 |
| 9503 | Triple 2-input OR-NOR gate | 2.00 | 1.85 | 1.70 |
| 95H03 | High speed 9503 | 3.15 | 2.85 | 2.50 |
| 9504 | Quad 2-input NOR gate | 2.00 | 1.85 | 1.70 |
| 95H04 | High speed 9504 | 3.15 | 2.85 | 2.50 |
| 9505 | Quad OR-AND gate | 3.15 | 2.85 | 2.50 |
| 9507 | Quad AND-NAND gate | 3.15 | 2.85 | 2.50 |
| 95L22 | Low power dual gate | 2.50 | 2.30 | 2.00 |
| 95L23 | Low power triple gate | 2.50 | 2.30 | 2.00 |
| 95L24 | Low power quad gate | 2.50 | 2.30 | 2.00 |
| 9528 | Dual D flip-flop | 4.65 | 4.25 | 4.00 |
| 95H29 | High speed J-K flip-flop | 4.65 | 4.25 | 4.00 |
| 9534 | Quad latch | 5.80 | 5.35 | 5.00 |
| 9538 | 3 line/8 line decoder | 6.60 | 6.10 | 5.70 |
| 9578 | Quad exclusive-OR gate/ 4-bit comparator | 3.85 | 3.50 | 3.05 |
| 9579 | Quad 2-input multiplexer | 6.00 | 5.55 | 5.20 |
| 9581 | 8-input multiplexer | 6.00 | 5.55 | 5.20 |
| 9582 | Multifunction receiver/ amplifier | 3.15 | 2.85 | 2.50 |
| 95H84 | High speed 2-bit adder/ subtracter | 16.00 | 14.50 | 13.60 |
| 9595 | Level converter | 3.15 | 2.85 | 2.50 |

## COMPLEMENTARY TRANSISTOR LOGIC (CTμL)

Compatible family of high speed non-inverting, non-saturating logic functions; designed to provide an optimum high speed cost-performance system. Current mode logic; high fan-out capability; high noise immunity. Operating Temperature Range: +15° C to +55° C. Ceramic Dual In-Line package.

| Fairchild Type | Element | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| 9952 | Dual 2-input inverter | $1.90 | $1.50 | $1.25 |
| 9953 | Triple 2-2-3 gate | 1.90 | 1.50 | 1.25 |
| 9954 | Dual 4-input gate | 1.90 | 1.50 | 1.25 |
| 9955 | Single 8-input gate | 1.90 | 1.50 | 1.25 |
| 9956 | Dual 2-input buffer | 1.90 | 1.50 | 1.25 |
| 9957 | Binary | 3.00 | 2.40 | 2.00 |
| 9964 | 3-3-1 gate | 1.90 | 1.50 | 1.25 |
| 9965 | Quad 1-input gate | 1.90 | 1.50 | 1.25 |
| 9966 | Quad 2-input gate | 1.90 | 1.50 | 1.25 |
| 9967 | J-K flip-flop | 3.00 | 2.40 | 2.00 |
| 9968 | Dual latch | 3.00 | 2.40 | 2.00 |
| 9971 | Quad 2-input AND gate | 1.90 | 1.50 | 1.25 |
| 9972 | Quad 2-input gate | 1.90 | 1.50 | 1.25 |

## HYBRID CIRCUITS

### HIGH VOLTAGE, HIGH CURRENT DRIVER

High current capability: 250 mA sinking current at 0.5 volt. High voltage capability: 40 volts $LV_{CEO}$. High speed: $t_{on}=70$ nsec (typical); $t_{off}=110$ nsec (typical). Specify 10-lead TO-100 or ¼" x ¼" Flat Pak.

| Fairchild Type | Operating Temperature | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| H2001-1 | −55° C to +125° C | $20.60 | $16.50 | $13.40 |
| H2001-9 | 0° C to +70° C | 10.30 | 8.25 | 6.67 |

### DTμL HIGH POWER DRIVER

High current capability: Up to 150 mA. High voltage capability: 40 volts $LV_{CEO}$. Specify 10-lead TO-100 or ¼" x ¼" Flat Pak; 10-lead plastic Dual In-Line also available; price on request.

| | | | | |
|---|---|---|---|---|
| H2002-1 | −55° C to +125° C | $16.30 | $13.04 | $10.92 |
| H2002-9 | 0° C to +70° C | 7.90 | 6.32 | 5.27 |
| H2200-1 | −55° C to +125° C | 17.95 | 14.34 | 12.02 |
| H2200-9 | 0° C to +70° C | 8.70 | 7.05 | 5.80 |

### BYTE PARITY GENERATOR OR CHECKER

35 nanosecond typical input to odd parity delay. All input diode clamping; CCSL interfacing. In 10-lead Flat Pak.

| Fairchild Type | Operating Temperature | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| H2204-1 | −55° C to +125° C | $68.00 | $54.00 | $48.00 |
| H2204-9 | 0° C to +70° C | 32.00 | 26.00 | 22.00 |

### SPDT ANALOG SWITCH

Low feed-through spikes on output. $t_{on}=120$ nsec typical. In 10-lead TO-100 package.

| | | | | |
|---|---|---|---|---|
| H3002-1 | −55° C to +125° C | $28.30 | $22.60 | $18.96 |
| H3002-9 | 0° C to +70° C | 20.60 | 16.50 | 13.80 |

### PNP QUAD CORE DRIVER

High voltage: Up to 50 volts $LV_{CEO}$. High current: Up to 1.0 amp. Fast switching: $t_{on}=25$ nsec typ.; $t_{off}=65$ nsec typ. In 14-lead ¼" x ¼" Flat Pak.

| Fairchild Type | Operating Temperature | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| H6400-1 | −55° C to +125° C | $24.00 | $24.00 | $16.00 |
| H6400-9 | 0° C to +70° C | 21.00 | 21.00 | 14.00 |

### NPN QUAD CORE DRIVER

High voltage: Up to 50 volts $LV_{CEO}$. High current: Up to 1.0 amp. Fast switching: $t_{on}=25$ nsec typ.; $t_{off}=45$ nsec typ. In 14-lead ¼" x ¼" Flat Pak; 14-lead plastic Dual In-Line also available; price on request.

| | | | | |
|---|---|---|---|---|
| H6501-1 | −55° C to +125° C | $21.00 | $21.00 | $14.00 |
| H6501-9 | 0° C to +70° C | 14.00 | 14.00 | 9.50 |

### 4-BIT ARITHMETIC LOGIC UNIT

Eight MSI chips in one 30-pin 1" x 1" Flat Pak. High speed operation; fully buffered complementary outputs.

| Fairchild Type | Operating Temperature | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| H8081-1 | −55° C to +125° C | $215.00 | $173.00 | $140.00 |
| H8081-9 | 0° C to +70° C | 140.00 | 112.00 | 92.00 |

**The following hybrid circuits are also available.** In 1" x 1" Flat Pak (flat metal lid). Temperature Range: 0° C to +70° C. Also available in −55° C to +125° C temperature range, prices on request.

| Fairchild Type | Element | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| H8090* | Digital/analog converter | $98.00 | $75.00 | $68.37 |
| H8095 | Prescaler | 60.00 | 55.00 | 50.00 |
| H8096 | Program divide | 50.00 | 46.00 | 42.00 |
| H8097 | VCD tuner | 75.00 | 66.00 | 60.00 |
| H8098 | Reference divide | 43.00 | 38.00 | 35.00 |

*Temperature Range: −20° C to +85° C.

**FOR LARGER QUANTITY ORDERS cramer OFFERS**

**MANUFACTURER-COMPETITIVE PRICING IN MOST INSTANCES.**

**CALL FOR QUOTATIONS ON YOUR REQUIREMENTS.**

FAIRCHILD SEMICONDUCTOR

# Integrated Circuits

## MOS INTEGRATED CIRCUITS

Fairchild MOS integrated circuits utilize either Metal Gate or Silicon Gate technology. The benefits of these technologies combined with the extensive usage of computer-aided design, have resulted in a group of highly complex and sophisticated products. Suffix (A6J310014X) indicates operating temperature: **19**, 0° C to +70° C; **14**, −55° C to +85° C.

| Fairchild Type | Family | Description | Pkg. | Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 1-24 | 25-99 | 100-999 |
| **A6J310014X** | MOS/MGT | Dual 5-input gate | 16-lead DIP | $ 9.00 | $ 9.00 | $ 6.00 |
| **A6J310114X** | MOS/MGT | Dual J-K flip-flop | 16-lead DIP | 12.00 | 12.00 | 8.00 |
| **A5F3102XXX** | MOS/MGT | 3-input gate | TO-5 | 6.00 | 6.00 | 4.00 |
| **A7G325014X** | MOS/MGT | CRT numeric character generator | 24-lead DIP | 48.00 | 36.00 | 28.80 |
| **A6G325019X** | MOS/MGT | CRT numeric character generator | 24-lead DIP | 38.00 | 30.00 | 24.00 |
| **A7K325519X** | MOS/SGT | 5 x 7 x 16 character generator | 16-lead DIP | 15.00 | 12.50 | 10.00 |
| **A7K325619X** | MOS/SGT | 5 x 7 x 16 character generator | 16-lead DIP | 15.00 | 12.50 | 10.00 |
| **A7C325719X** | MOS/SGT | 5 x 7 x 64 character generator | 24-lead DIP | 25.00 | 20.00 | 16.70 |
| **A5F330014X** | MOS/MGT | 25-bit 1-phase static shift register | TO-5 | 7.80 | 6.25 | 5.20 |
| **A5F330019X** | MOS/MGT | 25-bit 1-phase static shift register | TO-5 | 6.00 | 4.80 | 4.00 |
| **A5F330314X** | MOS/MGT | 2 x 25-bit 2-phase dynamic shift register | TO-5 | 7.80 | 6.25 | 5.20 |
| **A5F330319X** | MOS/MGT | 2 x 25-bit 2-phase dynamic shift register | TO-5 | 6.00 | 4.80 | 4.00 |
| **A5F330414X** | MOS/MGT | 2 x 16-bit 2-phase static shift register | TO-5 | 7.80 | 6.25 | 5.20 |
| **A5F330419X** | MOS/MGT | 2 x 16-bit 2-phase static shift register | TO-5 | 6.00 | 4.80 | 4.00 |
| **A6J330514X** | MOS/MGT | 4 x 16-bit 1-phase static shift register | 16-lead DIP | 12.00 | 9.60 | 8.00 |
| **A5F330614X** | MOS/MGT | 2 x 16 and 1 x 32 1-phase static shift register | TO-5 | 7.50 | 6.00 | 5.00 |
| **A5F3307141** | MOS/MGT | 2 x 100-bit 2-phase static shift register | TO-5 | 7.80 | 6.25 | 5.20 |
| **A5F3307192** | MOS/MGT | 2 x 100-bit 2-phase static shift register | TO-5 | 6.00 | 4.50 | 4.00 |
| **A5E332614X** | MOS/MGT | 3 x 66-bit 2-phase dynamic shift register | TO-5 | 8.25 | 6.60 | 5.50 |
| **A5F332919X** | MOS/SGT | 512-bit 2-phase dynamic shift register | TO-5 | 7.35 | 5.85 | 4.90 |
| **A5F333019X** | MOS/SGT | 480-bit 2-phase dynamic shift register | TO-5 | 7.35 | 5.85 | 4.90 |
| **A5F333119X** | MOS/SGT | 500-bit 2-phase dynamic shift register | TO-5 | 7.35 | 5.85 | 4.90 |
| **A7K333319X** | MOS/MGT | 3 x 48/64-bit 2-phase dynamic shift register | 16-lead DIP | 15.00 | 12.00 | 10.00 |
| **A5F338319X** | MOS/SGT | 256-bit 2-phase dynamic shift register | TO-5 | 6.90 | 5.50 | 4.60 |
| **A6G350114X*** | MOS/MGT | 1024-bit (128 x 8) static ROM | 24-lead DIP | 24.00 | 19.20 | 16.00 |
| **A6G350119X*** | MOS/MGT | 1024-bit (128 x 8) static ROM | 24-lead DIP | 18.00 | 14.40 | 12.00 |
| **A6G350719X*** | MOS/MGT | 2048-bit (256 x 8) static ROM | 24-lead DIP | 27.00 | 21.60 | 18.00 |
| **A7C351219X*** | MOS/SGT | 2048-bit (256 x 8) static ROM | 24-lead DIP | 30.00 | 24.00 | 20.00 |
| **A7C351319X*** | MOS/SGT | 2560-bit (256 x 10) static ROM | 24-lead DIP | 33.00 | 26.40 | 22.00 |
| **A6G358019X*** | MOS/MGT | 4 x 5 12-bit static ROM | 24-lead DIP | 27.00 | 21.60 | 18.00 |
| **A6G358419X*** | MOS/MGT | 2048-bit (512 x 4) static ROM | 24-lead DIP | 27.00 | 21.60 | 18.00 |
| **A3I3700112** | MOS/MGT | 4-channel multiplex switch | 14-lead F.P. | 20.00 | 16.00 | 12.00 |
| **A3F3700113** | MOS/MGT | 4-channel multiplex switch | 10-lead F.P. | 16.00 | 12.70 | 9.60 |
| **A3I3700192** | MOS/MGT | 4-channel multiplex switch | 14-lead F.P. | 13.40 | 10.60 | 8.00 |
| **A3I3700193** | MOS/MGT | 4-channel multiplex switch | 14-lead F.P. | 12.00 | 9.30 | 6.60 |
| **A3I370119X** | MOS/MGT | 6-channel multiplex switch | 14-lead F.P. | 12.00 | 9.30 | 6.60 |
| **A6J3705142** | MOS/MGT | 8-channel multiplex switch | 16-lead DIP | 27.00 | 21.60 | 18.00 |
| **A6J3705143** | MOS/MGT | 8-channel multiplex switch | 16-lead DIP | 22.50 | 18.00 | 15.00 |
| **A6J3705192** | MOS/MGT | 8-channel multiplex switch | 16-lead DIP | 18.00 | 14.40 | 12.00 |
| **A6J3705193** | MOS/MGT | 8-channel multiplex switch | 16-lead DIP | 15.00 | 12.50 | 10.00 |
| **A6J3708142** | MOS/SGT | 8-channel multiplex switch | 16-lead DIP | 35.10 | 28.10 | 23.40 |
| **A6J3708143** | MOS/SGT | 8-channel multiplex switch | 16-lead DIP | 29.25 | 23.40 | 19.50 |
| **A6J3708192** | MOS/SGT | 8-channel multiplex switch | 16-lead DIP | 23.40 | 18.75 | 15.60 |
| **A6J3708193** | MOS/SGT | 8-channel multiplex switch | 16-lead DIP | 19.50 | 15.60 | 13.00 |
| **A6H375014X** | MOS/MGT | 10-bit digital-to-analog converter | 36-lead DIP | 40.00 | 34.00 | 30.00 |
| **A6H375019X** | MOS/MGT | 10-bit digital-to-analog converter | 36-lead DIP | 33.00 | 29.00 | 25.00 |
| **A6H375114X** | MOS/MGT | 12-bit analog-to-digital converter | 36-lead DIP | 45.00 | 36.00 | 30.00 |
| **A6H375119X** | MOS/MGT | 12-bit analog-to-digital converter | 36-lead DIP | 36.50 | 30.00 | 27.50 |
| **A6H380014X** | MOS/MGT | 8-bit parallel accumulator | 36-lead DIP | 50.00 | 40.00 | 37.00 |
| **A6H380019X** | MOS/MGT | 8-bit parallel accumulator | 36-lead DIP | 41.00 | 37.00 | 31.00 |
| **A6H380114X** | MOS/MGT | 10-bit ser/par par/ser converter | 36-lead DIP | 38.00 | 31.00 | 25.00 |
| **A6H380119X** | MOS/MGT | 10-bit ser/par par/ser converter | 36-lead DIP | 30.00 | 27.00 | 22.00 |

*Minimum order of 25 pieces and $500.00 non-recurring mask charge. No masking charge for orders equal to or greater than 100 pieces.

## LINEAR INTEGRATED CIRCUITS

### OPERATIONAL AMPLIFIERS

Complete family of operational amplifiers including the μA741 internally-compensated type and its dual version, μA747; μA715 high-speed operational amplifier; μA725 instrumentation amplifier; μA740 FET-input amplifier and μA776 programmable operational amplifier. All devices are monolithically constructed using the Fairchild Planar Epitaxial Process.

| Fairchild Type | Circuit Function | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-499 |
| **μ5B7101311** | General purpose operational amplifier | $ 4.10 | $ 3.80 | $ 3.25 |
| **μ5B7101333** | | 3.85 | 3.50 | 3.05 |
| **μ5B7101392** | | 1.40 | 1.30 | 1.10 |
| **μ6A7101311** | | 4.10 | 3.80 | 3.25 |
| **μ6A7101333** | | 3.85 | 3.50 | 3.05 |
| **μ6A7101393** | | 1.40 | 1 30 | 1.10 |
| **μ9T7101393** | | 1.30 | 1 20 | 1.05 |
| **μ5B7201393** | High precision operational amplifier | 1.88 | 1.50 | 1.25 |
| **μ6A7201393** | | 1.88 | 1 50 | 1.25 |
| **μ9T7201393** | | 1.88 | 1 50 | 1.25 |
| **μ5B7702312** | Wide band IC operational amplifier | 10.50 | 8.40 | 7.00 |
| **μ5B7702393** | | 3.38 | 2.70 | 2.25 |
| **μ6A7702312** | | 11.25 | 9.00 | 7.50 |
| **μ6A7702393** | | 4.50 | 3.60 | 3.00 |
| **μ5B7709311** | High performance operational amplifier | 22.50 | 18.00 | 15.00 |
| **μ5B7709312** | | 2.93 | 2.34 | 1.95 |
| **μ5B7709393** | | 1.10 | 1.05 | .90 |
| **μ6A7709312** | | 3.38 | 2.70 | 2.25 |
| **μ6A7709393** | | 1.10 | 1.05 | .90 |
| **μ5F7715312** | High speed operational amplifier | 30.00 | 24.00 | 20.00 |
| **μ5F7715393** | | 7.43 | 5.94 | 4.95 |
| **μ6A7715312** | | 33.75 | 27.00 | 22.50 |
| **μ6A7715393** | | 8.25 | 6.60 | 5.50 |
| **μ5T7725312** | Instrumentation operational amplifier | 37.50 | 30.00 | 25.00 |
| **μ5T7725333** | | 22.50 | 18.00 | 15.00 |
| **μ5T7725393** | | 11.25 | 9.00 | 7.50 |
| **μ6A7739312** | Dual low noise operational amplifier | 8.93 | 7.14 | 5.95 |
| **μ6A7739393** | | 3.38 | 2.70 | 2.25 |

| Fairchild Type | Circuit Function | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-499 |
| **μ5B7740312** | FET input operational amplifier | $56.25 | $45.00 | $37.50 |
| **μ5B7740393** | | 14.93 | 11.94 | 9.95 |
| **μ5B7741312** | Internally compensated operational amplifier | 5.93 | 4.74 | 3.95 |
| **μ5B7741393** | | 1.50 | 1.40 | 1.25 |
| **μ6A7741312** | | 6.38 | 5.10 | 4.25 |
| **μ6A7741393** | | 1.50 | 1.40 | 1.25 |
| **μ9T7741393** | | 1.30 | 1.20 | 1.05 |
| **μ5F7747312** | Dual internally compensated operational amplifier | 14.93 | 11.94 | 9.95 |
| **μ5F7747393** | | 5.93 | 4.74 | 3.95 |
| **μ7A7747312** | | 18.75 | 15.00 | 12.50 |
| **μ7A7747393** | | 6.75 | 5.40 | 4.50 |
| **μ5B7748312** | High performance operational amplifier | 5.93 | 4.74 | 3.95 |
| **μ5B7748393** | | 1.30 | 1.20 | 1.10 |
| **μ6A7748312** | | 6.38 | 5.10 | 4.00 |
| **μ6A7748393** | | 1.30 | 1.20 | 1.10 |
| **μ9T7748393** | | 1.30 | 1.20 | 1.10 |
| **μ6A7749312** | Dual operational amplifier | 7.43 | 5.94 | 4.95 |
| **μ6A7749393** | | 2.85 | 2.28 | 1.90 |
| **μ5B7776312** | Programmable operational amplifier | 11.04 | 10.16 | 8.83 |
| **μ5B7776393** | | 4.10 | 3.77 | 3.28 |
| **μ5B7777312** | Precision operational amplifier | 8.95 | 7.15 | 5.95 |
| **μ5B7777393** | | 3.55 | 2.85 | 2.35 |
| **μ6A7777312** | | 7.45 | 6.85 | 5.95 |
| **μ6A7777393** | | 2.95 | 2.70 | 2.35 |

LINEAR INTEGRATED CIRCUITS

CONTINUED ON FOLLOWING PAGE

# FAIRCHILD SEMICONDUCTOR Integrated Circuits

## LINEAR INTEGRATED CIRCUITS (CONTINUED)

### TRANSISTOR ARRAYS

Available in a variety of configurations for use as basic building blocks in linear systems. VCEO = 15 V max.; IC = 50 mA max.

| Fairchild Type | Circuit Function | Net Each, Lots of 1-24 | 25-99 | 100-499 |
|---|---|---|---|---|
| μ6A7045312 | Differential amplifier and 3 isolated transistors | $1.31 | $1.21 | $1.05 |
| μ6A7045393 | | 1.31 | 1.21 | 1.05 |
| μ6A7054393 | Dual independent differential amplifiers | 1.31 | 1.21 | 1.05 |
| μ5G7018312 | Two isolated transistors and Darlington connected transistor pair | 1.31 | 1.21 | 1.05 |
| μ5G7026312 | Dual independent differential amplifiers | 1.74 | 1.60 | 1.39 |
| μ5F7036312 | Dual Darlington array | 1.25 | 1.15 | .99 |
| μ5G7039312 | Dual independent differential amplifiers | 1.31 | 1.21 | 1.05 |

### TEMPERATURE STABILIZED SUBSTRATE DEVICES

| Fairchild Type | Circuit Function | Net Each, Lots of 1-24 | 25-99 | 100-499 |
|---|---|---|---|---|
| μ5U7725312 | TSS transistor pair | $45.00 | $36.00 | $30.00 |
| μ5U7726323 | TSS transistor pair | 11.25 | 9.00 | 7.50 |
| μ5U7727312 | Temperature controlled preamplifiers | 71.25 | 57.00 | 47.50 |
| μ5U7727333 | | 16.88 | 13.50 | 11.25 |

### VIDEO CIRCUITS

| Fairchild Type | Circuit Function | Net Each, Lots of 1-24 | 25-99 | 100-499 |
|---|---|---|---|---|
| μ5A7064394 | Automatic FTC | $1.46 | $1.35 | $1.17 |
| μ5E7064394 | Automatic FTC | 1.31 | 1.21 | 1.05 |
| μ6A7065394 | TV/FM sound system | 1.38 | 1.26 | 1.10 |
| μ7F7065394 | TV/FM sound system | 1.51 | 1.39 | 1.21 |
| μ5E7746394 | Color TV chroma demodulizer | 2.04 | 1.83 | 1.67 |
| μ6A7746394 | | 2.04 | 1.83 | 1.67 |
| μ6A7786394 | PAL TV chroma demodulizer | 1.66 | 1.53 | 1.33 |
| μ7F7786394 | | 1.88 | 1.72 | 1.50 |

### VIDEO AMPLIFIERS

| Fairchild Type | Circuit Function | Net Each, Lots of 1-24 | 25-99 | 100-499 |
|---|---|---|---|---|
| μ5F7719312 | IF amplifier | $19.43 | $15.54 | $12.95 |
| μ5F7719393 | IF amplifier | 7.43 | 5.94 | 4.95 |
| μ5F7733312 | Wide band video amplifier | 8.93 | 7.14 | 5.95 |
| μ5F7733393 | Wide band video amplifier | 4.43 | 3.54 | 2.95 |
| μ6A7733312 | Wide band video amplifier | 9.75 | 7.80 | 6.50 |
| μ6A7733393 | Wide band video amplifier | 4.88 | 3.90 | 3.25 |

### SENSE AMPLIFIERS

| Fairchild Type | Circuit Function | Net Each, Lots of 1-24 | 25-99 | 100-499 |
|---|---|---|---|---|
| μ7B7524392 | Two channel core memory sense amplifiers | $7.35 | $5.88 | $4.90 |
| μ7B7525393 | | 3.98 | 3.18 | 2.65 |

### ANALOG/DIGITAL INTERFACE

| Fairchild Type | Description | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| μ3F7710312 | High speed comparator | $10.50 | $ 8.40 | $ 7.00 |
| μ3F7710313 | | 6.00 | 4.80 | 4.00 |
| μ5B7710312 | | 2.93 | 2.34 | 1.95 |
| μ5B7710393 | | 1.10 | 1.05 | .90 |
| μ6A7710312 | | 3.38 | 2.70 | 2.25 |
| μ6A7710393 | | 1.10 | 1.05 | .90 |
| μ3F7711312 | Dual comparator | 17.25 | 13.80 | 11.50 |
| μ3F7711313 | | 6.00 | 4.80 | 4.00 |
| μ5F7711393 | | 1.10 | 1.05 | .90 |
| μ5F7711312 | | 3.38 | 2.70 | 2.25 |
| μ3M7722333 | A/D-D/A current source | 56.25 | 45.00 | 37.50 |
| μ3M7722334 | | 22.50 | 18.00 | 15.00 |
| μ5F7734312 | Precision comparator | 11.04 | 10.16 | 8.83 |
| μ5F7734393 | | 4.10 | 3.77 | 3.28 |

### AC TRIGGER—TRIGAC

| Fairchild Type | Description | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| μ6A7742312 | Zero crossing | $11.25 | $9.00 | $7.50 |
| μ6A7742393 | Zero crossing | 4.43 | 3.54 | 2.95 |

### FAIRCHILD INTEGRATED CIRCUIT NUMBERING CODE FOR ORDERING

**U 5B 9900 31 X**

**U** = Micro-circuit
**H** = Hybrid
**A** = MOS/IC, Bipolar Arrays, Memories

Package Code (see tables below).

**2000–2999**—Std. Hybrid—Digital
**3000–3999** = Std. Hybrid—Linear
**6000–6999** = Quads
**7000–7999** = Linear IC
**9000–9999** = Digital IC

Temperature:
**31** = −55° C to +125° C Full Range MIL (LIC)
**33** = −20° C to +85° C Industrial (LIC)
**39** = 0° C to +70° C Industrial (LIC)
**51** = −55° C to +125° C Full Range MIL
**56** = −20° C to +100° C Intermediate Range
**59** = 0° C to +75° C Industrial (DTμL, CμL)
**79** = +15° C to +55° C Com'l (CTμL) Clamped
**79** = 0° C to +75° C Counting Family (CμL)

LIC Electrical Class
**X** = Not specified
**1** = Prime military
**2** = Standard military
**3** = Commercial
**4** = Consumer

| Flat Package Code | Size, Inches | No. of Leads | Name |
|---|---|---|---|
| 3B | ¼ x ¼ | 14 | Cerpak |
| 3F | ¼ x ¼ | 10 | Cerpak |
| 3I | ¼ x ¼ | 14 | Cerpak |
| 3M | ¼ x ⅜ | 24 | Flat Pak |
| 3N | ½ x 1.00 | 36 | Cerpak |
| 3Q | .255 x .400 | 16 | Cerpak |
| 4L | ¼ x ⅜ | 16 | Cerpak |
| 4M | ⅜ x ⅝ | 24 | Cerpak |

| Dual In-Line Code | Size, Inches | No. of Leads | Name |
|---|---|---|---|
| 7H | .271 x .785 | 16 | Ceramic |
| 7K | .295 x .765 | 16 | Ceramic |
| 9A | .260 x .760 | 14 | Silicone |
| 9B | .260 x .760 | 16 | Silicone |
| 9T | .256 x .393 | 8 | Plastic |
| 9Z | .360 x 1.000 | 20 | Plastic |

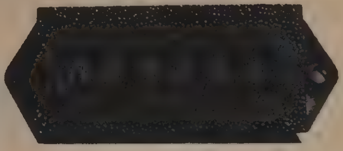
| Dual In-LineTM Code | Size, Inches | No. of Leads | Name |
|---|---|---|---|
| 6A | .271 x .785 | 14 | Ceramic |
| 6B | .271 x .785 | 16 | Ceramic |
| 6N | .575 x 1.29 | 24 | Ceramic |
| 6P | .590 x 1.89 | 36 | Ceramic |
| 6W | .275 x .735 | 14 | Metal |
| 7A | .291 x .785 | 14 | Ceramic |
| 7B | .291 x .785 | 16 | Ceramic |
| 7C | .560 x 1.300 | 24 | Metal |
| 7F | .271 x .785 | 14 | Ceramic |
| 7G | .525 x 1.270 | 24 | Ceramic |

| TO-Code | Type | No. of Leads | Leads Connected to Case |
|---|---|---|---|
| 5A | TO-100 | 10 | None |
| 5B | TO-99 | 8 | 4 |
| 5C | TO-99 | 6 | 4 |
| 5D | TO-99 | 6 | 4 |
| 5E | TO-100 | 10 | None |
| 5F | TO-100 | 10 | 5 |
| 5G | TO-101 | 12 | None |
| 5R | TO-96 | 10 | 5 |
| 5T | TO-100 | 8 | None |
| 5U | TO-100 | 10 | None |
| 5Z | TO-78 | 6 | None |

**FAIRCHILD**

# OPTOELECTRONICS AND HYBRID AMPLIFIERS

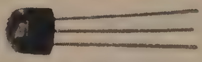
## SINGLE DIGIT AND SIX DIGIT MODULE SOLID STATE DIGITAL DISPLAYS



FND21

| Fairchild Type | Description | Net Each, Lots of 1-9 | 10-24 | 25-99 | 100-499 | 500-999 | 1000-4999 |
|---|---|---|---|---|---|---|---|
| FND10 | Single digit, straight leads | $7.50 | $6.95 | $6.60 | $5.95 | $5.50 | $5.20 |
| FND10A | Single digit, formed leads | 7.50 | 6.95 | 6.60 | 5.95 | 5.50 | 5.20 |
| FND12 | Single digit, straight leads | 7.50 | 6.96 | 6.60 | 5.95 | 5.50 | 5.20 |
| FND12A | Single digit, formed leads | 7.50 | 6.95 | 6.60 | 5.95 | 5.50 | 5.20 |

| Fairchild Type | Description | Net Each, Lots of 1-17 | 18-83 | 84-170 | 170 Up |
|---|---|---|---|---|---|
| FND21 | Six digit module for multiplexing | $47.70 | $40.80 | $36.60 | $34.80 |



FLV100/101

## OPTOELECTRONIC DEVICES

| Device | Fairchild Type | Description | Net Each, Lots of 1-99 | 100-999 | 1000-9999 | 10,000 |
|---|---|---|---|---|---|---|
| Infrared LED | FLD100 | Wide angle | $ 5·00 | $ 3·40 | $ 2·25 | $1·50 |
| Visible LED's | FLV100 | Point source | 1·50 | 1·00 | ·69 | ·59 |
| | FLV101 | Diffuse indicator | 1·50 | 1·00 | ·69 | ·59 |
| | FLV102 | Diffuse indicator | 1·50 | 1·00 | ·69 | ·59 |
| | FLV110 | Diffuse indicator | 1·50 | 1·00 | ·69 | ·59 |
| Reader arrays | FPA700 | 9 elements; 100 mil sep. | 21·00 | 14·00 | 12·50 | ...... |
| | FPA700A | 9 elements; close match | 24·00 | 16·00 | 14·00 | ...... |
| | FPA710 | 12 elements; 250 mil sep. | 30·00 | 20·00 | 18·00 | ...... |
| | FPA710A | 12 elements; close match | 36·00 | 24·00 | 21·00 | ...... |
| | FPA720 | 10 elements; 87 mil sep. | 25·00 | 17·00 | 15·00 | ...... |
| | FPA720A | 10 elements; close match | 20·00 | 20·00 | 18·00 | ...... |
| Flat lens phototransistors | FPF110 | Standard | 1·55 | 1·05 | ·70 | ·65 |
| | FPF110A | 1:3 sensitivity | 1·85 | 1·25 | ·85 | ·70 |
| | FPF110B | 1:2 sensitivity | 2·25 | 1·50 | 1·00 | ·85 |
| | FPF130 | High sensitivity | 2·25 | 1·50 | ·95 | ·85 |
| | FPF130A | 1:3 sensitivity | 2·70 | 1·80 | 1·15 | 1·00 |
| | FPF130B | 1:2 sensitivity | 3·25 | 2·15 | 1·40 | 1·20 |
| Source/sensor reader sets | FPLA700 | 9 elements; 100 mil sep. | 54·00 | 36·00 | 32·00 | ...... |
| | FPLA710 | 12 elements; 250 mil sep. | 72·00 | 48·00 | 42·70 | ...... |
| | FPLA720 | 10 elements; 87 mil sep. | 60·00 | 40·00 | 35·60 | ...... |
| Emitter/sensor devices | FPLA810 | Optical isolator | 2·55 | 1·70 | 1·55 | ...... |
| | FPLA820 | Optical isolator | 5·00 | 3·35 | 2·95 | ...... |
| | FPLA850 | Reflection transducer | 9·00 | 6·00 | 4·00 | ...... |
| | FPLA850A | 1:3 photo current | 12·00 | 8·00 | 5·35 | ...... |
| Coaxial hermetic sensors | FPM100 | Phototransistor | 9·00 | 6·00 | ...... | ...... |
| | FPM200 | Photodiode | 9·00 | 6·00 | ...... | ...... |
| Convex lens phototransistors | FPT100 | Standard | 1·20 | ·80 | ·55 | ·55 |
| | FPT100A | 1:3 sensitivity | 1·45 | ·95 | ·65 | ·60 |
| | FPT100B | 1:2 sensitivity | 1·75 | 1·15 | ·80 | ·70 |
| | FPT120 | High sensitivity | 1·80 | 1·20 | ·85 | ·75 |
| | FPT120A | 1:3 sensitivity | 2·15 | 1·45 | 1·00 | ·90 |
| | FPT120B | 1:2 sensitivity | 2·60 | 1·75 | 1·20 | 1·10 |
| Panel adapters | FVC001 | For FLV100, -101, -102 | ...... | ·10* | ·06 | ·05 |
| | FVC010 | For FLV110 | ...... | ·10* | ·06 | ·05 |

*100 piece minimum order.

## SELF SCANNED ARRAYS

| Fairchild Type | Description | Net Each, Lots of 1-4 | 5-24 | 25-99 | Fairchild Type | Description | Net Each, Lots of 1-4 | 5-24 | 25-99 |
|---|---|---|---|---|---|---|---|---|---|
| FPA601 | 64 elements | $600·00 | $400·00 | $300·00 | FPA602 | 128 elements | $800·00 | $550·00 | $400·00 |

## HYBRID AMPLIFIERS

### SMALL SIGNAL LOW NOISE AMPLIFIERS

| Fairchild Type | Description | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 | 1000 |
|---|---|---|---|---|---|---|---|---|---|
| MHA70-01 | 50 MHz to 90 MHz | $ 86·00 | $ 78·00 | $ 71·00 | $ 64·00 | ...... | ...... | ...... | ...... |
| MHA70-02 | | 140·00 | 127·00 | 115·00 | 104·00 | ...... | ...... | ...... | ...... |
| MHA100-01 | 30 MHz to 200 MHz | 97·00 | 88·00 | 73·00 | 67·00 | ...... | ...... | ...... | ...... |
| MHA100-02 | | 153·00 | 139·00 | 127·00 | 115·00 | ...... | ...... | ...... | ...... |
| MHA300-01 | 100 MHz to 500 MHz | 143·00 | 126·00 | 113·00 | 109·00 | ...... | ...... | ...... | ...... |
| MHA300-02 | | 206·00 | 182·00 | 162·00 | 159·00 | ...... | ...... | ...... | ...... |
| MHA500-01 | 500 MHz | 171·00 | 151·00 | 136·00 | 131·00 | ...... | ...... | ...... | ...... |
| MHA500-02 | 500 MHz | 247·00 | 218·00 | 194·00 | 190·00 | ...... | ...... | ...... | ...... |
| MHA800-01 | 500 MHz to 1000 MHz | 280·00 | 233·00 | 195·00 | 162·00 | ...... | ...... | ...... | ...... |
| MHA800-02 | | 330·00 | 285·00 | 230·00 | 210·00 | ...... | ...... | ...... | ...... |
| MHA1500 | 1 to 2 GHz | 580·00 | 483·00 | 402·00 | 351·00 | ...... | ...... | ...... | ...... |
| FCH-106 | 300–500 MHz | 139·00 | 105·00 | 96·00 | 81·00 | ...... | ...... | ...... | ...... |
| FCH-112 | 200–400 MHz | 139·00 | 105·00 | 96·00 | 81·00 | ...... | ...... | ...... | ...... |
| FCH-113 | 30–400 MHz | 163·00 | 136·00 | 114·00 | 95·00 | ...... | ...... | ...... | ...... |
| FCH-115 | 10–500 MHz | 181·00 | 151·00 | 126·00 | 104·00 | ...... | ...... | ...... | ...... |

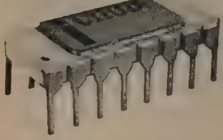
### BROADBAND MEDIUM POWER LINEAR AMPLIFIERS

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| RFA120 | 1–120 MHz | $107·00 | $ 89·00 | $ 74·00 | $ 61·60 | $51·40 | $41·60 | $33·60 | $29·80 |
| RFA320 | 3–300 MHz | 140·00 | 116·00 | 97·00 | 81·00 | 67·00 | 56·00 | 46·70 | 38·90 |
| FCH-118 | 10–500 MHz | 189·00 | 157·00 | 131·00 | 108·00 | ...... | ...... | ...... | ...... |

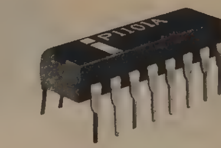
### BROADBAND CATV AMPLIFIERS

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| RFA110 | 3–110 MHz | $107·00 | $ 89·00 | $74·00 | $61·60 | $51·40 | $41·60 | $33·60 | $29·80 |
| RFA310 | 3–300 MHz | 140·00 | 116·00 | 97·00 | 81·00 | 67·00 | 56·00 | 46·70 | 38·90 |
| RFA330 | 3–300 MHz | 117·00 | 98·00 | 81·00 | 67·00 | 56·00 | 46·70 | 38·90 | 32·40 |

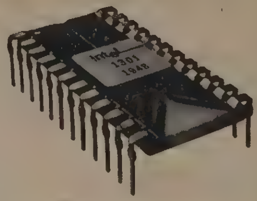
# intel™ SEMICONDUCTOR MEMORIES, SHIFT REGISTERS, DECODERS AND DRIVERS



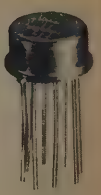
16-lead Ceramic DIP



16-lead Plastic DIP



24-lead Ceramic DIP



TO-99

## SILICON-GATE MOS TECHNOLOGY

All of the MOS products listed below use Intel's silicon-gate processing technology. The process differs from conventional aluminum gate MOS in that the gate is a self-aligned silicon structure, buried under an insulator. This construction provides several important advantages over conventional MOS: Higher frequency performance due to reduced parasitic capacitances; higher functional density due to inherently smaller device geometries; higher yields for a given functional complexity due to increased density; compatibility with standard IC logic forms due to lower threshold voltages; higher reliability due to complete dielectric isolation of the sensitive gate structure and more tolerance to various package environments due to the protection provided by the oxide surrounding the gate. Plastic packages may be used.

### RANDOM ACCESS MEMORIES

**1101A, 1101A1**—$T_{CASE}=0°$ C to $+85°$ C. Access time below 750 ns typ.; 1.5 μs max. Low power dissipation of less than 1.5 mW/bit during access. DTL and TTL compatible; OR-tie capability. Inputs protected against static charge.

**1103**—$T_A=0°$ C to $+70°$ C. Access time, 300 ns; cycle time, 500 ns. Power consumption, 240 μW/bit selected, 6 μW/bit standby. Prefix **C**, ceramic package; prefix **P**, plastic package. TO-99 metal can has 8 leads except 1405A, 10 leads.

| Intel Type | Package | Description | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|
| **C1101A**<br>**P1101A** | 16-lead DIP | 256 bit fully decoded RAM (1.5 μsec) | **$24.00**<br>**20.00** | **$19.60**<br>**16.25** | **$15.40**<br>**12.80** |
| **C1101A1**<br>**P1101A1** | 16-lead DIP | 256 bit fully decoded RAM (1.0 μsec) | **28.80**<br>**24.00** | **23.52**<br>**19.60** | **18.48**<br>**15.40** |
| **P1103** | 18-lead DIP | 1024 bit fully decoded dynamic RAM | **60.00** | **48.75** | **38.40** |

### SHIFT REGISTERS

**1402A, 1403A, 1404A**—$T_{CASE}=0°$ C to $+85°$ C. $P_D=0.1$ mW/bit at 1 MHz. Frequency range, 400 Hz to 5 MHz. DTL-TTL compatible. Clock capacitance, 140 pF; clock leakage, $<1$ μA. Inputs protected against static charge.

**1405**—$T_{CASE}=-55°$ C to $+85°$ C. $P_D=0.3$ mW/bit at 1 MHz. Frequency range, 200 Hz to 2 MHz. DTL-TTL compatible. Clock leakage, 1 μA at $-15$ V; capacitance, 80 pF. Inputs protected against static charge.

**1406, 1407, 1506, 1507**—$P_D=0.4$ mW/bit at 1 MHz. Frequency range, 400 Hz to 2 MHz. DTL-TTL compatible. Clock capacitance, 40 pF; leakage, $\leq 0.5$ μA at $-18$ V. Inputs protected against static charge. Output impedance 300 ohms typical.

| | | | | | |
|---|---|---|---|---|---|
| **1402A** | 16-lead DIP | Quad 256 bit dynamic shift register | **$40.00** | **$28.00** | **$18.00** |
| **1403A** | TO-99 | Dual 512 bit dynamic shift register | **30.00** | **20.00** | **12.00** |
| **1404A** | TO-99 | Single 1024 bit dynamic shift register | **30.00** | **20.00** | **12.00** |
| **1405A** | TO-99 | 512 bit dynamic recirculating shift register | **20.00** | **13.20** | **8.00** |
| **1406**<br>**1407** | TO-99 | Dual 100 bit dynamic shift register ($-55°$ to $+125°$ C) | **15.00**<br>**15.00** | **9.90**<br>**9.90** | **6.00**<br>**6.00** |
| **1506**<br>**1507** | TO-99 | Dual 100 bit dynamic shift register (0° C to +85° C) | **10.00**<br>**10.00** | **6.60**<br>**6.60** | **4.00**<br>**4.00** |

### READ ONLY MEMORIES

**1301, 1601**—$T_{CASE}=0°$ C to $+85°$ C. Static or dynamic operation. Field programmable pin-for-pin equivalent available for low volume and prototype requirements. TTL-DTL compatible; OR-tie capability.

| | | | | | |
|---|---|---|---|---|---|
| **C1301**<br>**C1601** | 24-lead DIP | ROM code converter: EBCDIC8/ASCII8 | **$ 28.00***<br>**110.00** | **$ 21.70**<br>**110.00** | **$ 18.80**<br>**110.00** |
| **C1601** | 24-lead DIP | Electrically programmable 2048 bit ROM† | **100.00** | **100.00** | **100.00** |

*Lots of 1-9; **$24.00**, Lots of 10-24. †If a tape is provided in the proper format, there will be an additional charge of **$10.00** per unit for programming. If the program is provded as a truth table only, a one time set up charge of **$90.00** per pattern will be made for converting to tape.

## SCHOTTKY BIPOLAR TECHNOLOGY

All the bipolar products listed below are built using Intel's Schottky process. Schottky diodes are formed at the interface between a metal (aluminum) and a semiconductor (silicon). Major difference between an ordinary diode and a Schottky diode is that no charge may be stored by a Schottky rectifying junction. Current is carried by electrons flowing from the silicon to the metal. These electrons quickly reach equilibrium with other metal electrons, effectively preventing any charge storage. Several advantages result from the use of Schottky processing when compared with standard or gold-doped bipolar processing: Higher speed—3 to 5 times faster; lower power; higher functional density and higher yields.

### RANDOM ACCESS MEMORIES

**3101, 3101A**—$T_{CASE}=0°$ C to $+85°$ C. Access time=60 nsec (3101); 35 nsec (3101A). Power=8 mW/bit. TTL-DTL compatible; OR-tie capability; open collector outputs. Minimum external components—fully decoded with on-chip address decode and buffer. Simple memory expansion—chip-select input lead. Minimum line reflection—low voltage diode input clamp.

**3102**—$T_{CASE}=0°$ C to $+85°$ C. Access time, 50 nsec typ. Power, 2.5 mW/bit. TTL-DTL compatible; OR-tie capability—open collector output. Simple memory expansion with decoder-driver (3202). Low input load current of 0.25 A maximum.

Prefix **C**, ceramic package; prefix **P**, plastic package.

| Intel Type | Package | Description | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|
| **C3101**<br>**P3101** | 16-lead DIP | 64 bit fully decoded RAM (60 nsec) | **$13.30**<br>**10.68** | **$10.60**<br>**8.50** | **$ 9.00**<br>**7.20** |
| **C3101A**<br>**P3101A** | 16-lead DIP | 64 bit fully decoded RAM (35 nsec) | **16.60**<br>**13.30** | **13.25**<br>**10.60** | **11.25**<br>**9.00** |
| **C3102** | 16-lead DIP | Partially decoded 256 bit RAM (80 nsec) | **80.00** | **65.00** | **51.20** |

### OTHER CIRCUITS

**3104**—$T_{CASE}=0°$ C to $+85°$ C. Speed=30 nsec search to output delay. TTL-DTL compatible. Separate bit enable. Simplifies system design. OR-tie capability—open collector outputs. High fan in of 0.25 mA load current.

**3202**—$T_{CASE}=0°$ C to $+85°$ C. Fast address to output time—25 nsec max. TTL-DTL compatible. Easy memory expansion with 4 chip-select inputs. Low system power consumption—3 of 6 code.

**3205**—$T_{CASE}=0°$ C to $+85°$ C. Easy memory expansion—3 enable inputs. Fast—18 nsec max. delay. TTL-DTL compatible. Low input load currents—0.25 mA max. High fan out of 10 mA min. sink current.

**3404**—$T_{CASE}=0°$ C to $+85°$ C. High speed—12 nsec max. input to output delay. Easy to use, independent 4-bit and 2-bit latches. High fan out of 10 mA min. output sink current. High fan in of 0.375 mA max. input load current. TTL-DTL compatible. Latches may be used as very high-speed inverters by applying a continuous "low" at the "write" inputs.

| | | | | | |
|---|---|---|---|---|---|
| **C3104** | 24-lead DIP | 16 bit content addressable memory (30 ns) | **$44.00** | **$35.50** | **$28.00** |
| **C3202** | 16-lead DIP | Decoder driver for C3102 | **20.00** | **16.25** | **12.80** |
| **C3205**<br>**P3205** | 16-lead DIP | 1-of-8 decoder (18 nsec delay) | **7.48**<br>**6.75** | **6.90**<br>**5.48** | **5.40**<br>**4.35** |
| **C3404**<br>**P3404** | 16-lead DIP | 6 bit latch—12 nsec output delay | **7.48**<br>**6.75** | **6.90**<br>**5.48** | **5.40**<br>**4.35** |

**INTEL SILICON-GATE MOS AND SCHOTTKY**

**BIPOLAR TECHNOLOGY PRODUCTS COVER**

**A WIDE RANGE OF APPLICATIONS**

**ASK FOR COMPLETE INFORMATION ON**

**NEW OR UNLISTED ITEMS.**

# ITT Integrated Circuits

Operating Temperature Range: −55° C to +125° C (suffix **-1** and 5400 Series); 0° C to +75° C (suffix **-5**); 0° C to +70° C (7400 Series). Package: 0.250″ sq. flat pack (suffix **B**); low profile TO-5 (suffix **C**); dual in-line ceramic (suffix **D** and **J**).

## TTL HIGH SPEED DIGITAL

| ITT Type | Circuit Function | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| ITT54H00J<br>ITT74H00J | Quad 2-input NAND gate | $ 3.82<br>.75 | $3.06<br>.60 | $2.55<br>.50 |
| ITT54H01J<br>ITT74H01J | Quad 2-input NAND gate (open-collector) | 3.82<br>.75 | 3.06<br>.60 | 2.55<br>.50 |
| ITT54H04J<br>ITT74H04J | Hex inverter | 4.80<br>.94 | 3.84<br>.75 | 3.20<br>.63 |
| ITT54H05J<br>ITT74H05J | Hex inverter—open collector | 4.80<br>.94 | 3.84<br>.75 | 3.20<br>.63 |
| ITT54H10J<br>ITT74H10J | Triple 3-input NAND gate | 3.82<br>.75 | 3.06<br>.60 | 2.55<br>.50 |
| ITT54H20J<br>ITT74H20J | Dual 4-input NAND gate | 3.82<br>.75 | 3.06<br>.60 | 2.55<br>.50 |
| ITT54H30J<br>ITT74H30J | 8-input NAND gate | 3.82<br>.75 | 3.06<br>.60 | 2.55<br>.50 |
| ITT54H40J<br>ITT74H40J | Dual 4-input NAND buffer | 3.82<br>.75 | 3.06<br>.60 | 2.55<br>.50 |
| ITT54H50J<br>ITT74H50J | Expand. dual 2-wide 2-input AND-OR-INVERT gate | 3.82<br>.75 | 3.06<br>.60 | 2.55<br>.50 |
| ITT54H51J<br>ITT74H51J | Dual 2-wide 2-input AND-OR-INVERT gate | 3.82<br>.75 | 3.06<br>.60 | 2.55<br>.50 |
| ITT54H53J<br>ITT74H53J | Expand. 4-wide 2-2-2-4 input AND-OR-INVERT gate | 3.82<br>.75 | 3.06<br>.60 | 2.55<br>.50 |
| ITT54H54J<br>ITT74H54J | 4-wide 2-input AND-OR-INVERT gate | 3.82<br>.75 | 3.06<br>.60 | 2.55<br>.50 |
| ITT54H60J<br>ITT74H60J | Dual 4-input expander | 3.82<br>.75 | 3.06<br>.60 | 2.55<br>.50 |
| ITT54H72J<br>ITT74H72J | J-K master slave flip-flop | 6.00<br>1.17 | 4.80<br>.93 | 4.00<br>.78 |
| ITT54H73J<br>ITT74H73J | Dual J-K master slave flip-flop | 10.35<br>2.02 | 8.28<br>1.62 | 6.90<br>1.35 |
| ITT54H74J<br>ITT74H74J | Dual D-type edge-triggered flip-flop | 8.02<br>1.57 | 6.42<br>1.26 | 5.35<br>1.05 |
| ITT54H76J<br>ITT74H76J | Dual J-K master slave flip-flop w/preset and clear | 10.65<br>2.10 | 8.52<br>1.68 | 7.10<br>1.40 |

## TTL DIGITAL

| ITT Type | Circuit Function | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| ITT5400J<br>ITT7400J | Quad 2-input positive NAND gate | $ 3.05<br>.60 | $ 2.45<br>.48 | $ 2.05<br>.40 |
| ITT5401J<br>ITT7401J | Quad 2-input positive NAND gate w/open collector | 3.05<br>.60 | 2.45<br>.48 | 2.05<br>.40 |
| ITT5402J<br>ITT7402J | Quad 2-input positive NOR gate | 3.35<br>.60 | 2.70<br>.48 | 2.25<br>.40 |
| ITT5403J<br>ITT7403J | Quad 2-input positive NAND gate w/open collector | 3.05<br>.60 | 2.45<br>.48 | 2.05<br>.40 |
| ITT5404J<br>ITT7404J | Hex inverter | 3.80<br>.75 | 3.05<br>.60 | 2.55<br>.50 |
| ITT5405J<br>ITT7405J | Hex inverter w/open collector | 3.80<br>.75 | 3.05<br>.60 | 2.55<br>.50 |
| ITT5410J<br>ITT7410J | Triple 3-input positive NAND gate | 3.05<br>.60 | 2.45<br>.48 | 2.05<br>.40 |
| ITT5420J<br>ITT7420J | Dual 4-input positive NAND gate | 3.05<br>.60 | 2.45<br>.48 | 2.05<br>.40 |
| ITT5430J<br>ITT7430J | 8-input positive NAND gate | 3.05<br>.60 | 2.45<br>.48 | 2.05<br>.40 |
| ITT5440J<br>ITT7440J | Dual 4-input positive NAND power gate | 3.50<br>.60 | 2.80<br>.48 | 2.35<br>.40 |
| ITT7441AJ | BCD-to-decimal decoder-driver | 4.05 | 3.24 | 2.70 |
| ITT5442J<br>ITT7442J | BCD-to-decimal decoder | 10.35<br>3.15 | 8.28<br>2.52 | 6.90<br>2.10 |
| ITT5443J<br>ITT7443J | Excess-3-to-decimal decoder | 14.70<br>4.42 | 11.76<br>3.54 | 9.80<br>2.95 |
| ITT5444J<br>ITT7444J | Excess 3-gray-to-decimal decoder | 14.70<br>4.42 | 11.76<br>3.54 | 9.80<br>2.95 |
| ITT5445J<br>ITT7445J | BCD-to-decimal decoder/driver (80 mA sink) | 27.00<br>8.25 | 21.60<br>6.60 | 18.00<br>5.50 |
| ITT5450J<br>ITT7450J | Dual AND-OR-INVERT gate with expander inputs | 3.05<br>.60 | 2.45<br>.48 | 2.05<br>.40 |
| ITT5451J<br>ITT7451J | Dual AND-OR-INVERT gate | 3.05<br>.60 | 2.45<br>.48 | 2.05<br>.40 |
| ITT5453J<br>ITT7453J | 4-wide 2-input AND-OR-INVERT gate w/expander | 3.05<br>.60 | 2.45<br>.48 | 2.05<br>.40 |
| ITT5454J<br>ITT7454J | 4-wide 2-input AND-OR-INVERT gate | 3.05<br>.60 | 2.45<br>.48 | 2.05<br>.40 |
| ITT5460J<br>ITT7460J | Dual 4-input expander | 2.77<br>.60 | 2.22<br>.48 | 1.85<br>.40 |
| ITT5470J<br>ITT7470J | Edge-triggered J-K flip-flop | 5.02<br>1.00 | 4.02<br>.80 | 3.35<br>.67 |
| ITT5472J<br>ITT7472J | J-K master-slave flip-flop | 4.70<br>.93 | 3.78<br>.74 | 3.15<br>.62 |

## TTL DIGITAL (CONTINUED)

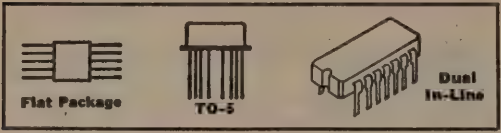
| ITT Type | Circuit Function | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| ITT5473J<br>ITT7473J | Dual J-K master-slave flip-flop | $ 7.80<br>1.57 | $ 6.24<br>1.26 | $ 5.20<br>1.05 |
| ITT5474J<br>ITT7474J | Dual D-type edge-triggered flip-flop | 6.15<br>1.35 | 4.92<br>1.08 | 4.10<br>.90 |
| ITT5475J<br>ITT7475J | Quad bistable latch | 8.85<br>2.55 | 7.08<br>2.04 | 5.90<br>1.70 |
| ITT5476J<br>ITT7476J | Dual J-K master-slave flip-flop | 8.25<br>1.60 | 6.60<br>1.30 | 5.50<br>1.08 |
| ITT5480J<br>ITT7480J | Gated full adder | 6.60<br>1.98 | 5.28<br>1.58 | 4.40<br>1.32 |
| ITT5481J<br>ITT7481J | 16-bit active element memory | 22.50<br>6.81 | 18.00<br>5.44 | 15.00<br>4.54 |
| ITT5482J<br>ITT7482J | 2-bit binary full adder | 9.60<br>2.92 | 7.68<br>2.34 | 6.40<br>1.95 |
| ITT5483J<br>ITT7483J | 4-bit binary full adder | 15.75<br>4.65 | 12.50<br>3.72 | 10.50<br>3.10 |
| ITT5484J<br>ITT7484J | 16-bit active element memory | 22.95<br>6.96 | 18.30<br>5.56 | 15.30<br>4.64 |
| ITT5486J<br>ITT7486J | Quad 2-input EXCLUSIVE-OR gate | 5.40<br>1.08 | 4.32<br>.86 | 3.60<br>.72 |
| ITT5490J<br>ITT7490J | Decade counter | 9.45<br>2.85 | 7.56<br>2.28 | 6.30<br>1.90 |
| ITT7491A | 8-bit shift register | 4.05 | 3.24 | 2.70 |
| ITT5492J<br>ITT7492J | Divide-by-twelve counter | 9.45<br>2.85 | 7.56<br>2.28 | 6.30<br>1.90 |
| ITT5493J<br>ITT7493J | 4-bit binary counter | 9.45<br>2.85 | 7.56<br>2.28 | 6.30<br>1.90 |
| ITT5494J<br>ITT7494J | 4-bit shift register | 12.90<br>3.90 | 10.32<br>3.12 | 8.60<br>2.60 |
| ITT5495J<br>ITT7495J | 4-bit right-shift, left-shift register | 10.35<br>3.22 | 8.28<br>2.58 | 6.90<br>2.15 |
| ITT5496J<br>ITT7496J | 5-bit shift register | 18.75<br>5.70 | 15.00<br>4.56 | 12.50<br>3.80 |
| ITT54121J<br>ITT74121J | One-shot monostable multivibrator | 9.45<br>1.87 | 7.56<br>1.50 | 6.30<br>1.25 |
| ITT54145J<br>ITT74145J | BCD-to-decimal decoder/driver (15 V outputs) | 15.90<br>4.80 | 12.72<br>3.84 | 10.60<br>3.20 |
| ITT54151J<br>ITT74151J | 8-bit data selector with strobe | 7.35<br>3.67 | 5.88<br>2.94 | 4.90<br>2.45 |
| ITT54154J/9311<br>ITT74154J/9311 | 4-to-16-line decoder/demultiplexer | 14.55<br>7.27 | 11.64<br>5.82 | 9.70<br>4.85 |
| ITT74180J | BCD-to-binary converter | 4.35 | 3.48 | 2.90 |

## TTL MIC9000 SERIES

Dual clocked flip-flops compatible with MIC390 Series on following page.

| ITT Type | Circuit Function | $t_{pd}$ ns | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-24 | 25-99 | 100-999 |
| MIC9000-1D<br>MIC9000-5D | J-K flip-flop | 25 | $ 5.85<br>1.96 | $ 4.68<br>1.57 | $ 3.90<br>1.31 |
| MIC9001-1D<br>MIC9001-5D | J-K flip-flop | 25 | 6.30<br>2.11 | 5.04<br>1.69 | 4.20<br>1.41 |
| MIC9002-1D<br>MIC9002-5D | Quad gate | 10 | 3.82<br>1.27 | 3.06<br>1.06 | 2.55<br>.85 |
| MIC9003-1D<br>MIC9003-5D | Triple gate | 10 | 3.82<br>1.27 | 3.06<br>1.06 | 2.55<br>.85 |
| MIC9004-1D<br>MIC9004-5D | Dual gate | 10 | 3.82<br>1.27 | 3.06<br>1.06 | 2.55<br>.85 |
| MIC9005-1D<br>MIC9005-5D | Dual gate | 12 | 3.82<br>1.27 | 3.06<br>1.06 | 2.55<br>.85 |
| MIC9006-1D<br>MIC9006-5D | Dual expander | ...... | 3.82<br>1.27 | 3.06<br>1.06 | 2.55<br>.85 |
| MIC9007-1D<br>MIC9007-5D | 8-input gate | 10 | 3.82<br>1.27 | 3.06<br>1.06 | 2.55<br>.85 |
| MIC9008-1D<br>MIC9008-5D | AND-NOR gate | 10 | 3.82<br>1.27 | 3.06<br>1.06 | 2.55<br>.85 |
| MIC9009-1D<br>MIC9009-5D | Dual buffer | 15 | 4.35<br>1.45 | 3.48<br>1.16 | 2.90<br>.97 |
| MIC9012-1D<br>MIC9012-5D | Quad 2-input NAND gate | ...... | 3.82<br>1.27 | 3.06<br>1.02 | 2.55<br>.85 |
| MIC9016-1D<br>MIC9016-5D | Hex inverter | 10 | 4.80<br>1.60 | 3.80<br>1.28 | 3.20<br>1.07 |
| MIC9017-1D<br>MIC9017-5D | Hex inverter with open collector | ...... | 4.80<br>1.60 | 3.84<br>1.28 | 3.20<br>1.07 |
| MIC9020-1D<br>MIC9020-5D | Dual J-K flip-flop | 12 | 9.67<br>3.22 | 7.94<br>2.58 | 6.45<br>2.15 |
| MIC9022-1D<br>MIC9022-5D | Dual J-K flip-flop | 12 | 10.35<br>3.42 | 8.28<br>2.73 | 6.85<br>2.28 |
| MIC9024-1D<br>MIC9024-5D | Dual J-K flip-flop | ...... | 9.47<br>2.82 | 6.78<br>2.25 | 5.65<br>1.88 |
| MIC9033-1D2<br>MIC9033-5D1<br>MIC9033-5D2 | 16-bit memory cell | ...... | 19.05<br>16.05<br>10.50 | 15.24<br>12.84<br>8.40 | 12.70<br>10.70<br>7.00 |

# ITT Integrated Circuits



## DTL MIC930 SERIES

Operating Temperature Range: −55° C to +125° C (suffix **-1**); 0° C to +75° C (suffix **-5**). Package: Flat pack (suffix **B**); dual in-line ceramic (suffix **D**). Full temperature flat packs have gold leads; limited temperature flat packs have tin leads.

| ITT Type | Circuit Function | Net Each, Lots of 1-24 | 25-99 | 100 Up |
|---|---|---|---|---|
| **930-1B** | Dual 4-input NAND-NOR gate | $ 4.05 | $ 3.20 | $ 2.70 |
| **930-1D** | | 3.70 | 2.95 | 2.50 |
| **930-5B** | | 1.38 | .97 | .92 |
| **930-5D** | | .60 | .42 | .40 |
| **932-1B** | Dual 4-input buffer | 4.05 | 3.20 | 2.70 |
| **932-1D** | | 3.70 | 2.95 | 2.50 |
| **932-5B** | | 1.38 | .97 | .92 |
| **932-5D** | | .60 | .42 | .40 |
| **933-1B** | Dual 4-input extender | 4.05 | 3.20 | 2.70 |
| **933-1D** | | 3.70 | 2.95 | 2.50 |
| **933-5B** | | 1.38 | .97 | .92 |
| **933-5D** | | .60 | .42 | .40 |
| **935-1B** | Hex inverter without input diodes | 4.05 | 3.20 | 2.70 |
| **935-1D** | | 3.70 | 2.95 | 2.50 |
| **935-5B** | | 1.38 | .97 | .92 |
| **935-5D** | | .60 | .42 | .40 |
| **936-1B** | Hex inverter gate | 4.05 | 3.20 | 2.70 |
| **936-1D** | | 3.70 | 2.95 | 2.50 |
| **936-5B** | | 1.38 | .97 | .92 |
| **936-5D** | | .60 | .42 | .40 |
| **937-1B** | Hex inverter gate | 4.05 | 3.20 | 2.70 |
| **937-1D** | | 3.70 | 2.95 | 2.50 |
| **937-5B** | | 1.38 | .97 | .92 |
| **937-5D** | | .60 | .42 | .40 |
| **941-1B** | One-shot monostable | 24.90 | 19.95 | 16.60 |
| **941-1D** | | 24.90 | 19.95 | 16.60 |
| **941-5B** | | 7.25 | 5.80 | 4.85 |
| **941-5D** | | 7.25 | 5.80 | 4.85 |
| **944-1B** | Dual 4-input EXCLUSIVE-OR gate | 4.05 | 3.20 | 2.70 |
| **944-1D** | | 3.70 | 2.95 | 2.50 |
| **944-5B** | | 1.38 | .97 | .92 |
| **944-5D** | | .60 | .42 | .40 |
| **945-1B** | R-S or J-K flip-flop | 4.05 | 3.20 | 2.70 |
| **945-1D** | | 4.95 | 3.95 | 3.30 |
| **945-5B** | | 2.20 | 1.77 | 1.47 |
| **945-5D** | | .96 | .77 | .64 |
| **946-1B** | Quad 2-input gate | 4.05 | 3.20 | 2.70 |
| **946-1D** | | 3.70 | 2.95 | 2.50 |
| **946-5B** | | 1.38 | .97 | .92 |
| **946-5D** | | .60 | .42 | .40 |
| **948-1B** | R-S or J-K flip-flop | 4.05 | 3.20 | 2.70 |
| **948-1D** | | 4.95 | 3.95 | 3.30 |
| **948-5B** | | 2.20 | 1.77 | 1.47 |
| **948-5D** | | .96 | .77 | .64 |
| **949-1B** | Quad 2-input gate | 4.05 | 3.20 | 2.70 |
| **949-1D** | | 3.70 | 2.95 | 2.50 |
| **949-5B** | | 1.38 | .97 | .92 |
| **949-5D** | | .60 | .42 | .40 |
| **950-1B** | R-S flip-flop | 7.75 | 6.20 | 5.20 |
| **950-1D** | | 7.75 | 6.20 | 5.20 |
| **950-5B** | | 6.10 | 4.85 | 4.05 |
| **950-5D** | | 2.35 | 1.95 | 1.75 |
| **951-1B** | 2-input monostable multivibrator | 24.90 | 19.95 | 16.60 |
| **951-1D** | | 24.90 | 19.95 | 16.60 |
| **951-5B** | | 7.25 | 5.80 | 4.85 |
| **951-5D** | | 7.25 | 5.80 | 4.85 |
| **961-1B** | Dual 4-input NAND-NOR gate | 4.05 | 3.20 | 2.70 |
| **961-1D** | | 3.70 | 2.95 | 2.50 |
| **961-5B** | | 1.38 | .97 | .92 |
| **961-5D** | | .60 | .42 | .40 |
| **962-1B** | Triple 3-input NAND-NOR gate | 4.05 | 3.20 | 2.70 |
| **962-1D** | | 3.70 | 2.95 | 2.50 |
| **962-5B** | | 1.38 | .97 | .92 |
| **962-5D** | | .60 | .42 | .40 |
| **963-1B** | Triple 3-input NAND-NOR gate | 4.05 | 3.20 | 2.70 |
| **963-1D** | | 3.70 | 2.95 | 2.50 |
| **963-5B** | | 1.38 | .97 | .92 |
| **963-5D** | | .60 | .42 | .40 |

**PLEASE INQUIRE ABOUT OTHER DTL, TTL, HIGH LEVEL LOGIC AND LINEAR INTEGRATED CIRCUITS AVAILABLE FROM ITT**

## LINEAR INTEGRATED CIRCUITS

Operating Temperature Range: −55° C to +125° C (suffix **-1**); 0° C to +70° C (suffix **-5**). Package: Flat pack (suffix **B**); metal can (suffix **C**) and DIP (suffix **D**).

**MIC709 High Performance Amplifier**—$P_D = 50$ mW; differential input voltage = ±5 V; output resistance = 150 ohms; input resistance = 4000 ohms; output voltage swing = ±11 V; input-offset voltage = 2 V; input-offset current = 50 nA; input bias current = 200 nA; input voltage = ±10 V. CMRR = 86 dB.

**MIC710 High-Speed Differential Comparator**—$P_D = 300$ mW; differential voltage = ±5 V; output resistance = 200 ohms; peak output current = 10 mA; supply voltage = +14.0 V, −7.0 V; input-offset voltage = 0.6 V; input-offset current = 0.75 μA; input bias current = 13 μA; input voltage = ±7 V. CMRR = 100 dB.

**MIC711 Dual Comparator**—$P_D = 300$ mW; differential input voltage = ±5 V; peak output current = 50 mA; supply voltage = +14.0 V, −7.0 V; strobe voltage = 0 to +6.0 V; power consumption = 130 mW; input-offset voltage = 1.0 V; input-offset current = 0.5 μA; input bias current = 25 μA; input voltage = ±7 V. Response time = 40 ns; strobe release time = 12 ns.

**MIC720 Dual High-Speed Differential Comparator**—$P_D = 300$ mW; differential input voltage = ±5.0 V; output resistance = 200 ohms; supply voltage = +14.0 V, −7.0 V; output sink current = 2.5 mA typ.; input-offset voltage = 2.0 mV (MIC720-1), 5.0 mV (MIC720-5); input-offset current = 3.0 μA (MIC720-1), 5.0 μA (MIC720-5); input bias current = 20 μA (MIC720-1), 25 μA (MIC720-5); input voltage = ±7.0 V. CMRR = 100 dB typical. (MIC720-1), 98 dB typical (MIC720-5).

**MIC723 Precision Voltage Regulator**—$P_D = 800$ mW (metal can), 900 mW (DIP): input-output differential voltage = 40 V; current from $V_Z = 25$ mA; current from $V_{REF} = 15$ mA; output noise voltage = 20 $\mu V_{rms}$; line regulation ±0.1% $V_{OUT}$; load regulation = 0.15% $V_{OUT}$ (MIC723-1), 0.2% $V_{OUT}$ (MIC723-5). Ripple rejection = 74 dB at f = 50 Hz to 10 kHz.

**MIC726 Temperature-Controlled Differential Pair**—Maximum Ratings Each Transistor: Collector-to-substrate voltage = 40 V; $BV_{CBO} = 40$ V; $LV_{CEO} = 30$ V at $I_C = 1$ mA; $BV_{EBO} = 5$ V; $I_C = 5$ mA. Input-offset voltage = 2.5 mV (MIC726-1), 3.0 mV (MIC726-5); input-offset current = 10 nA typ.; average input bias current = 250 nA typ. Supply voltage rejection ratio = 25 μV/V.

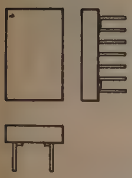
**MIC730 Differential Amplifier**—$P_D = 300$ mW; differential input voltage = ±15 V; supply voltage = 15 V; output resistance = 600 ohms; input resistance = 20K ohms typ. (MIC730-1), 15K ohms typ. (MIC730-5); output voltage swing = 8.0 $V_{pp}$; input-offset voltage = 2.5 mV (MIC730-1), 5.0 mV (MIC730-5); input-offset current = 1.5 μA (MIC730-1), 3.0 μA (MIC730-5); input bias current = 7.5 μA (MIC730-1), 16.0 μA (MIC730-5). CMRR = 85 dB typ. (MIC730-1), 80 dB typ. (MIC730-5).

**MIC741 High Performance Amplifier**—$P_D = 500$ mW; differential input voltage = ±30 V; input resistance = 1.0 meg typ.; output voltage swing = ±14 V; input-offset voltage = 5.0 mV (MIC741-1), 6.0 mV (MIC741-5); input-offset current = 200 nA; input bias current = 500 nA; input voltage = ±15 V. CMRR = 90 dB typical.

| ITT Type | Circuit Function | Net Each, Lots of 1-24 | 25-99 | 100 Up |
|---|---|---|---|---|
| **MIC709-1B** | High performance amplifier | $ 5.93 | $ 4.74 | $ 3.95 |
| **MIC709-1C** | | 5.93 | 4.74 | 3.95 |
| **MIC709-1D** | | 5.93 | 4.74 | 3.95 |
| **MIC709-5B** | | 2.93 | 2.34 | 1.95 |
| **MIC709-5C** | | 2.93 | 2.34 | 1.95 |
| **MIC710-1B** | High-speed differential comparator | 5.93 | 4.74 | 3.95 |
| **MIC710-1C** | | 2.93 | 2.34 | 1.95 |
| **MIC710-1D** | | 3.38 | 2.70 | 2.25 |
| **MIC710-5B** | | 2.93 | 2.34 | 1.40 |
| **MIC710-5C** | | 1.10 | 1.05 | .90 |
| **MIC710-5D** | | 1.10 | 1.05 | .90 |
| **MIC711-1B** | Dual comparator | 5.93 | 4.74 | 3.95 |
| **MIC711-1C** | | 3.38 | 2.70 | 2.25 |
| **MIC711-1D** | | 3.38 | 2.70 | 2.25 |
| **MIC711-5B** | | 2.93 | 2.34 | 1.95 |
| **MIC711-5C** | | 1.10 | 1.05 | .90 |
| **MIC711-5D** | | 1.10 | 1.05 | .90 |
| **MIC720-1D** | Dual high-speed differential comparator | **Prices on Request** | | |
| **MIC720-5D** | | **Prices on Request** | | |
| **MIC723-1C** | Precision voltage regulator | 5.93 | 4.74 | 3.95 |
| **MIC723-1D** | | 6.38 | 5.10 | 4.25 |
| **MIC723-5C** | | 2.93 | 2.34 | 1.95 |
| **MIC723-5D** | | 2.93 | 2.34 | 1.40 |
| **MIC726-1C** | Temperature controlled differential pair | 22.00 | 18.00 | 15.00 |
| **MIC726-5C** | | 11.00 | 9.00 | 7.50 |
| **MIC730-1C** | Differential amplifier | 14.93 | 11.94 | 9.95 |
| **MIC730-5C** | | 5.93 | 4.74 | 3.95 |
| **MIC741-1B** | High performance amplifier | 6.38 | 5.10 | 4.25 |
| **MIC741-1C** | | 5.93 | 4.74 | 3.95 |
| **MIC741-1D** | | 6.38 | 5.10 | 4.25 |
| **MIC741-5B** | | 2.40 | 2.25 | 2.00 |
| **MIC741-5C** | | 1.50 | 1.40 | 1.25 |
| **MIC741-5D** | | 1.50 | 1.40 | 1.25 |

**MICRO NETWORKS**

# STANDARD AND CUSTOM THIN FILM HYBRID CIRCUITS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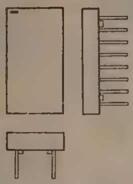
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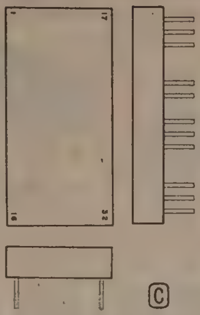
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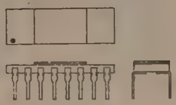
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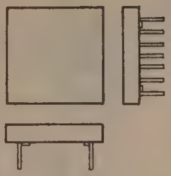
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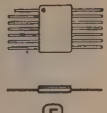
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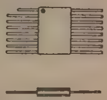
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PACKAGES: **Fig. A**, .750" w. x .450" d. x .140" h. 14-pin glass DIP; **Fig. B**, .900" w. x .490" d. x .140" h. 16-pin glass DIP; **Fig. C**, 1.70" w. x .825" d. module; **Fig. D**, .820" w. x .275" d. x .080" h. 16-pin ceramic DIP; **Fig. E**, .785" sq. module; **Fig. F**, ¼" x ⅜" 14-pin flat pack; **Fig. G**, ¼" x ⅜" 16-pin flat pack.

## DIGITAL-TO-ANALOG CONVERTERS

Wide selection of 6, 8, 10 and 12 bit D-to-A converters available with or without internal references and operational amplifiers. The 6, 8 and 10 bit converters require ±15 V and +5 V supplies. The 6 and 8 bit converters consume 400 mW max.; 10 and 12 bit consume 500 mW. All units are TTL-DTL compatible and provide a linearity of ±½ LSB. Temperature Range: 0° C to +70° C, no suffix (MN301); −55° C to +125° C, suffix **H** (MN301**H**).

| Micro Networks Number | Pkg. | Code | Output Voltage V | Slew Rate V/μsec | Settling Time μsec | Operational Amplifier | References | Net Each, Lots of 1-24 | 25-99 |
|---|---|---|---|---|---|---|---|---|---|
| **MN301** | A | 6-bit binary | 0 to −10, | 0.5 | 3.0 | Internal | Internal | $14.95 | $14.95 |
| **MN301H** | A | | +5 to −5 | | | | | 29.00 | 29.00 |
| **MN302** | A | 8-bit binary | 0 to −10 | 0.5 | 3.0 | Internal | External | 39.00 | 33.50 |
| **MN302H** | A | | | | | | | 69.00 | 59.00 |
| **MN303** | A | 8-bit BCD | 0 to −10 | 0.5 | 3.0 | Internal | External | 39.00 | 33.50 |
| **MN303H** | A | | | | | | | 69.00 | 59.00 |
| **MN306** | A | 8-bit high-speed binary | 0 to −10 | ......... | 0.1 | External | External | 39.00 | 33.50 |
| **MN307** | A | 8-bit binary | 0 to −10 | 0.5 | 3.0 | Internal | Internal | 39.00 | 33.50 |
| **MN307H** | A | | | | | | | 69.00 | 59.00 |
| **MN308** | A | 8-bit BCD | 0 to −10 | 0.5 | 3.0 | Internal | Internal | 39.00 | 33.50 |
| **MN308H** | A | | | | | | | 69.00 | 59.00 |
| **MN309** | A | 8-bit binary | +5 to −5 | 0.5 | 3.0 | Internal | External | 39.00 | 33.50 |
| **MN309H** | A | | | | | | | 69.00 | 59.00 |
| **MN316** | A | 8-bit binary | +5 to −5 | 0.5 | 3.0 | Internal | Internal | 39.00 | 33.50 |
| **MN316H** | A | | | | | | | 69.00 | 59.00 |
| **MN316-1** | A | High-speed | +5 to −5 | 20 | 1.0 | Internal | Internal | 59.00 | 49.00 |
| **MN321** | A | 8-bit binary | 0 to +10 | 0.5 | 3.0 | Internal | Internal | 39.00 | 33.50 |
| **MN321H** | A | | | | | | | 69.00 | 59.00 |
| **MN328** | B | 8-bit binary with input register | 0 to +10 | 0.5 | 3.0 | Internal | Internal | 59.00 | 50.00 |
| **MN328B** | B | | +5 to −5 | | | | | 59.00 | 50.00 |
| **MN310** | B | 10-bit binary | 0 to −10 | 0.5 | 3.0 | Internal | Internal | 59.00 | 50.00 |
| **MN310H** | B | | | | | | | 98.00 | 84.00 |
| **MN310-1** | B | High-speed | 0 to −10 | 20 | 1.0 | Internal | Internal | 89.00 | 76.00 |
| **MN319** | B | 10-bit BCD | 0 to −10 | 0.5 | 3.0 | Internal | Internal | 59.00 | 50.00 |
| **MN325** | B | 10-bit hi-speed | 0 to −10 | ......... | 0.1 | External | Internal | 59.00 | 50.00 |
| **MN329** | B | 10-bit binary | +5 to −5 | 0.5 | 3.0 | Internal | Internal | 59.00 | 50.00 |
| **MN329H** | B | | | | | | | 79.00 | 59.00 |
| **MN312** | B | 12-bit binary | 0 to +1 | ......... | 0.5 | External | External | 79.00 | 67.00 |

## MULTIPLYING D-TO-A CONVERTERS

Require ±15 V, + 5 V, 600 mW power. Temp. Range: 0° C to +70° C, no suffix (MN410); −55° C to +125° C, suffix H (MN410**H**).

| Micro Networks Number | Pkg. | Code | Output Voltage V | Slew Rate V/μsec | Settling Time μsec | Operational Amplifier | References | Net Each, Lots of 1-24 | 25-99 |
|---|---|---|---|---|---|---|---|---|---|
| **MN410** | C | 10-bit offset binary | +VREF to −VREF | 0.5 | 5.0 | Internal | External | $165.00 | $142.00 |
| **MN410H** | C | | | | | | | 224.00 | 192.00 |
| **MN412** | C | 12-bit offset binary | +VREF to −VREF | 0.5 | 5.0 | Internal | External | 245.00 | 195.00 |
| **MN412H** | C | | | | | | | 295.00 | 255.00 |

## NICKEL-CHROMIUM R-2R RESISTOR LADDER NETWORKS

Temperature Range: −55° C to +125° C. Accuracy, ±½ bit. TC=50 ppm/° C; TC tracking=1 ppm/° C.

| Micro Networks Number | Pkg. | Type | Bits | Value Ohms | Net Each, Lots of 1-24 | 25-99 |
|---|---|---|---|---|---|---|
| **MN120** | D | R-2R | 13 | 50K–100K | $79.00 | $67.00 |
| **MN121** | D | | 12 | | 49.00 | 43.50 |
| **MN121-11** | D | | 11 | | 42.00 | 37.00 |
| **MN121-10** | D | | 10 | | 38.00 | 33.50 |
| **MN160** | D or G | R-2R | 12 | 10K–20K | 32.00 | 29.00 |
| **MN160-11** | D or G | | 11 | | 29.00 | 25.65 |
| **MN160-10** | D or G | | 10 | | 26.00 | 23.00 |

## LADDER NETWORKS
### FOR OPERATION WITH INTERSIL QUAD SWITCHES ICL8018, ICL8019 AND ICL8020 FOR 12 BIT D-TO-A

MN142 provides three sets of R-2R-4R-8R resistors plus an 8R reference resistor. MN143 provides the necessary feedback, scaling and bias resistors. Operating Temperature: 0° C to +70° C (suffix CX); −55° C to +125° C (suffix MX).

| Micro Networks Number | Pkg. | Net Each, Lots of 1-24 | 25-99 | Micro Networks Number | Net Each, Lots of 1-24 | 25-99 |
|---|---|---|---|---|---|---|
| **MN142CX** | D or F | $34.00 | $29.00 | **MN142MX** | $42.00 | $36.00 |
| **MN143CX** | D or F | 22.00 | 19.00 | **MN143MX** | 28.00 | 24.00 |

## PRECISION FUNCTION GENERATORS
### SINE, PARABOLIC, S WAVE

Power required, ±12 V, ±5 V; 900 mW power dissipation. Output frequency=1/128 input frequency (0 to 10 kHz). Temperature Range: 0° C to +70° C (no suffix); −55° C to +125° C (suffix **H**).

| Micro Networks Number | Pkg. | Function | Input Freq. MHz | Output Level V | Net Each, Lots of 1-24 | 25-99 |
|---|---|---|---|---|---|---|
| **MN350** | E | Sine | 0 to 1.2 | 0 to −9 | $175.00 | $150.00 |
| **MN350H** | E | | | | 225.00 | 195.00 |
| **MN351** | E | Parabolic | 0 to 1.2 | −4.5 to +4.5 | 175.00 | 150.00 |
| **MN351H** | E | | | | 225.00 | 195.00 |
| **MN352** | E | S wave | 0 to 1.2 | 0 to +9 | 175.00 | 150.00 |
| **MN352H** | E | | | | 225.00 | 195.00 |

## DECODER DRIVERS

Operating Temperature Range: 0° C to +70° C, no suffix (MN-323); −55° C to +125° C, suffix **H** (MN323**H**).

| Micro Networks Number | Pkg. | Function | Net Each, Lots of 1-24 | 25-99 |
|---|---|---|---|---|
| **MN323** | A | Magnetic wheel driver | $27.00 | $23.00 |
| **MN323H** | A | BCD to decimal | 45.00 | 37.00 |
| **MN326** | A | Magnetic wheel driver | 27.00 | 23.00 |
| **MN326H** | A | BCD to 1 or 2 out of 5 | 45.00 | 37.00 |
| **MN7445** | A | High output TTL 5445 | 27.00 | 23.00 |
| **MN5445H** | A | Pin for pin replacement | 45.00 | 37.00 |

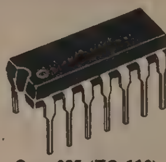
# MOTOROLA Semiconductors DIGITAL INTEGRATED CIRCUITS

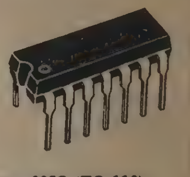
Case 601 (TO-99) and 619
8 Pin

Case 602A and 602B
10 Pin

Case 603
10 Pin (TO-100)

Case 604
12 Pin


Case 605 (TO-116) and 612 Plastic


Case 605C (TO-116), 620 Ceramic and 646 (TO-116)

## MECL™ MC300 AND MC350 SERIES

Compatible with the higher-speed MECL II circuits. $V_{CC}=0$, $V_{EE}=-5.2$ volts, $T_A=25°$ C.

### MC300 SERIES (−55° TO +125° C)

| Function | Typical | | Case 602B | | | | Case 606 | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | $t_{pd}$ nsec | $P_D$ mW | Motorola Type | Net Each, Lots of 1-24 | 25-99 | 100-999 | Motorola Type | Net Each, Lots of 1-24 | 25-99 | 100-999 |
| 5-input OR-NOR gate | 7.5 | 37 | MC301G | $11.55 | $ 9.25 | $ 7.70 | MC301F | $12.65 | $10.15 | $ 8.45 |
| R-S flip-flop | 11 | 42 | MC302G | 13.70 | 11.00 | 9.15 | MC302F | 14.85 | 11.90 | 9.90 |
| Half-adder | 7.5 | 63 | MC303G | 15.60 | 12.50 | 10.40 | MC303F | 16.70 | 13.40 | 11.15 |
| Bias driver | ...... | 18 | MC304G | 7.25 | 5.80 | 4.85 | MC304F | 8.40 | 6.70 | 5.60 |
| 5-input gate expander | 4.5 | ...... | MC305G | 7.25 | 5.80 | 4.85 | MC305F | 8.40 | 6.70 | 5.60 |
| 3-input OR-NOR gate | 7.5 | 37 | MC306G | 10.20 | 8.15 | 6.80 | MC306F | 11.30 | 9.05 | 7.55 |
| 3-input OR-NOR gate | 7.5 | 15 | MC307G | 10.20 | 8.15 | 6.80 | MC307F | 11.30 | 9.05 | 7.55 |
| AC coupled J-K flip-flop | 8.5 | 87 | MC308G | 17.70 | 14.15 | 11.80 | MC308F | 18.80 | 15.05 | 12.55 |
| Dual 2-input NOR gate | 7.0 | 54 | MC309G | 12.60 | 10.10 | 8.40 | MC309F | 13.70 | 11.00 | 9.15 |
| Dual 2-input NOR gate | 7.0 | 54 | MC310G | 12.60 | 10.10 | 8.40 | MC310F | 13.70 | 11.00 | 9.15 |
| Dual 2-input NOR gate | 7.0 | 41 | MC311G | 12.60 | 10.10 | 8.40 | MC311F | 13.70 | 11.00 | 9.15 |
| Dual 3-input NOR gate w/internal bias | 7.5 | 70 | MC312AG | 15.60 | 12.50 | 10.40 | MC312AF | 16.70 | 13.40 | 11.15 |
| Dual 3-input NOR gate | 7.5 | 54 | MC312G* | 15.60 | 12.50 | 10.40 | MC312F† | 16.70 | 13.40 | 11.15 |
| Quad 2-input NOR gate | 7.0 | 125 | ........... | ....... | ....... | ....... | MC313F† | 18.35 | 14.70 | 12.25 |
| AC coupled J-K flip-flop | 12 | 118 | MC314G | 20.85 | 16.70 | 13.90 | MC314F | 21.95 | 17.60 | 14.65 |
| Line driver | 14 | 180‡ | MC315G | 23.25 | 18.60 | 15.50 | MC315F | 24.35 | 19.50 | 16.25 |
| Lamp driver | ...... | 135 | MC316G | 10.20 | 8.15 | 6.80 | MC316F | 11.30 | 9.05 | 7.55 |
| Level translator—MECL to saturated logic | 27.5 | 63 | MC317G | 10.20 | 8.15 | 6.80 | MC317F | 11.30 | 9.05 | 7.55 |
| Level translator—saturated logic to MECL | 17 | 105 | MC318G | 10.20 | 8.15 | 6.80 | MC318F | 11.30 | 9.05 | 7.55 |

### MC350 SERIES (0° TO +75° C)

| Function | $t_{pd}$ nsec | $P_D$ mW | Motorola Type | 1-24 | 25-99 | 100-999 | Motorola Type | 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|---|---|---|---|---|
| 5-input OR-NOR gate | 7.5 | 37 | MC351G | $ 4.55 | $4.00 | $3.65 | MC351F | $ 6.45 | $ 5.65 | $5.15 |
| R-S flip-flop | 11 | 42 | MC352AG | 4.55 | 4.00 | 3.65 | MC352AF | 6.45 | 5.65 | 5.15 |
| R-S flip-flop w/o buffered outputs | 11 | 40 | MC352G | 4.55 | 4.00 | 3.65 | MC352F | 6.45 | 5.65 | 5.15 |
| Half-adder | 7.5 | 63 | MC353G | 5.95 | 5.20 | 4.75 | MC353F | 7.95 | 7.20 | 6.25 |
| Bias driver | ...... | 18 | MC354G | 2.45 | 2.15 | 1.95 | MC354F | 4.45 | 4.15 | 3.45 |
| 5-input gate expander | 4.5 | ...... | MC355G | 2.80 | 2.45 | 2.25 | MC355F | 4.80 | 4.45 | 3.75 |
| 3-input OR-NOR gate | 7.5 | 37 | MC356G | 3.55 | 3.15 | 2.85 | MC356F | 5.55 | 5.15 | 4.35 |
| 3-input OR-NOR gate | 7.5 | 15 | MC357G | 3.55 | 3.15 | 2.85 | MC357F | 5.55 | 5.15 | 4.35 |
| AC coupled J-K flip-flop | 8.5 | 87 | MC358AG | 9.50 | 8.35 | 7.60 | MC358AF | 11.50 | 10.35 | 9.10 |
| Dual 2-input NOR gate | 7.0 | 54 | MC359G | 3.70 | 3.25 | 2.95 | MC359F | 5.70 | 5.25 | 4.45 |
| Dual 2-input NOR gate | 7.0 | 54 | MC360G | 3.70 | 3.25 | 2.95 | MC360F | 5.70 | 5.25 | 4.45 |
| Dual 2-input NOR gate | 7.0 | 41 | MC361G | 3.70 | 3.25 | 2.95 | MC361F | 5.70 | 5.25 | 4.45 |
| Dual 3-input NOR gate w/internal bias | 7.5 | 70 | MC362AG | 5.00 | 4.40 | 4.00 | MC362AF | 6.85 | 6.05 | 5.50 |
| Dual 3-input NOR gate | 7.5 | 54 | MC362G* | 5.00 | 4.40 | 4.00 | MC362F† | 6.85 | 6.05 | 5.50 |
| Quad 2-input NOR gate | 7.0 | 125 | ........... | ....... | ....... | ....... | MC363F† | 7.35 | 6.50 | 5.90 |
| AC coupled J-K flip-flop | 12 | 118 | MC364G | 10.75 | 9.45 | 8.60 | MC364F | 12.20 | 10.70 | 9.75 |
| Line driver | 14 | 270§ | MC365G | 9.20 | 8.10 | 7.35 | MC365F | 11.05 | 9.75 | 8.85 |
| Lamp driver | ...... | 135 | MC366G | 6.25 | 5.50 | 5.00 | MC366F | 8.10 | 7.15 | 6.50 |
| Level translator—MECL to saturated logic | 27.5 | 63 | MC367G | 5.60 | 4.95 | 4.50 | MC367F | 7.50 | 6.60 | 6.00 |
| Level translator—saturated logic to MECL | 17 | 105 | MC368G | 5.60 | 4.95 | 4.50 | MC368F | 7.50 | 6.60 | 6.00 |
| Dual 4-input clock driver/high-speed gate | 3.0 | 250 | ........... | ....... | ....... | ....... | MC369F† | 7.25 | 6.40 | 5.80 |
| Dual 2-input clock driver/high-speed gate | 3.0 | 250 | MC369G | 5.45 | 4.80 | 4.35 | ........... | ....... | ....... | ....... |

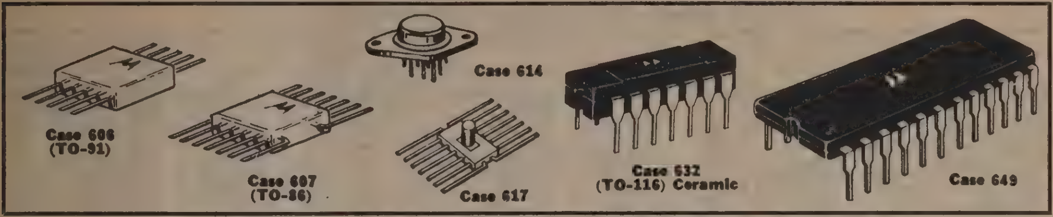
*Case 604. †Case 607. ‡With 93-ohm load for each side. §With 50-ohm load for each side.

## MECL II™ MC1200 AND MC1000 SERIES

MC1000 Series 0° C to +75° C; MC1200 Series −55° C to +125° C. $V_{CC}=0$, $V_{EE}=5.2$ volts, $T_A=25°$ C. MC1200 Series also available in ceramic dual in-line package (suffix L).

| Function | | Typical | | Case 607 (−55° C to +125° C) | | | | Case 605 (0° to +75° C) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $t_{pd}$ nsec | $P_D$ mW | Motorola Type | Net Each, Lots of 1-99 | 100-999 | 1000-4999 | Motorola Type | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
| Single 6-input gate | 3 OR outputs w/pulldowns<br>3 NOR outputs w/pulldowns | 4.0 | 115 | MC1201F | $2.23 | $1.86 | $1.49 | MC1001P | $1.48 | $1.25 | $0.99 |
| | 3 OR outputs w/pulldowns<br>3 NOR outputs w/o pulldowns | 4.0 | 80 | MC1202F | 2.23 | 1.86 | 1.49 | MC1002P | 1.48 | 1.25 | .99 |
| | 3 OR outputs w/o pulldowns<br>3 NOR outputs w/o pulldowns | 4.0 | 40 | MC1203F | 2.23 | 1.86 | 1.49 | MC1003P | 1.48 | 1.25 | .99 |
| Dual 4-input gate | 2 OR outputs w/pulldowns<br>2 NOR outputs w/pulldowns | 4.0 | 95 | MC1204F | 2.23 | 1.86 | 1.49 | MC1004P | 1.48 | 1.25 | .99 |
| | 2 OR outputs w/pulldowns<br>2 NOR outputs w/o pulldowns | 4.0 | 65 | MC1205F | 2.23 | 1.86 | 1.49 | MC1005P | 1.48 | 1.25 | .99 |
| | 2 OR outputs w/o pulldowns<br>2 NOR outputs w/o pulldowns | 4.0 | 45 | MC1206F | 2.23 | 1.86 | 1.49 | MC1006P | 1.48 | 1.25 | .99 |
| Triple 3-input gate | 3 NOR outputs w/o pulldowns | 4.0 | 110 | MC1207F | 2.23 | 1.86 | 1.49 | MC1007P | 1.48 | 1.25 | .99 |
| | 1 NOR output w/pulldowns<br>2 NOR outputs w/o pulldowns | 4.0 | 75 | MC1208F | 2.23 | 1.86 | 1.49 | MC1008P | 1.48 | 1.25 | .99 |
| | 3 NOR outputs w/o pulldowns | 4.0 | 60 | MC1209F | 2.23 | 1.86 | 1.49 | MC1009P | 1.48 | 1.25 | .99 |
| Quad 2-input gate | 4 NOR output w/pulldowns | 4.0 | 115 | MC1210F | 2.23 | 1.86 | 1.49 | MC1010P | 1.48 | 1.25 | .99 |
| | 2 NOR outputs w/pulldowns<br>2 NOR outputs w/o pulldowns | 4.0 | 95 | MC1211F | 2.23 | 1.86 | 1.49 | MC1011P | 1.48 | 1.25 | .99 |
| | 4 NOR outputs w/o pulldowns | 4.0 | 65 | MC1212F | 2.23 | 1.86 | 1.49 | MC1012P | 1.48 | 1.25 | .99 |
| 85 MHz AC coupled J-K flip-flop | | 6.0 | 125 | MC1213F | 4.47 | 3.72 | 2.98 | MC1013P | 2.97 | 2.47 | 1.98 |
| Dual R-S flip-flop (positive clock) | | 6.0 | 140 | MC1214F | 4.47 | 3.72 | 2.98 | MC1014P | 2.97 | 2.47 | 1.98 |
| Dual R-S flip-flop (negative clock) | | 6.0 | 140 | MC1215F | 4.47 | 3.72 | 2.98 | MC1015P | 2.97 | 2.47 | 1.98 |
| Dual R-S flip-flop (single rail, positive clock) | | 6.0 | 140 | MC1216F | 4.47 | 3.72 | 2.98 | MC1016P | 2.97 | 2.47 | 1.98 |

# MOTOROLA Semiconductors DIGITAL INTEGRATED CIRCUITS



## MECL II™, MC1200 AND MC1000 SERIES (CONTINUED)

| | Typical | | Case 607 (−55° C to +125° C) | | | | Case 605 (0° C to +75° C) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Net Each, Lots of | | | | Net Each, Lots of | | |
| Function | $t_{pd}$ nsec | $P_D$ mW | Motorola Type | 1-99 | 100-999 | 1000-4999 | Motorola Type | 1-99 | 100-999 | 1000-4999 |
| Level translator (saturated logic to MECL) | 15 | 105 | MC1217F | $ 5.59 | $4.66 | $3.73 | MC1017P | $ 3.72 | $ 3.10 | $ 2.48 |
| Level translator (MECL to saturated logic) | 20 | 70 | MC1218F | 5.59 | 4.66 | 3.73 | MC1018P | 3.72 | 3.10 | 2.48 |
| Full adder | 4.0 | 110 | MC1219F | 7.26 | 6.05 | 4.84 | MC1019P | 4.72 | 3.93 | 3.15 |
| Quad line receiver | 4.0 | 115 | MC1220F | 2.23 | 1.86 | 1.49 | MC1020P | 1.48 | 1.25 | .99 |
| Full subtractor | 4.0 | 110 | MC1221F | 7.26 | 6.05 | 4.84 | MC1021P | 4.72 | 3.93 | 3.15 |
| Type "D" flip-flop | 8.0 | 110 | MC1222F | 5.59 | 4.66 | 3.73 | MC1022P | 3.72 | 3.10 | 2.48 |
| Dual 4-input OR-NOR clock driver | 2.0 | 250 | ... | ... | ... | ... | MC1023P | 2.40 | 2.00 | 1.60 |
| Dual 2-input expandable gate | 4.0 | 95 | MC1224F | 2.23 | 1.86 | 1.49 | MC1024P | 1.48 | 1.23 | .99 |
| Dual 4-input and 5-input expander | ... | ... | MC1225F | 2.23 | 1.86 | 1.49 | MC1025P | 1.48 | 1.23 | .99 |
| Dual 3-4-input trans. line/clock driver | 2.0 | 140 | MC1226F | 3.60 | 3.00 | 2.40 | MC1026P | 2.40 | 2.00 | 1.60 |
| 120 MHz AC coupled J-K flip-flop | 4.0 | 250 | ... | ... | ... | ... | MC1027P | 4.45 | 3.71 | 2.97 |
| Data distributor | 4.0 | 160 | MC1229F | 6.70 | 5.58 | 4.47 | MC1029P | 4.45 | 3.71 | 2.97 |
| Quad exclusive OR gate | 5.0 | 130 | MC1230F | 3.36 | 2.80 | 2.24 | MC1030P | 2.23 | 1.86 | 1.49 |
| Quad exclusive NOR gate | 5.0 | 130 | MC1231F | 3.36 | 2.80 | 2.24 | MC1031P | 2.23 | 1.86 | 1.49 |
| Dual R-S flip-flop (single rail, negative clock) | 6.0 | 140 | MC1233F | 4.47 | 3.72 | 2.98 | MC1033P | 2.97 | 2.47 | 1.98 |
| Type "D" flip-flop | 4.0 | 185 | ... | ... | ... | ... | MC1034P | 6.00 | 5.00 | 4.00 |
| Dual Schmitt trigger/triple diff. amp | 5.0 | 140 | MC1235F | 2.23 | 1.86 | 1.49 | MC1035P | 1.48 | 1.25 | .99 |
| 16-bit coincident memory | 17 | 250 | ... | ... | ... | ... | MC1036P | 15.00 | 12.48 | 10.00 |
| 16-bit coincident memory without pulldowns | 17 | 250 | ... | ... | ... | ... | MC1037P | 15.00 | 12.48 | 10.00 |
| 8-channel data selector | 7.0 | 150 | MC1238F | 10.06 | 8.38 | 6.71 | MC1038P | 6.69 | 5.57 | 4.46 |
| Quad level translator (MECL to satur. logic) | 10 | 200 | ... | ... | ... | ... | MC1039P | 5.20 | 4.33 | 3.47 |
| Decoder-Nixie§ driver | ... | 178 | MC1245L* | 5.58 | 4.65 | 3.72 | MC1045P‡ | 4.45 | 3.71 | 2.97 |
| Dual full adder | 9.0 | 375 | MC1259L* | 8.37 | 6.97 | 5.58 | MC1059P‡ | 6.69 | 5.57 | 4.46 |
| Quad latch | 8.0 | 200 | MC1270L† | 5.58 | 4.65 | 3.72 | MC1070P | 4.45 | 3.71 | 2.97 |

*Case 620. †Case 632. ‡Case 612. §Registered Burroughs Corp. trademark.

## MECL III™ MC1600 SERIES

State-of-the-art, emitter coupled logic family with sub-nsec local propagation delays. Multilayer metalization for optimum performance. Compatible with MECL II and MECL 10,000™ Series. Temperature, 0° C to +75° C. $V_{CC} = 0$ V; $V_{EE} = -5.2$ V; $T_A = 25°$ C.

| | Typical | | Case 620 | | | | Case 617 | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Net Each, Lots of | | | | Net Each, Lots of | | |
| Function | $t_{pd}$ nsec | $P_D$ mW | Motorola Type | 1-24 | 25-99 | 100-999 | Motorola Type | 1-24 | 25-99 | 100-999 |
| Dual 4-input OR/NOR gate (high Z) | 1.1 | 120 | MC1660L | $11.25 | $ 9.40 | $ 7.50 | MC1660S | $15.00 | $12.00 | $10.00 |
| Dual 4-input OR/NOR gate (low Z) | 1.1 | 120 | MC1661L | 11.25 | 9.40 | 7.50 | MC1661S | 15.00 | 12.00 | 10.00 |
| Quad 2-input NOR gate (high Z) | 1.1 | 240 | MC1662L | 11.25 | 9.40 | 7.50 | MC1662S | 16.50 | 13.20 | 11.00 |
| Quad 2-input NOR gate (low Z) | 1.1 | 240 | MC1663L | 11.25 | 9.40 | 7.50 | MC1663S | 16.50 | 13.20 | 11.00 |
| Quad 2-input OR gate (high Z) | 1.1 | 240 | MC1664L | 11.25 | 9.40 | 7.50 | MC1664S | 16.50 | 13.20 | 11.00 |
| Quad 2-input OR gate (low Z) | 1.1 | 240 | MC1665L | 11.25 | 9.40 | 7.50 | MC1665S | 16.50 | 13.20 | 11.00 |
| Dual clocked R-S flip-flop (high Z) | 1.8 | 220 | MC1666L | 22.35 | 18.60 | 14.90 | MC1666S | 30.00 | 24.00 | 20.00 |
| Dual clocked R-S flip-flop (low Z) | 1.8 | 230 | MC1667L | 22.35 | 18.60 | 14.90 | MC1667S | 30.00 | 24.00 | 20.00 |
| Dual clocked latch (high Z) | 1.8 | 220 | MC1668L | 22.35 | 18.60 | 14.90 | MC1668S | 37.50 | 30.00 | 25.00 |
| Dual clocked latch (low Z) | 1.8 | 220 | MC1669L | 22.35 | 18.60 | 14.90 | MC1669S | 37.50 | 30.00 | 25.00 |
| Master-slave type D flip-flop (high Z) | * | 220 | MC1670L | 20.35 | 16.87 | 13.50 | MC1670S | 27.00 | 21.60 | 18.00 |
| Master-slave type D flip-flop (low Z) | * | 220 | MC1671L | 20.25 | 16.87 | 13.50 | MC1671S | 27.00 | 21.60 | 18.00 |
| Triple 2-input exclusive (high Z) | 1.3 | 220 | MC1672L | 14.10 | 11.75 | 9.40 | MC1672S | 18.75 | 15.00 | 12.50 |
| OR gate (low Z) | 1.3 | 250 | MC1673L | 14.10 | 11.75 | 9.40 | MC1673S | 18.75 | 15.00 | 12.50 |
| Triple 2-input exclusive (high Z) | 1.3 | 220 | MC1674L | 14.10 | 11.75 | 9.40 | MC1674S | 18.75 | 15.00 | 12.50 |
| NOR gate (low Z) | 1.3 | 250 | MC1675L | 14.10 | 11.75 | 9.40 | MC1675S | 18.75 | 15.00 | 12.50 |
| Bi-quinary counter (low Z) | † | ‡ | MC1679L | 64.80 | 54.00 | 43.20 | ... | ... | ... | ... |
| Random access memory (RAM) cell (high Z) | [illegible].5§<br>3.5# | 270 | MC1680L | 42.15 | 35.10 | 28.10 | ... | ... | ... | ... |
| Random access memory (RAM) cell (high Z) | 2.5§<br>3.5# | 300 | MC1681L | 42.20 | 35.10 | 28.10 | ... | ... | ... | ... |
| Content addressable memory (CAM) cell (low Z) | 2.8•<br>4.0# | 300 | MC1683L | 42.20 | 35.10 | 28.10 | ... | ... | ... | ... |
| Content addressable random access memory (CARAM) cell (high Z) | 2.5§<br>2.8•<br>4.0# | 270 | MC1684L | 42.15 | 35.10 | 28.10 | ... | ... | ... | ... |
| Quad line receiver | 1.1 | 220 | MC1692L | 11.25 | 9.40 | 7.50 | MC1692S | 16.50 | 13.20 | 11.00 |

*Toggle frequency = 350 MHz typical. †Max. operating frequency = 350 MHz typ. ‡Requires heat sink IERC LIC-14A2CB or equivalent. §Read delay. #Write delay. •Search delay.

## MHTL™ MC660 SERIES

Feature outstanding noise immunity; provide error-free operation in high noise environments far beyond the tolerance of other IC families. $V_{CC} = 15$ V ± 1.0 VDC; $T_A = 25°$ C. Temperature −30° C to +75° C. MHTL ceramic dual in-line devices are available with specification over the −55° C to +125° C temperature range and/or with hi-rel processing on special order.

| | Typical | | Case 632 Ceramic | | | | Case 605 Plastic | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Net Each, Lots of | | | | Net Each, Lots of | | |
| Function | $t_{pd}$ nsec | $P_D$ mW | Motorola Type | 1-99 | 100-999 | 1000-4999 | Motorola Type | 1-99 | 100-999 | 1000-4999 |
| Expandable dual Active pullup | 110 | 88/26† | MC660L | $1.68 | $1.40 | $1.12 | MC660P | $1.21 | $1.01 | $0.81 |
| 4-input gate Passive pullup | 125 | 88/26† | MC661L | 1.60 | 1.33 | 1.07 | MC661P | 1.15 | .96 | .77 |
| Expandable dual 4-input line driver | 140 | 180/26† | MC662L | 1.89 | 1.57 | 1.26 | MC662P | 1.33 | 1.11 | .89 |
| Dual J-K flip-flop | 3.0* | 200 | MC663L | 3.36 | 2.80 | 2.24 | MC663P | 2.43 | 2.02 | 1.62 |
| Master-slave R-S flip-flop | 3.0* | 160 | MC664L | 2.34 | 1.95 | 1.56 | MC664P | 1.87 | 1.56 | 1.25 |
| Triple level translator | 40 | 83‡ | MC665L | 2.37 | 1.97 | 1.58 | MC665P | 1.60 | 1.33 | 1.07 |
| Triple level translator | 75 | 105 | MC666L | 2.37 | 1.97 | 1.58 | MC666P | 1.80 | 1.50 | 1.20 |
| Dual monostable multivibrator | 140 | 240 | MC667L | 3.16 | 2.63 | 2.11 | MC667P | 2.76 | 2.30 | 1.84 |

*$f_{Tog}$, MHz. †Input high/input low. ‡DTL (104 RTL).

MC660 Series continued on following page.

## MHTL™ M660 SERIES (CONTINUED)

| Function | Typical $t_{pd}$ nsec | Typical $P_D$ mW | Case 632 Motorola Type | Case 632 Net Each, Lots of 1-99 | Case 632 100-999 | Case 632 1000-4999 | Case 605 Motorola Type | Case 605 Net Each, Lots of 1-99 | Case 605 100-999 | Case 605 1000-4999 |
|---|---|---|---|---|---|---|---|---|---|---|
| Quad 2-input gate (passive pullup) | 125 | 176/52* | MC668L | $1.60 | $1.33 | $1.07 | MC668P | $1.15 | $0.96 | $0.77 |
| Dual 4-input expander | ........ | ........ | MC669L | 1.20 | 1.00 | .80 | MC669P | 1.02 | .85 | .68 |
| Triple 3-input gate (passive pullup) | 125 | 132/39* | MC670L | 1.60 | 1.33 | 1.07 | MC670P | 1.15 | .96 | .77 |
| Triple 3-input gate (active pullup) | 110 | 132/39* | MC671L | 1.68 | 1.40 | 1.12 | MC671P | 1.21 | 1.01 | .81 |
| Quad 2-input gate (active pullup) | 110 | 176/52* | MC672L | 1.68 | 1.40 | 1.12 | MC672P | 1.21 | 1.01 | .81 |
| Dual 2-input AND-OR-INVERT gate | 110 | 160/50* | MC673L | 1.80 | 1.50 | 1.20 | MC673P | 1.32 | 1.10 | .88 |
| Dual 2-input AND-OR-INVERT gate | 125 | 160/50* | MC674L | 1.74 | 1.45 | 1.16 | MC674P | 1.29 | 1.07 | .86 |
| Dual pulse stretcher | 150† | 180 | MC675L | 3.24 | 2.70 | 2.16 | MC675P | 2.79 | 2.32 | 1.86 |
| Hex inverter with strobe (active pullup) | 110 | 246/96* | MC677L§ | 2.23 | 1.86 | 1.49 | MC677P♯ | 1.53 | 1.27 | 1.02 |
| w/o output resistors | 125 | 192/96* | MC678L§ | 2.15 | 1.78 | 1.43 | MC678P♯ | 1.45 | 1.21 | .97 |
| Dual lamp driver | 0.5‡ | 250/30* | MC679L | 2.37 | 1.97 | 1.58 | MC679P | 2.01 | 1.67 | 1.34 |
| Hex inverter | 110 | 246/96* | MC680L | 1.68 | 1.40 | 1.12 | MC680P | 1.21 | 1.01 | .81 |
| Hex inverter with open collector | 125 | 192/96* | MC681L | 1.68 | 1.40 | 1.12 | MC681P | 1.21 | 1.01 | .81 |
| Quad latch | 250 | 375 | MC682L§ | 3.30 | 2.75 | 2.20 | MC682P♯ | 2.65 | 2.20 | 1.76 |
| Quad 2-input exclusive OR | ........ | 380 | MC683L | 3.05 | 2.55 | 2.05 | MC683P | 2.45 | 2.05 | 1.62 |

*Inputs high/input low. †Pins 1, 6; 110, pins 5, 6. ‡μsec typ. §Case 620. ♯Case 612.

## MTTL™ MC7400 SERIES (CASE 605)

Temp., 0° to +70° C. Medium operating speed (15–30 MHz clock rate), good external noise immunity, high fan-out. $V_{CC}$ = 5.0 volts; $T_A$ = 25° C. Dual in-line plastic package.

| Function | Typical $t_{pd}$ nsec | Typical $P_D$ mW | Motorola Type MC- | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|
| Quad 2-input NAND gate | 10 | 40 | 7400P | $0.98 | $0.49 | $0.28 |
| Quad 2-input NAND gate (open collector output) | 35 | 40 | 7401P | .98 | .49 | .28 |
| Quad 2-input NOR gate | 10 | 40 | 7402P | .98 | .49 | .28 |
| Quad 2-input NAND gate (with open collector) | 35 | 40 | 7403P | .98 | .49 | .28 |
| Triple 3-input NAND gate | 10 | 30 | 7410P | .98 | .49 | .28 |
| Dual 4-input NAND gate | 10 | 20 | 7420P | .98 | .49 | .28 |
| Quad 2-input interface NAND gate | 17 | 40 | 7426P | 1.18 | .59 | .34 |
| 8-input NAND gate | 10 | 10 | 7430P | .98 | .49 | .28 |
| Dual 4-input NAND buffer | 13 | 50 | 7440P | .98 | .49 | .28 |
| BCD-to-decimal decoder and high-level driver | .... | 105 | 7441AP | 5.40 | 2.70 | 1.55 |
| BCD-to-decimal decoder | 22* | 140 | 7442P | 4.20 | 2.10 | 1.20 |
| Excess three-to-decimal decoder | 22* | 140 | 7443P | 5.90 | 2.95 | 1.70 |
| Excess three gray-to-decimal decoder | 22* | 140 | 7444P | 5.90 | 2.95 | 1.70 |
| BCD to one-of-ten decoder/driver | 50† | 215 | 7445P | 7.65 | 3.80 | 2.20 |
| BCD-to-seven segment decoder/driver | .... | 265 | 7446P | 6.30 | 3.15 | 1.80 |
| | .... | 265 | 7447P | 5.90 | 2.95 | 1.70 |
| | .... | 265 | 7448P | 4.90 | 2.45 | 1.40 |

| Function | Typical $t_{pd}$ nsec | Typical $P_D$ mW | Motorola Type MC- | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|
| Expandable dual 2-wide 2-input AND-OR-INVERT gate | 13 | 28 | 7450P | $0.98 | $0.49 | $0.28 |
| Dual 2-wide 2-input AND-OR-INVERT gate | 13 | 28 | 7451P | .98 | .49 | .28 |
| Expandable 4-wide 2-input AND-OR-INVERT gate | 13 | 22 | 7453P | .98 | .49 | .28 |
| 4-wide 2-input AND-OR-INVERT gate | 13 | 22 | 7454P | .98 | .49 | .28 |
| Dual 4-input expander for AND-OR-INVERT gate | 5 | 8 | 7460P | .98 | .49 | .28 |
| J-K flip-flop | 30 | 65 | 7470P | 1.46 | .73 | .42 |
| | 30 | 40 | 7472P | 1.38 | .69 | .39 |
| Dual J-K flip-flop | 30 | 80 | 7473P | 1.96 | .98 | .56 |
| Quad latch | 30 | 160 | 7475P | 3.40 | 1.70 | .98 |
| Dual J-K flip-flop | 30 | 80 | 7476P | 2.15 | 1.08 | .62 |
| Dual type D flip-flop | 16 | 84 | 7479P | 1.95 | .98 | .56 |
| Gated full adder | 10‡ | 105 | 7480P | 2.65 | 1.32 | .76 |
| 4-bit binary full adder | 35 | 390 | 7483P | 6.20 | 3.10 | 1.75 |
| 8-bit shift register | 25 | 175 | 7491AP | 5.40 | 2.70 | 1.55 |
| Divide-by-twelve counter | 60 | 160 | 7492P | 3.80 | 1.90 | 1.09 |
| 4-bit shift register | 25 | 250 | 7495P | 4.30 | 2.15 | 1.23 |
| 5-bit shift register | 25 | 240 | 7496P | 5.20 | 2.60 | 1.50 |

*Add delay; 23 nsec carry delay. †Maximum. ‡Add delay; 55 nsec carry delay.

Same as above except in Case 607 flat ceramic package (suffix **F**) and in Case 620/632 dual in-line ceramic package (suffix **L**). Other types available; data and pricing on request.

| Motorola Type | Net Each, Lots of 1-24 | 25-99 | 100-999 | Motorola Type | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| MC7426L | $ 2.15 | $ 1.80 | $1.44 | MC7449F* | $ 8.65 | $7.20 | $5.75 |
| MC7441AL | 9.90 | 8.25 | 6.60 | MC7470L | 2.70 | 2.25 | 1.80 |
| MC7442L | 7.75 | 6.45 | 5.15 | MC7480L | 4.85 | 4.05 | 3.25 |
| MC7443L | 10.95 | 9.15 | 7.30 | MC7483L | 11.35 | 9.45 | 7.55 |
| MC7444L | 10.95 | 9.15 | 7.30 | MC7491AL | 9.90 | 8.25 | 6.60 |
| MC7445L | 14.05 | 11.70 | 9.35 | MC7492F, L | 7.00 | 5.85 | 4.70 |
| MC7446L | 11.50 | 9.60 | 7.70 | MC7495F, L | 7.90 | 6.60 | 5.30 |
| MC7447L | 10.60 | 8.85 | 7.10 | MC7496F, L | 9.55 | 7.95 | 6.35 |
| MC7448L | 9.00 | 7.50 | 6.00 | | | | |

*BCD-to-seven segment decoder driver; $P_D$ = 165 mW typical.

Same as above except temperature range −55° C to +125° C; in Case 607 flat ceramic package (suffix **F**) or Case 620/632 dual in-line ceramic package (suffix **L**). Other types available; data and pricing on request.

| Motorola Type | Net Each, Lots of 1-24 | 25-99 | 100-999 | Motorola Type | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| MC5403L | $ 3.10 | $ 2.55 | $ 2.05 | MC5449F | $14.75 | $12.30 | $ 9.85 |
| MC5426L | 3.70 | 3.05 | 2.45 | MC5470L | 4.60 | 3.85 | 3.05 |
| MC5441AL | 16.90 | 14.10 | 11.25 | MC5476L | 6.75 | 5.65 | 4.50 |
| MC5442L | 13.20 | 11.00 | 8.80 | MC5480L | 8.30 | 6.90 | 5.50 |
| MC5443L | 18.45 | 15.35 | 12.30 | MC5483L | 19.35 | 16.15 | 12.90 |
| MC5444L | 18.45 | 15.35 | 12.30 | MC5491AL | 16.90 | 14.10 | 11.25 |
| MC5445L | 23.95 | 19.95 | 15.95 | MC5492F, L | 12.00 | 10.00 | 8.00 |
| MC5446L | 19.65 | 16.40 | 13.10 | MC5493F, L | 12.00 | 10.00 | 8.00 |
| MC5447L | 18.45 | 15.35 | 12.30 | MC5495F, L | 13.50 | 11.25 | 9.00 |
| MC5448L | 15.35 | 12.80 | 10.25 | MC5496F, L | 16.30 | 13.60 | 10.85 |

## MTTL I™ MC400 AND MC500 SERIES

Family of transistor-transistor logic designed for general purpose digital applications. Features medium operating speed (20 MHz clock rate), good external noise immunity, high fan-out and capability of driving lines up to 600 pF capacitance. Temperature 0° C to +75° C (MC400 Series), −55° C to +125° C (MC500 Series). $V_{CC}$ = 5.0 V; $T_A$ = 25° C. In Case 607 flat ceramic package (suffix **F**), Case 632 dual in-line ceramic package (suffix **L**) or Case 605 dual in-line plastic package (suffix **P**). Other types available; data on request.

| Function | Typical $t_{pd}$ nsec | Typical $P_D$ mW | Motorola Type | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|---|
| OR expandable dual 4-input gate | 10 | 38 | MC477P | $1.80 | $1.80 | $1.55* |
| Dual 2-wide 2-3 input OR expander | ..... | 15 | MC478F | 3.50 | 2.90 | 2.35 |
| | | | MC478L | 3.90 | 3.25 | 2.60 |
| | | | MC478P | 1.70 | 1.70 | 1.44† |
| Hex inverter | 10 | 90 | MC479L | 2.85 | 2.40 | 1.90 |
| Dual 2-wide 2-3 input OR expander | ..... | 15 | MC528F, L | 6.45 | 5.40 | 4.30 |
| | | | MC578F, L | 5.40 | 4.50 | 3.60 |

*1000–4999, $1.40. †1000–4999, $1.30.

## MTTL II™ MC2000 AND MC2100 SERIES

MC2100 Series −55° C to +125° C; fan out = 11 for MC2100–MC2128, 6 for MC2150–MC2178. MC2000 Series 0° C to +75° C; fan out = 9, MC2000–MC2028; 5, MC2050–MC2078. $V_{CC}$ = 5.0 volts, $T_A$ = 25° C. Available in ceramic dual in-line pkg. (suffix **L**).

| Function | Typical $t_{pd}$ nsec | Typical $P_D$ mW | Case 607 (−55° C to +125° C) Motorola Type | Net Each, Lots of 1-24 | 25-99 | 100 Up | Case 607 (0° C to +75° C) Motorola Type | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|---|---|---|---|---|
| Expandable 2-wide 4-input AND-OR-INVERT gate | 7.0 | 27 | MC2100F | $ 7.20 | $5.75 | $4.80 | MC2000F | $4.70 | $3.80 | $3.15 |
| | | | MC2150F | 5.90 | 4.75 | 3.95 | MC2050F | 3.95 | 3.20 | 2.65 |
| Quad 2-input NAND gate | 6.0 | 88 | MC2101F | 7.20 | 5.75 | 4.80 | MC2001F | 4.70 | 3.80 | 3.15 |
| | | | MC2151F | 5.90 | 4.75 | 3.95 | MC2051F | 3.95 | 3.20 | 2.65 |

**SEE FIRST TWO MOTOROLA IC PAGES FOR CASE ILLUSTRATIONS**

## MTTL II™ MC2000 AND MC2100 SERIES (CONTINUED)

| Function | Typical |  | Case 607 (−55° C to +125° C) |  |  |  | Case 607 (0° C to +75° C) |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|
|  | $t_{pd}$ nsec | $P_D$ mW | Motorola Type | Net Each, Lots of 1-24 | 25-99 | 100 Up | Motorola Type | Net Each, Lots of 1-24 | 25-99 | 100-999 |
| 4-wide 3-2-2-3-input expander for AND-OR-INVERT gates | .......... | 28 | MC2102F<br>MC2152F | $ 4.55<br>4.55 | $3.65<br>3.65 | $3.05<br>3.05 | MC2002F<br>MC2052F | $3.05<br>3.05 | $2.45<br>2.45 | $2.05<br>2.05 |
| Dual 4-input NAND gate | 6.0 | 44 | MC2103F<br>MC2153F | 7.20<br>5.90 | 5.75<br>4.75 | 4.80<br>3.95 | MC2003F<br>MC2053F | 4.70<br>3.95 | 3.80<br>3.20 | 3.15<br>2.65 |
| Expandable 4-wide 2-2-2-3-input AND-OR-INVERT gate | 7.0 | 36 | MC2104F<br>MC2154F | 7.20<br>5.90 | 5.75<br>4.75 | 4.80<br>3.95 | MC2004F<br>MC2054F | 4.70<br>3.95 | 3.80<br>3.20 | 3.15<br>2.65 |
| Single 8-input NAND gate | 8.0 | 22 | MC2105F<br>MC2155F | 7.20<br>5.90 | 5.75<br>4.75 | 4.80<br>3.95 | MC2005F<br>MC2055F | 4.70<br>3.95 | 3.80<br>3.20 | 3.15<br>2.65 |
| Dual 4-input expander for AND-OR-INVERT gate | .......... | 14 | MC2106F<br>MC2156F | 4.55<br>4.55 | 3.65<br>3.65 | 3.05<br>3.05 | MC2006F<br>MC2056F | 3.05<br>3.05 | 2.45<br>2.45 | 2.05<br>2.05 |
| Triple 3-input NAND gate | 6.0 | 66 | MC2107F<br>MC2157F | 7.20<br>5.90 | 5.75<br>4.75 | 4.80<br>3.95 | MC2007F<br>MC2057F | 4.70<br>3.95 | 3.80<br>3.20 | 3.15<br>2.65 |
| Expandable dual 2-wide 2-input AND-OR-INVERT gate | 7.0 | 58 | MC2113F<br>MC2163F | 7.20<br>5.90 | 5.75<br>4.75 | 4.80<br>3.95 | MC2013F<br>MC2063F | 4.70<br>3.95 | 3.80<br>3.20 | 3.15<br>2.65 |
| Quad 2-input lamp/line driver | 20 | 105 | MC2165F | 7.95 | 6.60 | 5.30 | MC2065F | 4.35 | 3.60 | 2.90 |
| AND J-K flip-flop | f= 50 MHz | 50 | MC2125F<br>MC2175F | 12.30<br>10.25 | 9.85<br>8.20 | 8.20<br>6.85 | MC2025F<br>MC2075F | 8.15<br>6.80 | 6.55<br>5.45 | 5.45<br>4.55 |
| OR J-K flip-flop | f= 50 MHz | 60 | MC2126F<br>MC2176F | 12.30<br>10.25 | 9.85<br>8.20 | 8.20<br>6.85 | MC2026F<br>MC2076F | 8.15<br>6.80 | 6.55<br>5.45 | 5.45<br>4.55 |
| OR J-K flip-flop | f= 35 MHz | 60 | MC2128F<br>MC2178F | 12.30<br>10.25 | 9.85<br>8.20 | 8.20<br>6.85 | MC2028F<br>MC2078F | 8.15<br>6.80 | 6.55<br>5.45 | 5.45<br>4.55 |

MC2000P Series same as Series MC2000F except Case 605.

| Motorola Type | Net Each, Lots of 1-99 | 100-999 | 1000-4999 | Motorola Type | Net Each, Lots of 1-99 | 100-999 | 1000-4999 | Motorola Type | Net Each, Lots of 1-99 | 100-999 | 1000-4999 | Motorola Type | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MC2000P | $2.60 | $2.20 | $2.00 | MC2007P | $2.60 | $2.20 | $2.00 | MC2052P | $ 2.00 | $1.70 | $1.55 | MC2065P | $2.20 | $1.85 | $1.70 |
| MC2001P | 2.60 | 2.20 | 2.00 | MC2013P | 2.85 | 2.40 | 2.20 | MC2053P | 2.20 | 1.85 | 1.70 | MC2075P | 2.90 | 2.50 | 2.25 |
| MC2002P | 2.00 | 1.70 | 1.55 | MC2025P | 3.65 | 3.10 | 2.80 | MC2054P | 2.20 | 1.85 | 1.70 | MC2076P | 2.90 | 2.50 | 2.25 |
| MC2003P | 2.60 | 2.20 | 2.00 | MC2026P | 3.65 | 3.10 | 2.80 | MC2055P | 2.20 | 1.85 | 1.70 | MC2078P | 2.90 | 2.50 | 2.25 |
| MC2004P | 2.60 | 2.20 | 2.00 | MC2028P | 3.65 | 3.10 | 2.80 | MC2056P | 2.00 | 1.70 | 1.55 |  |  |  |  |
| MC2005P | 2.60 | 2.20 | 2.00 | MC2050P | 2.20 | 1.85 | 1.70 | MC2057P | 2.20 | 1.85 | 1.70 |  |  |  |  |
| MC2006P | 2.00 | 1.70 | 1.55 | MC2051P | 2.20 | 1.85 | 1.70 | MC2063P | 2.40 | 2.05 | 1.85 |  |  |  |  |

## MTTL III™ MC3000 SERIES AND MC3100 SERIES

Designed for general purpose digital applications. High operating speed (30–50 MHz clock rate), good external noise immunity, high fan-out and capability of driving lines up to 600 pF capacitance. Temperature range 0° C to +75° C (MC3000 Series), −55° C to +125° C (MC3100 Series). In flat ceramic package, suffix **F** (Case 607) and dual in-line ceramic package, suffix **L** (Case 632). Series MC3000 also available in dual in-line plastic package.

| Function | Typical |  | Motorola Type | Net Each, Lots of |  |  | Motorola Type | Net Each, Lots of |  |  |
|---|---|---|---|---|---|---|---|---|---|---|
|  | $t_{pd}$ ns | $P_D$ mW |  | 1-24 | 25-99 | 100-999 |  | 1-24 | 25-99 | 100-999 |
| Quad 2-input NAND gate | 6.0 | 88 | MC3000F, L | $2.00 | $1.65 | $1.32 | MC3100F, L | $3.40 | $2.80 | $2.25 |
| Quad 2-input AND gate | 9.0 | 112 | MC3001F, L | 2.15 | 1.80 | 1.44 | MC3101F, L | 3.70 | 3.05 | 2.45 |
| Quad 2-input NOR gate | 6.0 | 122 | MC3002F, L | 2.00 | 1.65 | 1.32 | MC3102F, L | 3.40 | 2.80 | 2.25 |
| Quad 2-input OR gate | 9.0 | 150 | MC3003F, L | 2.15 | 1.80 | 1.44 | MC3103F, L | 3.70 | 3.05 | 2.45 |
| Quad 2-input NAND gate (open collector) | 8.0 | 88 | MC3004F, L | 2.00 | 1.65 | 1.32 | MC3104F, L | 3.40 | 2.80 | 2.25 |
| Triple 3-input NAND gate | 6.0 | 66 | MC3005F, L | 2.00 | 1.65 | 1.32 | MC3105F, L | 3.40 | 2.80 | 2.25 |
| Triple 3-input AND gate | 9.0 | 84 | MC3006F, L | 2.15 | 1.80 | 1.44 | MC3106F, L | 3.70 | 3.05 | 2.45 |
| Triple 3-input NAND gate (open collector) | 8.0 | 66 | MC3007F, L | 2.00 | 1.65 | 1.32 | MC3107F, L | 3.40 | 2.80 | 2.25 |
| Hex inverter | 6.0 | 140 | MC3008L | 2.35 | 1.95 | 1.55 | MC3108L | 4.00 | 3.30 | 2.65 |
| Hex inverter | 8.0 | 90 | MC3009F, L | 2.35 | 1.95 | 1.55 | MC3109F, L | 4.00 | 3.30 | 2.65 |
| Dual 4-input NAND gate | 6.0 | 44 | MC3010F, L | 2.00 | 1.65 | 1.32 | MC3110F, L | 3.40 | 2.80 | 2.25 |
| Dual 4-input AND gate | 9.0 | 56 | MC3011F, L | 2.15 | 1.80 | 1.44 | MC3111F, L | 3.70 | 3.05 | 2.45 |
| Dual 4-input NAND gate (open collector) | 8.0 | 44 | MC3012F, L | 2.00 | 1.65 | 1.32 | MC3112F, L | 3.40 | 2.80 | 2.25 |
| 8-input NAND gate | 8.0 | 22 | MC3015F, L | 2.00 | 1.65 | 1.32 | MC3115F, L | 3.40 | 2.80 | 2.25 |
| 8-input NAND gate | 8.0 | 22 | MC3016F, L | 1.95 | 1.65 | 1.32 | MC3116F, L | 3.40 | 2.80 | 2.25 |
| 4-wide 3-2-2-3 input expander for AND-OR-INVERT gates | * | 40 | MC3018L | 2.15 | 1.80 | 1.44 | MC3118L | 3.70 | 3.05 | 2.45 |
| Triple 3-input expander for AND-OR gates | * | 25 | MC3019L | 2.15 | 1.80 | 1.44 | MC3119L | 3.70 | 3.05 | 2.45 |
| Expandable dual 2-wide 2-input AND-OR-INVERT gate | 6.0 | 62.5 | MC3020F, L | 2.00 | 1.65 | 1.32 | MC3120F, L | 3.40 | 2.80 | 2.25 |
| Quad 2-input exclusive OR gate | 14.0 | 100 | MC3021F, L | 3.25 | 2.70 | 2.15 | MC3121F, L | 5.55 | 4.60 | 3.70 |
| Quad 2-input exclusive NOR gate | 14.0 | 85 | MC3022F, L | 3.25 | 2.70 | 2.15 | MC3122F, L | 5.55 | 4.60 | 3.70 |
| Dual 2-wide 2-input AND-OR-INVERT gate | 6.0 | 62.5 | MC3023F, L | 2.00 | 1.65 | 1.32 | MC3123F, L | 3.40 | 2.80 | 2.25 |
| Dual 4-input NAND buffer gate | 6.0 | 90 | MC3024F, L | 2.15 | 1.80 | 1.44 | MC3124F, L | 3.70 | 3.05 | 2.45 |
| Dual 4-input NAND power gate | 6.0 | 70 | MC3025F, L | 2.00 | 1.65 | 1.32 | MC3125F, L | 3.40 | 2.80 | 2.25 |
| Dual 4-input AND power gate | 9.0 | 90 | MC3026F, L | 2.15 | 1.80 | 1.44 | MC3126F, L | 3.70 | 3.05 | 2.45 |
| Dual 3-input 3-output AND series terminated line driver | 9.0 | 56 | MC3028F, L | 2.15 | 1.80 | 1.44 | MC3128F, L | 3.70 | 3.05 | 2.45 |
| Dual 3-input 3-output NAND series terminated line driver | 6.0 | 44 | MC3029F, L | 2.15 | 1.80 | 1.44 | MC3129F, L | 3.70 | 3.05 | 2.45 |
| Dual 4-input expander for AND-OR-INVERT gates | † | 15 | MC3030F, L | 2.00 | 1.65 | 1.32 | MC3130F, L | 3.40 | 2.80 | 2.25 |
| Expandable 4-wide 2-2-2-3 input AND-OR gate | 10.0 | 87.5 | MC3031F, L | 2.00 | 1.65 | 1.32 | MC3131F, L | 3.40 | 2.80 | 2.25 |
| Expandable 4-wide 2-2-2-3 input AND-OR-INVERT gate | 7.0 | 40 | MC3032F, L | 2.00 | 1.65 | 1.32 | MC3132F, L | 3.40 | 2.80 | 2.25 |
| 4-wide 2-2-2-3 input AND-OR-INVERT gate | 7.0 | 40 | MC3033F, L | 2.00 | 1.65 | 1.32 | MC3133F, L | 3.40 | 2.80 | 2.25 |
| Expandable 2-wide 4-input AND-OR-INVERT gate | 7.0 | 30 | MC3034L | 2.00 | 1.65 | 1.32 | MC3134L | 3.40 | 2.80 | 2.25 |
| AND J-K flip-flop | ‡ | 80 | MC3050F, L | 2.85 | 2.40 | 1.90 | MC3150F, L | 4.90 | 4.10 | 3.50 |
| AND input J-K flip-flop | § | 50 | MC3051F, L | 2.70 | 2.25 | 1.80 | MC3151F, L | 4.90 | 4.10 | 3.50 |
| AND input JJ-KK flip-flop | ‡ | 75 | MC3052F, L | 2.85 | 2.40 | 1.90 | MC3152F, L | 4.90 | 4.10 | 3.50 |
| Double edge-triggered master-slave type D flip-flop | ...... | 100 | MC3053F, L | 3.05 | 2.55 | 2.05 | MC3153F, L | 5.55 | 4.60 | 3.70 |
| OR input J-K flip-flop | # | 95 | MC3054L | 2.90 | 2.40 | 1.90 | MC3154L | 5.25 | 4.35 | 3.50 |
| AND input J-K flip-flop | # | 80 | MC3055F, L | 2.70 | 2.25 | 1.80 | MC3155F, L | 4.60 | 3.85 | 3.05 |
| Dual type D flip-flop | # | 120 | MC3060F, L | 3.95 | 3.30 | 2.65 | MC3160F, L | 6.75 | 5.65 | 4.50 |
| Dual J-K flip-flop | § | 100 | MC3061F, L | 4.30 | 3.60 | 2.90 | MC3161F, L | 7.35 | 6.15 | 4.90 |
| Dual J-K flip-flop | § | 100 | MC3062F, L | 4.50 | 3.75 | 3.00 | MC3162F, L | 7.65 | 6.40 | 5.10 |
| Dual J-K flip-flop | # | 176 | .......... | ..... | ..... | ..... | MC3163L | 7.65 | 6.40 | 5.10 |

*$\Delta t_{pd1} = 0.4$ ns; $\Delta t_{pd0} = 0.05$ ns. †$\Delta t_{pd} = 1.0$ ns. ‡f = 40 MHz. §f = 50 MHz. #f = 30 MHz.

**SEE FIRST TWO MOTOROLA IC PAGES FOR CASE ILLUSTRATIONS**

# MOTOROLA Semiconductors DIGITAL INTEGRATED CIRCUITS

## MTTL™ COMPLEX FUNCTIONS

Designed for digital applications in the medium to high-speed range. Provide significant reduction in package count and increased logic per function over devices in the basic MTTL and MDTL™ families. Temperature, 0° C to +75° C. $V_{CC}$ = 5.0 V; $T_A$ = 25° C. **F** suffix denotes ceramic flat package, **L** suffix denotes ceramic dual in-line package and **P** suffix denotes plastic dual in-line package.

| | Typical | | Case 607 (F), Case 632 (L) | Net Each, Lots of | | | Case 605 | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Function** | $t_{pd}$ ns | $P_D$ mW | **Motorola Type** | 1-24 | 25-99 | 100-999 | **Motorola Type** | 1-99 | 100-999 | 1000-4999 |
| Dual 4-channel data selector | 18* | 150 | MC4000L | $5.40 | $4.50 | $3.60 | ...... | ...... | ...... | ...... |
| Dual data distributor | 10.5 | 175 | MC4002F, L | 7.05 | 5.85 | 4.70 | MC4002P | $3.80 | $1.90 | $1.09 |
| 16-bit scratch pad memory cell | 25† | 250 | MC4004L | 7.00 | 5.80 | 4.65 | MC4004P | 3.65 | 3.10 | 2.80 |
| 16-bit scratch pad memory cell | 25† | 250 | MC4005L | 6.30 | 5.25 | 4.20 | MC4005P | 2.90 | 2.50 | 2.25 |
| Binary to one-of-eight line decoder | 14 | 100 | MC4006L | 7.05 | 5.85 | 4.70 | ...... | ...... | ...... | ...... |
| Dual binary to one-of-four line decoder | 14 | 125 | MC4007L▲ | 7.05 | 5.85 | 4.70 | ...... | ...... | ...... | ...... |
| 8-bit parity tree | 15–30 | 150 | MC4008F, L | 6.30 | 5.25 | 4.20 | ...... | ...... | ...... | ...... |
| Dual 4-bit parity tree | 9.5–22 | 125 | MC4010L | 6.30 | 5.25 | 4.20 | ...... | ...... | ...... | ...... |
| Quad type D flip-flop | 16 | 190 | MC4015L▲ | 7.00 | 5.85 | 4.70 | ...... | ...... | ...... | ...... |
| Programmable modulo-N decade counter | 50‡ | 250 | MC4016L▲ | 9.90 | 8.25 | 6.60 | MC4016P | 6.50 | 5.50 | 5.00 |
| MC4016 except hexadecimal counter | 50‡ | 250 | MC4018L▲ | 9.90 | 8.25 | 6.60 | MC4018P | 6.50 | 5.50 | 5.00 |
| 4-bit universal counter | 16/bit | 200 | MC4023F, L | 7.75 | 6.45 | 5.15 | MC4023P | 4.20 | 2.10 | 1.20 |
| Dual voltage controlled multivibrator | § | 150 | MC4024F, L | 3.95 | 3.30 | 2.65 | MC4024P | 2.60 | 2.20 | 2.00 |
| Full adder (12 fan out) | 25/13# | 90 | MC4026F, L | 5.40 | 4.50 | 3.60 | MC4026P | 2.90 | 2.50 | 2.25 |
| Full adder (6 fan out) | 25/13# | 90 | MC4027F, L | 4.35 | 3.60 | 2.90 | MC4027P | 2.25 | 1.90 | 1.75 |
| Adder (dependent carry) 12 fan-out | 25/13# | 125 | MC4028F, L | 6.30 | 5.25 | 4.20 | MC4028P | 3.25 | 2.75 | 2.50 |
| Adder (dependent carry) 6 fan-out | 25/13# | 125 | MC4029F, L | 4.90 | 4.05 | 3.25 | MC4029P | 2.55 | 2.15 | 1.95 |
| Adder (independent carry) 12 fan-out | 25/13# | 125 | MC4030F, L | 6.30 | 5.25 | 4.20 | MC4030P | 3.25 | 2.75 | 2.50 |
| Adder (independent carry) 6 fan-out | 25/13# | 125 | MC4031F, L | 4.90 | 4.05 | 3.25 | MC4031P | 2.55 | 2.15 | 1.95 |
| Carry decoder | • | 20 | MC4032F, L | 4.35 | 3.60 | 2.90 | MC4032P | 2.25 | 1.90 | 1.75 |
| Quad latch (open collector) | 25 | 140 | MC4035F, L | 5.95 | 4.95 | 3.95 | MC4035P | 3.10 | 2.65 | 2.40 |
| Quad latch | 25 | 150 | MC4037F, L | 5.95 | 4.95 | 3.95 | MC4037P | 3.10 | 2.65 | 2.40 |
| Inverting/non-inverting one-of-eight decoder | Address time <45 ns | 240 | ...... | ...... | ...... | ...... | MC4038P■ | 6.10 | 4.05 | 3.60 |
| Seven segment character generator | | 240 | ...... | ...... | ...... | ...... | MC4039P■ | 6.10 | 4.05 | 3.60 |
| Binary to two-of-eight decoder | | 200 | ...... | ...... | ...... | ...... | MC4040P■ | 6.10 | 4.05 | 3.60 |
| Single-error hamming code detector and generator | | 250 | ...... | ...... | ...... | ...... | MC4041P■ | 6.10 | 4.05 | 3.60 |
| Quad predriver | 15 | 120 | ...... | ...... | ...... | ...... | MC4042P | 1.18 | .59 | .34 |
| Dual line selector | 20 | 70 | ...... | ...... | ...... | ...... | MC4043P | 2.25 | 1.13 | .64 |
| Phase frequency detector | 9.0 | 85 | MC4044F | 4.80 | 4.00 | 3.20 | MC4044P | 2.60 | 2.20 | 2.00 |
| | | | MC4044L | 3.95 | 3.30 | 2.65 | | | | |

*Control line; data line = 11 ns. †Write mode = 25 ns; sense mode = 15 ns. ‡Clock to Q3; clock to buss = 35 ns. §$f_{max}$ = 25 MHz. #Add delay/carry delay. •$\Delta t_{pd}$ = 4.0/decoder. ▲Case 620. ■Case 612.

Same as above except temperature range −55° C to +125° C. In ceramic flat package (suffix F) Case 607 or ceramic dual in-line (suffix L) Case 632.

| Motorola Type | Net Each, Lots of | | | Motorola Type | Net Each, Lots of | | | Motorola Type | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1-24 | 25-99 | 100 Up | | 1-24 | 25-99 | 100 Up | | 1-24 | 25-99 | 100 Up |
| MC4304F, L | $11.65 | $ 9.70 | $ 7.75 | MC4323F, L | $ 7.10 | $5.90 | $4.75 | MC4331F, L | $ 8.25 | $6.90 | $5.50 |
| MC4305F, L | 9.25 | 7.70 | 6.15 | MC4326F, L | 9.20 | 7.70 | 6.15 | MC4332F, L | 7.35 | 6.15 | 4.90 |
| MC4306F, L | 11.95 | 9.95 | 8.00 | MC4327F, L | 7.35 | 6.15 | 4.90 | MC4335F, L | 10.15 | 8.45 | 6.75 |
| MC4308F, L | 10.75 | 8.95 | 7.15 | MC4328F, L | 10.75 | 8.95 | 7.15 | MC4337F, L | 10.15 | 8.45 | 6.75 |
| MC4316L* | 18.00 | 15.00 | 12.00 | MC4329F, L | 8.25 | 6.90 | 5.50 | MC4344F, L | 7.10 | 5.90 | 4.75 |
| MC4318L* | 18.00 | 15.00 | 12.00 | MC4330F, L | 10.75 | 8.95 | 7.15 | | | | |

*Case 620.

MC9300 Series temperature range −55° C to +125° C; MC8300 Series temperature range 0° C to +75° C. F suffix denotes ceramic flat package, L suffix denotes ceramic dual in-line package.

| | Typical | | Case 620 | Net Each, Lots of | | | | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Function** | $t_{pd}$ ns | $P_D$ mW | **Motorola Type** | 1-24 | 25-99 | 100-999 | **Motorola Type** | 1-24 | 25-99 | 100 Up |
| Universal 4-bit shift register | 25 | 300 | MC9300L | $14.75 | $12.30 | $ 9.80 | MC8300L | $ 8.65 | $ 7.20 | $5.75 |
| BCD-to-decimal decoder | 22 | 125 | MC9301L | 13.20 | 11.00 | 8.80 | MC8301L | 7.75 | 6.45 | 5.15 |
| Dual full adder | 8.0–28 | 110 | MC9304L | 16.30 | 13.60 | 10.85 | MC8302L | 9.55 | 7.95 | 6.35 |
| Dual 4-bit latch | 25* | 325 | MC9308L | 15.35 | 12.80 | 10.25 | MC8308L | 9.00 | 7.50 | 6.00 |
| Dual 4-channel data selector | 9.0–24 | 150 | MC9309L | 9.20 | 7.70 | 6.15 | MC8309L | 5.40 | 4.50 | 3.60 |
| Presettable decade counter | 14–35 | 300 | MC9310L | 15.35 | 12.80 | 10.25 | MC8310L | 9.00 | 7.50 | 6.00 |
| One-of-16 decoder | 26† | 175 | MC9311L | 15.35 | 12.80 | 10.25 | MC8311L | 9.00 | 7.40 | 6.00 |
| 8-channel data selector | 9.0–24 | 135 | MC9312L | 9.20 | 7.70 | 6.15 | MC8312L | 5.40 | 4.50 | 3.60 |
| Presettable 4-bit binary counter | 14–35 | 300 | MC9316L | 20.00 | 16.65 | 13.30 | MC8316L | 11.70 | 9.75 | 7.80 |
| Dual 8-bit shift register | ‡ | 250 | MC9328L | 23.95 | 20.00 | 15.95 | MC8328L | 14.05 | 11.70 | 9.35 |
| Retriggerable monostable multivibrator | 25 | 75 | MC9601F, L§ | 7.65 | 6.40 | 5.10 | MC8601F, L§ | 4.50 | 3.75 | 3.00 |
| 64-bit random access memory (access time 60 ns) | ...... | 6 mW/bit | ...... | ...... | ...... | ...... | MCM4064L# | 10.25 | 8.45 | 7.05 |
| | | | | | | | MCM4064AL• | 10.25 | 8.45 | 7.05 |

*E to Q. †Max., $\overline{E}$ to Q. ‡C to Q = 22 ns ($t_{pd\ minus}$), 13 ns ($t_{pd\ plus}$); $\overline{MR}$ to Q = 35 ns. §Suffix F, Case 607; suffix L, Case 623. #0° C to +70° C. •0° C to +85° C.

Same as MC8300 Series above except in ceramic dual in-line package (Case 612).

| Motorola Type | Net Each, Lots of | | | Motorola Type | Net Each, Lots of | | | Motorola Type | Net Each, Lots of | | | Motorola Type | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1-99 | 100-999 | 1000-4999 | | 1-99 | 100-999 | 1000-4999 | | 1-99 | 100-999 | 1000-4999 | | 1-99 | 100-999 | 1000-4999 |
| MC8300P | $4.70 | $2.35 | $1.34 | MC8308P | $4.90 | $2.45 | $1.40 | MC8311P | $4.90 | $2.45 | $1.40 | MC8328P | $7.60 | $3.80 | $2.20 |
| MC8301P | 4.20 | 2.10 | 1.20 | MC8309P | 2.95 | 1.47 | .84 | MC8312P | 2.95 | 1.47 | .84 | MC8601P | 2.45 | 1.22 | .70 |
| MC8304P | 5.20 | 2.50 | 1.48 | MC8310P | 4.90 | 2.45 | 1.40 | MC8316P | 6.40 | 3.20 | 1.80 | | | | |

## MTTL™ BEAM LEAD INTEGRATED CIRCUITS

Particularly useful in highly reliable systems using hybrid beam lead assembly techniques or standard flat package assembly. MCB Series in ceramic flat package (suffix F); MCBC Series in Beam-Lead™ chip. Temperature −55° C to +125° C. Fan-out = 10 each output. $V_{CC}$ = 5.0 V; $T_A$ = 25° C. Other types available on request.

| | Typical | | | Net Each, Multiples of 5 | | | | Net Each, Multiples of 5 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Function** | $t_{pd}$ ns | $P_D$ mW | **Motorola Type** | 5-24 | 25-99 | 100-999 | **Motorola Type** | 5-24 | 25-99 | 100-999 |
| Quad 2-input NOR gate | 13 | 48 | MCBC5402 | $3.90 | $3.25 | $2.60 | MCB5402F | $6.00 | $5.00 | $4.00 |
| 8-input NAND gate | 10 | 10 | MCBC5430 | 2.70 | 2.25 | 1.80 | MCB5430F | 4.60 | 3.80 | 3.05 |

# MOTOROLA Semiconductors DIGITAL INTEGRATED CIRCUITS

## MDTL™ MC930 AND MC830 SERIES

MC930 Series −55° C to +125° C; MC830 Series 0° C to +75° C. $V_{CC}$=5.0 VDC, $T_A$=25° C.
NOTE: Most circuits also available in flat pack (0° to +75° C), modified TO-5 and ceramic dual in-line packages.

| Function | Typical | | Fan Out | Case 607 (−55° to +125° C) | | | | Case 605 (0° to +75° C) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $t_{pd}$ nsec | $P_D$ mW | | Motorola Type | Net Each, Lots of 1-24 | 25-99 | 100-999 | Motorola Type | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
| Expandable dual 4-input NAND gate | 30 | 22 | 8 | MC930F | $ 3.10 | $ 2.55 | $2.05 | MC830P | $0.98 | $0.48 | $0.28 |
| Expandable dual 4-input buffer | 35 | 85 | 25 | MC932F | 3.10 | 2.55 | 2.05 | MC832P | .98 | .48 | .28 |
| Dual 4-input expander | .... | .... | .... | MC933F | 3.10 | 2.55 | 2.05 | MC833P | .98 | .48 | .28 |
| Hex inverter | .... | .... | .... | MC934F | 3.40 | 2.80 | 2.25 | MC834P | 1.10 | .53 | .31 |
| Hex inverter (w/o output resistors) | 30 | 42 | 8 | MC935F | 3.40 | 2.80 | 2.25 | MC835P | 1.10 | .53 | .31 |
| Hex inverter | 30 | 66 | 8 | MC936F | 3.40 | 2.80 | 2.25 | MC836P | 1.10 | .53 | .31 |
| Hex inverter | 25 | 90 | 7 | MC937F | 3.40 | 2.80 | 2.25 | MC837P | 1.10 | .53 | .31 |
| Decade counter | * | 150 | 8 | MC938F | 12.40 | 10.20 | 8.20 | MC838P | 3.95 | 1.95 | 1.15 |
| Divide-by-sixteen counter | * | 150 | 8 | MC939F | 12.40 | 10.20 | 8.20 | MC839P | 3.95 | 1.95 | 1.15 |
| Hex inverter (w/o output diodes) | 30 | 66 | 8 | MC940F | 3.40 | 2.80 | 2.25 | MC840P | 1.10 | .53 | .31 |
| Hex inverter w/o output resistors and input diodes | 30 | 42 | 8 | MC941F | 3.40 | 2.80 | 2.25 | MC841P | 1.10 | .53 | .31 |
| Expandable dual 4-input power gate | 30 | 65 | 27 | MC944F | 3.10 | 2.55 | 2.05 | MC844P | .98 | .48 | .28 |
| Clocked flip-flop | 40 | 60 | 12/10† | MC945F | 4.05 | 3.30 | 2.65 | MC845P | 1.25 | .62 | .36 |
| Quad 2-input NAND gate | 30 | 44 | 8 | MC946F | 3.10 | 2.55 | 2.05 | MC846P | .98 | .48 | .28 |
| Quad 2-input gate expander | .... | .... | .... | MC947F | 3.10 | 2.55 | 2.05 | MC847P | .98 | .48 | .28 |
| Clocked flip-flop | 40 | 70 | 11/9† | MC948F | 4.05 | 3.30 | 2.65 | MC848P | 1.25 | .62 | .36 |
| Quad 2-input NAND gate (2K ohm pull-up resistor) | 25 | 66 | 7 | MC949F | 3.10 | 2.55 | 2.05 | MC849P | .98 | .48 | .28 |
| Pulsed triggered binary | 15 | 50 | 10/8† | MC950F | 12.10 | 9.95 | 8.00 | MC850P | 3.85 | 1.90 | 1.10 |
| Monostable multivibrator | 40 | 30 | 10 | MC951F | 12.10 | 9.95 | 8.00 | MC851P | 3.85 | 1.90 | 1.10 |
| Dual J-K flip-flop Common clock, $C_D$; separate $S_D$ | 40 | 120 | 12/10† | MC952F | 5.65 | 4.65 | 3.75 | MC852P | 1.80 | .88 | .51 |
| Separate clock and $S_D$; no $C_D$ | 40 | 120 | 12/10† | MC953F | 5.65 | 4.65 | 3.75 | MC853P | 1.80 | .88 | .51 |
| Common clock, $C_D$; separate $S_D$‡ | 40 | 140 | 11/9† | MC955F | 5.65 | 4.65 | 3.75 | MC855P | 1.80 | .88 | .51 |
| Separate clock and $S_D$, no $C_D$‡ | 40 | 140 | 11/9† | MC956F | 5.65 | 4.65 | 3.75 | MC856P | 1.80 | .88 | .51 |
| Quad 2-input buffer | 35 | 170 | 25 | MC957F | 3.40 | 2.80 | 2.25 | MC857P | 1.10 | .53 | .31 |
| Quad 2-input NAND power gate | 30 | 130 | 27 | MC958F | 3.40 | 2.80 | 2.25 | MC858P | 1.10 | .53 | .31 |
| Expandable dual 4-input NAND gate (2K ohm pull-up resistor) | 25 | 33 | 7 | MC961F | 3.10 | 2.55 | 2.05 | MC861P | .98 | .48 | .28 |
| Triple 3-input NAND gate | 30 | 33 | 8 | MC962F | 3.10 | 2.55 | 2.05 | MC862P | .98 | .48 | .28 |
| Triple 3-input NAND gate (2K ohm pull-up resistor) | 25 | 50 | 7 | MC963F | 3.10 | 2.55 | 2.05 | MC863P | .98 | .48 | .28 |
| Dual 5-input NAND gate | 30 | 22 | 8 | MC1900F | 3.10 | 2.55 | 2.05 | MC1800P | .98 | .48 | .28 |
| Dual 5-input NAND gate (2K pull-up res.) | 25 | 33 | 7 | MC1901F | 3.10 | 2.55 | 2.05 | MC1801P | .98 | .48 | .28 |
| Expandable 8-input NAND gate | 30 | 11 | 8 | MC1902F | 3.10 | 2.55 | 2.05 | MC1802P | .98 | .48 | .28 |
| Exp. 8-input NAND gate (2K pull-up res.) | 25 | 16.5 | 7 | MC1903F | 3.10 | 2.55 | 2.05 | MC1803P | .98 | .48 | .28 |
| 10-input NAND gate | 30 | 11 | 8 | MC1904F | 3.10 | 2.55 | 2.05 | MC1804P | .98 | .48 | .28 |
| 10-input NAND gate (2K pull-up res.) | 25 | 16.5 | 7 | MC1905F | 3.10 | 2.55 | 2.05 | MC1805P | .98 | .48 | .28 |
| Quad 2-input AND gate | 35 | 72 | 8 | MC1906F | 3.10 | 2.55 | 2.05 | MC1806P | .98 | .48 | .28 |
| Quad 2-input AND gate (2K pull-up res.) | 30 | 85 | 7 | MC1907F | 3.10 | 2.55 | 2.05 | MC1807P | .98 | .48 | .28 |
| Quad 2-input OR gate | 35 | 97 | 8 | MC1908F | 3.10 | 2.55 | 2.05 | MC1808P | .98 | .48 | .28 |
| Quad 2-input OR gate (2K pull-up res.) | 30 | 115 | 7 | MC1909F | 3.10 | 2.55 | 2.05 | MC1809P | .98 | .48 | .28 |
| Quad 2-input NOR gate | 30 | 60 | 8 | MC1910F | 3.10 | 2.55 | 2.05 | MC1810P | .98 | .48 | .28 |
| Quad 2-input NOR gate (2K pull-up res.) | 25 | 72 | 7 | MC1911F | 3.10 | 2.55 | 2.05 | MC1811P | .98 | .48 | .28 |
| Quad 2-input exclusive OR gate | 40 | 120 | 8 | MC1912F | 5.60 | 4.60 | 3.70 | MC1812P | 1.75 | .85 | .50 |
| Quad latch | 35 | 220 | 7 | MC1913L§ | 11.50 | 9.45 | 7.60 | MC1813P♯ | 3.65 | 1.80 | 1.05 |
| Quad latch | 35 | 220 | 7 | MC1914F | 11.15 | 9.20 | 7.40 | MC1814P | 3.55 | 1.75 | 1.00 |
| High voltage hex inverter | 40 | 42 | 7 | .... | .... | .... | .... | MC1820P• | 1.75 | .85 | .50 |

*Maximum counting frequency=30 MHz (typical). †Fan out for MC830 Series/MC930 Series. ‡2K ohm pull-up resistor. §Case 620. ♯Case 612. •Also available in Case 632.

## MEDIUM POWER MRTL™ MC900, MC800 AND MC700 SERIES

MC900 Series −55° C to +125° C; MC800 Series 0° C to +100° C; MC700 Series +15° C to +55° C. $V_{CC}$=3.0 volts ±10% for MC900 Series and MC800G Series; 3.6 volts ±10% for MC800P and MC700 Series. $T_A$=25° C. Suffix **P** denotes plastic package (Case 605); suffix **G**, metal can (Case 601, except where otherwise indicated). Other package types available on request.

| Function | $t_{pd}$ ns | MC900 and MC800 Series | | Type MC900 Series (−55° C to +125° C) | | | Type MC800 Series (0° C to +100° C) | | | Type MC700 Series (+15° C to +55° C) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Fan Out | Typ. $P_D$ mW | Motorola Type | Net Ea., Lots 1-999 | 1000-4999 | Motorola Type | Net Ea., Lots 1-999 | 1000-4999 | Fan Out | Typ. $P_D$ mW | Motorola Type | Net Ea., Lots 1-999 | 1000-4999 |
| Buffer | 20 | 25 | 10/45♯ | MC900G | $1.78 | $1.31 | MC800G | $1.42 | $1.05 | 80 | 25/50♯ | MC700G | $1.24 | $0.92 |
| Counter adapter | 22 | 5 | 55 | MC901G | 2.09 | 1.55 | MC801G | 1.67 | 1.24 | 16 | 80 | MC701G | 1.50 | 1.11 |
| R-S flip-flop | 14 | 4 | 22 | MC902G | 1.78 | 1.31 | MC802G | 1.42 | 1.05 | 13 | 32 | MC702G | 1.24 | .92 |
| 3-input NOR gate | 12 | 5 | 19/5.0♯ | MC903G | 1.78 | 1.31 | MC803G | 1.42 | 1.05 | 16 | 28/7.5♯ | MC703G | 1.24 | .92 |
| Half adder | 14 | 5 | 45 | MC904G | 1.91 | 1.41 | MC804G | 1.53 | 1.13 | 16 | 65 | MC704G | 1.38 | 1.02 |
| Half-shift register | 22 | 4 | 53 | MC905G | 2.09 | 1.55 | MC805G | 1.67 | 1.24 | 13 | 75 | MC705G | 1.50 | 1.11 |
| Same w/o inverter | 22 | 4 | 36 | MC906G | 2.09 | 1.55 | MC806G | 1.67 | 1.24 | 13 | 52 | MC706G | 1.50 | 1.11 |
| 4-input NOR gate | 12 | 5 | 19/5.0♯ | MC907G | 1.78 | 1.31 | MC807G | 1.42 | 1.05 | 16 | 30/7.5♯ | MC707G | 1.24 | .92 |
| Dual 2-in. NOR gate | 12 | 5 | 38/10♯ | MC914G | 1.78 | 1.31 | MC814G | 1.42 | 1.05 | 16 | 50/15♯ | MC714G | 1.24 | .92 |
| Dual 3-in. NOR gate | 12 | 5 | 38/10♯ | MC915G† | 1.91 | 1.41 | MC815G† | 1.53 | 1.13 | 16 | 55/15♯ | MC715G† | 1.38 | 1.02 |
| J-K flip-flop | 35 | 3 | 62/54• | MC916G | 2.65 | 1.96 | MC816G | 2.12 | 1.57 | 10 | 91/79• | MC723G | 1.89 | 1.40 |
| Quad 2-in. NOR gate | 12 | 16 | 100/30♯ | .... | .... | .... | MC824P▴ | 1.08 | .81 | 16 | 100/30♯ | MC724P▴ | 1.08 | .81 |
| Dual 4-in. NOR gate | 12 | 16 | 60/15♯ | MC925G | 2.09 | 1.55 | MC825G† | 1.67 | 1.24 | 16 | 60/15♯ | .... | .... | .... |
| J-K flip-flop | 35 | 5 | 130/65• | MC926G† | 3.10 | 2.30 | MC826G† | 2.48 | 1.84 | 16 | 100/86• | MC726G† | 2.21 | 1.64 |
| Quad inverter | 12 | 5 | 76/20♯ | MC927G† | 1.78 | 1.31 | MC827G† | 1.42 | 1.05 | 16 | 87/30♯ | MC727G† | 1.24 | .92 |
| 5-input NOR gate | 12 | 5 | 19/5.0♯ | MC929G | 1.78 | 1.31 | MC829G | 1.42 | 1.05 | 16 | 33/7.5♯ | MC729G | 1.24 | .92 |
| Quad exclus. OR gate | 12 | 16 | 87 | .... | .... | .... | MC871P | 1.80 | 1.35 | 16 | 87 | MC771P | 1.80 | 1.35 |
| J-K flip-flop | 35 | 16 | 100/86• | MC974G | 3.10 | 2.30 | MC874G | 2.48 | 1.84 | 16 | 100/86• | MC774G | 2.21 | 1.64 |
| Dual half-adder | 20 | 16 | 120 | .... | .... | .... | MC875P | 1.35 | 1.00 | 16 | 120 | MC775P | 1.35 | 1.00 |
| 1 J-K flip-flop, 1 expander, 2 buffers | .... | .... | 166/169• | .... | .... | .... | MC879P | 1.90 | 1.40 | .... | 166/169• | MC779P | 1.90 | 1.40 |
| Dual half-shift reg. | 22 | 13 | 140 | .... | .... | .... | MC883P | 1.55 | 1.14 | 13 | 140 | MC783P | 1.55 | 1.14 |
| Same w/o inverter | 22 | 13 | 100 | .... | .... | .... | MC884P | 1.46 | 1.08 | 13 | 100 | MC784P | 1.46 | 1.08 |
| Quad 2-in. expander | 12 | .... | 20/♯ | .... | .... | .... | MC885P▴ | 1.09 | .81 | .... | 20/♯ | MC785P▴ | 1.09 | .81 |
| Dual 4-in. expander | 12 | .... | 20/♯ | .... | .... | .... | MC886P | 1.09 | .81 | .... | 20/♯ | MC786P | 1.09 | .81 |
| 1 J-K flip-flop, 1 inverter, 2 buffers | .... | .... | 163/177‡ | .... | .... | .... | MC887P§ | 1.90 | 1.40 | .... | 163/177‡ | MC787P* | 1.90 | 1.40 |
| Dual 3-input buffer, non-inverting | 24 | 80 | 145/56♯ | .... | .... | .... | MC888P | 1.35 | 1.00 | 80 | 145/56♯ | MC788P | 1.35 | 1.00 |

***P** plastic pkg. only (Case 605). †Case 603. ‡Only clock input high on flip-flop; other element inputs high/inputs low. §**P** plastic pkg. only (Case 605), temp. range 0° to 75° C. ♯Input high/input low. •Only clock input high/input low. ▴A suffix types available; have insured capability to drive at least one MTTL load or two MDTL loads.

**SEE FIRST TWO MOTOROLA IC PAGES FOR CASE ILLUSTRATIONS.**

MOTOROLA IC'S ARE STOCKED AT NEWTON, MA; NO. HAVEN, CT; HAUPPAUGE, ROCHESTER AND SYRACUSE, NY; SALT LAKE CITY, UT; GAITHERSBURG, MD; AND RALEIGH, NC

## MEDIUM POWER MRTL™ MC900, MC800 AND MC700 SERIES (CONTINUED)

Types MC889, MC889A and MC9819, MC9819A temperature range, 0° C to +75° C; all others as noted.

| | | MC900 and MC800 Series | | Type MC900 Series (−55° C to +125° C) | | | Type MC800 Series (0° C to +100° C) | | | Type MC700 Series (+15° C to +75° C) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Net Ea., Lots | | | Net Ea., Lots | | | | | Net Ea., Lots | |
| Function | $t_{pd}$ ns | Fan Out | Typ. $P_D$ mW | Motorola Type | 1-999 | 1000-4999 | Motorola Type | 1-999 | 1000-4999 | Fan Out | Typ. $P_D$ mW | Motorola Type | 1-999 | 1000 Up |
| Hex inverter | 12 | 16 | 130/15# | .......... | ...... | ...... | MC889P* | $1.08 | $0.81 | 16 | 130/15# | MC789P* | $1.08 | $0.81 |
| Dual J-K flip-flop | 35 | 10 | 182/158‡ | .......... | ...... | ...... | MC890P | 2.00 | 1.50 | 10 | 182/158‡ | MC790P | 2.00 | 1.50 |
| Dual J-K flip-flop | 40 | 16 | 190/160‡ | .......... | ...... | ...... | MC891P | 2.25 | 1.65 | 16 | 190/160‡ | MC791P | 2.25 | 1.65 |
| Triple 3-in. NOR gate | 12 | 16 | 82/24# | .......... | ...... | ...... | MC892P | 1.09 | .81 | 16 | 82/24# | MC792P | 1.09 | .81 |
| Dual full adder | 60 | 13 | 84 | .......... | ...... | ...... | MC896P | 3.40 | 2.50 | 13 | 84 | MC796P | 3.40 | 2.50 |
| Dual full subtractor | 90 | 13 | 84 | .......... | ...... | ...... | MC897P | 3.40 | 2.50 | 13 | 84 | MC797P | 3.40 | 2.50 |
| Dual buffer | 20 | 25 | 32/90# | MC999G† | $2.16 | $1.60 | MC899P | 1.08 | .81 | 80 | 50/100# | MC799P | 1.08 | .81 |
| Hex expander | 12 | .... | 13/–# | .......... | ...... | ...... | MC9819P* | 1.09 | .81 | .... | 13/–# | MC9719P* | 1.09 | .81 |

*A suffix type available; have insured capability to drive at least one MTTL™ or two MDTL™ loads. †Case 603. ‡Only clock input high/input low. #Input high/input low.

## DIGITAL LOW POWER mW MRTL MC908, MC808 AND MC708 SERIES (CASE 601)

MC908 Series −55° C to +125° C; MC808 Series 0° C to +75° C; MC708 Series +15° C to +55° C. $P_D$ ratings at inputs high/inputs low except as otherwise noted. MC708 Series can be mixed with devices from the medium-power MC700 Series which has loading factors normalized for compatibility. $V_{CC}$=3.0 volts ±10% for MC908 Series; 3.6 volts ±10% for MC808 and MC708 Series. $T_A$=25° C. Plastic packaged devices are available in the MC708/MC808 Series only. Ceramic flat packages also available on request.

| | | | Type MC908 Series (−55° C to +125° C) | | | | MC808, MC708 | Type MC808 Series (0° C to +100° C) | | | Type MC708 Series (+15° C to +55° C) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Net Ea., Lots | | | | Net Ea., Lots | | | Net Ea., Lots | |
| Function | Typ. $t_{pd}$ ns | Fan Out | Typ. $P_D$ mW | Motorola Type | 1-999 | 1000-4999 | Typ. $P_D$ mW | Motorola Type | 1-999 | 1000-4999 | Motorola Type | 1-999 | 1000-4999 |
| Half adder | 60 | 4 | 14/8.5 | MC908G | $2.09 | $1.55 | 19/12.5 | MC808G | $1.67 | $1.24 | MC708G | $1.50 | $1.11 |
| 2-input buffer | 57 | 30 | 5.5/16 | MC909G | 1.78 | 1.31 | 7.0/23 | MC809G | 1.42 | 1.05 | MC709G | 1.24 | .92 |
| Dual 2-input NOR gate | 27 | 4 | 8.0/1.0 | MC910G | 1.78 | 1.31 | 10/2.5 | MC810G | 1.42 | 1.05 | MC710G | 1.24 | .92 |
| 4-input OR-NOR gate | 60 | 4 | 6.0/3.5 | MC911G | 1.78 | 1.31 | 8.0/5.5 | MC811G | 1.42 | 1.05 | MC711G | 1.24 | .92 |
| Half adder | 66 | 4 | 11.5/5.5 | MC912G | 2.09 | 1.55 | 15.5/10.5 | MC812G | 1.67 | 1.24 | MC712G | 1.50 | 1.11 |
| Type D flip-flop | 75 | 3 | 17.5/13* | MC913G | 2.65 | 1.96 | 24/17.5* | MC813G | 2.12 | 1.57 | MC713G | 1.89 | 1.40 |
| Quad 2-input NOR gate | 27 | 4 | .......... | .......... | ...... | ...... | 20/5.0 | MC817P† | 1.08 | .81 | MC717P† | 1.08 | .81 |
| Dual 3-input NOR gate | 27 | 4 | 9.5/1.0 | MC918G§ | 1.91 | 1.41 | 12/2.5 | MC818G§ | 1.53 | 1.13 | MC718G§<br>MC718P† | 1.38<br>1.00 | 1.02<br>.75 |
| Dual 4-input NOR gate | 27 | 4 | .......... | .......... | ...... | ...... | 13/2.5 | MC819P† | 1.08 | .81 | MC719P† | 1.08 | .81 |
| J-K flip-flop | 50 | 2 | 15.5/10‡ | MC920G | 2.65 | 1.96 | 20.5/14.5‡ | MC820G | 2.12 | 1.57 | MC720G | 1.89 | 1.40 |
| Dual 2-input gate expander | 27 | .... | 3.0/ | MC921G | 1.78 | 1.31 | 3.0/ | MC821G | 1.42 | 1.05 | MC721G | 1.24 | .92 |
| J-K flip-flop | 70 | 4 | 17.5/13‡ | MC922G§ | 3.10 | 2.30 | 24/20‡ | MC822G§ | 2.48 | 1.84 | .......... | ...... | ...... |
| 5-input NOR gate | 27 | 4 | 6.5/0.5 | MC928G | 1.78 | 1.31 | 7.5/1.0 | MC828G | 1.42 | 1.05 | MC728G | 1.24 | .92 |
| Quad latch | 50 | 9 | .......... | .......... | ...... | ...... | 110 | .......... | ...... | ...... | MC767AP# | 3.26 | 2.42 |
| Dual J-K flip-flop | 50 | 2 | .......... | .......... | ...... | ...... | 41/29‡ | MC876P† | 2.00 | 1.50 | MC776P† | 2.00 | 1.50 |
| Dual type D flip-flop | 60 | 3 | .......... | .......... | ...... | ...... | 48/35* | MC878P† | 1.90 | 1.40 | MC778P† | 1.90 | 1.40 |
| Dual buffer | 57 | 2 | 11/32 | MC981G | 2.16 | 1.60 | 14/46 | MC881G | 1.73 | 1.28 | MC781G | 1.54 | 1.14 |
| J-K flip-flop | 80 | 2 | 15/13‡ | MC982G | 3.10 | 2.30 | 23/21‡ | MC882G | 2.48 | 1.84 | MC782G | 2.21 | 1.64 |
| Triple 3-input NOR gate | 27 | 4 | .......... | .......... | ...... | ...... | 18/3.5 | MC893P† | 1.09 | .81 | MC793P† | 1.09 | .81 |
| Dual 2-input buffer | 57 | 30 | .......... | .......... | ...... | ...... | 14/46 | MC898P† | 1.21 | .90 | MC798P† | 1.21 | .90 |
| Hex inverter | 27 | 4 | .......... | .......... | ...... | ...... | 7.0/3.0 | MC9818P† | 1.09 | .81 | MC9718P† | 1.09 | .81 |
| Hex expander | 12 | .... | .......... | .......... | ...... | ...... | 30/– | MC9820P† | 1.09 | .81 | MC9720P† | 1.09 | .81 |
| Quad 2-input expander | 27 | .... | .......... | .......... | ...... | ...... | 20/– | MC9821P† | 1.09 | .81 | MC9721P† | 1.09 | .81 |

*Direct set and direct clear low. All other inputs high/all inputs low. †Case 605. ‡Only clock input high/all inputs low. §Case 603. #Case 612. A suffix devices have insured capability to drive at least one MTTL load or two MDTL loads.

## MTTL™ DIELECTRICALLY ISOLATED INTEGRATED CIRCUITS (CASE 607)

Utilize nichrome resistors, post metallization, nonmetallic interconnections and very small HF transistor structures to enhance the radiation resistant qualities. Temperature range −55° C to +125° C. $V_{CC}$= 5.0 V; $T_A$=25° C.

| | Typical | | | | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|
| Function | $t_{pd}$ nsec | $P_D$ mW | Fan Out | Motorola Type | 1-24 | 25-99 | 100-999 |
| Quad 2-input NAND gate | 6.0 | 80 | 10 | MCE54H00F | $32.25 | $26.90 | $21.50 |
| Quad 2-input NAND gate (open collector output) | 8.0 | 80 | 10 | MCE54H01F | 32.25 | 26.90 | 21.50 |
| Hex inverter | 6.0 | 120 | 10 | MCE54H04F | 38.70 | 32.25 | 25.80 |
| Triple 3-input NAND gate | 6.0 | 60 | 10 | MCE54H10F | 32.25 | 26.90 | 21.50 |
| Dual 4-input NAND gate | 6.0 | 40 | 10 | MCE54H20F | 29.25 | 24.40 | 19.50 |
| 11-input NAND gate | 9.0 | 20 | 10 | MCE54H31F | 30.40 | 25.30 | 20.25 |
| Dual 4-input NAND power gate | 6.0 | 80 | 30 | MCE54H40F | 30.10 | 25.05 | 20.05 |
| Dual 2-wide 2-input AND-OR-INVERT gate | 6.0 | 58 | 10 | MCE54H51F | 29.25 | 24.40 | 19.50 |
| 4-wide 2-input AND-OR-INVERT gate | 6.0 | 40 | 10 | MCE54H54F | 28.65 | 23.90 | 19.10 |
| Dual 2-wide 2-3-input AND-OR-INVERT gate | 6.0 | 58 | 10 | MCE54H56F | 32.25 | 26.90 | 21.50 |
| 4-wide 3-3-2-3-input AND-OR-INVERT gate | 6.0 | 40 | 10 | MCE54H57F | 32.25 | 26.90 | 21.50 |
| J-K flip-flop | 16 | 70 | 10 | MCE54H72F | 40.05 | 33.40 | 26.70 |
| Dual J-K flip-flop | 15 | 140 | 10 | MCE54H73F | 44.25 | 36.90 | 29.50 |
| Dual type D flip-flop | 16 | 140 | 10 | MCE54H79F | 43.85 | 36.55 | 29.25 |
| Dual R-S flip-flop | ........ | ........ | ...... | MCE54H109F | 42.00 | 35.00 | 28.00 |
| Binary to one-of-eight line decoder | ........ | 130 | 10 | MCE54H146F | 46.90 | 39.05 | 31.25 |
| Hex inverter | ........ | ........ | ...... | MCE937F | 16.40 | 13.70 | 10.95 |
| Expandable hex inverter | ........ | ........ | ...... | MCE940F | 16.40 | 13.70 | 10.95 |
| Quad 2-input NAND gate | 25 | 66 | ...... | MCE949F | 15.00 | 12.50 | 10.00 |

SEE FIRST TWO AND LAST MOTOROLA IC PAGES FOR CASE ILLUSTRATIONS

# MOTOROLA Semiconductors DIGITAL AND LINEAR INTEGRATED CIRCUITS

## MECL$^{TM}$ MC10,000$^{TM}$ SERIES

Provides non-saturated switching for very high speed operation. Large scale integration and compatible with MECL III$^{TM}$. Relatively slow rise and fall times. Temperature range, 0° C to +75° C. $V_{CC}=0$, $V_{EE}=5.2$ volts, $T_A=25°$ C.

| Function | Case | Typical | | Motorola Type | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|
| | | $t_{pd}$ nsec | $P_D$ mW | | 1-24 | 25-99 | 100-999 |
| Quad 2-input gate | 620 Ceramic | 2.0 | 100 | MC10102L | $ 2.50 | $ 2.20 | $ 2.00 |
| Triple 2-3-2-input gate | 620 Ceramic | 2.0 | 75 | MC10105L | 2.50 | 2.20 | 2.00 |
| Triple OR-NOR input gate | 620 Ceramic | 2.0 | 115 | MC10107L | 3.10 | 2.75 | 2.50 |
| Dual 4-input OR-NOR gate | 620 Ceramic | 2.0 | 50 | MC10109L | 2.50 | 2.20 | 2.00 |
| Dual 3-input 3-output OR gate | 620 Ceramic | 2.4 | 120 | MC10110L | 3.10 | 2.75 | 2.50 |
| Dual 3-input 3-output NOR gate | 620 Ceramic | 2.5 | 120 | MC10111L | 3.10 | 2.75 | 2.50 |
| Quad differential amplifier | 620 Ceramic | 2.0 | 100 | MC10115L | 2.50 | 2.20 | 2.00 |
| Dual 2-wide 2-3-input OR-AND/ OR-AND-INVERT gate | 620 Ceramic | 2.2 | 100 | MC10117L | 3.10 | 2.75 | 2.50 |
| Dual 2-wide 3-input OR-AND gate | 620 Ceramic | 2.2 | 200 | MC10118L | 3.10 | 2.75 | 2.50 |
| 4-wide 4-3-3-3-input OR/NOR gate | 620 Ceramic | 2.3 | 100 | MC10119L | 3.10 | 2.75 | 2.50 |
| 4-wide 3-3-3-3-input AND-OR/ AND-OR-INVERT gate | 620 Ceramic | 2.2 | 400 | MC10121L | 3.10 | 2.75 | 2.50 |
| Dual type D master-slave flip-flop | 620 Ceramic | | 215 | MC10131L | 7.35 | 6.40 | 5.90 |
| 4-bit arithmetic logic unit/ function generator | 649 Plastic | * | 600 | MC10181P | 24.00 | 22.00 | 20.00 |

*Depends on logic circuit.

## MMOS SERIES

Monolithic integrated circuits provide low-cost, high-complexity logic in functional blocks. Utilize high component density and have metalized gated. Suffix **G** denotes metal package and suffix **L** denotes ceramic package.

### MC1100 SERIES MMOS I$^{TM}$ HIGH-THRESHOLD P-CHANNEL MOS

| Function | Temperature | Case | Motorola Type | Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 1-24 | 25-99 | 100-999 |
| Quad type T flip-flop | 0° to +75° C | 632 | MC1124L | $ 5.95 | $ 4.75 | $ 3.95 |
| Quad type T flip-flop | 0° to +75° C | 602A | MC1125G | 3.70 | 3.05 | 2.45 |
| 200-bit dynamic shift register | 0° to +55° C | 619-02 | MC1142G | 5.25 | 4.50 | 3.50 |
| General purpose logic element | 0° to +75° C | 632 | MC1155L | 6.60 | 5.50 | 4.40 |
| Dual 100-bit static shift register | −55° to +85° C | 602A | MC1160G | 6.30 | 5.00 | 3.95 |
| Dual 50-bit static shift register | −55° to +85° C | 602A | MC1161G | 4.45 | 3.75 | 2.95 |
| 2240-bit column select USASCII character generator | −25° to +85° C | 635 | MCM1131L | 22.00 | 18.50 | 14.60 |
| 2240-bit column select USASCII character generator | −25° to +85° C | 663 | MCM1132L | 24.50 | 20.50 | 16.20 |
| 1024-bit dynamic random access memory | 0° to +70° C | 635 | MCM1173L | 42.00 | 33.60 | 28.00 |

### MC2200 SERIES MMOS II$^{TM}$ LOW-THRESHOLD P-CHANNEL MOS

| | | | | | | |
|---|---|---|---|---|---|---|
| General purpose logic element | 0° to +75° C | 632 | MC2255L | $6.60 | $5.50 | $4.40* |

*100 Up.

## MCMOS$^{TM}$ MC 14,000 SERIES COMPLEMENTARY MOS

Monolithic logic circuits have simplified power supply design and high noise immunity with large fanout capability. Output logic excursion independent of fanout. Diode protection on all inputs. $V_{DD}$-$V_{SS}=10$ $V_{dc}$, $T_A=25°$ C.

| Function | Case | Typical | | Motorola Type | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|
| | | $t_{pd}$ nsec | $P_D$ nW | | 1-24 | 25-99 | 100-999 |
| Quad 2-input NOR gate | 632 Ceramic | 40 | 10 | MC14001L | $4.95 | $3.99 | $3.30 |
| Dual 4-input NOR gate | 632 Ceramic | 50 | 10 | MC14002L | 4.95 | 3.99 | 3.30 |
| Dual type D flip-flop | 632 Ceramic | 100 | 50 | MC14013L | 7.10 | 5.73 | 4.75 |

## LINEAR OPERATIONAL AMPLIFIERS

| Open Loop Voltage Gain | Output Voltage Swing | Case 602B** | | | Case 606** | | | Case 602B†† | | | Case 606†† | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Motorola Type | Net Ea., Lots 1-24 | Net Ea., Lots 25-99* | Motorola Type | Net Ea., Lots 1-24 | Net Ea., Lots 25-99* | Motorola Type | Net Ea., Lots 1-24 | Net Ea., Lots 25-99* | Motorola Type | Net Ea., Lots 1-24 | Net Ea., Lots 25-99* |
| 1500 | ±4.0 | MC1520G* | $ 9.75 | $ 8.10 | MC1520F | $12.00 | $10.00 | | | | | | |
| 5000 | ±5.2 | MC1530G | 12.75 | 10.60 | MC1530F | 15.00 | 12.50 | MC1430G | $5.25 | $4.35 | MC1430F | $6.75 | $5.60 |
| 3500 | ±5.2 | MC1531G | 12.75 | 10.60 | MC1531F | 15.00 | 12.50 | MC1431G | 5.25 | 4.35 | MC1431F | 6.75 | 5.60 |
| 60,000† | ±13 | MC1533G | 5.25 | 4.40 | MC1533F | 12.00 | 10.00 | MC1433G | 3.90 | 2.65 | MC1433F | 8.85 | 7.35 |
| 7000 | ±2.8 | MC1535G‡ | 12.75 | 10.60 | MC1535F‡§ | 15.00 | 12.50 | MC1435G‡ | 2.25 | 1.90 | MC1435F‡§ | 8.25 | 6.85 |
| 500,000 | ±23 | MC1536G•▲ | 27.00 | 22.50 | | | | MC1436G•▲ | 6.75 | 5.60 | MC1436CG•▲ | 3.75 | 3.10 |
| 45,000 | ±14 | MC1537L♯ | 4.90 | 4.05 | | | | MC1437L♯ | 2.65 | 2.20 | | | |
| 120,000 | ±13 | MC1539G•▲ | 3.75 | 3.10 | MC1539L♯▲ | 3.75 | 3.10 | MC1439G•▲ | 2.20 | 1.80 | MC1439L♯▲ | 2.40 | 2.00 |
| 200,000 | ±13 | | | | | | | | | | | | |
| 200,000 | ±14 | MC1558G•▲ | 7.50 | 6.25 | | | | MC1458G•▲ | 3.75 | 3.12 | | | |
| 45,000 | ±14 | MC1709G•▲ | 2.62 | 2.10 | MC1709F▲ | 4.87 | 3.90 | MC1709CG•▲ | 1.47 | 1.17 | MC1709CF▲ | 2.25 | 1.80 |
| 45,000 | ±14 | | | | MCB1709F■♦ | 3.30 | 2.75 | | | | | | |
| 3,600 | ±5.3 | MC1712G• | 7.90 | 6.30 | MC1712F | 8.55 | 6.85 | MC1712CG• | 2.80 | 2.20 | MC1712CF | 2.80 | 2.20 |
| 200,000 | ±14 | MC1748G•▲ | 5.75 | 4.80 | MC1748CG•▲ | 1.87 | 1.56 | | | | | | |
| 200,000 | ±13 | MCH2870MRI | 24.00 | 20.00 | MCH2870CRI | 12.75 | 10.60 | | | | | | |

*Case 602A. †Adjustable. ‡Dual. §Case 607. ♯Case 632. •Case 601. ▲Also available as non-encapsulated chip. ■Also available as a non-encapsulated beam-lead-device, MCBC1709; prices on request. ♦Available in multiples of five only. ICase 614. **−55° C to +125° C. ††0° C to +75° C. ***100 Up quantity prices on request.**

Same as above, except in Case 605, suffix **P**; Case 626, suffix **P-1**; Case 605, suffix **P-2**; Case 632, suffix **L.**

| Motorola Type | Net Each, Lots of 1-24 | 25-99 | 100-999 | Motorola Type | Net Each, Lots of 1-24 | 25-99 | 100-999 | Motorola Type | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MC1533L | $5.25 | $4.40 | $3.50 | MC1430P | $5.25 | $4.35 | $3.50 | MC1458CP-1 | $2.50 | $2.05 | $1.65 |
| MC1709L | 2.62 | 2.10 | 1.75 | MC1431P | 5.25 | 4.35 | 3.50 | MC1458CP-2 | 2.70 | 2.25 | 1.80 |
| MC1709CL | 1.47 | 1.17 | .98 | MC1433L | 2.90 | 2.45 | 1.95 | MC1458P-1 | 3.35 | 2.80 | 2.25 |
| MC1712L | 7.90 | 6.30 | 5.25 | MC1435L | 2.25 | 1.90 | 1.50 | MC1458P-2 | 3.75 | 3.10 | 2.50 |
| MC1712CL | 3.38 | 2.70 | 2.25 | MC1439P | 2.25 | 1.90 | 1.50 | | | | |

## DIGITAL FUNCTIONAL CIRCUITS

Temperature, −10° C to +75° C.

| Function | Case | Motorola Type | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-99 | 100-999 | 1000-4999 |
| Toggle flip-flop | 206A | MFC4040 | $0.77 | $0.60 | $0.50 |
| Dual toggle flip-flop | 643A | MFC6020 | 1.26 | .99 | .83 |
| Dual toggle flip-flop* | 643A | MFC6050 | 1.36 | 1.06 | .89 |
| 3-Input AND gate | 643A | MFC6060 | .96 | .75 | .63 |
| R-S flip-flop | 643A | MFC6080 | 1.30 | 1.00 | .85 |
| J-K flip-flop | 643A | MFC8050 | 1.30 | 1.00 | .85 |

*With reset.

**SEE FIRST TWO AND LAST MOTOROLA IC PAGES FOR CASE ILLUSTRATIONS**

## INTEGRATED CIRCUIT MODULES

| Function | Case | Motorola Type | Net Ea., Lots | |
|---|---|---|---|---|
| | | | 1-99 | 100-999* |
| 256-bit TTL ROM | 620 | MCM4002L | $17.35* | $13.90† |
| 256-bit TTL ROM | 605 | MCM4002P | 10.15* | 6.75† |
| 512-bit TTL ROMP | 635 | MCM5003L/AL | 45.00* | 32.50† |
| 512-bit TTL ROMP, 2K ohms pull up resistor | 635 | MCM5004L/AL | 45.00* | 32.50† |
| Dual J-K flip-flop | 620 | MC54107L | 6.15 | 5.10 |
| One shot multivibrator | 607 | MC54121F | 6.15 | 5.10 |
| BCD to DEC decoder | 620 | MC54145L | 13.80 | 11.50 |
| Dual J-K flip-flop | 605 | MC74107P | 1.95 | .98 |
| One shot multivibrator | 607 | MC74121F | 3.60 | 3.00 |
| BCD to DEC decoder | 620 | MC74145L | 8.10 | 6.75 |

*Lots of: 1–24; †25–99*. ***Larger Quantity Prices on Request.**

# MOTOROLA Semiconductors LINEAR INTEGRATED CIRCUITS

## HIGH FREQUENCY AMPLIFIERS

Temperature −55° C to +125° C.

| Motorola Type | Case | Small Signal Voltage Gain | Band-width MHz | Noise Figure dB | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| MC1110G | 602C | 26 dB* at 100 MHz | 300* | 4.0 at 100 MHz | $37.50 | $31.25 | $25.00 |
| MC1410G‡ | 601 | 39 dB | 40 | 5.0 μV§ | 2.25 | 1.90 | 1.50 |
| MC1509F | 608 | 40 dB | 40 | 4.5 μV† | 13.95 | 11.60 | 9.30 |
| MC1510G | 601 | 40 dB | 40 | 4.5 μV§ | 12.00 | 10.00 | 8.00 |
| MC1510F | 608 | 40 dB | 40 | 4.5 μV§ | 13.95 | 11.60 | 9.30 |
| MC1545G | 602A | 18 dB | 75 | 25 μV† | 8.25 | 6.85 | 5.50 |
| MC1545L | 632 | 18 dB | 75 | 25 μV† | 8.25 | 6.85 | 5.50 |
| MC1545F | 607 | 18 dB | 75 | 25 μV† | 9.75 | 8.10 | 6.50 |
| MC1550G | 602B | 26 dB* at | 200* | 5.0 at | 1.50 | 1.00 | .75 |
| MC1550F | 606 | 60 MHz | 200* | 60 MHz | 7.25 | 6.05 | 4.85 |
| MC1552G | 602B | 34 dB | 40 | 5.0 at | 9.00 | 7.50 | 6.00 |
| MC1553G | 602B | 52 dB | 35 | 30 MHz | 9.00 | 7.50 | 6.00 |

*Useful transducer power gain. †5 Hz to 10 MHz, noise voltage referred to input. ‡0° to +75° C. §10 Hz to 500 kHz, noise voltage referred to input.

## SENSE AMPLIFIERS

Temperature −55° C to +125° C. Response time = 40 nsec except MC1540, 20 nsec; MC1541, 30 (diff. mode)/15 (com. mode) nsec.

| Motorola Type | Case | Input Threshold mVDC | Voltage Gain | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|---|
| MC1514L | 632 | 21.5/18.5 | 1700* | $ 4.90 | $ 4.05 | $ 3.25 |
| MC1540F | 606 | 17 | 85 | 24.00 | 20.00 | 16.00 |
| MC1540G | 602B | 17 | 85 | 5.95 | 4.95 | 3.95 |
| MC1541L | 632 | 17 | 85 | 12.00 | 10.00 | 8.00 |
| MC1541F | 607 | 17 | 85 | 14.25 | 11.90 | 9.50 |
| MC1710F | 606 | 0 | 1700* | 4.90 | 4.05 | 3.25 |
| MC1710G | 601 | 0 | 1700* | 2.65 | 2.20 | 1.75 |
| MC1711F | 606 | 0 | 1500* | 13.35 | 10.70 | 8.90 |
| MC1711G | 603-02 | 0 | 1500* | 2.65 | 2.20 | 1.75 |

Temperature 0° C to +75° C; response time = 40 nsec except MC1440 20 nsec and MC1441 30 (diff. Mode)/15 (common) nsec.

| | | | | | | |
|---|---|---|---|---|---|---|
| MC1414L | 632 | 21.5/18.5 | 1700* | $ 2.70 | $ 2.25 | $1.80 |
| MC1440F | 606 | 17 | 85 | 13.50 | 11.25 | 9.00 |
| MC1440G | 602B | 17 | 85 | 1.50 | 1.25 | .98 |
| MC1441L | 632 | 17 | 75 | 5.25 | 4.40 | 3.50 |
| MC1441F | 607 | 17 | 75 | 5.25 | 4.40 | 3.50 |
| MC1710CF | 606 | 0 | 1700* | 2.25 | 1.90 | 1.50 |
| MC1710CG | 601 | 0 | 1700* | 1.50 | 1.25 | .98 |
| MC1710CL | 632 | 0 | 1700* | 1.50 | 1.25 | .98 |
| MC1711CF | 606 | 0 | 1500* | 2.25 | 1.90 | 1.50 |
| MC1711CG | 603-02 | 0 | 1500* | 1.50 | 1.25 | .98 |
| MC1711CL | 632 | 0 | 1500* | 1.50 | 1.25 | .98 |

*AVOL.

Temperature 0° C to ±70° C. Cycle time = 200 nsec. Common-mode input firing range, ±3 volts.

| Motorola Type | Case | Input Threshold mV at $V_{ref}$ = 15 mV Min. | Typ. | Max. | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| MC7520L* | 620 | 11 | 15 | 19 | $4.85 | $4.05 | $3.25 |
| MC7521L* | 620 | 8 | 15 | 22 | 4.50 | 3.75 | 3.00 |
| MC7522L† | 620 | 11 | 15 | 19 | 4.25 | 3.55 | 2.85 |
| MC7523L† | 620 | 8 | 15 | 22 | 3.75 | 3.10 | 2.50 |

*Dual input preamplifiers connected to a common output stage. †Provide dual input amplifiers connected to a common output stage; features open collector output.

## LINE DRIVER/RECEIVER SERIES

EIA RS-232C Interface Circuit—Quad MDTL™. MC1488L, line driver; MC1489L, line receiver.

| Motorola Type | Temperature | Case | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|
| MC1488L | 0° to +75° C | 632 | $8.25 | $6.90 | $5.50 |
| MC1489L | 0° to +75° C | 632 | 6.00 | 5.00 | 4.00 |

## MULTIPLIERS, MODULATORS AND DETECTORS

MC1594, MC1595, −55° to +125° C; MC1494, MC1495 and MC1496, 0° to +70° C.

| Motorola Type | Case | Linearity Error | Input Volts | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|---|
| MC1494L | 620 | 0.5% | ±10 | $12.00 | $10.00 | $ 8.00 |
| MC1594L | 620 | 0.3% | ±10 | 18.00 | 15.00 | 12.00 |
| MC1495L* | 632 | X, 1%; Y, 2% | ±10 | 7.45 | 6.20 | 4.95 |
| MC1595L* | 632 | X, .5%; Y, 1% | ±10 | 12.00 | 10.00 | 8.00 |

*Also available as non-encapsulated chip.

### MODULATORS/DEMODULATORS

Balanced modulators/demodulators for use where output voltage is a product of input voltage and switching function.
**Motorola Type MC1496G** (Case 602A) or **Type MC1496L** (Case 632)—Net Each, 1-24 **$3.25**; 25-99 **$2.70**; 100-999 **$2.15**

## POWER AMPLIFIERS (CASE 602B)

Temperature −55° C to +125° C. Power output = 1.0 watt.

| Motorola Type | Voltage Gain Av | Total Harmonic Distortion | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|
| MC1524G | 38 | 0.6% | $70.00 | $55.00 | $40.00 |
| MC1554G | 10, 18, 36 | 0.4% | 14.25 | 11.85 | 9.50 |

## VOLTAGE REGULATORS

Excellent load regulation, transient response, thermal stability. High ripple rejection. Temperature −55° C to +125° C (MC1560, MC1561, MC1723, MC1563); 0° C to +70° C (MC1460, MC1461, MC1723C, MC1463); −10° C to +75° C (MFC4060, MFC6030).

### POSITIVE VOLTAGE REGULATORS

| Motorola Type | Case | Max. Input | Load mADC | $P_D$, W at 25° C | Net Ea., Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| MC1560G | 602A | 20 | 200 | 1.8 | $10.50 | $ 8.75 | $7.00 |
| MC1560R | 614 | VDC | 500 | 12 | 12.75 | 10.65 | 8.50 |
| MC1561G | 602A | 40 | 200 | 1.8 | 12.75 | 10.65 | 8.50 |
| MC1561R | 614 | VDC | 500 | 17.5 | 15.00 | 12.50 | 10.00 |
| MC1460G | 602A | 20 | 200 | 1.8 | 3.75 | 3.10 | 2.50 |
| MC1460R | 614 | VDC | 500 | 12 | 5.25 | 4.35 | 3.50 |
| MC1461G | 602A | 35 | 200 | 1.8 | 5.25 | 4.35 | 3.50 |
| MC1461R | 614 | VDC | 500 | 17.5 | 6.75 | 5.60 | 4.50 |
| MC1723G* | 603-03 | 40 | 150 | ...... | 5.85 | 4.85 | 3.90 |
| MC1723CG* | 603-03 | VDC | 150 | ...... | 2.85 | 2.40 | 1.90 |
| MFC4060 | 206A | 35 | 200 | ...... | 1.17 | 1.17 | .90† |
| MFC6030 | 643A | VDC | 200 | ...... | 1.32 | 1.32 | 1.05‡ |

### NEGATIVE VOLTAGE REGULATORS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MC1563G* | 602A | −40 | 200 | 1.8 | $7.90 | $6.55 | $5.25 |
| MC1563R* | 614 | VDC | 500 | 9 | 8.20 | 6.80 | 5.45 |
| MC1463G* | 602A | −35 | 200 | 1.8 | 4.15 | 3.45 | 2.75 |
| MC1463R* | 614 | VDC | 500 | 9 | 4.45 | 3.70 | 2.95 |

*Also available as non-encapsulated chip. †Lots of 1000–4999, **$0.73.** ‡Lots of 1000–4999, **$0.84.**

## MICROWAVE DEVICES

Unencapsulated beam-lead capacitor chips designed for use in UHF and microwave hybrid circuits as coupling or blocking capacitors. Temperature, −55° C to +150° C. $V_{bd}$ = 100 volts.

| Motorola Type | $C_{(nom)}$ pF | TC Max. PPM/° C | Net Each, Multiples of 25 25-99 | 100-999 |
|---|---|---|---|---|
| MCH5901 | 1.8 ± 20% | 100 | $1.15 | $0.90 |
| MCH5902 | 2.5 ± 10% | 100 | 1.15 | .90 |
| MCH5903 | 3.2 ± 10% | 100 | 1.15 | .90 |
| MCH5904 | 4.0 ± 10% | 100 | 1.15 | .90 |
| MCH5905 | 4.8 ± 10% | 100 | 1.15 | .90 |
| MCH5907 | 6.6 ± 10% | 100 | 1.15 | .90 |
| MCH5908 | 8.0 ± 10% | 100 | 1.15 | .90 |
| MCH5909 | 9.6 ± 10% | 100 | 1.15 | .90 |
| MCH5910 | 11.2 ± 10% | 100 | 1.15 | .90 |
| MCH5911 | 13.0 ± 10% | 100 | 1.15 | .90 |
| MCH5912 | 15.6 ± 10% | 100 | 1.15 | .90 |
| MCH5914 | 23.0 ± 10% | 100 | 1.60 | 1.30 |
| MCH5915 | 27.5 ± 10% | 100 | 1.60 | 1.30 |
| MCH5916 | 33 ± 10% | 100 | 1.60 | 1.30 |
| MCH5917 | 40 ± 10% | 100 | 1.60 | 1.30 |
| MCH5918 | 48 ± 10% | 100 | 1.60 | 1.30 |
| MCH5919 | 57 ± 10% | 100 | 1.60 | 1.30 |

## DUAL MECL CORE MEMORY SENSE AMPLIFIER

Adjustable input threshold, 10–40 mV (positive or negative). Both OR and NOR outputs. Temp. −55° to +125° C. Case 632. Differ. input, ±5 VDC; load current, 25 mA; $P_D$, 625 mW.
**Motorola Type MC1543L**—Net Each, Lots of 1–24....**$12.00**
25–99..............**$10.00**; 100–999.............. **8.00**

## POWER BOOSTER (CASE 614)

High current gain amplifier (70 dB) with unity voltage gain; delivers load currents to ±300 mADC. For 0° to +75° C.

| Motorola Type | Current Gain | Band-width | Input Imped. | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|---|
| MC1438R | 3000 | 1.5 MHz | 0.4 meg | $9.75 | $8.10 | $6.50 |

## DIFFERENTIAL AMPLIFIERS (CASE 602B)

Temperature −55° C to +125° C except MC1429 0° C to +75° C.

| Motorola Type | Differ-ential Voltage Gain | Output Voltage Swing V | CMRR dB | Differ. Input Imped Kohms | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| MC1429G | 38 dB | 6.0 | −75 | 40 | $ 3.90 | $ 2.65 | $ 1.95 |
| MC1519G* | 73 dB | 14 | −89 | 2.6 | 50.00 | 40.00 | 30.00 |
| MC1525G | 43 dB | 8.0 | −85 | 3.0 | 12.00 | 10.00 | 8.00 |
| MC1526G | 36 dB | 8.0 | −85 | 70 | 60.00 | 48.00 | 36.00 |
| MC1529G | 38 dB | 6.0 | −75 | 50 | 11.25 | 9.35 | 7.50 |

*NPN inputs, PNP outputs, 1 MHz bandwidth.

## DUAL STEREO PREAMPLIFIER (CASE 632)

**Motorola Type MC1303L**—Temp. 0° to +75° C. Input offset voltage, 1.5 mV; open loop voltage gain, 10 kV; output voltage swing, 5.5 V rms; channel separation, 70 dB. Net Each, Lots of 1–99.....**$2.20**; 100–999.....**$1.75**; 1000–4999.....**$1.60**

## FM MULTIPLEX STEREO DEMODULATOR (CASE 605)

Built-in stereo indicator lamp driver. Temp. 0° to +75° C. Power required, 8–14 VDC; lamp current, 40 mADC; $P_D$, 625 mW.
**Motorola Type MC1304P**—Net Each, Lots of 1–99......**$4.05**
100–999.............**$3.25**; 1000–4999.............. **2.90**

## DIFFERENTIAL VIDEO AMPLIFIER

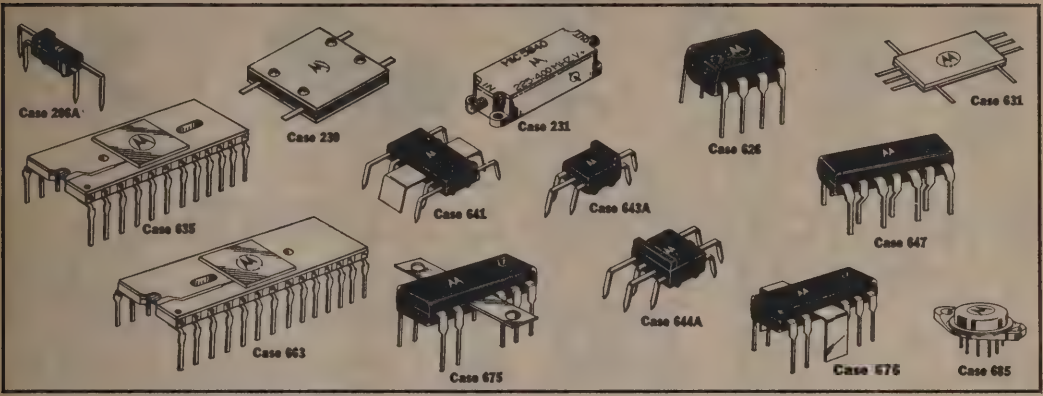
Temperature: MC1733C, 0° to +75° C; MC1733, −55° to +125° C. Suffix **G** denotes case 603 metal package and suffix **L** denotes case 632 ceramic package.

| Motorola Type | Band-Width | Rise Time | $P_D$ mW | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|---|
| MC1733C | 120 MHz | 2.5 ns | 500 | $4.10 | $3.45 | $2.85 |
| MC1733 | 120 MHz | 2.5 ns | 500 | 8.60 | 7.20 | 5.75 |

**SEE FIRST TWO AND LAST MOTOROLA IC PAGES FOR CASE ILLUSTRATIONS**

# MOTOROLA Semiconductors LINEAR INTEGRATED CIRCUITS AND IC BREADBOARDS

## LINEAR INTEGRATED CIRCUITS



## CONSUMER DEVICES

### HIGH FREQUENCY CIRCUITS

Temperature, 0° to +75° C (MC1330); −10° to +75° C (MFC8030).

| Motorola Type | Case | Small Signal Voltage Gain | Supply Drain Cur., mA | Net Ea., Lots 1-99 | Net Ea., Lots 100-999* |
|---|---|---|---|---|---|
| **MC1330P** | 626 | 34 dB | 15 | $1.15 | $0.90 |
| **MFC8030** | 644A | 40 dB at 10 MHz | Variable | .89 | .69 |

### SOUND IF AMPLIFIERS

Temperature, 0° to +75° C (MC1351 and MC1357); −20° to +75° C (MC1358).

| | | | | | |
|---|---|---|---|---|---|
| **MC1351P** | 605 | 65 dB | 31 | $1.40 | $1.10 |
| **MC1357P** | 646 | 60 dB | 15 | 1.80 | 1.45 |
| **MC1357PQ** | 647 | 60 dB | 15 | 1.80 | 1.45 |
| **MC1358P** | 646 | more than 60 dB | 33 | 1.80 | 1.45 |
| **MC1358PQ** | 647 | more than 60 dB | 33 | 1.80 | 1.45 |

### FM IF AMPLIFIERS

Temperature, −10° to +75° C (MFC6010); 0° to +75° C (MC1355).

| | | | | | |
|---|---|---|---|---|---|
| **MFC6010** | 643A | 40 dB at 10.7 MHz | .......... | $0.66 | $0.52 |
| **MC1355P** | 605 | 40 dB at 10.7 MHz | .......... | 1.40 | 1.10 |
| **MC1355PQ** | 647 | 40 dB at 10.7 MHz | .......... | 1.40 | 1.10 |

*Larger quantity prices available on request.

### AUDIO POWER AMPLIFIER CIRCUITS

| Motorola Type | Temperature, ° C | Case | Output Power W | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|
| **MC1316P** | −20 to +75 | 675, 676 | 4.0 | $2.05 | $1.65 | $1.40 |
| **MFC4000B** | −10 to +75 | 206A | .25 | .90 | .70 | .59 |
| **MFC6070** | −10 to +55 | 643A | 1.0 | 1.20 | .95 | .79 |
| **MFC8010** | −10 to +55 | 644A | 1.0 | 1.57 | 1.24 | 1.03 |
| **MFC9020** | −10 to +75 | 641 | 2.0 | 2.00 | 1.56 | 1.35 |

### DRIVER AND AUDIO PREAMPLIFIER CIRCUITS

Temperature, −10° to +75° C.

| Motorola Type | Case | Open-Loop Voltage Gain | Power Supply Voltage | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|
| **MFC4050** | 206A | 42 dB | 18 VDC | $1.00 | $0.77 | $0.66 |
| **MFC8020** | 644A | 80 dB | 35 VDC | 1.62 | 1.12 | .95 |
| **MFC8040** | 644A | 90 dB | 33 VDC | 1.15 | .87 | .74 |

### ELECTRONIC ATTENUATOR

Ideal for DC volume control and AGC audio amplifier applications. Temperature, 0° to +75° C.

| Motorola Type | Case | Open-Loop Voltage Gain | Power Supply Voltage | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|
| **MFC6040** | 643A | 13 dB | 9–18 VDC | $1.20 | $0.93 | $0.79 |

### CHROMA DEMODULATORS

Temperature, 0° to +75° C.

| Motorola Type | Case | Output Voltage Swing V | Output Differential Voltage VDC | Net Each, Lots of 1-99 | 100-999 | 1000-49999 |
|---|---|---|---|---|---|---|
| **MC1326P** | 605 | 10 | 0.3 | $1.75 | $1.40 | $1.25 |
| **MC1326PQ** | 647 | 10 | 0.3 | 1.75 | 1.40 | 1.25 |
| **MC1328G** | 603-02 | 10 | 0.3 | 1.70 | 1.35 | 1.20 |
| **MC1328P** | 605 | 10 | 0.3 | 1.70 | 1.35 | 1.20 |
| **MC1328PQ** | 647 | 10 | 0.3 | 1.70 | 1.35 | 1.20 |

### 3 dB QUADRATURE COUPLERS

Temperature, −55° to +100° C. Case, 230. Impedance, 50 ohms.

| Motorola Type | Frequency Range MHz | Isolation dB Min. | Phase Balance (°) Max. | Net Each, Lots 1-99 | 100-999 |
|---|---|---|---|---|---|
| **MIC5830** | 225–400 | 20 | ±1.5 | $14.95 | $12.00 |
| **MIC5830A** | 225–400 | 20 | ±3.0 | 13.50 | 10.50 |
| **MIC5831** | 450–512 | 20 | ±2.5 | 14.50 | 11.50 |

**Motorola Type MIC5840**—Power module designed as hybrid driver or final amplifier in VHF equipment. Temperature, −55° to +80° C. Case, 231. Net Each, Lots of 1–9..........**$225.00**
10–29...**$200.00**; 30–59...**$185.00**; 60–99... **170.00**

**Motorola Type MIC5890**—Duplexer, 3-port hybrid network functions as a SPDT switch connecting an antenna to a transmitter or receiver. Temperature 0° to +120° C. Case, 631. Input power, 40 watts max. Net Each, Lots of 1–9..**$15.00**; 10–99..**$13.50**

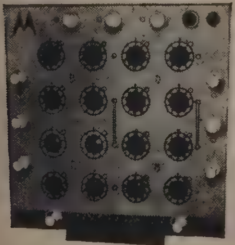
### MCH2890R DUAL POWER DRIVER

Hybrid IC dual hammer driver handles high speed printers and paper-tape punches; operates stepping motors, relays and computer-controlled plotters. Two power transistors and an IC predriver pulse out a fast six amps for many driving jobs. Case, 685 metal package.

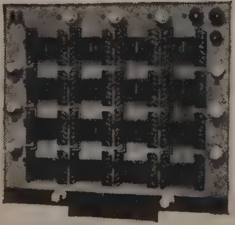
**Motorola Type MCH2890R**—Net Each, Lots of 1–24...**$11.90**
25–99................**$9.95**; 100–999.............. **7.95**

**ALSO SEE FIRST TWO MOTOROLA IC PAGES FOR CASE ILLUSTRATIONS**

## INTEGRATED CIRCUIT BREADBOARDS



**XC63**



**XC72**

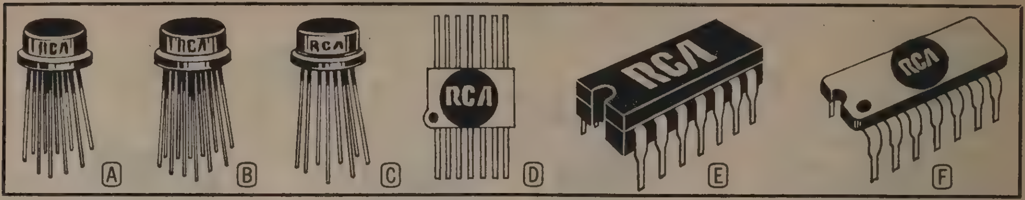
**XC73**

Complete breadboarding flexibility with "plug in-plug out" changes possible. With 3 supply voltages at each socket, double pin jacks, 22-pin PC edge connector or 11 BNC coaxial connectors input/output arrangement, plus banana plug for power connection between boards. Designed using 1/16″ glass epoxy with 2 oz. gold plated printed circuit runs. Operating Temperature Range: −65° C to +150° C. Rated for DC to 50 MHz frequency.

| Motorola Type | Description | Net Each, Lots of 1-9 | 10-24 | 25 Up |
|---|---|---|---|---|
| **XC63** | 16 10-pin sockets for TO-5 cases | $150.00 | $120.00 | $100.00 |
| **XC72** | 16 14-pin socket for 10- and 14-pin flat packages | 240.00 | 192.00 | 160.00 |
| **XC73** | 16 dual in-line packages | 210.00 | 168.00 | 140.00 |

**MOTOROLA IC'S ARE STOCKED AT NEWTON, MA; NO. HAVEN, CT; HAUPPAUGE, ROCHESTER AND SYRACUSE, NY; SALT LAKE CITY, UT; GAITHERSBURG, MD; AND RALEIGH, NC**

# RCA LINEAR INTEGRATED CIRCUITS



RCA integrated circuits are available in the following packages: **TO-5** 10-lead, Fig. A; 12-lead, Fig. B; 8-lead, Fig. C; **Flat Pack** 14-lead ceramic and metal, Fig. D; **Dual In-Line** 14-lead plastic, Fig. E and **TO-116** dual in-line 14-lead ceramic and metal, Fig. F.

## LINEAR INTEGRATED CIRCUITS

### OPERATIONAL AMPLIFIERS

| RCA Type | Fig. | Description | Net Each, Lots of 1-99 | 100-999 | 1000 Up |
|---|---|---|---|---|---|
| CA3008 | D | Wideband | $3.14 | $2.28 | $1.90 |
| CA3008A | D | | 5.10 | 3.72 | 3.10 |
| CA3010 | B | | .89 | .65 | .54 |
| CA3010A | B | | 1.07 | .78 | .65 |
| CA3015 | B | | 2.14 | 1.56 | 1.30 |
| CA3015A | B | | 3.05 | 2.22 | 1.85 |
| CA3016 | D | | 4.30 | 3.12 | 2.60 |
| CA3016A | D | | 6.52 | 4.75 | 3.95 |
| CA3029 | E | | .81 | .59 | .49 |
| CA3029A | E | | .98 | .71 | .59 |
| CA3030 | E | | 1.82 | 1.32 | 1.10 |
| CA3030A | E | | 2.72 | 1.98 | 1.65 |
| CA3033 | F | High current | 4.79 | 3.48 | 2.90 |
| CA3033A | F | | 8.09 | 5.88 | 4.90 |
| CA3037 | F | Wideband | 2.80 | 2.04 | 1.70 |
| CA3037A | F | | 4.29 | 3.12 | 2.60 |
| CA3038 | F | | 4.29 | 3.12 | 2.60 |
| CA3038A | F | | 5.78 | 4.20 | 3.50 |
| CA3047 | E | High current | 2.61 | 1.90 | 1.58 |
| CA3047A | E | | 4.79 | 3.48 | 2.90 |
| CA3060 | F* | Triple transconductance amplifier array (OTA) | 9.82 | 7.14 | 5.95 |
| CA3078 | C | Single operational amp | 6.50 | 4.74 | 3.95 |
| CA3080 | C | Single transconductance amplifier (OTA) | .97 | .71 | .59 |
| CA3080A | C | | 3.22 | 2.34 | 1.95 |
| CA3741 | C | General purpose | 4.54 | 3.30 | 2.75 |
| CA3741A | C | | 2.06 | 1.50 | 1.25 |

*16-lead.

### HIGH-GAIN WIDEBAND AMPLIFIERS

| | | | | | | |
|---|---|---|---|---|---|---|
| CA3011 | A | −1 MHz to 20 MHz FM IF amplifiers | | $1.47 | $1.07 | $0.89 |
| CA3012 | A | | | 1.82 | 1.32 | 1.10 |
| CA3020 | B | DC to 9 MHz | Multipurpose power | 2.56 | 1.86 | 1.55 |
| CA3020A | B | DC to 8 MHz | | 3.26 | 2.37 | 1.98 |
| CA3021 | B | DC to 6 MHz | Low power video | 3.14 | 2.28 | 1.90 |
| CA3022 | B | DC to 20 MHz | | 2.64 | 1.92 | 1.60 |
| CA3023 | B | DC to 40 MHz | | 2.56 | 1.86 | 1.55 |
| CA3040 | B | DC to 200 MHz—video | | 4.87 | 3.54 | 2.95 |

### DIFFERENTIAL AMPLIFIERS

| | | | | | |
|---|---|---|---|---|---|
| CA3000 | A | DC to 30 MHz | $3.80 | $2.76 | $2.30 |
| CA3001 | B | Video and wideband—DC to 55 MHz | 5.55 | 4.00 | 3.35 |
| CA3002 | A | IF—DC to 15 MHz | 3.71 | 2.70 | 2.25 |
| CA3004 | B | RF—DC to 100 MHz | 3.71 | 2.70 | 2.25 |
| CA3005 | B | | 2.48 | 1.80 | 1.50 |
| CA3006 | B | | 5.80 | 4.20 | 3.50 |
| CA3007 | B | BW = 0.01 MHz at 3 dB | 5.35 | 3.90 | 3.25 |
| CA3008 | D | AF—DC to 3 kHz | 3.14 | 2[illegible]8 | 1.90 |
| CA3008A | D | | 5.10 | 3.72 | 3.10 |
| CA3028A | C | Cascade—DC to 500 MHz | 1.47 | 1.07 | .89 |
| CA3028B | C | | 2.06 | 1.50 | 1.25 |
| CA3053 | C | | .81 | .59 | .49 |

## LINEAR POWER CONTROL CIRCUITS

### VOLTAGE REGULATORS

| RCA Type | Fig. | Description | Net Each, Lots of 1-99 | 100-999 | 1000 Up |
|---|---|---|---|---|---|
| CA3055 | C | $V_{REF}$ = 1.6 V typ.; $V_O$ = 1.6 V min.; $V_I$ = 7.5 V min. | $2.46 | $1.79 | $1.49 |
| CA3085 | C | | 1.62 | 1.18 | .98 |
| CA3085A | C | | 2.62 | 1.91 | 1.59 |
| CA3085B | C | | 6.52 | 4.74 | 3.95 |

### AC THYRISTOR

| | | | | | |
|---|---|---|---|---|---|
| CA3058 | E | Zero voltage switches | $5.80 | $4.20 | $3.50 |
| CA3059 | E | | 3.20 | 2.35 | 1.95 |
| CA3079 | E | | 1.63 | 1.19 | .99 |

### OPTOELECTRONIC

| | | | | | |
|---|---|---|---|---|---|
| CA3062 | B | Photo detector and power amplifier | $4.86 | $3.54 | $2.95 |

## LINEAR ARRAYS

### MATCHED DIODE

| RCA Type | Fig. | Description | Net Each, Lots of 1-99 | 100-999 | 1000 Up |
|---|---|---|---|---|---|
| CA3019 | A | Individual | $1.62 | $1.18 | $0.98 |
| CA3039 | B | Quad plus two | 1.61 | 1.17 | .98 |

### TRANSISTOR

| | | | | | |
|---|---|---|---|---|---|
| CA3018 | B | Darlington connected pair plus two individual | $1.62 | $1.18 | $0.98 |
| CA3018A | B | | 2.22 | 1.62 | 1.35 |
| CA3036 | A | Dual Darlington connected | 1.47 | 1.07 | .89 |
| CA3045 | F | Differentially connected pair plus 3 individual | 2.47 | 1.80 | 1.50 |
| CA3046 | F | | 1.61 | 1.17 | .98 |
| CA3050 | F | Dual Darlington connected | 3.71 | 2.70 | 2.25 |
| CA3051 | E | | 2.72 | 1.98 | 1.65 |
| CA3081 | E* | NPN general purpose | 3.12 | 2.27 | 1.89 |
| CA3082 | E* | NPN general purpose | 3.12 | 2.27 | 1.89 |
| CA3083 | E* | NPN general purpose | 2.74 | 2.03 | 1.69 |
| CA3084 | E | PNP general purpose | 2.95 | 2.15 | 1.79 |
| CA3086 | E | NPN general purpose | .81 | .59 | .49 |

*16-lead.

### AMPLIFIER

| RCA Type | Fig. | Description | Net Each, Lots of 1-99 | 100-999 | 1000 Up |
|---|---|---|---|---|---|
| CA3026 | B | Dual independent | $2.06 | $1.50 | $1.25 |
| CA3035 | A | Three amplifiers | 2.48 | 1.80 | 1.50 |
| CA3035V1 | A† | Three amplifiers | 2.48 | 1.80 | 1.50 |
| CA3048 | E* | Four amplifiers | 4.04 | 2.94 | 2.45 |
| CA3049 | B | Dual independent | 3.22 | 2.34 | 1.95 |
| CA3054 | E | Dual independent | 2.06 | 1.50 | 1.25 |

## LINEAR FM, AM AND AUDIO CIRCUITS

| | | | | | |
|---|---|---|---|---|---|
| CA3011 | A | FM IF amplifier | $1.47 | $1.07 | $0.89 |
| CA3012 | A | | 1.82 | 1.32 | 1.10 |
| CA3013 | A | Wideband amplifier/limiter/FM detector | 2.15 | 1.56 | 1.30 |
| CA3014 | A | | 2.48 | 1.80 | 1.50 |
| CA3041 | D | Wideband amplifier/limiter/FM detector/driver | 2.06 | 1.50 | 1.25 |
| CA3042 | D | | 2.06 | 1.50 | 1.25 |
| CA3043 | B | FM IF amplifier/limiter/FM detector/AF preamp/driver | 2.81 | 2.04 | 1.70 |
| CA3048 | E* | Stereo preamplifier | 4.04 | 2.94 | 2.45 |
| CA3052 | E* | | 3.14 | 2.28 | 1.90 |
| CA3065 | D | FM IF amplifier/limiter/FM detector/driver/electronic attenuator | 2.31 | 1.68 | 1.40 |
| CA3075 | D | FM IF amplifier/limiter/FM detector/AF preamp | 2.31 | 1.68 | 1.40 |
| CA3076 | C | FM IF amplifier/limiter | 2.64 | 1.92 | 1.60 |
| CA3088E | E* | AM IF amplifier/AM detector/AF preamplifier | 2.31 | 1.68 | 1.40 |
| CA3089E | E* | | 3.63 | 2.64 | 2.20 |

*16-lead: †Formed leads.

## LINEAR TELEVISION CIRCUITS

| RCA Type | Pkg. | Description | Net Each, Lots of 1-99 | 100-999 | 1000 Up |
|---|---|---|---|---|---|
| CA3035 | A | Remote control | $2.48 | $1.80 | $1.50 |
| CA3035V1 | A* | | 2.48 | 1.80 | 1.50 |
| CA3044 | A | Automatic fine tuning/detector/output amp | 2.31 | 1.68 | 1.40 |
| CA3044V1 | A* | | 2.31 | 1.68 | 1.40 |
| CA3064 | A | Automatic fine tuning/detector/zener diode voltage regulator/DC amplifier | 2.31 | 1.68 | 1.40 |
| CA3066† | D‡ | Chroma signal processor/chroma amplifier | 4.29 | 3.12 | 2.60 |
| CA3067† | D‡ | Chroma demodulator | 4.46 | 3.24 | 2.70 |
| CA3068 | D§ | Video IF system | 4.95 | 3.60 | 3.00 |
| CA3070# | E‡ | Chroma signal processor | 3.47 | 2.52 | 2.10 |
| CA3071# | E | Chroma amplifier | 3.30 | 2.40 | 2.00 |
| CA3072# | E | Chroma demodulator | 3.38 | 2.46 | 2.05 |

*Formed lead. †CA3066 and CA3067 together constitute a complete chroma system. ‡16-lead. §20-lead. #CA3070, CA3071 and CA3072 together constitute a complete TV chroma system.

# RCA DIGITAL INTEGRATED CIRCUITS

## COS/MOS INTEGRATED CIRCUITS

**CD4000A Series** digital IC's operating temperature range −55° C to +125° C except types in plastic package, −40° C to +85° C. Noise immunity = 4.5 V typ. Threshold voltage = 1.5 V typ. N-channel; −1.5 V typ. P-channel. Recommended operating voltage range of 3 V to 15 V. DC supply voltage −0.5 V to +15 V. Available in four types of packages: Suffix **D**, ceramic dual inline; suffix **E**, plastic dual inline; suffix **K**, flat pack; suffix **T**, TO-5 style.

**CD4000 Series,** same as CD4000A series except 5 V to 15 V. In flat pack except suffix **D**, ceramic dual inline; suffix **T**, TO-5 style.

### GATES

| RCA Type | No. of Leads | Description | Net Each, Lots of 1-24 | 25-99 | 100-999 | 1000 Up |
|---|---|---|---|---|---|---|
| **CD4000AD** | 14 | Dual 3-input NOR gate plus inverter—positive logic | $ 5.85 | $4.71 | $3.90 | $3.25 |
| **CD4000AE** | 14 | | 1.75 | 1.39 | 1.15 | .96 |
| **CD4000AK** | 14 | | 7.00 | 5.66 | 4.70 | 3.90 |
| **CD4001AD** | 14 | Quad 2-input NOR gate—positive logic | 6.20 | 5.00 | 4.15 | 3.45 |
| **CD4001AE** | 14 | | 1.77 | 1.42 | 1.18 | .98 |
| **CD4001AK** | 14 | | 7.40 | 5.95 | 4.90 | 4.10 |
| **CD4002AD** | 14 | Dual 4-input NOR gate—positive logic | 6.50 | 5.22 | 4.30 | 3.60 |
| **CD4002AE** | 14 | | 1.85 | 1.48 | 1.22 | 1.02 |
| **CD4002AK** | 14 | | 7.65 | 6.16 | 5.10 | 4.25 |
| **CD4007AD** | 14 | Dual complementary pair plus inverter | 4.95 | 3.99 | 3.30 | 2.75 |
| **CD4007AE** | 14 | | 1.77 | 1.42 | 1.18 | .98 |
| **CD4007AK** | 14 | | 6.10 | 4.93 | 4.10 | 3.40 |
| **CD4011AD** | 14 | Quad 2-input NAND gate—positive logic | 6.20 | 5.00 | 4.15 | 3.45 |
| **CD4011AE** | 14 | | 1.77 | 1.42 | 1.18 | .98 |
| **CD4011AK** | 14 | | 7.40 | 5.95 | 4.90 | 4.10 |
| **CD4012AD** | 14 | Dual 4-input NAND gate—positive logic | 6.50 | 5.22 | 4.30 | 3.60 |
| **CD4012AE** | 14 | | 1.85 | 1.48 | 1.22 | 1.02 |
| **CD4012AK** | 14 | | 7.65 | 6.16 | 5.10 | 4.25 |
| **CD4019AD** | 16 | Quad AND-OR select gate | 9.45 | 7.61 | 6.30 | 5.25 |
| **CD4019AE** | 16 | | 3.15 | 2.54 | 2.10 | 1.75 |
| **CD4019AK** | 16 | | 10.45 | 8.56 | 7.10 | 5.90 |
| **CD4023AD** | 14 | Triple 3-input NAND gate—positive logic | 6.50 | 5.22 | 4.30 | 3.60 |
| **CD4023AE** | 14 | | 1.85 | 1.48 | 1.22 | 1.02 |
| **CD4023AK** | 14 | | 7.65 | 6.16 | 5.10 | 4.25 |
| **CD4025AD** | 14 | Triple 3-input NOR gate—positive logic | 6.50 | 5.22 | 4.30 | 3.60 |
| **CD4025AE** | 14 | | 1.85 | 1.48 | 1.22 | 1.02 |
| **CD4025AK** | 14 | | 7.65 | 6.16 | 5.10 | 4.25 |
| **CD4030AD** | 14 | Quad exclusive OR gate | 7.11 | 5.73 | 4.74 | 3.95 |
| **CD4030AE** | 14 | | 2.79 | 2.25 | 1.86 | 1.55 |
| **CD4030AK** | 14 | | 8.28 | 6.67 | 5.52 | 4.60 |

| RCA Type | Net Each, Lots of 1-24 | 25-99 | 100-999 | 1000 Up |
|---|---|---|---|---|
| **CD4000** | $ 5.55 | $ 4.50 | $ 3.70 | $ 3.10 |
| **CD4000D** | 4.68 | 3.77 | 3.10 | 2.60 |
| **CD4001** | 5.95 | 4.79 | 3.95 | 3.30 |
| **CD4001D** | 4.95 | 3.99 | 3.30 | 2.75 |
| **CD4002** | 6.10 | 4.93 | 4.05 | 3.40 |
| **CD4002D** | 5.10 | 4.13 | 3.40 | 2.85 |
| **CD4004** | 12.40 | 9.50 | 7.85 | 6.55 |
| **CD4004D** | 10.80 | 8.70 | 7.20 | 6.00 |
| **CD4004T** | 10.80 | 8.70 | 7.20 | 6.00 |
| **CD4005** | 14.40 | 11.60 | 9.60 | 8.00 |
| **CD4005D** | 13.60 | 10.95 | 9.05 | 7.55 |
| **CD4006** | 14.40 | 11.60 | 9.60 | 8.00 |
| **CD4006D** | 13.70 | 11.02 | 9.10 | 7.60 |
| **CD4007** | 4.85 | 3.92 | 3.25 | 2.70 |
| **CD4007D** | 3.95 | 3.19 | 2.65 | 2.20 |
| **CD4008** | 16.30 | 13.12 | 10.90 | 9.05 |
| **CD4008D** | 15.20 | 12.25 | 10.15 | 8.45 |
| **CD4009** | 8.80 | 7.11 | 5.85 | 4.90 |
| **CD4009D** | 7.90 | 6.38 | 5.25 | 4.40 |
| **CD4010** | 8.80 | 7.11 | 5.85 | 4.90 |
| **CD4010D** | 7.40 | 6.38 | 5.25 | 4.40 |
| **CD4011** | 5.85 | 4.71 | 3.90 | 3.25 |
| **CD4011D** | 4.95 | 3.99 | 3.30 | 2.75 |
| **CD4012** | 6.10 | 4.93 | 4.05 | 3.40 |
| **CD4012D** | 5.20 | 4.18 | 3.45 | 2.88 |
| **CD4013** | 8.10 | 6.53 | 5.40 | 4.50 |
| **CD4013D** | 7.10 | 5.73 | 4.75 | 3.95 |
| **CD4014** | 15.95 | 12.83 | 10.65 | 8.85 |
| **CD4014D** | 15.20 | 12.25 | 10.15 | 8.45 |
| **CD4015** | 15.95 | 12.83 | 10.65 | 8.85 |
| **CD4015D** | 15.20 | 12.25 | 10.15 | 8.45 |
| **CD4016** | 8.65 | 6.96 | 5.75 | 4.80 |
| **CD4016D** | 7.75 | 6.24 | 5.15 | 4.30 |
| **CD4017** | 16.80 | 13.49 | 11.20 | 9.30 |
| **CD4017A** | 15.90 | 12.76 | 10.60 | 8.80 |
| **CD4018** | 14.85 | 11.96 | 9.90 | 8.25 |
| **CD4018D** | 13.90 | 11.17 | 9.25 | 7.70 |
| **CD4019** | 8.45 | 6.82 | 5.65 | 4.70 |
| **CD4019A** | 7.55 | 6.09 | 5.05 | 4.20 |
| **CD4020** | 18.90 | 15.23 | 12.60 | 10.50 |
| **CD4020D** | 18.00 | 14.50 | 12.00 | 10.00 |
| **CD4021** | 15.70 | 12.62 | 10.45 | 8.70 |
| **CD4021D** | 14.70 | 11.82 | 9.75 | 8.15 |

### HEX BUFFERS

16-lead package.

| RCA Type | Description | Net Each, Lots of 1-24 | 25-99 | 100-999 | 1000 Up |
|---|---|---|---|---|---|
| **CD4009AD** | Inverting logic-level converters | $ 9.90 | $7.98 | $5.50 | $5.50 |
| **CD4009AE** | | 3.90 | 3.12 | 2.60 | 2.15 |
| **CD4009AK** | | 11.00 | 8.92 | 7.40 | 6.15 |
| **CD4010AD** | Non-inverting logic-level converters | 9.90 | 7.98 | 6.60 | 5.50 |
| **CD4010AE** | | 3.90 | 3.12 | 2.60 | 2.15 |
| **CD4010AK** | | 11.00 | 8.92 | 7.40 | 6.15 |

### DECODERS

16-lead package.

| RCA Type | Description | Net Each, Lots of 1-24 | 25-99 | 100-999 | 1000 Up |
|---|---|---|---|---|---|
| **CD4028AD** | BCD-to-decimal | $14.85 | $11.96 | $ 9.90 | $8.25 |
| **CD4028AE** | | 7.38 | 5.95 | 4.92 | 4.10 |
| **CD4028AK** | | 16.02 | 12.90 | 10.68 | 8.90 |

### MULTIPLEXERS

14-lead package.

| RCA Type | Description | Net Each, Lots of 1-24 | 25-99 | 100-999 | 1000 Up |
|---|---|---|---|---|---|
| **CD4016AD** | Quad bilateral switch | $ 9.70 | $7.84 | $6.50 | $5.40 |
| **CD4016AE** | | 3.60 | 2.87 | 2.40 | 1.98 |
| **CD4016AK** | | 10.80 | 8.70 | 7.20 | 6.00 |

### ARITHMETIC DEVICES

| RCA Type | No. of Leads | Description | Net Each, Lots of 1-24 | 25-99 | 100-999 | 1000 Up |
|---|---|---|---|---|---|---|
| **CD4008AD** | 16 | Four-bit full adder | $19.10 | $15.37 | $12.70 | $10.60 |
| **CD4008AE** | 16 | | 8.10 | 6.53 | 5.40 | 4.50 |
| **CD4008AK** | 16 | | 20.30 | 16.39 | 13.55 | 11.30 |
| **CD4032AD** | 16 | Positive logic triple serial adder | 12.96 | 10.44 | 8.64 | 7.20 |
| **CD4032AE** | 16 | | 7.65 | 6.16 | 5.10 | 4.25 |
| **CD4032AK** | 16 | | 14.13 | 11.38 | 9.42 | 7.85 |
| **CD4038AD** | 16 | Negative logic triple serial adder | 12.96 | 10.45 | 8.64 | 7.20 |
| **CD4038AE** | 16 | | 7.65 | 6.16 | 5.10 | 4.25 |
| **CD4038AK** | 16 | | 14.13 | 11.38 | 9.42 | 7.85 |

### DUAL FLIP-FLOPS

| RCA Type | No. of Leads | Description | Net Each, Lots of 1-24 | 25-99 | 100-999 | 1000 Up |
|---|---|---|---|---|---|---|
| **CD4013AD** | 14 | D type with set-reset | $ 8.90 | $7.18 | $5.95 | $4.95 |
| **CD4013AE** | 14 | | 3.60 | 2.87 | 2.40 | 1.98 |
| **CD4013AK** | 14 | | 10.05 | 8.12 | 6.70 | 5.60 |
| **CD4027AD** | 16 | J-K master-slave | 9.90 | 7.98 | 6.60 | 5.50 |
| **CD4027AE** | 16 | | 4.77 | 3.83 | 3.18 | 2.65 |
| **CD4027AK** | 16 | | 11.07 | 8.91 | 7.38 | 6.15 |

### STATIC SHIFT REGISTERS

16-lead except CD4006, 14-lead.

| RCA Type | Description | Net Each, Lots of 1-24 | 25-99 | 100-999 | 1000 Up |
|---|---|---|---|---|---|
| **CD4006AD** | 18-stage | $17.10 | $13.78 | $11.40 | $ 9.50 |
| **CD4006AE** | | 8.40 | 6.74 | 5.60 | 4.65 |
| **CD4006AK** | | 18.00 | 14.50 | 12.00 | 10.00 |
| **CD4014AD** | 8-stage synchronous | 19.00 | 15.30 | 12.65 | 10.55 |
| **CD4014AE** | | 8.40 | 6.74 | 5.60 | 4.65 |
| **CD4014AK** | | 20.15 | 16.24 | 13.45 | 11.20 |
| **CD4015AD** | Dual 4-stage | 19.00 | 15.30 | 12.65 | 10.55 |
| **CD4015AE** | | 8.40 | 6.74 | 5.60 | 4.65 |
| **CD4015AK** | | 20.25 | 16.31 | 13.50 | 11.25 |
| **CD4021AD** | 8-stage asynchronous | 18.35 | 14.79 | 12.24 | 10.20 |
| **CD4021AE** | | 7.85 | 6.31 | 5.20 | 4.33 |
| **CD4021AK** | | 19.50 | 15.73 | 13.00 | 10.85 |

### COUNTERS/DIVIDERS

16-lead except as otherwise noted.

| | | | | | |
|---|---|---|---|---|---|
| **CD4004AD*** | 7-stage binary ripple carry | $13.50 | $10.88 | $ 9.00 | $ 7.50 |
| **CD4004AE*** | | 6.00 | 4.86 | 4.02 | 3.35 |
| **CD4004AK*** | | 14.75 | 11.89 | 9.85 | 8.20 |
| **CD4004AT†** | | 13.50 | 10.88 | 9.00 | 7.50 |
| **CD4017AD** | 10-decoded decimal outputs decade | 19.80 | 15.95 | 13.20 | 11.00 |
| **CD4017AE** | | 8.65 | 6.96 | 5.75 | 4.80 |
| **CD4017AK** | | 20.95 | 16.89 | 14.00 | 11.65 |
| **CD4018AD** | Divide-by-N fixed or programmable counter | 17.40 | 13.99 | 11.60 | 9.65 |
| **CD4018AE** | | 18.55 | 14.94 | 12.35 | 10.30 |
| **CD4018AK** | | 18.55 | 14.94 | 12.35 | 10.30 |
| **CD4020AD** | 14-stage binary ripple carry | 22.50 | 18.13 | 15.00 | 12.50 |
| **CD4020AE** | | 10.25 | 8.27 | 6.85 | 5.70 |
| **CD4020AK** | | 23.65 | 19.07 | 15.80 | 13.15 |
| **CD4022AD** | Octal—8-decoded outputs | 18.00 | 14.50 | 12.00 | 10.00 |
| **CD4022AE** | | 7.65 | 6.16 | 5.10 | 4.25 |
| **CD4022AK** | | 20.95 | 15.44 | 14.00 | 10.65 |
| **CD4024AD*** | 7-stage binary ripple carry | 13.50 | 10.88 | 9.00 | 7.50 |
| **CD4024AE*** | | 6.00 | 4.86 | 4.02 | 3.35 |
| **CD4024AK*** | | 14.75 | 11.89 | 9.85 | 8.20 |
| **CD4024AT†** | | 13.50 | 10.88 | 9.00 | 7.50 |
| **CD4026AD** | 7-segment display outputs decade | 22.50 | 18.13 | 15.00 | 12.50 |
| **CD4026AE** | | 10.70 | 8.63 | 7.14 | 5.95 |
| **CD4026AK** | | 23.67 | 19.07 | 15.78 | 13.15 |
| **CD4029AD** | Presettable up/down | 21.51 | 17.33 | 14.34 | 11.95 |
| **CD4029AE** | | 10.35 | 8.34 | 6.90 | 5.75 |
| **CD4029AK** | | 22.68 | 18.27 | 15.12 | 12.60 |
| **CD4033AD** | 7-segment display outputs decade | 22.50 | 18.13 | 15.00 | 12.50 |
| **CD4033AE** | | 10.70 | 8.63 | 7.14 | 5.95 |
| **CD4033AK** | | 23.67 | 19.07 | 15.78 | 13.15 |

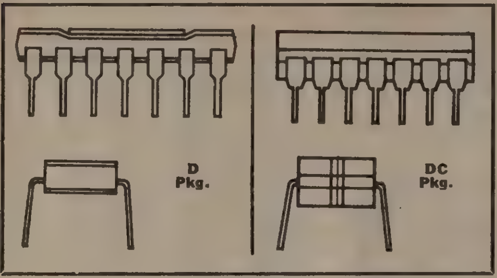
*14-lead. †12-lead.

## DIGITAL TTL INTEGRATED CIRCUITS

ECCSL (Emitter-Coupled Current Steered Logic) and BCD-to-7 segment decoder drivers also available. Specifications and prices available on request.

**RCA IC'S STOCKED AT GAITHERSBURG, MD; ORLANDO & HOLLYWOOD, FL; HUNTSVILLE, AL; WINSTON-SALEM & RALEIGH, NC; AND ATLANTA, GA**

# RAYTHEON Integrated Circuits



### TTL SERIES

Operating temperature −55° C to +125° C (**0, 1** final digit) and 0° C to +75° C (**2, 3** final digit). Even numbers (RF30, RF32) high fanout versions; odd numbers (RF31, RF33) standard fanout versions.

### RAY I AND RAY II SERIES

In hermetic glass-kovar 14-lead DIP; available in 14-lead ¼″ x 3⁄16″ flat pkg. at same price, add suffix **K** (RF30**K**). Also available in ceramic 14-lead DIP (Cerdip). Prices on request.

| Raytheon Number | Description | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| RF30D | Single phase SRT flip-flop | $ 7.30 | $ 5.80 | $ 4.80 |
| RF31D | | 5.70 | 4.55 | 3.75 |
| RF32D | | 4.50 | 3.65 | 3.05 |
| RF33D | | 3.65 | 2.90 | 2.40 |
| RF50D | J-K flip-flop with AND inputs | 8.75 | 6.95 | 5.90 |
| RF51D | | 7.35 | 5.85 | 4.95 |
| RF52D | | 5.70 | 4.55 | 3.85 |
| RF53D | | 4.80 | 3.85 | 3.25 |
| RF60D | J-K flip-flop with OR inputs | 8.75 | 6.95 | 5.90 |
| RF61D | | 7.35 | 5.85 | 4.95 |
| RF62D | | 5.70 | 4.55 | 3.85 |
| RF63D | | 4.80 | 3.85 | 3.25 |
| RF100D | Dual J-K flip-flop with separate clocks | 13.40 | 10.70 | 9.05 |
| RF101D | | 11.20 | 8.90 | 7.55 |
| RF102D | | 8.80 | 7.05 | 5.95 |
| RF103D | | 7.35 | 5.85 | 4.95 |
| RF110D | Dual J-K flip-flop with common clock | 13.40 | 10.70 | 9.05 |
| RF111D | | 11.20 | 8.90 | 7.55 |
| RF112D | | 8.80 | 7.05 | 5.95 |
| RF113D | | 7.35 | 5.85 | 4.95 |
| RF120D | Dual J-K flip-flop with separate clocks | 14.85 | 11.85 | 10.05 |
| RF121D | | 12.40 | 9.90 | 8.40 |
| RF122D | | 9.80 | 7.80 | 6.60 |
| RF123D | | 8.15 | 6.50 | 5.50 |
| RF130D | Dual J-K flip-flop with common clock | 14.85 | 11.85 | 10.05 |
| RF131D | | 12.40 | 9.90 | 8.40 |
| RF132D | | 9.80 | 7.80 | 6.60 |
| RF133D | | 8.15 | 6.50 | 5.50 |
| RF200D | J-K flip-flop with AND inputs | 10.70 | 8.55 | 7.20 |
| RF201D | | 8.60 | 6.85 | 5.70 |
| RF202D | | 6.90 | 5.50 | 4.55 |
| RF203D | | 5.60 | 4.50 | 3.80 |
| RF210D | J-K flip-flop with OR inputs | 10.70 | 8.55 | 7.20 |
| RF211D | | 8.60 | 6.85 | 5.70 |
| RF212D | | 6.90 | 5.50 | 4.55 |
| RF213D | | 5.60 | 4.50 | 3.80 |
| RF250D | J-K flip-flop with AND inputs | 10.70 | 8.55 | 7.20 |
| RF251D | | 8.60 | 6.85 | 5.70 |
| RF252D | | 6.90 | 5.50 | 4.55 |
| RF253D | | 5.60 | 4.50 | 3.80 |
| RF260D | J-K flip-flop with OR inputs | 10.70 | 8.55 | 7.20 |
| RF261D | | 8.60 | 6.85 | 5.70 |
| RF262D | | 6.90 | 5.50 | 4.55 |
| RF263D | | 5.60 | 4.50 | 3.80 |
| RG40D | Dual 4-input NAND gate | 5.05 | 4.05 | 3.35 |
| RG41D | | 3.95 | 3.15 | 2.65 |
| RG42D | | 3.15 | 2.55 | 2.10 |
| RG43D | | 2.55 | 2.05 | 1.70 |
| RG50D | Expandable quad 2-input OR gate | 5.05 | 4.05 | 3.35 |
| RG51D | | 3.95 | 3.15 | 2.65 |
| RG52D | | 3.15 | 2.55 | 2.10 |
| RG53D | | 2.55 | 2.05 | 1.70 |
| RG60D | Single 8-input NAND gate | 5.05 | 4.05 | 3.35 |
| RG61D | | 3.95 | 3.15 | 2.65 |
| RG62D | | 3.15 | 2.55 | 2.10 |
| RG63D | | 2.55 | 2.05 | 1.70 |
| RG70D | Expandable dual output dual 2-input OR gate | 5.05 | 4.05 | 3.35 |
| RG71D | | 3.95 | 3.15 | 2.65 |
| RG72D | | 3.15 | 2.55 | 2.10 |
| RG73D | | 2.55 | 2.05 | 1.70 |
| RG80D | Dual pulse shaper/delay AND gate | 6.15 | 4.90 | 4.10 |
| RG81D | | 4.85 | 3.85 | 3.20 |
| RG82D | | 3.85 | 3.10 | 2.60 |
| RG83D | | 3.10 | 2.50 | 2.05 |
| RG90D | Exclusive OR with complement | 5.05 | 4.05 | 3.35 |
| RG91D | | 3.95 | 3.15 | 2.65 |
| RG92D | | 3.15 | 2.55 | 2.10 |
| RG93D | | 2.55 | 2.05 | 1.70 |
| RG100D | Expandable triple 3-input OR gate | $5.05 | $4.05 | $3.35 |
| RG101D | | 3.95 | 3.15 | 2.65 |
| RG102D | | 3.15 | 2.55 | 2.10 |
| RG103D | | 2.55 | 2.05 | 1.70 |
| RG110D | Expandable dual 4-input OR gate | 5.05 | 4.05 | 3.35 |
| RG111D | | 3.95 | 3.15 | 2.65 |
| RG112D | | 3.15 | 2.55 | 2.10 |
| RG113D | | 2.05 | 2.05 | 1.70 |
| RG120D | Expandable single 8-input NAND gate | 5.05 | 4.05 | 3.35 |
| RG121D | | 3.95 | 3.15 | 2.65 |
| RG122D | | 3.15 | 2.55 | 2.10 |
| RG123D | | 2.55 | 2.05 | 1.70 |
| RG130D | Dual 4-input line driver | 6.15 | 4.90 | 4.10 |
| RG131D | | 4.85 | 3.85 | 3.20 |
| RG132D | | 3.85 | 3.10 | 2.60 |
| RG133D | | 3.10 | 2.50 | 2.05 |
| RG140D | Quad 2-input NAND gate | 5.05 | 4.05 | 3.35 |
| RG141D | | 3.95 | 3.15 | 2.65 |
| RG142D | | 3.15 | 2.55 | 2.10 |
| RG143D | | 2.55 | 2.05 | 1.70 |
| RG150D | Quad 2-input OR expander | 4.35 | 3.45 | 2.90 |
| RG151D | | 4.35 | 3.45 | 2.90 |
| RG152D | | 2.70 | 2.15 | 1.80 |
| RG153D | | 2.70 | 2.15 | 1.80 |
| RG160D | Triple 2-input buss driver | 7.30 | 5.80 | 4.80 |
| RG161D | | 5.70 | 4.55 | 3.75 |
| RG162D | | 4.50 | 3.65 | 3.05 |
| RG163D | | 3.65 | 2.90 | 2.40 |
| RG170D | Dual 4-input OR expander | 4.35 | 3.45 | 2.90 |
| RG171D | | 4.35 | 3.45 | 2.90 |
| RG172D | | 2.70 | 2.15 | 1.80 |
| RG173D | | 2.70 | 2.15 | 1.80 |
| RG180D | Dual 4-input AND expander | 4.35 | 3.45 | 2.90 |
| RG181D | | 4.35 | 3.45 | 2.90 |
| RG182D | | 2.70 | 2.15 | 1.80 |
| RG183D | | 2.70 | 2.15 | 1.80 |
| RG190D | Triple 3-input NAND gate | 5.05 | 4.05 | 3.35 |
| RG191D | | 3.95 | 3.15 | 2.65 |
| RG192D | | 3.15 | 2.55 | 2.10 |
| RG193D | | 2.55 | 2.05 | 1.70 |
| RG200D | Expandable single 8-input NAND/NOR gate | 6.15 | 4.90 | 4.10 |
| RG201D | | 4.85 | 3.85 | 3.20 |
| RG202D | | 3.85 | 3.10 | 2.60 |
| RG203D | | 3.10 | 2.50 | 2.05 |
| RG210D | Expandable dual 4-input OR gate | 6.15 | 4.90 | 4.10 |
| RG211D | | 4.85 | 3.85 | 3.20 |
| RG212D | | 3.85 | 3.10 | 2.60 |
| RG213D | | 3.10 | 2.50 | 2.05 |
| RG220D | Quad 2-input NAND/NOR gate | 6.15 | 4.90 | 4.10 |
| RG221D | | 4.85 | 3.85 | 3.20 |
| RG222D | | 3.85 | 3.10 | 2.60 |
| RG223D | | 3.10 | 2.50 | 2.05 |
| RG230D | Quad 2-input OR expander | 4.35 | 3.45 | 2.90 |
| RG231D | | 4.35 | 3.45 | 2.90 |
| RG232D | | 2.70 | 2.15 | 1.80 |
| RG233D | | 2.70 | 2.15 | 1.80 |
| RG240D | Dual 4-input NAND gate | 6.15 | 4.90 | 4.10 |
| RG241D | | 4.85 | 3.85 | 3.20 |
| RG242D | | 3.85 | 3.10 | 2.60 |
| RG243D | | 3.10 | 2.50 | 2.05 |
| RG250D | Expandable quad 2-input OR gate | 6.15 | 4.90 | 4.10 |
| RG251D | | 4.85 | 3.85 | 3.20 |
| RG252D | | 3.85 | 3.10 | 2.60 |
| RG253D | | 3.10 | 2.50 | 2.05 |
| RG260D | Single 8-input NAND gate | 6.15 | 4.90 | 4.10 |
| RG261D | | 4.85 | 3.85 | 3.20 |
| RG262D | | 3.85 | 3.10 | 2.60 |
| RG263D | | 3.10 | 2.50 | 2.05 |
| RG270D | Dual 4-input OR expander | 4.35 | 3.45 | 2.90 |
| RG271D | | 4.35 | 3.45 | 2.90 |
| RG272D | | 2.70 | 2.15 | 1.80 |
| RG273D | | 2.70 | 2.15 | 1.80 |
| RG280D | Expandable dual 4-input AND gate | 6.15 | 4.90 | 4.10 |
| RG281D | | 4.85 | 3.85 | 3.20 |
| RG282D | | 3.85 | 3.10 | 2.60 |
| RG283D | | 3.10 | 2.50 | 2.05 |
| RG290D | Dual 2- and 3-input AND/OR expander | 6.15 | 4.90 | 4.10 |
| RG291D | | 4.85 | 3.85 | 3.20 |
| RG292D | | 3.85 | 3.10 | 2.60 |
| RG293D | | 3.10 | 2.50 | 2.05 |
| RG300D | Expandable triple 3-input OR gate | 6.15 | 4.90 | 4.10 |
| RG301D | | 4.85 | 3.85 | 3.20 |
| RG302D | | 3.85 | 3.10 | 2.60 |
| RG303D | | 3.10 | 2.50 | 2.05 |
| RG310D | Expandable dual output dual 2-input OR gate | 6.15 | 4.90 | 4.10 |
| RG311D | | 4.85 | 3.85 | 3.20 |
| RG312D | | 3.85 | 3.10 | 2.60 |
| RG313D | | 3.10 | 2.50 | 2.05 |
| RG320D | Triple 3-input NAND gate | 6.15 | 4.90 | 4.10 |
| RG321D | | 4.85 | 3.85 | 3.20 |
| RG322D | | 3.85 | 3.10 | 2.60 |
| RG323D | | 3.10 | 2.50 | 2.05 |
| RG370D | Hex inverter | 6.15 | 4.90 | 4.10 |
| RG371D | | 4.85 | 3.85 | 3.20 |
| RG372D | | 3.85 | 3.10 | 2.60 |
| RG373D | | 3.10 | 2.50 | 2.05 |

RAY I AND RAY II SERIES CONT'D ON FOLLOWING PAGE

# RAYTHEON Integrated Circuits

## TTL SERIES

### RAY I AND RAY II SERIES (CONTINUED)

| Raytheon Number | Description | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| RG380D | Hex inverter | $7.30 | $5.80 | $4.80 |
| RG381D | | 5.70 | 4.55 | 3.75 |
| RG382D | | 4.50 | 3.65 | 3.05 |
| RG383D | | 3.65 | 2.90 | 2.40 |
| RG7510D | Quad 2-input line driver | 7.30 | 5.80 | 4.80 |
| RG7511D | | 5.70 | 4.55 | 3.75 |
| RG7512D | | 4.50 | 3.65 | 3.05 |
| RG7513D | | 3.65 | 2.90 | 2.40 |
| RG7520D | Quad 2-input lamp driver | 7.30 | 5.80 | 4.80 |
| RG7521D | | 5.70 | 4.55 | 3.75 |
| RG7522D | | 4.50 | 3.65 | 3.05 |
| RG7523D | | 3.65 | 2.90 | 2.40 |
| RG7540D | Dual 4-input lamp driver | 6.15 | 4.90 | 4.10 |
| RG7541D | | 4.85 | 3.85 | 3.20 |
| RG7542D | | 3.85 | 3.10 | 2.60 |
| RG7543D | | 3.10 | 2.50 | 2.05 |

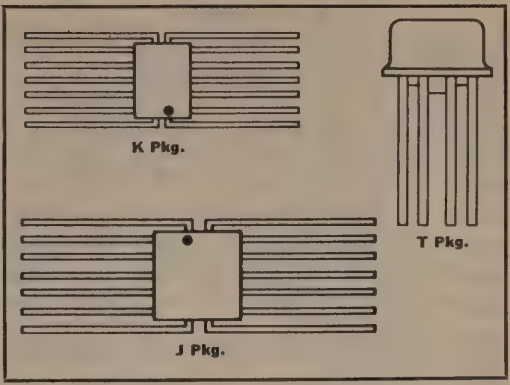
### RAY I AND RAY II MSI CIRCUITS

Specify hermetic glass-kovar 14-lead DIP (suffix **D**); 14-lead ¼″ x 3⁄16″ flat pkg. (suffix **K**) or ceramic 14-lead DIP (suffix **DC**).

| Raytheon No. | Circuit Function | Suffix D or K<br>Net Each, Lots of<br>1-24 | 25-99 | 100-999 | Suffix DC<br>Net Each, Lots of<br>1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| RL10 | Fast full adder | $ 9.95 | $ 7.95 | $ 6.75 | $ 7.46 | $ 5.96 | $ 5.06 |
| RL11 | | 7.60 | 6.05 | 5.15 | 5.70 | 4.54 | 3.86 |
| RL12 | | 6.05 | 4.85 | 4.10 | 4.54 | 3.64 | 3.08 |
| RL13 | | 5.00 | 4.00 | 3.40 | 3.75 | 3.00 | 2.55 |
| RL20 | Dependent adder | 11.40 | 9.10 | 7.70 | 8.55 | 6.83 | 5.78 |
| RL21 | | 8.75 | 6.95 | 5.90 | 6.56 | 5.21 | 4.43 |
| RL22 | | 6.85 | 5.50 | 4.65 | 5.14 | 4.13 | 3.49 |
| RL23 | | 5.70 | 4.55 | 3.85 | 4.28 | 3.41 | 2.89 |
| RL30 | Independent carry adder | 11.40 | 9.10 | 7.70 | 8.55 | 6.83 | 5.78 |
| RL31 | | 8.75 | 6.95 | 5.90 | 6.56 | 5.21 | 4.43 |
| RL32 | | 6.85 | 5.50 | 4.65 | 5.14 | 4.13 | 3.49 |
| RL33 | | 5.70 | 4.55 | 3.85 | 4.28 | 3.41 | 2.89 |
| RL40 | Carry decoder | 7.35 | 5.85 | 4.95 | 5.51 | 4.39 | 3.71 |
| RL41 | | 7.35 | 5.85 | 4.95 | 5.51 | 4.39 | 3.71 |
| RL42 | | 4.80 | 3.85 | 3.25 | 3.60 | 2.89 | 2.44 |
| RL43 | | 4.80 | 3.85 | 3.25 | 3.60 | 2.89 | 2.44 |
| RL60 | 4-bit storage register | 13.20 | 10.55 | 8.95 | 9.90 | 7.91 | 6.71 |
| RL61 | | 10.55 | 8.40 | 7.10 | 7.91 | 6.30 | 5.33 |
| RL62 | | 8.40 | 6.60 | 5.60 | 6.30 | 4.95 | 4.20 |
| RL63 | | 6.60 | 5.30 | 4.45 | 4.95 | 3.98 | 3.34 |
| RL70 | 4-bit storage register | 13.20 | 10.55 | 8.95 | 9.90 | 7.91 | 6.71 |
| RL71 | | 10.55 | 8.40 | 7.10 | 7.91 | 6.30 | 5.33 |
| RL72 | | 8.40 | 6.60 | 5.60 | 6.30 | 4.95 | 4.20 |
| RL73 | | 6.60 | 5.30 | 4.45 | 4.95 | 3.98 | 3.34 |
| RL80 | 16-bit memory | 15.00 | 12.00 | 10.20 | 11.25 | 9.00 | 7.65 |
| RL81 | | 12.00 | 9.60 | 8.15 | 9.00 | 7.20 | 6.11 |
| RL82 | | 9.60 | 7.70 | 6.55 | 7.20 | 5.78 | 4.91 |
| RL83 | | 7.70 | 6.15 | 5.25 | 5.78 | 4.61 | 3.94 |
| RL90 | Decade divider | 25.30 | 20.15 | 17.10 | 18.98 | 15.11 | 12.83 |
| RL91 | | 25.30 | 20.15 | 17.10 | 18.98 | 15.11 | 12.83 |
| RL92 | | 12.65 | 10.10 | 8.55 | 9.49 | 7.58 | 6.41 |
| RL93 | | 12.65 | 10.10 | 8.55 | 9.49 | 7.58 | 6.41 |
| RL111* | 4-bit shift register | 21.85 | 17.40 | 14.85 | 16.39 | 13.05 | 11.14 |
| RL113* | | 13.05 | 10.40 | 8.80 | 9.79 | 7.80 | 6.60 |
| RL121 | Parity gen. checker | 19.60 | 15.60 | 13.20 | 14.70 | 11.70 | 9.90 |
| RL123 | | 9.90 | 7.80 | 6.60 | 7.35 | 5.85 | 4.95 |
| RL131 | 2-word 4-bit comparator | 19.60 | 15.60 | 13.20 | 14.70 | 11.70 | 9.90 |
| RL133 | | 9.80 | 7.80 | 6.60 | 7.35 | 5.85 | 4.95 |
| RL141* | Programmable binary divider | 19.40 | 15.50 | 13.10 | 14.55 | 11.63 | 9.83 |
| RL143* | | 13.05 | 10.40 | 8.80 | 9.79 | 7.80 | 6.60 |
| RL151* | Programmable decade divider | 19.40 | 15.50 | 13.10 | 14.55 | 11.63 | 9.83 |
| RL153* | | 13.05 | 10.40 | 8.80 | 9.79 | 7.80 | 6.60 |
| RL163* | Binary counter | 9.80 | 7.80 | 6.60 | 7.35 | 5.85 | 4.95 |
| RL173* | Decade counter | 9.80 | 7.80 | 6.60 | 7.35 | 5.85 | 4.95 |
| RL181* | Binary up/down counter | 24.95 | 19.90 | 16.85 | 18.71 | 14.93 | 12.64 |
| RL183* | | 13.85 | 11.10 | 9.35 | 10.39 | 8.33 | 7.01 |
| RL191* | Decade up/down counter | 24.95 | 19.90 | 16.85 | 18.71 | 14.93 | 12.64 |
| RL193* | | 13.85 | 11.10 | 9.35 | 10.39 | 8.33 | 7.01 |
| RL211 | Dual 4-bit multiplexer | 17.20 | 13.75 | 11.70 | 12.90 | 10.31 | 8.78 |
| RL213 | | 8.65 | 6.90 | 5.85 | 6.49 | 5.18 | 4.39 |

*Not available in **K** pkg.; specify suffix **J** for ¼″ x ¼″ flat pkg.

**RAYTHEON DTL 200 SERIES AND ALL LISTED IC'S ARE AVAILABLE IN BOTH DICE AND WAFER FORM. DATA AND PRICES ON REQUEST.**



### RAY III SERIES

In hermetic glass-kovar 14-lead DIP; available in 14-lead ¼″ x 3⁄16″ flat pkg. at same price, add suffix **K** (RF3120**K**). Also available in 14-lead ceramic DIP (Cerdip). Prices on request.

| Raytheon Number | Description | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| RF3120D | Dual J-K flip-flop with separate clocks | $17.20 | $14.10 | $12.00 |
| RF3122D | | 8.80 | 7.05 | 6.00 |
| RF3130D | Dual J-K flip-flop with common clock | 17.60 | 14.10 | 12.00 |
| RF3132D | | 8.80 | 7.05 | 6.00 |
| RF3200D | AND input J-K flip-flop | 13.80 | 11.00 | 9.35 |
| RF3202D | | 6.90 | 5.50 | 4.65 |
| RF3210D | OR input J-K flip-flop | 13.80 | 11.00 | 9.35 |
| RF3212D | | 6.90 | 5.50 | 4.65 |
| RF3220D | Triple flip-flop separate neg. edge clocks | 17.60 | 14.10 | 12.00 |
| RF3222D | | 8.80 | 7.05 | 6.00 |
| RF3230D | Dual D-type flip-flop (60 MHz) | 17.60 | 14.10 | 12.00 |
| RF3232D | | 8.80 | 7.05 | 6.00 |
| RF3240D | Triple flip-flop, common pos. edge clock | 17.60 | 14.10 | 12.00 |
| RF3242D | | 8.80 | 7.05 | 6.00 |
| RF3250D | 5-channel selector flip-flop | 17.60 | 14.10 | 12.00 |
| RF3252D | | 8.80 | 7.05 | 6.00 |
| RG3180D | Dual 4-input AND expander | 5.40 | 4.30 | 3.65 |
| RG3182D | | 2.70 | 2.15 | 1.80 |
| RG3200D | Expandable single 8 NAND gate | 7.70 | 6.15 | 5.20 |
| RG3202D | | 3.85 | 3.10 | 2.60 |
| RG3210D | Expandable 2-wide, 4-input AOI gate | 7.70 | 6.15 | 5.20 |
| RG3212D | | 3.85 | 3.10 | 2.60 |
| RG3220D | Quad 2-input NAND gate | 7.70 | 6.15 | 5.20 |
| RG3222D | | 3.85 | 3.10 | 2.60 |
| RG3230D | 4-wide, 2-2-3-3-input AOI expander | 5.40 | 4.30 | 3.65 |
| RG3232D | | 2.70 | 2.15 | 1.80 |
| RG3240D | Dual 4-input NAND gate | 7.70 | 6.15 | 5.20 |
| RG3242D | | 3.85 | 3.10 | 2.60 |
| RG3250D | Expandable 4-wide, 2-2-2-3-input AOI gate | 7.70 | 6.15 | 5.20 |
| RG3252D | | 3.85 | 3.10 | 2.60 |
| RG3260D | Single 8-input NAND gate | 7.70 | 6.15 | 5.20 |
| RG3262D | | 3.85 | 3.10 | 2.60 |
| RG3270D | 2-wide, 4-input AOI expander | 5.40 | 4.30 | 3.65 |
| RG3272D | | 2.70 | 2.15 | 1.80 |
| RG3300D | Expandable 3-wide, 3-input AOI gate | 7.70 | 6.15 | 5.20 |
| RG3302D | | 3.85 | 3.10 | 2.60 |
| RG3310D | Dual 2-wide, 2-input AOI gate, one side expand. | 7.70 | 6.15 | 5.20 |
| RG3312D | | 3.85 | 3.10 | 2.60 |
| RG3320D | Triple 3-input NAND gate | 7.70 | 6.15 | 5.20 |
| RG3322D | | 3.85 | 3.10 | 2.60 |
| RG3380D | Hex inverter | 9.00 | 7.20 | 6.10 |
| RG3382D | | 4.50 | 3.60 | 3.05 |
| RG3390D | Dual 4-input AND gate with split outputs | 9.00 | 7.20 | 6.10 |
| RG3392D | | 4.50 | 3.60 | 3.05 |
| RG3400D | Quad 2-input AND gate | 9.00 | 7.20 | 6.10 |
| RG3402D | | 4.50 | 3.60 | 3.05 |
| RG3410D | Quad 2-input NOR gate | 9.00 | 7.20 | 6.10 |
| RG3412D | | 4.50 | 3.60 | 3.05 |
| RG3420D | Dual 4-input NAND gate, split outputs | 7.70 | 6.15 | 5.20 |
| RG3422D | | 3.85 | 3.10 | 2.60 |
| RG3430D | Single 8-input NAND gate, split outputs | 7.70 | 6.15 | 5.20 |
| RG3432D | | 3.85 | 3.10 | 2.60 |
| RG3440D | Dual 2-wide 2-input AOI gate, split outputs | 7.70 | 6.15 | 5.20 |
| RG3442D | | 3.85 | 3.10 | 2.60 |
| RG3450D | 4-wide, 2-2-3-4-input AOI gate | 7.70 | 6.15 | 5.20 |
| RG3452D | | 3.85 | 3.10 | 2.60 |
| RG3460D | Hex inverter, open collector outputs | 9.00 | 7.20 | 6.10 |
| RG3462D | | 4.50 | 3.60 | 3.05 |
| RG3470D | Dual 5-input AND gate | 9.00 | 7.20 | 6.10 |
| RG3472D | | 4.50 | 3.60 | 3.05 |

# RAYTHEON Integrated Circuits

## DTL 930 SERIES

Operating temp. −55° C to +125° C. Specify glass-kovar 14-lead DIP (suffix **D**); 14-lead ¼" x ¼" flat pkg. (suffix **J**) or 8-lead metal can (suffix **T**). Available in 14-lead ceramic or plastic DIP; temp. range of 0° C to +75° C. Prices on request.

| Raytheon Number | Description | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| RM930 | Dual 4-input NAND gate | $ 3.70 | $ 2.95 | $ 2.50 |
| RM932 | Dual 4-NAND/NOR buffer | 4.05 | 3.20 | 2.70 |
| RM933 | Dual 4-expander | 2.90 | 2.30 | 1.95 |
| RM934* | Hex inverter—6K ohm pull-up resistor | 4.05 | 3.20 | 2.70 |
| RM935* | Hex inverter w/o collector pull-up resistor | 4.05 | 3.20 | 2.70 |
| RM936* | Hex inverter—6K ohm pull-up resistor | 4.05 | 3.45 | 2.70 |
| RM937* | Hex inverter—2K ohm pull-up resistor | 4.05 | 3.20 | 2.70 |
| RM944 | Dual 4-NAND/NOR power gate | 2.04 | 3.20 | 2.70 |
| RM945 | RS clocked flip-flop | 4.95 | 3.95 | 3.30 |
| RM946* | Quad 2-NAND/NOR power gate | 3.70 | 2.95 | 2.50 |
| RM948 | RS clocked flip-flop | 4.95 | 3.95 | 3.30 |
| RM949 | Quad 2-input gate | 3.70 | 2.95 | 2.50 |
| RM950 | Pulse triggered binary F-F | 12.40 | 10.00 | 8.30 |
| RM951 | Monostable multivibrator | 18.50 | 14.80 | 12.35 |
| RM957* | Quad 2-input buffer | 11.40 | 9.10 | 7.60 |
| RM958* | Quad 2-NAND power gate | 11.40 | 9.10 | 7.60 |
| RM961 | Dual 4-NAND/NOR gate | 3.70 | 2.95 | 2.50 |
| RM962 | Triple 3-NAND/NOR gate | 3.70 | 2.95 | 2.50 |
| RM963 | Triple 3-NAND/NOR gate | 3.70 | 2.95 | 2.50 |
| RM988 | Monostable multivibrator | 9.00 | 7.20 | 6.00 |
| RM993* | Dual RM945 w/sep. clock/direct set | 7.05 | 5.65 | 4.75 |
| RM994* | Dual RM948 | 7.05 | 5.65 | 4.75 |
| RM997* | Dual RM948 w/common clock/direct set | 7.05 | 5.65 | 4.75 |
| RM999* | Dual RM945 | 7.05 | 5.65 | 4.75 |

*Not available in **T** package.

## LINEAR CIRCUITS

Operating temperature −55° C to +125° C (prefix **RM**); 0° C to +70° C (prefix **RC**). Specify hermetic glass-kovar 14-lead DIP (suffix **D**) or 8-lead metal pkg. (suffix **T**). Ten-lead ¼" x ¼" flat package also available, prices on request.

| | | | | |
|---|---|---|---|---|
| RC101A | High performance operational amplifier | $ 5.25 | $ 4.20 | $ 3.45 |
| RM101A | | 22.50 | 18.00 | 15.00 |
| RC107 | | 5.25 | 4.20 | 3.45 |
| RM107 | | 22.50 | 18.00 | 15.00 |
| RC702 | General purpose amplifier | 2.65 | 2.25 | 1.90 |
| RM702 | | 5.85 | 4.65 | 3.90 |
| RM702A | | 8.05 | 6.45 | 5.35 |
| RC709 | Operational amplifier | 1.10 | 1.05 | .90 |
| RM709 | | 2.93 | 2.34 | 1.95 |
| RM709A | | 14.95 | 11.95 | 9.95 |
| RC710 | Differential amplifier | 1.20 | 1.10 | .95 |
| RM710 | | 3.38 | 2.70 | 2.25 |
| RC711 | Core memory sense amplifier | 1.25 | 1.15 | 1.00 |
| RM711 | | 3.38 | 2.70 | 2.25 |
| RC723 | Voltage regulator | 2.93 | 2.34 | 1.95 |
| RM723 | | 5.93 | 4.74 | 3.95 |
| RC741 | Internally compensated operational amplifier | 1.50 | 1.40 | 1.25 |
| RM741 | | 5.93 | 4.74 | 3.95 |
| RC4131 | High gain operational amplifier | 7.60 | 6.10 | 5.05 |
| RM4131 | | 30.00 | 24.00 | 20.00 |
| RC4132 | Low power, high gain operational amplifier | 10.60 | 8.50 | 7.00 |
| RM4132 | | 45.00 | 36.00 | 30.00 |
| RM4441 | Dual digital line receiver | 27.00 | 21.60 | 18.00 |
| RC4709D | Dual monolithic RC709D | 5.75 | 3.40 | 2.95 |
| RM4709D | Dual monolithic RM709D | 15.00 | 12.00 | 10.00 |
| RM4709A | Dual monolithic RM709A | 27.00 | 22.50 | 18.00 |
| RC4741D | Dual monolithic RC741D | 6.75 | 5.40 | 4.50 |
| RM4741D | Dual monolithic RM741D | 18.75 | 15.00 | 12.50 |

## BEAM LEAD INTEGRATED CIRCUITS

Beam Lead system is a packaging technique which totally eliminates wire bonding along with the cost and reliability problems associated with wire bonding. Leads are an integral part of the chip. Data sheets available on request.

### TTL RAY I AND RAY II SERIES BEAM LEAD

Oper. temp.: Final digit 0 or 1 types, −55° C to +125° C; all others 0° C to +75° C. Fanout: Final digit 0 or 2 types, high fanout version; all others standard version.

| Raytheon Number | Description | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 5-20 | 25-95 | 100-995 |
| RF50BL | J-K flip-flop with AND inputs | $5.25 | $4.17 | $3.54 |
| RF51BL | | 4.41 | 3.51 | 2.97 |
| RF52BL | | 3.42 | 2.73 | 2.31 |
| RF53BL | | 2.88 | 2.31 | 1.95 |
| RF100BL | Dual J-K flip-flop with separate clocks | 8.04 | 6.42 | 5.43 |
| RF101BL | | 6.72 | 5.34 | 4.53 |
| RF102BL | | 5.28 | 4.23 | 3.57 |
| RF103BL | | 4.41 | 3.51 | 2.97 |
| RF110BL | Dual J-K flip-flop with common clock | 8.04 | 6.42 | 5.43 |
| RF111BL | | 6.72 | 5.34 | 4.53 |
| RF112BL | | 5.28 | 4.23 | 3.57 |
| RF113BL | | 4.41 | 3.51 | 2.97 |
| RF200BL | J-K flip-flop with AND inputs | 6.42 | 5.13 | 4.32 |
| RF201BL | | 5.16 | 4.11 | 3.42 |
| RF202BL | | 4.14 | 3.30 | 2.73 |
| RF203BL | | 3.36 | 2.70 | 2.28 |

### TTL RAY I AND RAY II SERIES BEAM LEAD (CONT'D)

| Raytheon Number | Description | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 5-20 | 25-95 | 100-995 |
| RF210BL | J-K flip-flop with OR inputs | $6.42 | $5.13 | $4.32 |
| RF211BL | | 5.16 | 4.11 | 3.42 |
| RF212BL | | 4.14 | 3.30 | 2.73 |
| RF213BL | | 3.36 | 2.70 | 2.28 |
| RG130BL | Dual 4-input line driver | 3.69 | 2.94 | 2.46 |
| RG131BL | | 2.91 | 2.31 | 1.92 |
| RG132BL | | 2.31 | 1.86 | 1.56 |
| RG133BL | | 1.86 | 1.50 | 1.23 |
| RG200BL | Expandable single 8-input NAND gate | 3.69 | 2.94 | 2.46 |
| RG201BL | | 2.91 | 2.31 | 1.92 |
| RG202BL | | 2.31 | 1.86 | 1.56 |
| RG203BL | | 1.86 | 1.50 | 1.23 |
| RG220BL | Quad 2-input NAND gate | 3.69 | 2.94 | 2.46 |
| RG221BL | | 2.91 | 2.31 | 1.92 |
| RG222BL | | 2.31 | 1.86 | 1.56 |
| RG223BL | | 1.86 | 1.50 | 1.23 |
| RG230BL | Quad 2-input AOI gate | 2.61 | 2.07 | 1.74 |
| RG231BL | | 2.61 | 2.07 | 1.74 |
| RG232BL | | 1.62 | 1.29 | 1.08 |
| RG233BL | | 1.62 | 1.29 | 1.08 |
| RG240BL | Dual 4-input NAND gate | 3.69 | 2.94 | 2.46 |
| RG241BL | | 2.91 | 2.31 | 1.92 |
| RG242BL | | 2.31 | 1.86 | 1.56 |
| RG243BL | | 1.86 | 1.50 | 1.23 |
| RG250BL | Expandable quad 2-input AOI gate | 3.69 | 2.94 | 2.46 |
| RG251BL | | 2.91 | 2.31 | 1.92 |
| RG252BL | | 2.31 | 1.86 | 1.56 |
| RG253BL | | 1.86 | 1.50 | 1.23 |
| RG310BL | Expandable dual output 2-input AOI gate | 3.69 | 2.94 | 2.46 |
| RG311BL | | 2.91 | 2.31 | 1.92 |
| RG312BL | | 2.31 | 1.86 | 1.56 |
| RG313BL | | 1.86 | 1.50 | 1.23 |
| RG320BL | Triple 3-input NAND gate | 3.69 | 2.94 | 2.46 |
| RG321BL | | 2.91 | 2.31 | 1.92 |
| RG322BL | | 2.31 | 1.86 | 1.56 |
| RG323BL | | 1.86 | 1.50 | 1.23 |
| RG380BL | Hex inverter | 4.38 | 3.48 | 2.88 |
| RG381BL | | 3.42 | 2.73 | 2.25 |
| RG382BL | | 2.70 | 2.19 | 1.83 |
| RG383BL | | 2.19 | 1.70 | 1.44 |
| RL10BL | Fast full adder | 5.97 | 4.77 | 4.05 |
| RL11BL | | 4.56 | 3.63 | 3.09 |
| RL12BL | | 3.63 | 2.91 | 2.46 |
| RL13BL | | 3.00 | 2.40 | 2.04 |
| RL20BL | Dependent carry fast adder | 6.84 | 5.46 | 4.62 |
| RL21BL | | 5.25 | 4.17 | 3.54 |
| RL22BL | | 4.11 | 3.30 | 2.79 |
| RL23BL | | 3.42 | 2.73 | 2.31 |
| RL30BL | Independent carry fast adder | 6.84 | 5.46 | 4.62 |
| RL31BL | | 5.25 | 4.17 | 3.54 |
| RL32BL | | 4.11 | 3.30 | 2.79 |
| RL33BL | | 3.42 | 2.73 | 2.31 |
| RL40BL | Carry decoder | 4.41 | 3.51 | 2.97 |
| RL41BL | | 4.41 | 3.51 | 2.97 |
| RL42BL | | 2.88 | 2.31 | 1.95 |
| RL43BL | | 2.88 | 2.31 | 1.95 |
| RL60BL | 4-bit storage register | 7.92 | 6.33 | 5.37 |
| RL61BL | | 6.33 | 5.04 | 4.26 |
| RL62BL | | 5.04 | 3.96 | 3.36 |
| RL63BL | | 3.96 | 3.18 | 2.67 |
| RL70BL | | 7.92 | 6.33 | 5.37 |
| RL71BL | | 6.33 | 5.04 | 4.26 |
| RL72BL | | 5.04 | 3.96 | 3.36 |
| RL73BL | | 3.96 | 3.18 | 2.67 |

### TTL RAY III SERIES BEAM LEAD

Temp. and fanout same as TTL RAY I and II Series Beam Lead.

| | | | | |
|---|---|---|---|---|
| RF3200BL | J-K flip-flop with AND inputs | $8.28 | $6.60 | $5.61 |
| RF3202BL | | 4.14 | 3.30 | 2.79 |
| RG3220BL | Quad 2-input NAND gate | 4.64 | 3.69 | 3.12 |
| RG3222BL | | 2.31 | 1.86 | 1.56 |
| RG3380BL | Hex inverter | 5.40 | 4.32 | 3.66 |
| RG3382BL | | 2.70 | 2.16 | 1.83 |
| RG3390BL | Dual 4-input AND gate with split outputs | 5.40 | 4.32 | 3.66 |
| RG3392BL | | 2.70 | 2.16 | 1.83 |
| RG3410BL | Quad 2-input NOR gate | 5.40 | 4.32 | 3.66 |
| RG3412BL | | 2.70 | 2.16 | 1.83 |

### DTL 930 SERIES BEAM LEAD

Same specs as DTL930 Series, above left, except Beam Lead pkg.

| Raytheon Number | Net Each, Lots of | | | Raytheon Number | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|
| | 5-20 | 25-95 | 100-995 | | 5-20 | 25-95 | 100-995 |
| RM930BL | $2.22 | $1.77 | $1.50 | RM950BL | $ 7.44 | $6.00 | $4.98 |
| RM932BL | 2.43 | 1.92 | 1.62 | RM951BL | 11.10 | 8.88 | 7.41 |
| RM933BL | 1.74 | 1.38 | 1.17 | RM957BL | 6.84 | 5.46 | 4.56 |
| RM934BL | 2.43 | 1.92 | 1.62 | RM958BL | 6.84 | 5.46 | 4.56 |
| RM935BL | 2.43 | 1.82 | 1.62 | RM961BL | 2.22 | 1.77 | 1.50 |
| RM936BL | 2.43 | 1.92 | 1.62 | RM962BL | 2.22 | 1.77 | 1.50 |
| RM937BL | 2.43 | 1.92 | 1.62 | RM963BL | 2.22 | 1.77 | 1.50 |
| RM944BL | 2.43 | 1.92 | 1.62 | RM988BL | 5.40 | 4.32 | 3.60 |
| RM945BL | 2.97 | 2.37 | 1.98 | RM993BL | 4.23 | 3.39 | 2.85 |
| RM946BL | 2.22 | 1.77 | 1.50 | RM994BL | 4.23 | 3.99 | 2.85 |
| RM948BL | 2.97 | 2.37 | 1.98 | RM997BL | 4.23 | 3.39 | 2.85 |
| RM949BL | 2.22 | 1.77 | 1.50 | RM999BL | 4.23 | 3.39 | 2.85 |

### LINEAR OPERATIONAL AMPLIFIERS

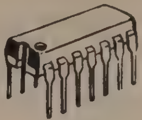
Same specs as Linear IC's, above left, except Beam Lead pkg.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| RC709BL | $1.59 | $1.35 | $1.17 | RC741BL | $2.91 | $2.34 | $1.95 |
| RM709BL | 2.82 | 2.22 | 1.86 | RM741BL | 4.26 | 3.42 | 2.85 |

# Siliconix incorporated ANALOG SWITCHING CIRCUITS

Siliconix integrated circuit part numbers include letter prefix which denotes function and letter suffixes denote temperature range and package style. Function Letter Prefix: **D**, driver for FET switch; **DG**, **DGM**, drivers with FET switches; **G**, multiple FET switch; **SI**, second source item. First Letter Suffix: **A**, −55° C to +125° C military service; **B**, −20° C to +85° C industrial service; **C**, 0° C to +70° C industrial service; **D**, −55° C to +85° C industrial service. Final Letter Suffix: **A**, round TO-5; **F**, TO-84, TO-89 Flatpac; **K**, TO-116 ceramic DIP; **L**, TO-86 Flatpac; **P**, metal-ceramic TO-116 DIP; **R**, 24-32 lead DIP.

**Flatpac**


**DIP**

**TO-5**

## DRIVERS WITH FET SWITCHES

| Siliconix Type | * | † | Switch Configuration and Control | FET Type Switch | Standard Supply Voltages V | Switch Time | | Input Logic Level for ON Switch | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | $t_{ON}$ µs | $t_{OFF}$ µs | | 1-29 | 30-99 | 100-999 |
| DG110AL, P | 2 | 2 | SPST 2-channel | PMOS | +10, −20, +5, 0 | 0.3 | 1.0 | 1 | $38.00 | $30.40 | $26.60 |
| DGM111AL, P | 2 | 2 | SPST 2-channel | PMOS | +10, −20, +5 | 0.3 | 1.0 | 0 | 23.00 | 18.40 | 16.10 |
| DG112AL, P | 2 | 2 | SPST 2-channel | PMOS | +10, −20, 0 | 0.3 | 1.0 | 1 | 35.00 | 28.00 | 24.50 |
| DG116AL, P | 4 | 1 | 4-channel multiplexer | PMOS | +10, −20, 0 | 0.3 | 1.0 | 1 | 60.00 | 48.00 | 42.00 |
| DG120AL, P | 6 | 2 | 3-channel double-pole multiplexer | PMOS | +10, −20, 0 | 0.3 | 2.0 | 1 | 60.00 | 48.00 | 42.00 |
| DG121AL, P | 6 | 2 | | PMOS | +10, −20, +5 | 0.3 | 2.0 | 0 | 60.00 | 48.00 | 42.00 |
| DGM122AL, P | 4 | 2 | 2-channel double-pole multiplexer | PMOS | +10, −20, +5, 0 | 0.3 | 2.0 | 1 | 35.60 | 28.45 | 24.90 |
| DG123AL, P | 5 | 1 | 5-channel separate control | PMOS | +10, −20, 0 | 0.3 | 1.0 | 1 | 65.00 | 52.00 | 45.50 |
| DG125AL, P | 5 | 1 | 5-channel multiplexer | PMOS | +10, −20, +5 | 0.3 | 1.0 | 0 | 65.00 | 52.00 | 45.50 |
| DG126AL, P | 4 | 4 | DPST 2-channel | N-JFET | +12, −18, 0 | 0.6 | 1.6 | 1 | 43.25 | 34.60 | 30.25 |
| DG129AL, P | 4 | 4 | DPST 2-channel | N-JFET | +12, −18, 0 | 0.6 | 1.6 | 1 | 49.25 | 39.40 | 34.45 |
| DG133AL, P | 2 | 2 | SPST 2-channel | N-JFET | +12, −18, 0 | 0.6 | 1.6 | 1 | 34.20 | 27.35 | 23.95 |
| DG134AL, P | 2 | 2 | SPST 2-channel | N-JFET | +12, −18, 0 | 0.6 | 1.6 | 1 | 29.20 | 23.35 | 20.45 |
| DG139AL, P | 4 | 4 | DPDT | N-JFET | +12, −18, 0 | 0.8 | 1.6 | .......... | 49.25 | 39.40 | 34.45 |
| DG140AL | 4 | 4 | DPST 2-channel | N-JFET | +12, −18, 0 | 1.0 | 2.5 | 1 | 72.00 | 57.60 | 50.40 |
| DG141AL, P | 2 | 2 | SPST 2-channel | N-JFET | +12, −18, 0 | 1.0 | 2.5 | 1 | 48.00 | 38.40 | 33.60 |
| DG142AL, P | 4 | 4 | DPDT | N-JFET | +12, −18, 0 | 0.8 | 1.6 | .......... | 43.25 | 34.60 | 30.25 |
| DG143AL, P | 2 | 2 | SPDT | N-JFET | +12, −18, 0 | 0.8 | 1.6 | .......... | 29.20 | 23.35 | 20.45 |
| DG144AL, P | 2 | 2 | SPDT | N-JFET | +12, −18, 0 | 0.8 | 1.6 | .......... | 34.20 | 27.35 | 23.95 |
| DG145AL | 4 | 4 | DPDT | N-JFET | +12, −18, 0 | 1.0 | 2.5 | .......... | 72.00 | 57.60 | 50.40 |
| DG146AL, P | 2 | 2 | SPDT | N-JFET | +12, −18, 0 | 1.0 | 2.5 | .......... | 48.00 | 38.40 | 33.60 |
| DG151AL, P | 2 | 2 | SPST 2-channel | N-JFET | +15, −15, 0 | 1.0 | 2.5 | 1 | 36.00 | 28.80 | 25.20 |
| DG152AL, P | 2 | 2 | SPST 2-channel | N-JFET | +15, −15, 0 | 0.6 | 1.5 | 1 | 24.00 | 19.20 | 16.80 |
| DG153AL | 4 | 4 | DPST 2-channel | N-JFET | +15, −15, 0 | 1.0 | 2.5 | 1 | 48.00 | 38.40 | 33.60 |
| DG154AL, P | 4 | 4 | DPST 2-channel | N-JFET | +15, −15, 0 | 0.6 | 1.5 | 1 | 36.00 | 28.80 | 25.20 |
| DG161AL, P | 2 | 2 | SPDT | N-JFET | +15, −15, 0 | 1.0 | 2.5 | .......... | 36.00 | 28.80 | 25.20 |
| DG162AL, P | 2 | 2 | SPDT | N-JFET | +15, −15, 0 | 0.8 | 1.5 | .......... | 24.00 | 19.20 | 16.80 |
| DG163AL | 4 | 4 | DPDT | N-JFET | +15, −15, 0 | 1.0 | 2.5 | .......... | 48.00 | 38.40 | 33.60 |
| DG164AL, P | 4 | 4 | DPDT | N-JFET | +15, −15, 0 | 0.8 | 1.5 | .......... | 36.00 | 28.80 | 25.20 |
| DG171AA | 1 | 1 | SPST gate output for RF bypass | PMOS | +10, −20, +5, 0 | 0.2 | 0.7 | 1 | 13.45 | 10.75 | 9.40 |
| DG172AL, P | 4 | 1 | 4-channel multiplexer | PMOS | +10, −20, +5, 0 | 0.3 | 0.75 | 0 | 30.80 | 24.65 | 21.55 |
| DG173AL, P | 4 | 2 | DPDT 2-input "OR" control | PMOS | +10, −20, +5, 0 | 0.3 | 0.75 | .......... | 26.45 | 21.15 | 18.50 |
| DG175AA | 2 | 2 | SPDT | PMOS | +10, −20, +5, 0 | 0.2 | 0.4 | .......... | 15.20 | 12.15 | 10.65 |
| DG181AA‡ | 2 | 2 | SPST 2-channel | N-JFET | +10, −20, +5, 0 | 0.15 | 0.08 | 0 | 25.00 | 20.00 | 17.50 |
| DG182AA‡ | 2 | 2 | SPST 2-channel | N-JFET | +10, −20, +5, 0 | 0.15 | 0.08 | 0 | 25.00 | 20.00 | 17.50 |
| DG184AP‡ | 4 | 4 | DPST 2-channel | N-JFET | +10, −20, +5, 0 | 0.15 | 0.08 | 1 | 41.45 | 33.15 | 29.00 |
| DG185AP‡ | 4 | 4 | DPST 2-channel | N-JFET | +10, −20, +5, 0 | 0.15 | 0.08 | 1 | 41.45 | 33.15 | 29.00 |
| DG187AA‡ | 2 | 2 | SPDT | N-JFET | +10, −20, +5, 0 | 0.15 | 0.08 | .......... | 25.00 | 20.00 | 17.50 |
| DG188AA‡ | 2 | 2 | SPDT | N-JFET | +10, −20, +5, 0 | 0.15 | 0.08 | .......... | 25.00 | 20.00 | 17.50 |
| DG190AP‡ | 4 | 4 | SPDT 2-channel | N-JFET | +10, −20, +5, 0 | 0.15 | 0.08 | .......... | 41.45 | 33.15 | 29.00 |
| DG191AP‡ | 4 | 4 | SPDT 2-channel | N-JFET | +10, −20, +5, 0 | 0.15 | 0.08 | .......... | 41.45 | 33.15 | 29.00 |
| DG501AK§ | 8 | 1 | 8-channel multiplex binary decode +enable | PMOS | +5, −22 | 1.0 | 0.6 | 1 | 61.45 | 49.15 | 43.00 |
| DG503AK§ | 8 | 1 | | PMOS | +10, −20 | 1.0 | 0.6 | 1 | 64.25 | 51.40 | 44.95 |
| DG506AR# | 16 | 1 | 16-channel DG501 | CMOS | +15, −15, +5, 0 | 1.0 | 1.0 | 1 | ** | ** | ** |
| DG507AR# | 16 | 2 | 8-channel double-pole multiplex binary decode+enable | CMOS | +15, −15, +5, 0 | 1.0 | 1.0 | 1 | ** | ** | ** |
| DG510AK• | 8 | 1 | 8-channel multiplex binary decode +enable | PMOS | +10, −20, 0 | 2.5 | 1.2 | 1 | ** | ** | ** |
| DG511AK• | 8 | 2 | 4-channel DG507 | PMOS | +10, −20, 0 | 2.5 | 1.2 | 1 | ** | ** | ** |

*Sources. †Drains. ‡Low power; fast break-before-make; constant "on" resistance. §Break-before-make-operation; 0.25 µs typical. #Complementary MOS; low power. •Break-before-make-operation. **Prices on request.

Same as above except **B** temperature range (−20° C to +85° C).

| Siliconix Type | Net Each, Lots of | | | Siliconix Type | Net Each, Lots of | | | Siliconix Type | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1-29 | 30-99 | 100-999 | | 1-29 | 30-99 | 100-999 | | 1-29 | 30-99 | 100-999 |
| DG110BL, P | $19.00 | $15.20 | $13.30 | DG140BL | $36.00 | $28.80 | $25.20 | DG172BK | $11.40 | $ 9.10 | $ 7.45 |
| DGM111BK | 7.20 | 5.75 | 5.05 | DG141BL, P | 24.00 | 19.20 | 16.80 | DG172BL | 15.45 | 12.35 | 10.80 |
| DGM111BL | 11.50 | 9.20 | 8.05 | DG142BL, P | 21.60 | 17.25 | 15.10 | DG173BK | 9.00 | 7.20 | 6.30 |
| DG112BL, P | 17.50 | 14.00 | 12.25 | DG143BL, P | 14.60 | 11.65 | 10.20 | DG173BL | 13.20 | 10.55 | 9.25 |
| DG116BL, P | 30.00 | 24.00 | 21.00 | DG144BL, P | 17.10 | 13.65 | 11.95 | DG175BA | 6.70 | 5.35 | 4.70 |
| DG120BL, P | 30.00 | 24.00 | 21.00 | DG145BL | 36.00 | 28.80 | 25.20 | DG181BA | 12.50 | 10.00 | 8.75 |
| DG121BL, P | 30.00 | 24.00 | 21.00 | DG146BL, P | 24.00 | 19.20 | 16.80 | DG182BA | 12.50 | 10.00 | 8.75 |
| DGM122BK | 9.00 | 7.20 | 6.30 | DG151BL, P | 18.00 | 14.40 | 12.60 | DG184BP | 20.70 | 16.55 | 14.50 |
| DGM122BL | 17.80 | 14.25 | 12.45 | DG152BL, P | 12.00 | 9.60 | 8.40 | DG185BP | 20.70 | 16.55 | 14.50 |
| DG123BL, P | 32.50 | 26.00 | 22.75 | DG153BL | 24.00 | 19.20 | 16.80 | DG187BA | 12.50 | 10.00 | 8.75 |
| DG125BL, P | 32.50 | 26.00 | 22.75 | DG154BL, P | 18.00 | 14.40 | 12.60 | DG188BA | 12.50 | 10.00 | 8.75 |
| DG126BL, P | 21.60 | 17.25 | 15.10 | DG161BL, P | 18.00 | 14.40 | 12.60 | DG190BP | 20.70 | 16.55 | 14.50 |
| DG129BL, P | 24.60 | 19.65 | 17.20 | DG162BL, P | 12.00 | 9.60 | 8.40 | DG191BP | 20.70 | 16.55 | 14.50 |
| DG133BL, P | 17.10 | 13.65 | 11.95 | DG163BL | 24.00 | 19.20 | 16.80 | DG501BK | 18.30 | 14.65 | 11.90 |
| DG134BL, P | 14.60 | 11.65 | 10.20 | DG164BL, P | 18.00 | 14.40 | 12.60 | DG503BK | 20.00 | 16.00 | 14.00 |
| DG139BL, P | 24.60 | 19.65 | 17.20 | DG171BA | 6.70 | 5.35 | 4.70 | | | | |

# Siliconix incorporated Integrated Circuits

**See preceding page for integrated circuit ordering information.**

### DRIVERS WITH PMOS FET SWITCHES

DTL, RTL and TTL compatible. MOS type SI3705 break-before-make switching.

| Siliconix Type | Sources | Drains | Switch Configuration and Control | Standard Supply Voltage V | Switch Time $t_{ON}$ μs | Switch Time $t_{OFF}$ μs | Input Logic Level For ON Switch | Net Each, Lots of 1-29 | Net Each, Lots of 30-99 | Net Each, Lots of 100-999 |
|---|---|---|---|---|---|---|---|---|---|---|
| SI3001AA<br>SI3001CA | 4 | 2 | DPST 2-channel comm. control | +10, −20, 0 | 0.3 | 0.6 | 1 | $22.80<br>11.45 | $18.25<br>9.15 | $15.95<br>8.00 |
| SI3002*<br>SI3002A†<br>SI3002BK | 2 | 1 | SPDT | +10, −20, 0 | 1.0 | 1.5 | .......... | 22.80<br>22.80<br>7.20 | 18.25<br>18.25<br>5.75 | 15.95<br>15.95<br>5.05 |
| SI3705142K‡<br>SI3705143K‡<br>SI3705192K§<br>SI3705193K§ | 8 | 1 | SP8T and all OFF binary decode + enable | +5, −22 | 1.0 | 1.0 | 1 | 39.85<br>33.50<br>22.00<br>18.00 | 31.90<br>26.80<br>17.60<br>14.40 | 27.90<br>23.45<br>14.30<br>11.70 |

***A** temperature range and **A** case. †Same as SI3002 except different pin assignment. ‡ −55° C to +85° C. §0° C to +70° C.

### MULTIPLE CHANNEL PMOS SWITCHES

For applications such as sequential switching (commutation), signal processing, modulation and A-to-D converters. The MOS FET is normally OFF and performs an SPST function. **A** Operating Temperature: $BV_{DSS} = -30$ V min.; $I_{S(OFF)}$ and $I_{GSS} = -0.5$ nA max.; $V_{GS(th)} = -2$ V to $-6$ V; $C_{gs} = 3.0$ pF max.; $C_{ds} = 0.4$ pF max.; $C_{sb} = 3.5$ pF max. **B** Operating Temperature: −25° C to +85° C; $BV_{DSS} = -25$ V min.; $I_{S(OFF)}$ and $I_{GSS} = -5.0$ nA max.; $V_{GS(th)} = -2$ V to $-6$ V; $C_{ds} = 0.4$ pF typ.; $C_{sb} = 3.5$ pF typ.

| Siliconix Type | Sources | Drains | Gates | Switch Type and Description | Pull Up On Gate | Max. $r_{DS}$ at 25° C Condition Best Ohms | Max. $r_{DS}$ at 25° C Condition Worst Ohms | Net Each, Lots of 1-29 | Net Each, Lots of 30-99 | Net Each, Lots of 100-999 |
|---|---|---|---|---|---|---|---|---|---|---|
| G114AL*<br>G114BL* | 5 | 1 | 5 | SP5T, very low leakage | No | 1000<br>1000 | 5000<br>5000 | $28.60<br>14.30 | $22.85<br>11.45 | $20.00<br>10.00 |
| G115AK<br>G115BK | 6 | 1 | 6 | SP6T | Yes | 100<br>125 | 450<br>500 | 18.45<br>10.80 | 14.75<br>8.65 | 12.90<br>7.55 |
| G116AL, P<br>G116BL | 5 | 1 | 5 | SPST | Yes | 100<br>125 | 450<br>500 | 18.45<br>12.30 | 14.75<br>9.85 | 12.90<br>8.60 |
| G117AL<br>G117BL | 5 | 1 | 6 | SP5T+SPST, commutator +1 channel sub commutator | Yes | 100 x 2†<br>125 x 2† | 450 x 2†<br>500 x 2† | 18.45<br>12.30 | 14.75<br>9.85 | 12.90<br>8.60 |
| G118AL<br>G118BL, P | 6 | 1 | 6 | SP6T | No | 100<br>125 | 450<br>500 | 18.45<br>12.30 | 14.75<br>9.85 | 12.90<br>8.60 |
| G119AL<br>G119BL | 6 | 2 | 3 | DP3T, 3-channel differential | Yes | 100<br>125 | 450<br>500 | 18.45<br>12.30 | 14.75<br>9.85 | 12.90<br>8.60 |
| G122AL<br>G122BL | 4 | 2 | 2 | DPDT, 2-channel differential | Yes | 125<br>125 | 600<br>500 | 15.15<br>11.20 | 12.10<br>8.95 | 10.60<br>7.85 |
| G123AL<br>G123BK<br>G123BL | 4 | 2 | 4 | 2 x SPDT | Yes | 125<br>125<br>125 | 600<br>500<br>500 | 15.15<br>7.20<br>11.20 | 12.10<br>5.75<br>8.95 | 10.60<br>5.05<br>7.85 |
| G124AL<br>G124BL | 4 | 1 | 4 | SP4T | Yes | 125<br>125 | 600<br>500 | 15.15<br>11.20 | 12.10<br>8.95 | 10.60<br>7.85 |

*$I_{S(OFF)}$ and $I_{GSS} = -0.075$ nA max.; $G_{ps} = 0.5$ pF max. (G114B, 0.5 pF typ.). †Each FET.

### MULTIPLE N- AND P-CHANNEL JFET SWITCHES

Four sources and four gates. $BV_{GSS} = -40$ V min. (N-channel); 30 V min. (P-channel). Ratings given are maximum values.

| Siliconix Type | † | Switch Type | $r_{DS}$ Ohms | $V_P$ V | $I_S$ (OFF) nA | $I_{GSS}$ nA | $C_{dg} + C_{sg}$ (ON) pF | $C_{dg}$ (OFF) pF |
|---|---|---|---|---|---|---|---|---|
| G125AF | 4 | 4XSPST | 500 | −5 | 0.05 | −0.1 | 10 | 2 |
| G126AF | 4 | 4XSPST | 250 | −10 | 0.05 | −0.1 | 10 | 2 |
| G127AF | 4 | 4XSPST | 90 | −5 | 0.1 | −0.2 | 40 | 7 |
| G128AF, P | 4 | 4XSPST | 45 | −10 | 0.1 | −0.2 | 40 | 7 |
| G128BF, P | 4 | 4XSPST | 45 | −10 | 0.1 | −0.2 | 40 | 7 |
| G129AF | 1 | SP4T | 500 | −5 | 0.05 | −0.1 | 10 | 2 |
| G130AF | 1 | SP4T | 250 | −10 | 0.05 | −0.1 | 10 | 2 |
| G131AF | 1 | SP4T | 90 | −5 | 0.1 | −0.2 | 40 | 7 |
| G132AF | 1 | SP4T | 45 | −10 | 0.1 | −0.2 | 40 | 7 |
| G134AF* | 4 | 4XSPST | 1000 | 8 | −0.5 | 3.0 | 8 | 2 |
| G135AF* | 4 | 4XSPST | 300 | 8 | −2.5 | 15.0 | 80 | 5 |

*P-channel; all others are N-channel. †Drains.

| Siliconix Type | Net Each, Lots of 1-29 | Net Each, Lots of 30-99 | Net Each, Lots of 100-999 | Siliconix Type | Net Each, Lots of 1-29 | Net Each, Lots of 30-99 | Net Each, Lots of 100-999 |
|---|---|---|---|---|---|---|---|
| G125AF | $24.05 | $19.70 | $16.10 | G130AF | $24.05 | $19.70 | $16.10 |
| G126AF | 24.05 | 19.70 | 16.10 | G131AF | 30.60 | 25.10 | 20.50 |
| G127AF | 30.60 | 25.10 | 20.50 | G132AF | 30.60 | 25.10 | 20.50 |
| G128AF, P | 30.60 | 25.10 | 20.50 | G134AF<br>G135AF | Prices on request | | |
| G128BF, P | 15.25 | 12.50 | 10.20 | | | | |
| G129AG | 24.05 | 19.70 | 16.10 | | | | |

### NEW CMOS PRODUCTS

Integrated circuits employing complementary MOS (CMOS) technology incorporate both N- and P-channel devices on a common substrate. Advantages of CMOS over conventional MOS circuits include near-zero quiescent power dissipation and nearly-constant analog switch ON resistance.

**G1500AA/DA Switch**—CMOS analog switch with near-constant ON resistance. An inverter is included to provide opposite polarity control signals to parallel N- and P-channel switches. Zener diode clamp protection on all inputs. Switching time of 50–80 ns.

**DM110 Digital Multiplexer**—A 16-channel digital multiplexer featuring a "floating" output when the package is inhibited so that multiple outputs may be connected to build digital multiplexers for as many channels as desired. Chip contains protection and pull-up circuits for decode and enable inputs, four-line binary to 1-out-of-16 decode logic, 75 V over-voltage protection for data inputs and an inverter buffer.

### NEW CMOS PRODUCTS (CONT'D)

**DG506A/B Analog Multiplexer**—Monolithic circuit which includes 16 CMOS switches on a common substrate, binary decode (with enable) and driver for each channel and +5 volt pull-ups for TTL compatibility.

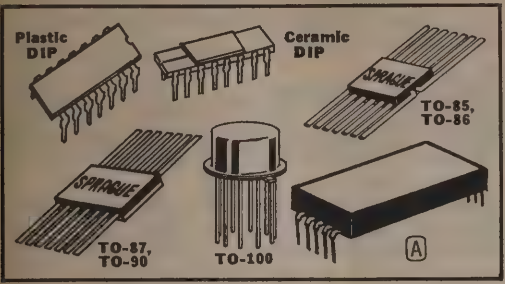
**Data Sheets and Pricing Available on Request.**

### DRIVERS FOR FET SWITCHES, LAMPS AND RELAYS

| Siliconix Type | Function and Uses | Standard Supply Voltages | Net Each, Lots of 1-29 | Net Each, Lots of 30-99 | Net Each, Lots of 100-999 |
|---|---|---|---|---|---|
| D111AL<br>D112AL<br>D113AL<br>D119AL<br>D120AL<br>D121AL | Dual MOSFET driver | +10, −20, +5,0<br>+10, −20, +5<br>+10, −20,0<br>+10, −20, +5,0<br>+10, −20, +5<br>+10, −20,0 | $30.60<br>26.35<br>26.35<br>30.60<br>26.35<br>26.35 | $24.45<br>21.10<br>21.10<br>24.45<br>21.10<br>21.10 | $21.40<br>18.45<br>18.45<br>21.40<br>18.45<br>18.45 |
| D123AL, P<br>D123BL, P | 6 separate MOSFET drivers | −20.0 | 28.00<br>14.00 | 22.40<br>11.20 | 19.60<br>9.80 |
| D125AL, P<br>D125BK<br>D125BL | | −20, +5<br>−20, +2.8<br>−20, +2.8 | 28.00<br>10.00<br>14.00 | 22.40<br>8.00<br>11.20 | 19.60<br>7.00<br>9.80 |
| D129AL, P<br>D129BK<br>D129BL | 4-channel 50 V MOSFET driver w/ decode* | −30, +5,0<br>−20, +5,0 | 25.20<br>8.55<br>12.60 | 20.15<br>6.85<br>10.05 | 17.65<br>6.00<br>8.80 |
| D130AA, L<br>D130BA, L | Dual high-speed MOSFET driver | +10, −20,0 | 24.30<br>15.10 | 19.45<br>12.05 | 17.00<br>10.55 |
| D132AL, P<br>D132BL, P | 4-channel 50 V driver w/ decode | +5,0 | 17.95<br>11.80 | 14.35<br>9.45 | 12.55<br>8.25 |
| SI2001AA<br>SI2001CA | Single lamp relay driver† | +5,0 | 14.15<br>8.50 | 11.30<br>6.80 | 9.90<br>5.95 |
| SI2200AA, L | 4-input lamp relay driver† | +5,0 | 17.10 | 13.65 | 11.95 |
| SI4001AL<br>SI4001CL | Dual 4-input lamp relay driver | +5,0 | 37.50<br>22.45 | 30.00<br>17.95 | 26.25<br>15.70 |
| SI4002AL, P<br>SI4002CP | Dual 3-input lamp relay driver† | +5,0 | 37.50<br>22.45 | 30.00<br>17.95 | 26.25<br>15.75 |

*$B_v = 40$ V. †With latch.

# SPRAGUE UNICIRCUIT® INTEGRATED CIRCUITS



## COMPLEX-FUNCTION CIRCUITS—TTL

Diode clamping on all inputs prevents "line ringing" problems. Compatible with Series 54/74. Operating temperature −55° C to +125° C (US5400, **USS** prefix); 0° C to +70° C (US7400, **USN** prefix). In plastic dual inline package. Available in hermetic metal bottom flat-pack (**J**) and −55° C to +125° C temperature range. Prices on request.

### DECODERS

| Sprague Type | Pins per Pkg. | Device Description | Net Each, Lots of 1-24 | 25-99 | 100-999* |
|---|---|---|---|---|---|
| US5441A | 16 | BCD-to-decimal decoder driver | $12.92 | $10.34 | $ 8.80 |
| US7441A | | | 8.63 | 6.88 | 5.86 |
| US5442A | 16 | BCD-to-decimal decoder | 11.90 | 9.48 | 8.08 |
| US7442A | | | 6.67 | 5.31 | 4.53 |
| US5443A | 16 | Excess-3-to-decimal decoder | 11.90 | 9.48 | 8.08 |
| US7443A | | | 6.67 | 5.31 | 4.53 |
| US5444A | 16 | Excess-3-gray-to-decimal decoder | 11.90 | 9.48 | 8.08 |
| US7444A | | | 6.67 | 5.31 | 4.53 |
| US5445A | 16 | BCD-to-decimal decoder driver | 18.14 | 14.44 | 12.31 |
| US7445A | | | 12.10 | 9.64 | 8.22 |
| US5446A | 16 | BCD-to-seven segment decoder driver | 14.95 | 11.90 | 10.15 |
| US7446A | | | 9.96 | 7.93 | 6.76 |
| US5447A | | | 13.80 | 10.99 | 9.37 |
| US7447A | | | 9.20 | 7.33 | 6.25 |
| US5448A | | | 11.90 | 9.48 | 8.08 |
| US7448A | | | 7.92 | 6.31 | 5.38 |
| US54145A | 16 | BCD-to-decimal decoder driver | 15.38 | 12.25 | 10.45 |
| US74145A | | | 7.00 | 5.57 | 4.75 |

### COUNTERS

| Sprague Type | Pins per Pkg. | Device Description | 1-24 | 25-99 | 100-999* |
|---|---|---|---|---|---|
| US5490A | 14 | Decade counter | $ 9.57 | $ 7.62 | $ 6.50 |
| US7490A | 14 | Decade counter | 6.07 | 4.84 | 4.12 |
| US5492A | 14 | Divide-by-twelve counter | 9.57 | 7.62 | 6.50 |
| US7492A | 14 | Divide-by-twelve counter | 6.07 | 4.84 | 4.12 |
| US5493A | 14 | 4-bit binary counter | 9.57 | 7.62 | 6.50 |
| US7493A | 14 | 4-bit binary counter | 6.07 | 4.84 | 4.12 |
| US54192A | 16 | Up-down decade counter | 17.01 | 13.54 | 11.55 |
| US74192A | 16 | Up-down decade counter | 11.34 | 9.03 | 7.70 |
| US54193A | 16 | Up-down 4-bit binary counter | 17.01 | 13.54 | 11.55 |
| US74193A | | | 11.34 | 9.03 | 7.70 |
| USS8280A | 14 | BCD decade counter/ storage element | 8.61 | 6.86 | 5.85 |
| USN8280A | | | 4.37 | 4.35 | 3.71 |
| USS8281A | 14 | 4-bit binary counter/ storage element | 8.61 | 6.86 | 5.85 |
| USN8281A | | | 4.37 | 4.35 | 3.71 |
| USS8290A | 14 | Presettable high speed decade counter | 9.57 | 7.62 | 6.50 |
| USN8290A | | | 4.85 | 4.83 | 4.12 |
| USS8291A | 14 | Presettable high speed 4-bit binary counter | 9.57 | 7.62 | 6.50 |
| USN8291A | | | 4.85 | 4.83 | 4.12 |
| USS8520A | 16 | Modul-n-Divider | 11.05 | 8.70 | 7.65 |
| USN8520A | | | 7.32 | 5.80 | 5.10 |

### ARITHMETIC ELEMENTS

| Sprague Type | Pins per Pkg. | Device Description | 1-24 | 25-99 | 100-999* |
|---|---|---|---|---|---|
| US5480A | 14 | Gated full adder | $ 6.28 | $ 5.00 | $ 4.26 |
| US7480A | 14 | Gated full adder | 4.20 | 3.34 | 2.85 |
| US5482A | 14 | 2-bit binary full adder | 9.31 | 7.41 | 6.32 |
| US7482A | 14 | 2-bit binary full adder | 6.22 | 4.95 | 4.22 |
| US5483A | 16 | 4-bit binary full adder | 14.82 | 11.80 | 10.06 |
| US7483A | 16 | 4-bit binary full adder | 9.87 | 7.86 | 6.70 |
| US5486A | 14 | Quad exclusive-OR gate | 5.50 | 4.38 | 3.73 |
| US7486A | 14 | Quad exclusive-OR gate | 3.79 | 2.20 | 1.89 |
| US54180A | 14 | 8-bit odd-even parity generator/checker | 14.17 | 11.28 | 9.62 |
| US74180A | | | 6.22 | 4.95 | 4.22 |
| US54181A | 24 | Arithmetic logic unit/ function generator | 36.45 | 29.02 | 24.75 |
| US74181A | | | 24.30 | 19.35 | 16.50 |
| US54182A | 16 | Look-ahead carry generator | 8.02 | 6.39 | 5.44 |
| US74182A | | | 5.35 | 4.29 | 3.63 |
| USS8200A | 14 | 4-bit comparator | 8.62 | 6.90 | 4.88 |
| USN8200A | | | 5.75 | 4.60 | 3.92 |

### MEMORIES/LATCHES

| Sprague Type | Pins per Pkg. | Device Description | 1-24 | 25-99 | 100-999* |
|---|---|---|---|---|---|
| US5475A | 16 | Quad bistable latch | $ 8.19 | $ 6.52 | $5.56 |
| US7475A | | | 5.48 | 4.36 | 3.72 |
| US5481A | 14 | 16-bit active element memory | 13.68 | 10.90 | 9.29 |
| US7481A | 14 | | 6.69 | 5.33 | 4.54 |
| US5484A | 16 | | 14.41 | 11.48 | 9.78 |
| US7484A | 16 | | 6.84 | 5.44 | 4.64 |

## COMPLEX-FUNCTION CIRCUITS (CONT'D)

### DATA SELECTORS/MULTIPLEXERS

| Sprague Type | Pins per Pkg. | Device Description | Net Each, Lots of 1-24 | 25-99 | 100-999* |
|---|---|---|---|---|---|
| US54150A | 24 | Data selector/ multiplexer | $17.81 | $14.19 | $12.10 |
| US74150A | | | 10.25 | 8.17 | 6.96 |
| US54151A | 16 | 8-input data selector/multiplexer | 8.90 | 7.09 | 6.05 |
| US74151A | | | 5.12 | 4.08 | 3.48 |
| US54153A | 16 | Dual 4-to-1-line data selector/multiplexer | 8.90 | 7.09 | 6.05 |
| US74153A | | | 4.67 | 3.72 | 3.17 |

### DECODER/DEMULTIPLEXER

| Sprague Type | Pins per Pkg. | Device Description | 1-24 | 25-99 | 100-999* |
|---|---|---|---|---|---|
| US54154A | 24 | 4-line-to-16-line decoder/demultiplexer | $13.20 | $10.51 | $8.96 |
| US74154A | | | 7.84 | 6.24 | 5.32 |

### SHIFT REGISTERS

| Sprague Type | Pins per Pkg. | Device Description | 1-24 | 25-99 | 100-999* |
|---|---|---|---|---|---|
| US5491A | 14 | 8-bit shift register | $12.96 | $10.51 | $8.96 |
| US7491A | 14 | 8-bit shift register | 8.55 | 6.81 | 5.81 |
| US5494A | 16 | 4-bit shift register | 10.27 | 8.17 | 6.97 |
| US7494A | 16 | 4-bit shift register | 6.85 | 5.46 | 4.65 |
| US5495A | 14 | 4-bit right-shift left-shift register | 10.27 | 8.17 | 6.97 |
| US7495A | | | 6.85 | 5.46 | 4.65 |
| US5496A | 16 | 5-bit shift register | 12.31 | 9.80 | 8.35 |
| US7496A | | | 8.23 | 6.55 | 5.59 |
| US74164A | 14 | 8-bit serial-in parallel-out shift register | 8.90 | 7.20 | 5.95 |
| US74165A | 16 | 8-bit parallel-in serial-out shift register | 8.90 | 7.20 | 5.95 |
| USS8270A | 14 | 4-bit shift register | 9.24 | 7.35 | 6.27 |
| USN8270A | 14 | | 6.17 | 4.91 | 4.19 |
| USS8271A | 16 | | 10.27 | 8.17 | 6.97 |
| USN8271A | 16 | | 6.78 | 5.40 | 4.60 |

## STANDARD TTL LOGIC

Operating temperature 0° C to +70° C. In plastic 14-pin DIP. Available in hermetic metal bottom flat pack (**J**) or plastic 14-pin DIP (**A**) in operating temp. of −55° C to +125° C. Prices on request.

### GATES

| Sprague Type | Device Description | Net Each, Lots of 1-24 | 25-99 | 100-999* |
|---|---|---|---|---|
| US7400A | Quad 2-input NAND gate | $1.56 | $1.24 | $1.06 |
| US7401A | US7400A w/OC output | 1.56 | 1.24 | 1.06 |
| US7402A | Quad 2-input NOR gate | 1.56 | 1.24 | 1.06 |
| US7403A | Same as US7401A | 1.56 | 1.24 | 1.06 |
| US7404A | Hex inverter gate | 1.94 | 1.55 | 1.32 |
| US7405A | US7404A w/OC output | 1.94 | 1.55 | 1.32 |
| US7408A | Quad 2-input AND gate | 1.70 | 1.35 | 1.15 |
| US7409A | US7408A w/OC output | 1.70 | 1.35 | 1.15 |
| US7410A | Triple 3-input NAND gate | 1.56 | 1.24 | 1.06 |
| US7411A | Triple 3-input AND gate | 1.70 | 1.35 | 1.15 |
| US7418A | Triple 3-input OR gate | 1.70 | 1.35 | 1.15 |
| US7420A | Dual 4-input NAND gate | 1.56 | 1.24 | 1.06 |
| US7427A | Triple 3-input NOR gate | 1.70 | 1.35 | 1.15 |
| US7429A | Dual 4-input NOR gate | 1.70 | 1.35 | 1.15 |
| US7430A | Single 8-input NAND gate | 1.56 | 1.24 | 1.06 |
| US7432A | Quad 2-input OR gate | 1.86 | 1.48 | 1.26 |

### AND-OR-INVERT GATES

| Sprague Type | Device Description | 1-24 | 25-99 | 100-999* |
|---|---|---|---|---|
| US7450A | Expandable dual 2-wide 2-input AND-OR-INVERT gate | $1.56 | $1.24 | $1.06 |
| US7451A | Dual 2-wide 2-input AOI gate | 1.56 | 1.24 | 1.06 |
| US7453A | Expandable 4-wide 2-input AND-OR-INVERT gate | 1.56 | 1.24 | 1.06 |
| US7454A | 4-wide 2-input AOI gate | 1.56 | 1.24 | 1.06 |
| US7459A | Dual 2-wide 2-3-input AOI gate | 1.56 | 1.24 | 1.06 |

### BUFFER/DRIVER GATES

| Sprague Type | Device Description | 1-24 | 25-99 | 100-999* |
|---|---|---|---|---|
| US7426A | Quad 2-input high voltage interface NAND gate | $1.86 | $1.48 | $1.26 |
| US7438A | Quad 2-input NAND buffer w/open collector output | 2.17 | 1.73 | 1.47 |
| US7439A | | 2.17 | 1.73 | 1.47 |
| US7440A | Dual 4-input NAND buffer gate | 1.70 | 1.35 | 1.15 |

### LOGIC INPUT EXPANDER

| Sprague Type | Device Description | 1-24 | 25-99 | 100-999* |
|---|---|---|---|---|
| US7460A | Dual 4-wide expander gate | $1.39 | $1.11 | $0.95 |

### FLIP-FLOPS

| Sprague Type | Device Description | 1-24 | 25-99 | 100-999* |
|---|---|---|---|---|
| US7470A | DC clocked J-K flip-flop | $2.48 | $1.97 | $1.68 |
| US7472A | J-K master-slave flip-flop | 2.17 | 1.73 | 1.47 |
| US7473A | Dual US7472A | 3.56 | 2.84 | 2.42 |
| US7474A | Dual D type edge triggered FF | 3.11 | 2.48 | 2.11 |
| US7476A* | Dual J-K master slave flip-flop with $S_D$ and $R_D$ | 3.73 | 2.97 | 2.53 |
| US74107A | Dual J-K master slave flip-flop | 3.56 | 2.84 | 2.42 |

### MONOSTABLE MULTIVIBRATORS

| Sprague Type | Device Description | 1-24 | 25-99 | 100-999* |
|---|---|---|---|---|
| US74121A | Monostable multivibrator | $4.34 | $3.46 | $2.95 |
| USN9601A | Retriggerable monostable multivibrator | 4.34 | 3.46 | 2.95 |

*16-pin pkg.

★LARGER QUANTITY PRICES ON REQUEST

# SPRAGUE and MOSTEK INTEGRATED CIRCUITS

## HIGH-SPEED TTL LOGIC

Operating temperature 0° C to +70° C. In plastic 14-pin DIP. Available in hermetic metal bottom flat pack (**J**) or plastic 14-pin DIP (**A**) in operating temperature of −55° C to +125° C. Prices on request.

### NAND, AND, INVERTER GATES

| Sprague Type | Device Description | Net Each, Lots of 1-24 | 25-99 | 100-999* |
|---|---|---|---|---|
| **US74H00A** | Quad 2-input NAND gate | $1.95 | $1.55 | $1.32 |
| **US74H01A** | US74H00A w/OC output | 1.95 | 1.55 | 1.32 |
| **US74H04A** | Hex inverter | 2.42 | 1.93 | 1.65 |
| **US74H05A** | Hex inverter w/OC output | 2.42 | 1.93 | 1.65 |
| **US74H08A** | Quad 2-input AND gate | 2.12 | 1.68 | 1.43 |
| **US74H10A** | Triple 3-input NAND gate | 1.95 | 1.55 | 1.32 |
| **US74H11A** | Triple 3-input AND gate | 2.12 | 1.68 | 1.43 |
| **US74H20A** | Dual 4-input NAND gate | 1.95 | 1.55 | 1.32 |
| **US74H21A** | Dual 4-input AND gate | 2.12 | 1.68 | 1.43 |
| **US74H22A** | US74H20A w/OC output | 1.95 | 1.55 | 1.32 |
| **US74H30A** | Single 8-input NAND gate | 1.95 | 1.55 | 1.32 |

### AND-OR GATE

| Sprague Type | Device Description | 1-24 | 25-99 | 100-999* |
|---|---|---|---|---|
| **US74H52A** | Expandable 4-wide 2-2-2-3-input AND-OR gate | $1.95 | $1.55 | $1.32 |

### AND-OR-INVERT GATES

| Sprague Type | Device Description | 1-24 | 25-99 | 100-999* |
|---|---|---|---|---|
| **US74H50A** | Expandable dual 2-wide 2-input AOI gate | $1.95 | $1.55 | $1.32 |
| **US74H51A** | Dual 2-wide 2-input AOI gate | 1.95 | 1.55 | 1.32 |
| **US74H53A** | Expandable 4-wide 2-2-2-3-input AOI gate | 1.95 | 1.55 | 1.32 |
| **US74H54A** | 4-wide 2-2-2-3 input AOI gate | 1.95 | 1.55 | 1.32 |
| **US74H55A** | Expandable 2-wide 4-input AOI gate | 1.95 | 1.55 | 1.32 |

### BUFFER GATES

| Sprague Type | Device Description | 1-24 | 25-99 | 100-999* |
|---|---|---|---|---|
| **US74H37A** | Quad 2-input buffer NAND gate | $3.12 | $2.48 | $2.16 |
| **US74H38A** | US74H37A w/OC output | 3.12 | 2.48 | 2.16 |
| **US74H40A** | Dual 4-input buffer NAND gate | 2.12 | 1.68 | 1.43 |

### EXPANDER GATES

| Sprague Type | Device Description | 1-24 | 25-99 | 100-999* |
|---|---|---|---|---|
| **US74H60A** | Dual 4-input expander for AND-OR-INVERT gate | $1.73 | $1.38 | $1.18 |
| **US74H61A** | Triple 3-input expander for AND-OR gate | 1.73 | 1.38 | 1.18 |
| **US74H62A** | 3-2-2-3 input AND-OR expander for AOI gate | 1.73 | 1.38 | 1.18 |

### FLIP-FLOPS

| Sprague Type | Device Description | 1-24 | 25-99 | 100-999* |
|---|---|---|---|---|
| **US74H71A** | J-K flip-flop with AND-OR inputs | $3.12 | $2.48 | $2.16 |
| **US74H72A** | J-K master-slave flip-flop | 3.12 | 2.48 | 2.16 |
| **US74H73A** | Dual J-K master-slave F-F | 4.87 | 3.87 | 3.30 |
| **US74H74A** | Dual D type edge-triggered flip-flop | 4.46 | 3.56 | 3.03 |
| **US74H76A*** | Dual J-K master-slave flip-flop with $S_D$ and $R_D$ | 5.16 | 4.10 | 3.49 |
| **US74H78A** | Dual J-K master-slave F-F w/common clock and clear | 4.87 | 3.87 | 3.30 |
| **US74H571A** | 50 MHz AND-OR input J-K flip-flop | 3.90 | 3.10 | 2.64 |
| **US74H572A** | 50 MHz AND input J-K flip-flop | 3.90 | 3.10 | 2.64 |

*16-pin. ***Larger Quantity Prices on Request.**

## FUNCTIONAL ELECTRONIC CIRCUITS

### DIGITAL-TO-ANALOG CONVERTER CIRCUITS

**4-bit expandable to 12-bit.**

| Sprague Type | Description | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| **UHC001** | Ladder switch (TO-91) | $ 69.00 | $ 55.28 | $46.07 |
| **UHC024** | Buffer amplifier (TO-87) | 60.00 | 47.80 | 39.90 |
| **UHR010** | Ladder network (TO-90) | 37.68 | 30.15 | 25.13 |
| **UHR002** | Kit of above for 12-bits | 131.93 | 105.56 | 87.98 |

**5-bit expandable to 10-bit.**

| Sprague Type | Description | 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| **UHC036** | Ladder switch (TO-87) | $93.00 | $74.66 | $62.22 |
| **UHC037** | Buffer amplifier (TO-87) | 80.50 | 64.32 | 53.62 |
| **UHR001** | Ladder network (TO-86) | 48.67 | 38.94 | 32.45 |
| **UHR001A** | Ladder network (TO-86) | 56.13 | 44.91 | 37.43 |

### DIGITAL-TO-ANALOG CONVERTER NETWORKS (FIG. A)

| Sprague Type | Description | 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| **UHM400** | 1–4 bit Moduline | $ 47.51 | $ 38.01 | $ 31.68 |
| **UHM410** | 5–8 bit Moduline | 46.51 | 39.61 | 33.01 |
| **UHM450** | 12-bit kit: UHM400, -410A, B | 153.85 | 123.09 | 102.58 |
| **UHM500** | 10-bit—DIP compatible | 82.00 | 65.76 | 54.08 |
| **UHM504** | 1–4 bit Moduline, modified DIP | 34.50 | 27.72 | 24.40 |
| **UHM505** | 5-bit, non-hermetic DIP | 41.60 | 33.37 | 29.37 |
| **UHM508** | 5- to 8-bit expansion module | 36.50 | 29.09 | 25.60 |
| **UHM512** | 12-bit kit: UHM504, -508A, B | 116.50 | 93.31 | 82.21 |

### DUAL AC/DC REFERENCE SWITCH

| Sprague Type | Description | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| **UHC023** | DTL/TTL compatible | $29.97 | $23.97 | $19.98 |

### QUAD POWER DRIVER

| Sprague Type | Description | 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| **UHC131** | −55° C to +125° C (TO-87) | $16.90 | $13.51 | $11.26 |

### DUAL POSITIVE BUFFER SWITCHES

| Sprague Type | | Description | 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|
| **UHC074** | 20 V | DTL/TTL compatible (TO-87) | $85.80 | $68.65 | $57.20 |
| **UHC080** | 30 V | | 85.80 | 68.25 | 57.20 |

### SWITCH AND CORE DRIVER

UHC047 in flat pack; UHP004 in DIP.

| Sprague Type | Description | 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| **UHC047** | 5-bit analog switch | $19.67 | $15.12 | $12.60 |
| **UHP004** | Quad high current core driver | 9.45 | 7.50 | 6.30 |

### NPN-PNP PAIRS AND QUAD TRANSISTORS (TO-85)

$f_t = 200$ MHz; $V_{CBO} = 60$ V; $h_{FE} = 100$–$300$ at 150 mA; $C_{ob} = 8$ pF.

| Sprague Type | Description | 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| **UNC005** | NPN quad | $20.80 | $16.65 | $13.85 |
| **UNC006** | PNP quad | 28.50 | 22.80 | 19.00 |
| **UNC007** | NPN-PNP comp. pair | 24.65 | 19.75 | 16.45 |

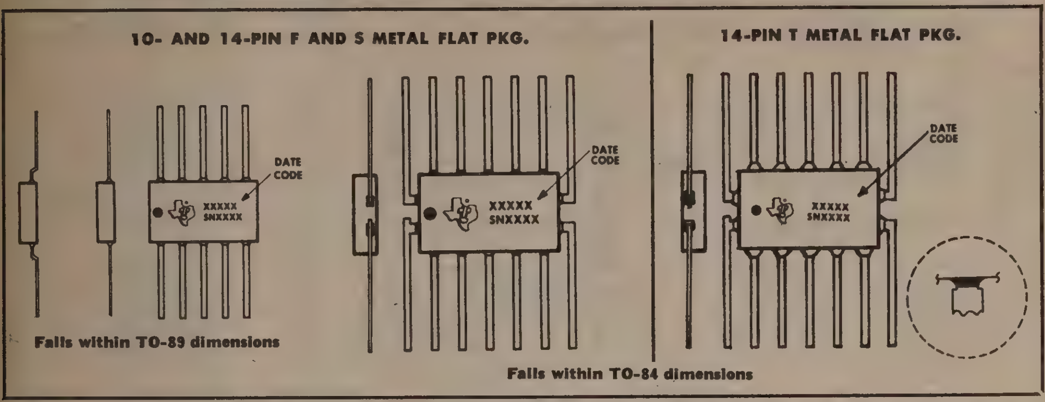
**WE CAN PROVIDE COMPLETE SPECIFICATIONS ON ALL CURRENT SPRAGUE SEMICONDUCTOR PRODUCTS AS WELL AS ANY NEW ITEMS INTRODUCED AFTER PUBLICATION OF THIS CATALOG.**

## MOSTEK MOS INTEGRATED CIRCUITS

Incorporates ion implantation processing step by which standard P-channel, enhancement-mode MOS devices are made to be compatible with TTL/DTL logic levels. Accomplished by doping the silicon wafer with ions of the proper dopant, such as phosphorus or boron. These ions are accelerated to a high energy level, 40,000 to 300,000 electron volts, and bombard the wafer. The ion penetration depth is determined by their energy. An aluminum mask or a thick oxide (12,000 Angstrom) is sufficient for masking areas where implantation is not desired. Ion implantation in the channel or gate region (thin oxide area) reduces the threshold or turn on voltage requirements. This controlled process allows the threshold to be set at a desired level so that five volt logic swings will turn the transistors on-and-off and still maintain good noise margins. Each of these products interfaces directly, at all inputs and outputs, to TTL or DTL without the use of external resistors or other interface components. All MOSTEK ROM's can be custom programmed to individual customer specifications by coding a single mask used during processing. Please inquire about coding sheets available. Package: Suffix **L**, TO-100; suffix **P**, ceramic DIP.

| MOSTEK Type | Pins per Pkg. | Power Supply Volts | Device Description | Net Each, Lots of 1-24 | 25-99 | 100 Up |
|---|---|---|---|---|---|---|
| **MK1001L** | 10 | −12 to −16 | Triple 66-bit dynamic shift register | $15.50 | $13.00 | $10.75 |
| **MK1002L** | 10 | +5, −12 | Dual 128-bit static shift register | 8.00 | 6.00 | 4.50 |
| **MK1002P** | 16 | | | 10.00 | 8.00 | 6.50 |
| **MK1007P** | 16 | +5, −12 | Quad 80-bit dynamic shift register | 12.00 | 10.00 | 8.00 |
| **MK2002P** | 28 | +12, −12 | 2240-bit (64 x 5 x 7) ROM character generator—ASCII encoded | 17.50 | 14.50 | 13.00 |
| **MK2101P** | 16 | +12, −12 | | 22.00 | 18.50 | 15.00 |
| **MK2302P** | 24 | +5, −12 | | 18.50 | 15.50 | 14.00 |
| **MK2400P** | 24 | +5, −12 | 2560-bit (256 x 10) ROM | 21.45 | 19.25 | 17.05 |
| **MK3101P** | 24 | +12, −12 | 2240-bit (64 x 7 x 5) ROM character generator—ASCII encoded | 26.00 | 21.50 | 17.50 |
| **MK4001P** | 40 | −18 | 256-bit RAM—wire-OR capable | 35.00 | 30.00 | 24.00 |
| **MK4002P** | 24 | +5, −12 | 256-bit (64 x 4) RAM—internal address decoder | 25.00 | 20.00 | 18.00 |
| **MK4006P** | 16 | +5, −15 | 1024-bit RAM—internal address decoder | 45.00 | 35.00 | 28.00 |
| **MK4007P** | 16 | +5, −7 to −15 | 256-bit RAM—replaces Intel 1101 pin-for-pin | 16.00 | 14.00 | 11.50 |

# Texas Instruments INTEGRATED CIRCUITS


10- AND 14-PIN F AND S METAL FLAT PKG.
DATE CODE
XXXXX
SNXXXX
Falls within TO-89 dimensions
DATE CODE
XXXXX
SNXXXX
14-PIN T METAL FLAT PKG.
DATE CODE
XXXXX
SNXXXX
Falls within TO-84 dimensions

PACKAGE SUFFIX: **F, S, T:** Metal flat pkg. **H, U, W, Z:** Ceramic flat pkg. **J:** Ceramic dual-in-line pkg. **N, P:** Plastic dual-in-line pkg. **L:** Plug-in pkg. See following TI Integrated Circuit pages for additional ordering information (Mech-Pak carrier, formed and solder-dipped leads, insulators) and package description.

## MILITARY TEMPERATURE RANGE DEVICES (−55° C TO +125° C)

### LINEAR OPERATIONAL AMPLIFIERS

| TI Type | Circuits Function | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| SN52101AJ | High-performance operational amplifiers | $ 5.28 | $ 5.28 | $ 4.58 |
| SN52101AL | | 4.52 | 4.52 | 4.08 |
| SN52101AZ | | 6.38 | 6.38 | 5.52 |
| SN52107J | High-performance operational amplifiers | 13.13 | 13.13 | 11.37 |
| SN52107L | | 9.97 | 9.97 | 9.00 |
| SN52107Z | | 15.93 | 15.93 | 13.81 |
| SN52558L | Dual high-performance operational amplifier | 4.06 | 4.06 | 3.66 |
| SN52702AL | General purpose operational amplifiers | 2.66 | 2.66 | 2.40 |
| SN52702AN | | 2.33 | 2.33 | 2.10 |
| SN52702AS | | 9.73 | 9.73 | 8.44 |
| SN52702L | | 2.26 | 2.26 | 2.04 |
| SN52702N | | 1.80 | 1.80 | 1.62 |
| SN52702S | | 7.60 | 7.60 | 6.59 |
| SN52709AL | High-performance operational amplifiers | 2.53 | 2.53 | 2.28 |
| SN52709AN | | 2.06 | 2.06 | 1.86 |
| SN52709AS | | 10.45 | 10.45 | 9.06 |
| SN52709L | | 2.07 | 2.07 | 1.87 |
| SN52709N | | 2.19 | 2.19 | 1.98 |
| SN52709S | | 7.21 | 7.21 | 6.25 |
| SN52741J | High-performance operational amplifiers | 2.80 | 2.80 | 2.43 |
| SN52741L | | 2.25 | 2.25 | 2.03 |
| SN52741Z | | 3.38 | 3.38 | 2.92 |
| SN52747J | Dual high-performance operational amplifier | 5.05 | 5.05 | 4.38 |
| SN52748J | High-performance operational amplifiers | 2.80 | 2.80 | 2.43 |
| SN52748L | | 2.25 | 2.25 | 2.03 |
| SN52748Z | | 3.38 | 3.38 | 2.92 |
| SN52770J | High-performance operational amplifiers | 17.82 | 17.82 | 15.44 |
| SN52770L | | 14.96 | 14.96 | 13.50 |
| SN52770Z | | 18.75 | 18.75 | 16.25 |
| SN52771J | High-performance operational amplifiers | 17.82 | 17.82 | 15.44 |
| SN52771L | | 14.96 | 14.96 | 13.50 |
| SN52771Z | | 18.75 | 18.75 | 16.25 |

### LINEAR DIFFERENTIAL COMPARATORS

| TI Type | Circuits Function | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| SN52710J | Differential comparators | $2.63 | $2.63 | $2.27 |
| SN52710L | | 2.07 | 2.07 | 1.87 |
| SN52710N | | 1.73 | 1.73 | 1.56 |
| SN52710S | | 5.58 | 5.58 | 4.84 |
| SN52711J | Dual-channel differential comparators with strobes | 3.00 | 3.00 | 2.60 |
| SN52711L | | 2.33 | 2.33 | 2.10 |
| SN52711N | | 1.99 | 1.99 | 1.80 |
| SN52711S | | 9.34 | 9.34 | 8.10 |

### LINEAR VIDEO AMPLIFIERS

| TI Type | Circuits Function | 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| SN52733L | Differential video amplifiers | $ 4.26 | $ 4.26 | $ 3.84 |
| SN5510F | | 6.60 | 6.60 | 5.90 |
| SN5510L | | 6.78 | 6.78 | 6.12 |
| SN5511F | | 22.00 | 18.00 | 15.40 |
| SN5511L | | 18.62 | 18.62 | 16.80 |

### LINEAR SENSE AMPLIFIERS

| TI Type | Circuits Function | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| SN5524J | Dual sense amplifiers | $12.50 | $12.50 | $11.00 |
| SN5525J | | 2.55 | 2.55 | 4.81 |

### LINEAR LINE CIRCUITS

| TI Type | Circuits Function | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| SN55107AJ | Dual line receivers | $6.00 | $6.00 | $5.20 |
| SN55108AJ | | 6.00 | 6.00 | 5.20 |
| SN55109J | | 6.57 | 6.57 | 5.69 |
| SN55110J | | 6.57 | 6.57 | 5.69 |

### LINEAR MEMORY DRIVERS

| TI Type | Circuits Function | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| SN55325J | Memory driver | $9.38 | $9.38 | $8.12 |

### LINEAR COMMUNICATIONS CIRCUITS

| TI Type | Circuits Function | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| SN56502L | Logarithmic amplifiers | $9.00 | $9.00 | $7.80 |
| SN56502N | | 6.65 | 6.65 | 6.00 |
| SN56514L | Balanced mixer | 3.26 | 3.26 | 2.94 |

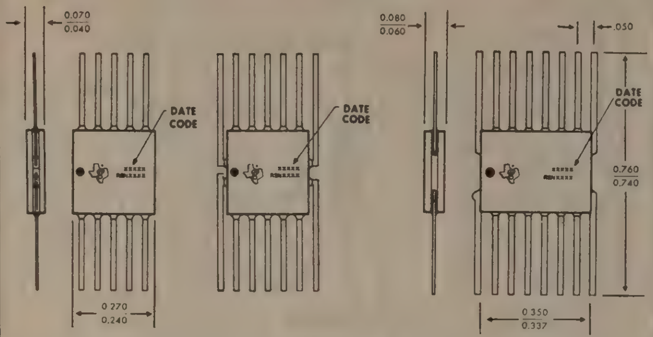
### SERIES 54 DIGITAL—TTL

| TI Type | Circuits Function | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| SN5400J | Quad 2-input positive-NAND gate | $ 6.37 | $5.07 | $4.32 |
| SN5400N | | 2.33 | 1.85 | 1.58 |
| SN5400W | | 6.37 | 5.07 | 4.32 |
| SN5401J | Quad 2-input positive-NAND gate (open collector) | 5.31 | 4.23 | 3.60 |
| SN5401N | | 2.33 | 1.85 | 1.58 |
| SN5401W | | 5.31 | 4.23 | 3.60 |
| SN5402J | Quad 2-input positive-NOR gate | 6.10 | 4.86 | 4.14 |
| SN5402N | | 2.67 | 2.12 | 1.81 |
| SN5402W | | 6.10 | 4.86 | 4.14 |
| SN5403J | Quad 2-input positive-NAND gate (open collector) | 5.31 | 4.23 | 3.60 |
| SN5403N | | 2.33 | 1.85 | 1.58 |
| SN5404J | Hex inverter | 6.64 | 5.28 | 4.40 |
| SN5404N | | 2.91 | 2.32 | 1.97 |
| SN5404W | | 6.64 | 5.28 | 4.40 |
| SN5405J | Hex inverter (open collector) | 6.64 | 5.28 | 4.40 |
| SN5405N | | 2.91 | 2.32 | 1.97 |
| SN5405W | | 6.64 | 5.28 | 4.40 |
| SN5406J | 30 V hex inverter buffer/driver | 11.96 | 9.52 | 8.12 |
| SN5406N | | 5.25 | 4.18 | 3.56 |
| SN5406W | | 11.96 | 9.52 | 8.12 |
| SN5407J | 30 V hex buffer/driver | 11.96 | 9.52 | 8.12 |
| SN5407N | | 5.25 | 4.18 | 3.56 |
| SN5407W | | 11.96 | 9.52 | 8.12 |
| SN5408J | Quad 2-input positive-AND gate | 5.82 | 4.63 | 3.95 |
| SN5408N | | 2.56 | 2.04 | 1.74 |
| SN5408W | | 5.82 | 4.63 | 3.95 |
| SN5409J | SN5408 with open-collector output | 5.82 | 4.63 | 3.95 |
| SN5409N | | 2.56 | 2.04 | 1.74 |
| SN5409W | | 5.82 | 4.63 | 3.95 |
| SN5410J | Triple 3-input positive-NAND gate | 5.31 | 4.23 | 3.60 |
| SN5410N | | 2.33 | 1.85 | 1.58 |
| SN5410W | | 5.31 | 4.23 | 3.60 |
| SN5413J | Dual NAND Schmitt trigger | 8.31 | 6.62 | 5.64 |
| SN5413N | | 3.64 | 2.90 | 2.47 |
| SN5413W | | 8.31 | 6.62 | 5.64 |
| SN5416J | 15 V hex inverter buffer/driver | 9.96 | 7.93 | 6.76 |
| SN5416N | | 4.37 | 3.48 | 2.97 |
| SN5416W | | 9.96 | 7.93 | 6.76 |

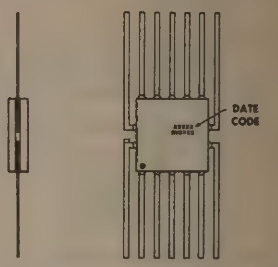
SERIES 54 DIGITAL CONT'D ON NEXT PAGE

**SEE FOLLOWING TI INTEGRATED CIRCUIT PAGES FOR ADDITIONAL ORDERING INFORMATION**

10-, 14- AND 16-PIN H CERAMIC FLAT PKG.



14-PIN U AND Z CERAMIC FLAT PKG.



Falls within JEDEC MO-004AA dimensions

## MILITARY TEMPERATURE RANGE DEVICES (−55° C TO +125° C) CONT'D

### SERIES 54 DIGITAL—TTL (CONTINUED)

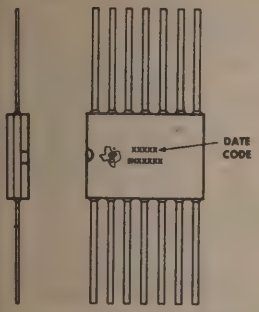
| TI Type | Circuit Functions | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| SN5417J | 15 V hex buffer/driver | $ 9.96 | $ 7.93 | $ 6.76 |
| SN5417N | | 4.37 | 3.48 | 2.97 |
| SN5417W | | 9.96 | 7.93 | 6.76 |
| SN5420J | Dual 4-input positive-NAND gate | 4.50 | 3.58 | 3.05 |
| SN5420N | | 1.99 | 1.58 | 1.35 |
| SN5420W | | 4.50 | 3.58 | 3.05 |
| SN5423J | Dual 4-input NOR gate with strobe | 5.50 | 4.32 | 3.93 |
| SN5423N | | 2.80 | 2.23 | 1.90 |
| SN5423W | | 5.50 | 4.32 | 3.93 |
| SN5425J | Dual 4-input NOR gate with strobe | 5.03 | 3.95 | 3.59 |
| SN5425N | | 2.56 | 2.04 | 1.74 |
| SN5425W | | 5.03 | 3.95 | 3.59 |
| SN5426J | Quad 2-input high voltage (MOS) interface NAND gate | 5.04 | 4.00 | 3.42 |
| SN5426N | | 2.80 | 2.23 | 1.90 |
| SN5430J | 8-input positive-NAND gate | 4.50 | 3.58 | 3.05 |
| SN5430N | | 1.99 | 1.58 | 1.35 |
| SN5430W | | 4.50 | 3.58 | 3.05 |
| SN5437J | Quad 2-input positive-NAND buffer | 7.42 | 5.91 | 5.04 |
| SN5437N | | 3.26 | 2.59 | 2.21 |
| SN5437W | | 7.42 | 5.91 | 5.04 |
| SN5438J | Quad 2-input positive-NAND buffer (open collector) | 7.42 | 5.91 | 5.04 |
| SN5438N | | 3.26 | 2.59 | 2.21 |
| SN5438W | | 7.42 | 5.91 | 5.04 |
| SN5440J | Dual 4-input positive-NAND power gate | 6.10 | 4.86 | 4.14 |
| SN5440N | | 2.67 | 2.12 | 1.81 |
| SN5440W | | 6.10 | 4.86 | 4.14 |
| SN5442J | BCD-to-decimal decoder | 27.05 | 21.54 | 18.36 |
| SN5442N | | 11.90 | 9.48 | 8.08 |
| SN5442W | | 27.05 | 21.54 | 18.36 |
| SN5443J | Excess-3-to-decimal decoder | 27.05 | 21.54 | 18.36 |
| SN5443N | | 11.90 | 9.48 | 8.08 |
| SN5443W | | 27.05 | 21.54 | 18.36 |
| SN5444J | Excess-3-gray-to-decimal decoder | 27.05 | 21.54 | 18.36 |
| SN5444N | | 11.90 | 9.48 | 8.08 |
| SN5444W | | 27.05 | 21.54 | 18.36 |
| SN5445J | BCD-to-decimal decoder/driver (80 mA sink) | 41.95 | 33.41 | 28.48 |
| SN5445N | | 18.14 | 14.44 | 12.31 |
| SN5445W | | 41.95 | 33.41 | 28.48 |
| SN5446AJ | BCD-to-seven-segment decoder/driver | 34.02 | 27.09 | 23.09 |
| SN5446AN | | 14.95 | 11.90 | 10.15 |
| SN5446AW | | 34.02 | 27.09 | 23.09 |
| SN5447AJ | BCD-to-seven-segment decoder/driver | 31.34 | 24.96 | 21.28 |
| SN5447AN | | 13.80 | 10.99 | 9.37 |
| SN5447AW | | 31.34 | 24.96 | 21.28 |
| SN5448J | BCD-to-seven-segment decoder/driver | 27.05 | 21.54 | 18.36 |
| SN5448N | | 11.90 | 9.48 | 8.08 |
| SN5448W | | 27.05 | 21.54 | 18.36 |
| SN5450J | Dual AND-OR-INVERT gate with expander inputs | 5.31 | 4.23 | 4.60 |
| SN5450N | | 2.33 | 1.85 | 1.58 |
| SN5450W | | 5.31 | 4.23 | 3.60 |
| SN5451J | Dual AND-OR-INVERT gate | 5.31 | 4.23 | 3.60 |
| SN5451N | | 2.33 | 1.85 | 1.58 |
| SN5451W | | 5.31 | 4.23 | 3.60 |
| SN5453J | 4-wide 2-input AND-OR-INVERT gate with expander | 5.31 | 4.23 | 3.60 |
| SN5453N | | 2.33 | 1.85 | 1.58 |
| SN5453W | | 5.31 | 4.23 | 3.60 |
| SN5454J | 4-wide 2-input AND-OR-INVERT gate | 5.31 | 4.23 | 3.60 |
| SN5454N | | 2.33 | 1.85 | 1.58 |
| SN5454W | | 5.31 | 4.23 | 3.60 |
| SN5460J | Dual 4-input expander | 3.98 | 3.17 | 2.70 |
| SN5460N | | 1.74 | 1.39 | 1.18 |
| SN5460W | | 3.98 | 3.17 | 2.70 |
| SN5470J | Edge-triggered J-K flip-flop | 7.97 | 6.34 | 5.41 |
| SN5470N | | 3.49 | 2.78 | 2.37 |
| SN5470W | | 7.97 | 6.34 | 5.41 |

| TI Type | Circuit Functions | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| SN5472J | J-K master-slave flip-flop | $ 7.43 | $ 5.92 | $ 5.04 |
| SN5472N | | 3.25 | 2.59 | 2.21 |
| SN5472W | | 7.43 | 5.92 | 5.04 |
| SN5472J | Dual J-K master-slave flip-flop | 12.21 | 9.72 | 8.29 |
| SN5473N | | 5.36 | 4.26 | 3.64 |
| SN5473W | | 12.21 | 9.72 | 8.29 |
| SN5474J | Dual D-type edge-triggered flip-flop | 10.61 | 8.44 | 7.20 |
| SN5474N | | 4.66 | 3.71 | 3.16 |
| SN5474W | | 10.61 | 8.44 | 7.20 |
| SN5475J | Quad bistable latch | 18.71 | 14.89 | 12.70 |
| SN5475N | | 8.19 | 6.52 | 5.56 |
| SN5475W | | 18.71 | 14.89 | 12.70 |
| SN5476J | Dual J-K master-slave flip-flop | 12.87 | 10.25 | 8.74 |
| SN5476N | | 5.65 | 4.50 | 3.83 |
| SN5476W | | 12.87 | 10.25 | 8.74 |
| SN5480J | Gated full adder | 14.28 | 11.37 | 9.70 |
| SN5480N | | 6.28 | 5.00 | 4.26 |
| SN5480W | | 14.28 | 11.37 | 9.70 |
| SN5481J | 16-bit active-element memory | 24.62 | 19.60 | 16.71 |
| SN5481N | | 13.68 | 10.90 | 9.29 |
| SN5481W | | 24.62 | 19.60 | 16.71 |
| SN5482J | 2-bit binary full adder | 17.98 | 14.31 | 12.20 |
| SN5482N | | 9.31 | 7.41 | 6.32 |
| SN5482W | | 17.98 | 14.31 | 12.20 |
| SN5483J | 4-bit binary full adder | 26.64 | 21.22 | 18.09 |
| SN5483N | | 14.82 | 11.80 | 10.06 |
| SN5483W | | 26.64 | 21.22 | 18.09 |
| SN5484J | 16-bit active-element memory | 25.92 | 20.64 | 17.60 |
| SN5484N | | 9.31 | 7.41 | 6.32 |
| SN5484W | | 25.92 | 20.64 | 17.60 |
| SN5486J | Quad 2-input EXCLUSIVE-OR gate | 9.88 | 7.86 | 6.70 |
| SN5486N | | 5.50 | 4.38 | 3.73 |
| SN5486W | | 9.88 | 7.86 | 6.70 |
| SN5490J | Decade counter | 21.78 | 17.35 | 14.79 |
| SN5490N | | 9.57 | 7.62 | 6.50 |
| SN5490W | | 21.78 | 17.35 | 14.79 |
| SN5491AJ | 8-bit shift register | 21.22 | 16.89 | 14.40 |
| SN5491AN | | 12.96 | 10.32 | 8.80 |
| SN5491AW | | 21.22 | 16.89 | 14.40 |
| SN5492J | Divide-by-twelve counter | 21.78 | 17.35 | 14.79 |
| SN5492N | | 9.57 | 7.62 | 6.50 |
| SN5492W | | 21.78 | 17.35 | 14.79 |
| SN5493J | 4-bit binary counter | 21.78 | 17.35 | 14.79 |
| SN5493N | | 9.57 | 7.62 | 6.50 |
| SN5493W | | 21.78 | 17.35 | 14.79 |
| SN5494J | 4-bit shift register | 23.32 | 18.57 | 15.83 |
| SN5494N | | 10.27 | 8.17 | 6.97 |
| SN5494W | | 23.32 | 18.57 | 15.83 |
| SN5495AJ | 4-bit right-shift, left-shift shift register | 21.86 | 17.41 | 14.85 |
| SN5495AN | | 10.27 | 8.17 | 6.97 |
| SN5495AW | | 21.86 | 17.41 | 14.85 |
| SN5496J | 5-bit shift register | 27.62 | 21.99 | 18.75 |
| SN5496N | | 12.31 | 9.80 | 8.35 |
| SN54100N | 8-bit bistable latch | 13.68 | 10.90 | 9.29 |
| SN54104J | Gated J-K master-slave flip-flop | 7.28 | 5.80 | 4.94 |
| SN54104N | | 4.05 | 3.22 | 2.75 |
| SN54104W | | 7.28 | 5.80 | 4.94 |
| SN54105J | Gated J-K master-slave flip-flop | 7.28 | 5.80 | 4.94 |
| SN54105N | | 4.05 | 3.22 | 2.75 |
| SN54105W | | 7.28 | 5.80 | 4.94 |
| SN54107J | Dual J-K master-slave flip-flop | 12.21 | 9.72 | 8.29 |
| SN54107N | | 5.36 | 4.26 | 3.64 |

SERIES 54 DIGITAL CONT'D ON NEXT PAGE

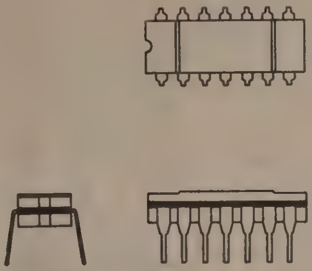
SEE FOLLOWING TI INTEGRATED CIRCUIT PAGES FOR ADDITIONAL ORDERING INFORMATION

**14-PIN W CERAMIC FLAT PKG.**



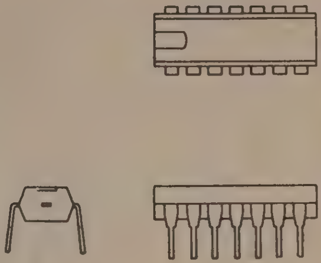
Falls within JEDEC MO-004AA dimensions

**14-PIN J CERAMIC DUAL-IN-LINE PKG.**



Falls within JEDEC TO-116 and MO-001AA dimensions

**14-PIN N PLASTIC DUAL-IN-LINE PKG.**



Falls within JEDEC TO-116 and MO-001AA dimensions

## MILITARY TEMPERATURE RANGE DEVICES (−55° C TO +125° C) CONT'D

### SERIES 54 DIGITAL—TTL (CONTINUED)

| TI Type | Circuits Function | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| SN54110J | Gated J-K master-slave flip-flop with data lockout | $ 6.41 | $ 5.04 | $ 4.58 |
| SN54110N | | 3.26 | 2.59 | 2.21 |
| SN54110W | | 6.41 | 5.04 | 4.58 |
| SN54111J | Dual J-K master-slave flip-flop with data lockout | 8.68 | 6.91 | 5.89 |
| SN54111N | | 5.21 | 4.15 | 3.54 |
| SN54111W | | 8.68 | 6.91 | 5.89 |
| SN54121J | One-shot monostable multivibrator | 14.57 | 11.61 | 9.89 |
| SN54121N | | 8.10 | 6.45 | 5.50 |
| SN54121W | | 14.57 | 11.61 | 9.89 |
| SN54122J | Retriggerable monostable multivibrator with clear | 12.82 | 10.08 | 9.16 |
| SN54122N | | 6.51 | 5.19 | 4.42 |
| SN54122W | | 12.82 | 10.08 | 9.16 |
| SN54145J | BCD-to-decimal decoder/driver (15 V outputs) | 32.40 | 25.80 | 22.00 |
| SN54145N | | 15.38 | 12.25 | 10.45 |
| SN54145W | | 32.40 | 25.80 | 22.00 |
| SN54150N | 16-bit data selector | 17.81 | 14.19 | 12.10 |
| SN54151J | 8-bit data selector with strobe | 16.03 | 12.77 | 10.88 |
| SN54151N | | 8.90 | 7.09 | 6.05 |
| SN54151W | | 16.03 | 12.77 | 10.88 |
| SN54153J | Dual 4-to-1-line data selector/multiplexer | 16.03 | 12.77 | 10.88 |
| SN54153N | | 8.90 | 7.09 | 6.05 |
| SN54153W | | 16.03 | 12.77 | 10.88 |
| SN54154N | 4-to-16-line decoder/demultiplexer | 13.20 | 10.51 | 8.96 |
| SN54155J | Dual 2-to-4-line decoder demultiplexer | 15.23 | 12.13 | 10.34 |
| SN54155N | | 6.69 | 5.33 | 4.54 |
| SN54155W | | 15.23 | 12.13 | 10.34 |
| SN54156J | SN54155 with open-collector output | 15.23 | 12.13 | 10.34 |
| SN54156N | | 6.69 | 5.33 | 4.54 |
| SN54156W | | 15.23 | 12.13 | 10.34 |
| SN54166J | 8-bit shift register | 23.73 | 18.64 | 16.95 |
| SN54166N | | 12.05 | 9.60 | 8.18 |
| SN54166W | | 23.73 | 18.64 | 16.95 |
| SN54170J | 4-by-4 register file | 21.76 | 17.33 | 14.78 |
| SN54170W | | 21.76 | 17.33 | 14.78 |
| SN54180J | 8-bit odd/even parity generator/checker | 25.51 | 20.31 | 17.32 |
| SN54180N | | 14.17 | 11.28 | 9.62 |
| SN54180W | | 25.51 | 20.31 | 17.32 |
| SN54181N | 4-bit ALU function generator | 36.45 | 29.02 | 24.75 |
| SN54182N | Look-ahead carry generator for ALU | 8.02 | 6.39 | 5.44 |
| SN54190J | Synchronous up/down counter | 33.49 | 26.31 | 23.92 |
| SN54190N | | 17.01 | 13.54 | 11.55 |
| SN54190W | | 33.49 | 26.31 | 23.92 |
| SN54191J | Synchronous up/down counter | 33.49 | 26.31 | 23.92 |
| SN54191N | | 17.01 | 13.54 | 11.55 |
| SN54191W | | 33.49 | 26.31 | 23.92 |
| SN54192J | Synchronous up/down decade counter | 38.75 | 30.86 | 26.31 |
| SN54192N | | 17.01 | 13.54 | 11.55 |
| SN54193J | Synchronous up/down 4-bit binary counter | 38.75 | 30.86 | 26.31 |
| SN54193N | | 17.01 | 13.54 | 11.55 |
| SN54198N | 8-bit shift register | 16.09 | 12.81 | 10.92 |
| SN54199N | | 16.09 | 12.81 | 10.92 |

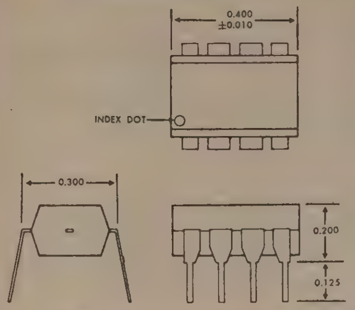
SEE FOLLOWING TI INTEGRATED CIRCUIT PAGES FOR ADDITIONAL ORDERING INFORMATION

### SERIES 54H HIGH-SPEED DIGITAL—TTL

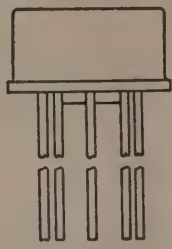
| TI Type | Circuits Function | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| SN54H00J | Quad 2-input positive-NAND gate | $ 6.64 | $5.28 | $4.50 |
| SN54H00N | | 2.91 | 2.32 | 1.97 |
| SN54H00W | | 6.64 | 5.28 | 4.50 |
| SN54H01J | Quad 2-input positive-NAND gate (open collector) | 6.64 | 5.28 | 4.50 |
| SN54H01N | | 2.91 | 2.32 | 1.97 |
| SN54H01W | | 6.64 | 5.28 | 4.50 |
| SN54H04J | Hex inverter | 8.29 | 6.60 | 5.63 |
| SN54H04N | | 3.64 | 2.90 | 2.47 |
| SN54H04W | | 8.29 | 6.60 | 5.63 |
| SN54H05J | Hex inverter (open collector) | 8.29 | 6.60 | 5.63 |
| SN54H05N | | 3.64 | 2.90 | 2.47 |
| SN54H05W | | 8.29 | 6.60 | 5.63 |
| SN54H10J | Triple 3-input positive-NAND gate | 7.28 | 5.80 | 4.94 |
| SN54H10N | | 2.91 | 2.32 | 1.97 |
| SN54H10W | | 7.28 | 5.80 | 4.94 |
| SN54H11J | Triple 3-input positive-AND gate | 7.28 | 5.80 | 4.94 |
| SN54H11N | | 3.19 | 2.54 | 2.16 |
| SN54H11W | | 7.28 | 5.80 | 4.94 |
| SN54H20J | Dual 4-input positive-NAND gate | 5.63 | 4.48 | 3.82 |
| SN54H20N | | 2.46 | 1.96 | 1.67 |
| SN54H20W | | 5.63 | 4.48 | 3.82 |
| SN54H21J | Dual 4-input positive-AND gate | 7.28 | 5.80 | 4.94 |
| SN54H21N | | 3.19 | 2.54 | 2.16 |
| SN54H21W | | 7.28 | 5.80 | 4.94 |
| SN54H22J | Dual 4-input positive-NAND gate (open collector) | 5.63 | 4.48 | 3.82 |
| SN54H22N | | 2.46 | 1.96 | 1.67 |
| SN54H22W | | 5.63 | 4.48 | 3.82 |
| SN54H30J | 8-input positive-NAND gate | 5.63 | 4.48 | 3.82 |
| SN54H30N | | 2.46 | 1.96 | 1.67 |
| SN54H30W | | 5.63 | 4.48 | 3.82 |
| SN54H40J | Dual 4-input positive-NAND buffer | 7.28 | 5.80 | 4.94 |
| SN54H40N | | 3.19 | 2.54 | 2.16 |
| SN54H40W | | 7.28 | 5.80 | 4.94 |
| SN54H50J | Expandable dual 2-wide 2-input AND-OR-INVERT gate | 6.64 | 5.28 | 4.50 |
| SN54H50N | | 2.91 | 2.32 | 1.97 |
| SN54H50W | | 6.64 | 5.28 | 4.50 |
| SN54H51J | Dual 2-wide 2-input AND-OR-INVERT gate | 6.64 | 5.28 | 4.50 |
| SN54H51N | | 2.91 | 2.32 | 1.97 |
| SN54H51W | | 6.64 | 5.28 | 4.50 |
| SN54H52J | Expandable 2-2-2-3-input AND-OR gate | 6.64 | 5.28 | 4.50 |
| SN54H52N | | 2.91 | 2.32 | 1.97 |
| SN54H52W | | 6.64 | 5.28 | 4.50 |
| SN54H53J | Expandable 2-2-2-3-input AND-OR-INVERT gate | 6.64 | 5.28 | 4.50 |
| SN54H53N | | 2.91 | 2.32 | 1.97 |
| SN54H53W | | 6.64 | 5.28 | 4.50 |
| SN54H54J | 2-2-2-3-input AND-OR-INVERT gate | 6.64 | 5.28 | 4.50 |
| SN54H54N | | 2.91 | 2.32 | 1.97 |
| SN54H54W | | 6.64 | 5.28 | 4.50 |
| SN54H55J | Expandable 4-input AND-OR gate | 6.64 | 5.28 | 4.50 |
| SN54H55N | | 2.91 | 2.32 | 1.97 |
| SN54H55W | | 6.64 | 5.28 | 4.50 |
| SN54H60J | Dual 4-input expander | 4.97 | 3.96 | 3.37 |
| SN54H60N | | 2.18 | 1.74 | 1.48 |
| SN54H60W | | 4.97 | 3.96 | 3.37 |
| SN54H61J | Triple 3-input expanders | 4.97 | 3.96 | 3.37 |
| SN54H61N | | 2.18 | 1.74 | 1.48 |
| SN54H61W | | 4.97 | 3.96 | 3.37 |
| SN54H62J | 3-2-2-3-input AND-OR expander | 4.97 | 3.96 | 3.37 |
| SN54H62N | | 2.18 | 1.74 | 1.48 |
| SN54H62W | | 4.97 | 3.96 | 3.37 |
| SN54H71J | J-K master-slave flip-flop (AND-OR inputs) | 10.61 | 8.44 | 7.20 |
| SN54H71N | | 4.66 | 3.71 | 3.16 |
| SN54H71W | | 10.61 | 8.44 | 7.20 |

SERIES 54H DIGITAL CONT'D ON NEXT PAGE

**8-PIN P PLASTIC DUAL-IN-LINE PKG.**

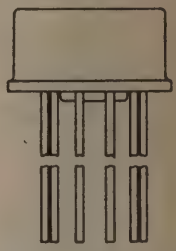


**8-PIN L PLUG-IN PKG.**



Same as JEDEC TO-99 and MO-002AK, except for diameter of standoff

**10-PIN L PLUG-IN PKG.**



Same as JEDEC TO-100 and MO-006AD, except for diameter of standoff

## MILITARY TEMPERATURE RANGE DEVICES (–55° C TO +125° C) CONTINUED

### SERIES 54H HIGH-SPEED DIGITAL—TTL (CONT'D)

| TI Type | Circuits Function | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| SN54H72J | J-K master-slave flip-flop (AND inputs) | $10.61 | $ 8.44 | $ 7.20 |
| SN54H72N | | 4.66 | 3.71 | 3.16 |
| SN54H72W | | 10.61 | 8.44 | 7.20 |
| SN54H73J | Dual J-K master-slave flip-flop | 17.25 | 13.73 | 11.71 |
| SN54H73N | | 7.58 | 6.03 | 5.14 |
| SN54H73W | | 17.25 | 13.73 | 11.71 |
| SN54H74J | Dual D-type edge-triggered flip-flop | 10.53 | 8.38 | 7.14 |
| SN54H74N | | 5.83 | 4.64 | 3.95 |
| SN54H74W | | 10.53 | 8.38 | 7.14 |
| SN54H76J | Dual J-K master-slave flip-flop with preset and clear | 18.14 | 14.44 | 12.31 |
| SN54H76N | | 8.01 | 6.38 | 5.44 |
| SN54H76W | | 18.14 | 14.44 | 12.31 |
| SN54H78J | Dual J-K master-slave flip-flop (common clock) | 17.25 | 13.73 | 11.71 |
| SN54H78N | | 7.58 | 6.03 | 5.14 |
| SN54H78W | | 17.25 | 13.73 | 11.71 |
| SN54H87J | 4-bit true/complement, zero/one element | 16.92 | 13.48 | 11.49 |
| SN54H87N | | 9.47 | 7.54 | 6.43 |
| SN54H87W | | 16.92 | 13.48 | 11.49 |
| SN54H101J | J-K edge-triggered flip-flop (AND-OR inputs) | 10.61 | 8.44 | 7.20 |
| SN54H101N | | 4.66 | 3.71 | 3.16 |
| SN54H101W | | 10.61 | 8.44 | 7.20 |
| SN54H102J | J-K edge-triggered flip-flop (AND inputs) | 10.61 | 8.44 | 7.20 |
| SN54H102N | | 4.66 | 3.71 | 3.16 |
| SN54H102W | | 10.61 | 8.44 | 7.20 |
| SN54H103J | Dual J-K edge-triggered flip-flop | 17.25 | 13.73 | 11.71 |
| SN54H103N | | 7.58 | 6.03 | 5.14 |
| SN54H103W | | 17.25 | 13.73 | 11.71 |
| SN54H106J | Dual J-K edge-triggered flip-flop with preset and clear | 18.14 | 14.44 | 12.31 |
| SN54H106N | | 8.01 | 6.38 | 5.44 |
| SN54H106W | | 18.14 | 14.44 | 12.31 |
| SN54H108J | Dual J-K edge-triggered flip-flop (common clock) | 17.25 | 13.73 | 11.71 |
| SN54H108N | | 7.58 | 6.03 | 5.14 |
| SN54H108W | | 17.25 | 13.73 | 11.71 |
| SN54H183J | Dual carry-save full adder | 31.56 | 25.13 | 21.43 |
| SN54H183N | | 13.85 | 11.03 | 9.40 |
| SN54H183W | | 31.56 | 25.13 | 21.43 |

### SERIES 54S—SCHOTTKY-CLAMPED TTL

| TI Type | Circuits Function | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| SN54S00N | Quad 2-input pos.-NAND gate | $ 4.86 | $ 3.87 | $3.30 |
| SN54S03N | SN54S00N with open collector | 4.86 | 3.87 | 3.30 |
| SN54S04N | Hex inverter | 5.83 | 4.65 | 3.96 |
| SN54S05N | Hex inverter (open collector) | 5.83 | 4.65 | 3.96 |
| SN54S10N | Triple 3-input pos.-NAND gate | 4.86 | 3.87 | 3.30 |
| SN54S11N | Triple 3-input pos.-AND gate | 4.86 | 3.87 | 3.30 |
| SN54S15N | SN54S11N with open collector | 4.86 | 3.87 | 3.30 |
| SN54S20N | Dual 4-input pos.-NAND gate | 4.86 | 3.87 | 3.30 |
| SN54S22N | SN54S20N with open collector | 4.86 | 3.87 | 3.30 |
| SN54S40N | Dual 4-input pos.-NAND buffer | 5.36 | 4.27 | 3.64 |
| SN54S64N | 4-2-3-2-input AND-OR-INVERT gate | 4.86 | 3.87 | 3.30 |
| SN54S65N | | 4.86 | 3.87 | 3.30 |
| SN54S74N | Dual D-type edge-triggered flip-flop | 11.23 | 8.94 | 7.63 |
| SN54S112N | Dual J-K negative-edge-triggered flip-flop w/preset, clear | 13.18 | 10.49 | 8.95 |
| SN54S140N | Dual 4-input positive-NAND line driver | 8.05 | 6.41 | 5.46 |

**SEE FOLLOWING TI INTEGRATED CIRCUIT PAGES FOR ADDITIONAL ORDERING INFORMATION**

### SERIES 54L LOW-POWER DIGITAL—TTL

| TI Type | Circuits Function | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| SN54L00J | Quad 2-input positive-NAND gate | $ 5.28 | $ 4.29 | $ 3.63 |
| SN54L00N | | 3.02 | 2.46 | 2.08 |
| SN54L00T | | 5.84 | 4.74 | 4.01 |
| SN54L01T | SN54L00T w/open collector | 5.84 | 4.74 | 4.01 |
| SN54L02J | Quad 2-input positive-NOR gate | 6.34 | 5.15 | 4.36 |
| SN54L02N | | 3.78 | 3.07 | 2.60 |
| SN54L02T | | 7.01 | 5.69 | 4.82 |
| SN54L03J | Quad 2-input positive-NAND gate (open collector) | 5.28 | 4.29 | 3.63 |
| SN54L03N | | 3.02 | 2.46 | 2.08 |
| SN54L04J | Hex inverter | 6.34 | 5.15 | 4.36 |
| SN54L04N | | 3.78 | 3.07 | 2.60 |
| SN54L04T | | 7.01 | 5.69 | 4.82 |
| SN54L10J | Triple 3-input positive-NAND gate | 5.28 | 4.29 | 3.63 |
| SN54L10N | | 3.02 | 2.46 | 2.08 |
| SN54L10T | | 5.84 | 4.74 | 4.01 |
| SN54L20J | Dual 4-input positive-NAND gate | 5.28 | 4.29 | 3.63 |
| SN54L20N | | 3.02 | 2.46 | 2.08 |
| SN54L20T | | 5.84 | 4.74 | 4.01 |
| SN54L30J | 8-input positive-NAND gate | 5.28 | 4.29 | 3.63 |
| SN54L30N | | 3.02 | 2.46 | 2.08 |
| SN54L30T | | 5.84 | 4.74 | 4.01 |
| SN54L42J | BCD-to-decimal decoder | 27.05 | 21.54 | 18.36 |
| SN54L47J | 15 V BCD-to-seven-segment decoder/driver | 31.34 | 24.96 | 21.38 |
| SN54L51J | Dual 2-wide AND-OR-INVERT gate | 5.28 | 4.29 | 3.63 |
| SN54L51N | | 3.02 | 2.46 | 2.08 |
| SN54L51T | | 5.84 | 4.74 | 4.01 |
| SN54L54J | 4-wide 3-2-2-3-input AND-OR-INVERT gate | 5.28 | 4.29 | 3.63 |
| SN54L54N | | 3.02 | 2.46 | 2.08 |
| SN54L54T | | 5.84 | 4.74 | 4.01 |
| SN54L55J | 2-wide 4-input AND-OR-INVERT gate | 5.28 | 4.29 | 3.63 |
| SN54L55N | | 3.02 | 2.46 | 2.08 |
| SN54L55T | | 5.84 | 4.74 | 4.01 |
| SN54L71J | R-S master-slave flip-flop | 7.38 | 5.99 | 5.07 |
| SN54L71N | | 4.24 | 3.44 | 2.91 |
| SN54L71T | | 8.18 | 6.64 | 5.62 |
| SN54L72J | J-K master-slave flip-flop | 7.38 | 5.99 | 5.07 |
| SN54L72N | | 4.24 | 3.44 | 2.91 |
| SN54L72T | | 8.18 | 5.64 | 5.62 |
| SN54L73J | Dual J-K master-slave flip-flop | 12.66 | 10.28 | 8.70 |
| SN54L73N | | 6.96 | 5.65 | 4.78 |
| SN54L73T | | 14.02 | 11.39 | 9.64 |
| SN54L78J | Dual J-K master-slave flip-flop (common clock) | 12.66 | 10.28 | 8.70 |
| SN54L78N | | 6.96 | 5.65 | 4.78 |
| SN54L78T | | 14.02 | 11.39 | 9.64 |
| SN54L85J | 4-bit magnitude comparator | 26.40 | 21.45 | 18.15 |
| SN54L85N | | 21.46 | 17.43 | 14.75 |
| SN54L86J | Quad 2-input exclusive-OR gate | 10.56 | 8.58 | 7.26 |
| SN54L86N | | 6.35 | 5.16 | 4.37 |
| SN54L86T | | 11.68 | 9.49 | 8.03 |
| SN54L90J | Decade counter | 24.00 | 19.50 | 16.50 |
| SN54L90N | | 19.95 | 16.21 | 13.72 |
| SN54L90T | | 26.61 | 21.62 | 18.29 |
| SN54L91J | 8-bit shift register | 24.00 | 19.50 | 16.50 |
| SN54L91N | | 17.23 | 14.00 | 11.85 |
| SN54L91T | | 26.61 | 21.62 | 18.29 |
| SN54L93J | 4-bit binary counter | 24.00 | 19.50 | 16.50 |
| SN54L93N | | 16.62 | 13.51 | 11.43 |
| SN54L93T | | 26.61 | 21.62 | 18.29 |
| SN54L95J | 4-bit right-shift/left-shift register | 24.00 | 19.50 | 16.50 |
| SN54L95N | | 18.14 | 14.74 | 12.47 |
| SN54L95T | | 26.61 | 21.62 | 18.29 |

SERIES 54L DIGITAL CONT'D ON NEXT PAGE

# Texas Instruments INTEGRATED CIRCUITS

## MILITARY TEMPERATURE RANGE DEVICES (−55° C TO +125° C) CONT'D

### SERIES 54L LOW-POWER DIGITAL—TTL (CONT'D)

| TI Type | Circuits Function | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| SN54L98J | 4-bit data selector/ storage register | $24.00 | $19.50 | $16.50 |
| SN54L98N | | 19.95 | 16.21 | 13.72 |
| SN54L99J | 4-bit right-shift/left-shift register | 24.00 | 19.50 | 16.50 |
| SN54L99N | | 19.95 | 16.21 | 13.72 |
| SN54L122J | Retriggerable monostable multivibrator | 15.84 | 12.87 | 10.89 |
| SN54L122N | | 6.96 | 5.65 | 4.78 |
| SN54L122T | | 17.52 | 14.23 | 12.04 |
| SN54L164J | 8-bit parallel-out serial shift register | 24.00 | 19.50 | 16.50 |
| SN54L164N | | 16.62 | 13.51 | 11.43 |
| SN54L164T | | 26.61 | 21.62 | 18.29 |

### SERIES 15930 DIGITAL—TTL

| TI Type | Circuits Function | | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|
| SN15930N | Expandable dual 4-input NAND gate (6-kΩ pull-up resistors) | | $1.68 | $1.50 | $1.08 |
| SN15931N | Gated J-K/F-S flip-flop (6-kΩ pull-up resistors) | | 2.46 | 2.10 | 1.65 |
| SN15932N | Expandable dual 4-input NAND buffer gate | | 1.68 | 1.50 | 1.08 |
| SN15933N | Dual 4-input expander | | 1.51 | 1.36 | 1.06 |
| SN15936N | Hex inverter | 6-kΩ pull-up resistors | 1.85 | 1.65 | 1.19 |
| SN15937N | | 2-kΩ pull-up resistors | 1.85 | 1.65 | 1.19 |
| SN15944N | Expandable dual 4-input NAND power gate | | 1.68 | 1.50 | 1.08 |

### SERIES 15930 DIGITAL—DTL (CONT'D)

| TI Type | Circuits Function | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| SN15945N | Gated J-K/R-S flip-flop (6-kΩ pull-up resistors) | $2.46 | $2.10 | $1.65 |
| SN15946N | Quad 2-input NAND gate (6-kΩ pull-up resistors) | 1.68 | 1.50 | 1.08 |
| SN15948N | Gated J-K/R-S flip-flop (2-kΩ pull-up resistors) | 2.46 | 2.10 | 1.65 |
| SN15949N | Quad 2-input NAND gate (2-kΩ pull-up resistors) | 1.68 | 1.50 | 1.08 |
| SN15950N | Pulse-triggered binary flip-flop (active pull-up) | 5.05 | 4.50 | 3.24 |
| SN15951N | Gated, negative-edge-triggered monostable multivibrator | 5.05 | 4.50 | 3.24 |
| SN15961N | Expandable dual 4-input NAND gate (2-kΩ pull-up resistors) | 1.68 | 1.50 | 1.08 |
| SN15962N | Triple 3-input NAND gate (6-kΩ pull-up resistors) | 1.68 | 1.50 | 1.08 |
| SN15963N | Triple 3-input NAND gate (2-kΩ pull-up resistors) | 1.68 | 1.50 | 1.08 |
| SN159093N | Dual J-K flip-flop, individual clocks and presets (6-kΩ pull-up resistors) | 3.02 | 2.70 | 1.95 |
| SN159094N | Dual J-K flip-flop, individual clocks and presets (2-kΩ pull-up resistors) | 3.02 | 2.70 | 1.95 |
| SN159097N | Dual J-K flip-flop, common clocks and clears (6-kΩ pull-up resistors) | 3.02 | 2.70 | 1.95 |
| SN159099N | Dual J-K flip-flop, common clocks and clears (2-kΩ pull-up resistors) | 3.02 | 2.70 | 1.95 |

## INDUSTRIAL TEMPERATURE RANGE DEVICES (0° C TO +70° C)

### LINEAR OPERATIONAL AMPLIFIERS

| TI Type | Circuits Function | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| SN72301AJ | High-performance operational amplifiers | $ 1.62 | $ 1.62 | $ 1.40 |
| SN72301AL | | 1.40 | 1.40 | 1.26 |
| SN72301AN | | 1.29 | 1.29 | 1.16 |
| SN72301AP | | 1.26 | 1.26 | 1.14 |
| SN72301AZ | | 1.93 | 1.93 | 1.68 |
| SN72307J | High-performance operational amplifiers | 1.62 | 1.62 | 1.40 |
| SN72307L | | 1.40 | 1.40 | 1.26 |
| SN72307N | | 1.29 | 1.29 | 1.16 |
| SN72307P | | 1.26 | 1.26 | 1.14 |
| SN72307Z | | 1.93 | 1.93 | 1.68 |
| SN72558L | Dual high-performance operational amplifiers | 2.02 | 2.02 | 1.82 |
| SN72558P | | 1.86 | 1.86 | 1.68 |
| SN72702L | General purpose operational amplifiers | 1.16 | 1.16 | 1.04 |
| SN72702N | | 1.06 | 1.06 | .96 |
| SN72702S | | 3.97 | 3.97 | 3.44 |
| SN72709L | High-performance operational amplifiers | 1.06 | 1.06 | .96 |
| SN72709N | | 1.00 | 1.00 | .90 |
| SN72709P | | .97 | .97 | .88 |
| SN72709S | | 4.65 | 4.65 | 4.03 |
| SN72741J | High-performance operational amplifiers | 1.32 | 1.32 | 1.14 |
| SN72741L | | 1.14 | 1.14 | 1.03 |
| SN72741N | | 1.06 | 1.06 | .96 |
| SN72741P | | 1.04 | 1.04 | .94 |
| SN72741Z | | 1.57 | 1.57 | 1.36 |
| SN72747J | Dual high-performance operational amplifiers | 2.35 | 2.35 | 2.04 |
| SN72747N | | 1.92 | 1.92 | 1.73 |
| SN72748J | High-performance operational amplifiers | 1.32 | 1.32 | 1.14 |
| SN72748L | | 1.14 | 1.14 | 1.03 |
| SN72748N | | 1.06 | 1.06 | .96 |
| SN72748P | | 1.04 | 1.04 | .94 |
| SN72748Z | | 1.57 | 1.57 | 1.36 |
| SN72770J | High-performance operational amplifiers | 12.18 | 12.18 | 10.56 |
| SN72770L | | 9.97 | 9.97 | 9.00 |
| SN72770N | | 9.14 | 9.14 | 8.24 |
| SN72770P | | 8.31 | 8.31 | 7.50 |
| SN72770Z | | 13.13 | 13.13 | 11.37 |
| SN72771J | High-performance operational amplifiers | 12.18 | 12.18 | 10.56 |
| SN72771L | | 9.99 | 9.97 | 9.00 |
| SN72771N | | 9.14 | 9.14 | 8.24 |
| SN72771P | | 8.31 | 8.31 | 7.50 |
| SN72771Z | | 13.13 | 13.13 | 11.37 |

### LINEAR DIFFERENTIAL COMPARATORS

| TI Type | Circuits Function | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| SN72710J | Differential comparators | $1.23 | $1.23 | $1.07 |
| SN72710L | | 1.06 | 1.06 | .96 |
| SN72710N | | 1.00 | 1.00 | .90 |
| SN72710S | | 4.47 | 4.47 | 3.87 |
| SN72711J | Dual-channel differential comparators with strobes | 1.41 | 1.41 | 1.22 |
| SN72711L | | 1.14 | 1.14 | 1.03 |
| SN72711N | | 1.08 | 1.08 | .97 |
| SN72711S | | 6.87 | 6.87 | 5.95 |
| SN72720N | Dual differential comparator | 1.66 | 1.66 | 1.50 |

### LINEAR VIDEO AMPLIFIERS

| TI Type | Circuits Function | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| SN72733L | Differential video amplifiers | $2.66 | $2.66 | $2.40 |
| SN72733N | | 2.49 | 2.49 | 2.24 |
| SN7510F | | 4.30 | 4.30 | 3.80 |
| SN7510L | | 4.39 | 4.39 | 3.96 |
| SN7511L | | 2.99 | 2.99 | 2.70 |

### LINEAR LINE CIRCUITS

| TI Type | Circuits Function | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| SN75100L | Dual differential line receiver | $4.65 | $4.65 | $4.20 |
| SN75107AJ | Dual line receivers | 3.75 | 3.75 | 3.25 |
| SN75107AN | | 2.99 | 2.99 | 2.70 |
| SN75108AJ | | 3.75 | 3.75 | 3.25 |
| SN75108AN | | 2.99 | 2.99 | 2.70 |
| SN75109J | Dual line drivers | 3.93 | 3.93 | 3.41 |
| SN75109N | | 3.15 | 3.15 | 2.84 |
| SN75110J | | 3.93 | 3.93 | 3.41 |
| SN75110N | | 3.15 | 3.15 | 2.84 |
| SN75150J | Dual line receivers | 3.93 | 3.93 | 3.41 |
| SN75150N | | 3.15 | 3.15 | 2.84 |
| SN75150P | | 2.99 | 2.99 | 2.70 |
| SN75154J | Quad line receivers | 7.50 | 7.50 | 6.50 |
| SN75154N | | 5.98 | 5.98 | 5.40 |

### LINEAR MEMORY AND PERIPHERAL DRIVERS

| | | | | |
|---|---|---|---|---|
| SN75303N | 2 x 4 transistor arrays | $2.58 | $2.58 | $2.33 |
| SN75303S | | 5.63 | 5.63 | 4.87 |
| SN75308J | | 7.32 | 7.32 | 6.34 |
| SN75308N | | 5.91 | 5.91 | 5.33 |
| SN75324J | Memory drivers with decode inputs | 5.82 | 5.82 | 5.04 |
| SN75324N | | 4.65 | 4.65 | 4.20 |
| SN75324S | | 8.92 | 8.92 | 7.73 |
| SN75325J | Memory drivers | 5.82 | 5.82 | 5.04 |
| SN75325N | | 4.65 | 4.65 | 4.20 |
| SN75450AN | Dual peripheral drivers | 1.58 | 1.58 | 1.43 |
| SN75451AP | | 1.21 | 1.21 | 1.09 |
| SN75452P | | 1.21 | 1.21 | 1.09 |
| SN75453P | | 1.21 | 1.21 | 1.09 |
| SN75454P | | 1.21 | 1.21 | 1.09 |

### LINEAR COMMUNICATIONS CIRCUITS

| TI Type | Circuits Function | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|
| SN76502J | Logarithmic amplifiers | $6.38 | $6.38 | $5.52 |
| SN76502N | | 4.65 | 4.65 | 4.20 |
| SN76514L | Balanced mixers | 2.15 | 2.15 | 1.94 |
| SN76514N | | 1.99 | 1.99 | 1.80 |

**SEE FOLLOWING TI INTEGRATED CIRCUIT PAGES FOR ADDITIONAL ORDERING INFORMATION**

## INDUSTRIAL TEMPERATURE RANGE DEVICES (0° C TO +70° C) CONT'D

### SERIES 74 DIGITAL—TTL

| TI Type | Circuit Functions | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| SN7400J | Quad 2-input positive NAND gate | $ 2.33 | $ 1.85 | $ 1.58 |
| SN7400N | | .77 | .62 | .48 |
| SN7400W | | 2.33 | 1.85 | 1.58 |
| SN7401J | Quad 2-input positive-NAND gate (open collector) | 2.33 | 1.85 | 1.58 |
| SN7401N | | .77 | .62 | .48 |
| SN7401W | | 2.33 | 1.85 | 1.58 |
| SN7402J | Quad 2-input positive-NOR gate | 2.67 | 2.12 | 1.81 |
| SN7402N | | .77 | .62 | .48 |
| SN7402W | | 2.67 | 2.12 | 1.81 |
| SN7403J | Quad 2-input positive-NAND gate (open collector) | 2.33 | 1.85 | 1.58 |
| SN7403N | | .77 | .62 | .48 |
| SN7404J | Hex inverter | 2.91 | 2.32 | 1.97 |
| SN7404N | | .96 | .76 | .59 |
| SN7404W | | 2.91 | 2.32 | 1.97 |
| SN7405J | Hex inverter (open collector) | 2.91 | 2.32 | 1.97 |
| SN7405N | | .96 | .76 | .59 |
| SN7405W | | 2.91 | 2.32 | 1.97 |
| SN7406J | 30 V hex inverter buffer/driver | 5.25 | 4.18 | 3.56 |
| SN7406N | | 3.50 | 2.79 | 2.21 |
| SN7406W | | 5.25 | 4.18 | 3.56 |
| SN7407J | 30 V hex buffer/driver | 5.25 | 4.18 | 3.56 |
| SN7407N | | 3.50 | 2.79 | 2.21 |
| SN7407W | | 5.25 | 4.18 | 3.56 |
| SN7408J | Quad 2-input positive-AND gate | 2.56 | 2.04 | 1.74 |
| SN7408N | | 1.09 | .87 | .67 |
| SN7408W | | 2.56 | 2.04 | 1.74 |
| SN7409J | Quad 2-input positive-AND gate (open collector) | 2.56 | 2.04 | 1.74 |
| SN7409N | | 1.09 | .87 | .67 |
| SN7409W | | 2.56 | 2.04 | 1.74 |
| SN7410J | Triple 3-input positive-NAND gate | 2.33 | 1.85 | 1.58 |
| SN7410N | | .77 | .62 | .48 |
| SN7410W | | 2.33 | 1.85 | 1.58 |
| SN7412J | Triple 3-input positive-NAND gate (open collector) | 1.94 | 1.54 | 1.31 |
| SN7412N | | .77 | .62 | .48 |
| SN7412W | | 1.94 | 1.54 | 1.31 |
| SN7413J | Dual NAND Schmitt trigger | 3.64 | 2.90 | 2.47 |
| SN7413N | | 2.43 | 1.93 | 1.62 |
| SN7413W | | 3.64 | 2.90 | 2.47 |
| SN7416J | 15 V hex inverter buffer/driver | 4.37 | 3.48 | 2.97 |
| SN7416N | | 2.92 | 2.32 | 1.85 |
| SN7416W | | 4.37 | 3.48 | 2.97 |
| SN7417J | 15 V hex buffer/driver | 4.37 | 3.48 | 2.97 |
| SN7417N | | 2.92 | 2.32 | 1.85 |
| SN7417W | | 4.37 | 3.48 | 2.97 |
| SN7420J | Dual 4-input positive-NAND gate | 1.99 | 1.58 | 1.35 |
| SN7420N | | .77 | .62 | .48 |
| SN7420W | | 1.99 | 1.58 | 1.35 |
| SN7423J | Expandable dual 4-input NOR gate with strobe | 1.94 | 1.54 | 1.31 |
| SN7423N | | 1.18 | .94 | .73 |
| SN7423W | | 1.94 | 1.54 | 1.31 |
| SN7425J | Dual 4-input NOR gate with strobe | 1.94 | 1.54 | 1.31 |
| SN7425N | | 1.18 | .94 | .73 |
| SN7425W | | 1.94 | 1.54 | 1.31 |
| SN7426J | Quad 2-input high voltage (MOS) interface NAND gate | 2.80 | 2.23 | 1.90 |
| SN7426N | | 1.09 | .87 | .67 |
| SN7427J | Triple 3-input positive-NOR gate | 2.14 | 1.70 | 1.45 |
| SN7427N | | 1.18 | .94 | .73 |
| SN7427W | | 2.14 | 1.70 | 1.45 |
| SN7430J | 8-input positive-NAND gate | 1.99 | 1.58 | 1.35 |
| SN7430N | | .77 | .62 | .48 |
| SN7430W | | 1.99 | 1.58 | 1.35 |
| SN7432J | Quad 2-input positive-OR gate | 2.14 | 1.70 | 1.45 |
| SN7432N | | 1.18 | .94 | .73 |
| SN7432W | | 2.14 | 1.70 | 1.45 |
| SN7437J | Quad 2-input positive-NAND buffer | 3.26 | 2.59 | 2.21 |
| SN7437N | | 1.27 | 1.01 | .78 |
| SN7437W | | 3.26 | 2.59 | 2.21 |
| SN7438J | Quad 2-input positive-NAND buffer (open collector) | 3.26 | 2.59 | 2.21 |
| SN7438N | | 1.27 | 1.01 | .78 |
| SN7438W | | 3.26 | 2.59 | 2.21 |
| SN7440J | Dual 4-input positive-NAND buffer | 2.67 | 2.12 | 1.81 |
| SN7440N | | .77 | .62 | .48 |
| SN7440W | | 2.67 | 2.12 | 1.81 |
| SN7442J | BCD-to-decimal decoder | 11.90 | 9.48 | 8.08 |
| SN7442N | | 3.39 | 2.71 | 2.10 |
| SN7442W | | 11.90 | 9.48 | 8.08 |
| SN7443J | Excess-3-to-decimal decoder | 11.90 | 9.48 | 8.08 |
| SN7443N | | 4.78 | 3.81 | 2.95 |
| SN7443W | | 11.90 | 9.48 | 8.08 |
| SN7444J | Excess-3-gray-to-decimal decoder | 11.90 | 9.48 | 8.08 |
| SN7444N | | 4.78 | 3.81 | 2.95 |
| SN7444W | | 11.90 | 9.48 | 8.08 |
| SN7445J | 30 V BCD-to-decimal decoder | 18.14 | 14.44 | 12.31 |
| SN7445N | | 5.97 | 4.76 | 3.69 |
| SN7445W | | 18.14 | 14.44 | 12.31 |
| SN7446AJ | 30 V BCD-to-seven-segment decoder/driver | 14.95 | 11.90 | 10.15 |
| SN7446AN | | 5.10 | 4.06 | 3.15 |
| SN7446AW | | 14.95 | 11.90 | 10.15 |
| SN7447AJ | 15 V BCD-to-seven-segment decoder/driver | $13.80 | $10.99 | $ 9.37 |
| SN7447AN | | 4.78 | 3.81 | 2.95 |
| SN7447AW | | 13.80 | 10.99 | 9.37 |
| SN7448J | BCD-to-seven-segment decoder | 11.90 | 9.48 | 8.08 |
| SN7448N | | 5.67 | 4.52 | 3.51 |
| SN7448W | | 11.90 | 9.48 | 8.08 |
| SN7450J | Dual 2-wide 2-input AND-OR-INVERT gate with expander inputs | 2.33 | 1.85 | 1.58 |
| SN7450N | | .77 | .62 | .48 |
| SN7450W | | 2.33 | 1.85 | 1.58 |
| SN7451J | Dual 2-wide 2-input AND-OR-INVERT gate | 2.33 | 1.85 | 1.58 |
| SN7451N | | .77 | .62 | .48 |
| SN7451W | | 2.33 | 1.85 | 1.58 |
| SN7453J | Expandable 4-wide 2-input AND-OR-INVERT gate | 2.33 | 1.85 | 1.58 |
| SN7453N | | .77 | .62 | .48 |
| SN7453W | | 2.33 | 1.85 | 1.58 |
| SN7454J | 4-wide 2-input AND-OR-INVERT gate | 2.33 | 1.85 | 1.58 |
| SN7454N | | .77 | .62 | .48 |
| SN7454W | | 2.33 | 1.85 | 1.58 |
| SN7460J | Dual 4-input expander | 1.74 | 1.39 | 1.18 |
| SN7460N | | .77 | .62 | .48 |
| SN7460W | | 1.74 | 1.39 | 1.18 |
| SN7470J | J-K flip-flop | 3.49 | 2.78 | 2.37 |
| SN7470N | | 1.27 | 1.01 | .78 |
| SN7470W | | 3.49 | 2.78 | 2.37 |
| SN7472J | J-K master-slave flip-flop | 3.25 | 2.59 | 2.21 |
| SN7472N | | 1.18 | .94 | .73 |
| SN7472W | | 3.25 | 2.59 | 2.21 |
| SN7473J | Dual J-K master-slave flip-flop | 5.36 | 4.26 | 3.64 |
| SN7473N | | 1.68 | 1.34 | .98 |
| SN7473W | | 5.36 | 4.26 | 3.64 |
| SN7474J | Dual D-type edge-triggered flip-flop | 4.66 | 3.71 | 3.16 |
| SN7474N | | 1.68 | 1.34 | .98 |
| SN7474W | | 4.66 | 3.71 | 3.16 |
| SN7475J | Quad bistable latch | 8.19 | 6.52 | 5.56 |
| SN7475N | | 2.75 | 2.91 | 1.70 |
| SN7475W | | 8.19 | 6.52 | 5.56 |
| SN7476J | Dual J-K master-slave flip-flop | 5.63 | 4.48 | 3.82 |
| SN7476N | | 1.87 | 1.48 | 1.15 |
| SN7476W | | 5.63 | 4.48 | 3.82 |
| SN7480J | Gated full adder | 6.28 | 5.00 | 4.26 |
| SN7480N | | 2.13 | 1.70 | 1.32 |
| SN7480W | | 6.28 | 5.00 | 4.26 |
| SN7481J | 16-bit active-element memory | 13.67 | 10.88 | 9.28 |
| SN7481N | | 5.09 | 4.06 | 3.15 |
| SN7481W | | 13.67 | 10.88 | 9.28 |
| SN7482J | 2-bit binary full adder | 9.31 | 7.41 | 6.32 |
| SN7482N | | 5.03 | 4.01 | 3.11 |
| SN7482W | | 9.31 | 7.41 | 6.32 |
| SN7483J | 4-bit binary full adder | 14.79 | 11.77 | 10.04 |
| SN7483N | | 3.43 | 2.74 | 2.12 |
| SN7483W | | 14.79 | 11.77 | 10.04 |
| SN7484J | 16-bit active-element memory (gated write inputs) | 14.38 | 11.45 | 9.76 |
| SN7484N | | 5.53 | 4.41 | 3.42 |
| SN7484W | | 14.38 | 11.45 | 9.76 |
| SN7486J | Quad 2-input exclusive-OR gate | 5.50 | 4.38 | 3.73 |
| SN7486N | | 1.45 | 1.16 | .90 |
| SN7486W | | 5.50 | 4.38 | 3.73 |
| SN7489J | 64-bit read-write memory | 13.35 | 10.62 | 9.06 |
| SN7489N | | 10.68 | 8.50 | 7.20 |
| SN7489W | | 13.35 | 10.62 | 9.06 |
| SN7490J | Decade counter | 9.57 | 7.62 | 6.50 |
| SN7490N | | 3.07 | 2.45 | 1.90 |
| SN7490W | | 9.57 | 7.62 | 6.50 |
| SN7491AJ | 8-bit shift register | 12.96 | 10.32 | 8.80 |
| SN7491AN | | 4.36 | 3.48 | 2.70 |
| SN7491AW | | 12.96 | 10.32 | 8.80 |
| SN7492J | Divide-by-twelve counter | 9.57 | 7.62 | 6.50 |
| SN7492N | | 3.07 | 2.45 | 1.90 |
| SN7492W | | 9.57 | 7.62 | 6.50 |
| SN7493J | 4-bit binary counter | 9.57 | 7.62 | 6.50 |
| SN7493N | | 3.07 | 2.45 | 1.90 |
| SN7493W | | 9.57 | 7.62 | 6.50 |
| SN7494J | 4-bit shift register—parallel-in, serial-out | 10.27 | 8.17 | 6.97 |
| SN7494N | | 5.59 | 4.45 | 3.46 |
| SN7494W | | 10.27 | 8.17 | 6.97 |
| SN7495AJ | 4-bit right-shift-left-shift register—parallel-in, parallel-out | 10.27 | 8.17 | 6.97 |
| SN7495AN | | 3.48 | 2.77 | 2.15 |
| SN7495AW | | 10.27 | 8.17 | 6.97 |
| SN7496J | 5-bit shift register—dual parallel-in, parallel-out | 12.31 | 9.80 | 8.35 |
| SN7496N | | 6.69 | 5.43 | 4.14 |
| SN7497J | 6-bit binary synchronous rate multiplier | 9.51 | 7.57 | 6.46 |
| SN7497N | | 6.98 | 5.57 | 4.32 |
| SN7497W | | 9.51 | 7.57 | 6.46 |
| SN74100J | 8-bit bistable latch | 9.73 | 7.74 | 6.60 |
| SN74100N | | 5.59 | 4.45 | 3.46 |
| SN74100W | | 9.73 | 7.74 | 6.60 |

SERIES 74 DIGITAL CONT'D ON NEXT PAGE

SEE FOLLOWING TI INTEGRATED CIRCUIT PAGES FOR ADDITIONAL ORDERING INFORMATION

## INDUSTRIAL TEMPERATURE RANGE DEVICES (0° C TO +70° C) CONT'D

### SERIES 74 DIGITAL—TTL (CONTINUED)

| TI Type | Circuits Function | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| SN74104J | Gated J-K master-slave flip-flop | $ 4.05 | $ 3.22 | $ 2.75 |
| SN74104N | | 2.32 | 1.85 | 1.43 |
| SN74104W | | 4.05 | 3.22 | 2.75 |
| SN74105J | Gated J-K master-slave flip-flop | 4.05 | 3.22 | 2.75 |
| SN74105N | | 2.32 | 1.85 | 1.43 |
| SN74105W | | 4.05 | 3.22 | 2.75 |
| SN74107J | Dual J-K master-slave flip-flop | 5.36 | 4.26 | 3.64 |
| SN74107N | | 1.68 | 1.34 | .98 |
| SN74110J | Gated J-K master-slave flip-flop with data lockout | 3.26 | 2.59 | 2.21 |
| SN74110N | | 2.17 | 1.73 | 1.47 |
| SN74110W | | 3.26 | 2.59 | 2.21 |
| SN74111J | Dual J-K master-slave flip-flop with data lockout | 4.34 | 3.45 | 2.95 |
| SN74111N | | 3.47 | 2.76 | 2.36 |
| SN74111W | | 4.34 | 3.45 | 2.95 |
| SN74121J | One-shot monostable multivibrator | 8.10 | 6.45 | 5.50 |
| SN74121N | | 1.68 | 1.34 | 1.04 |
| SN74121W | | 8.10 | 6.45 | 5.50 |
| SN74122J | Retriggerable monostable multivibrator with clear | 6.51 | 5.19 | 4.42 |
| SN74122N | | 2.14 | 1.70 | 1.32 |
| SN74122W | | 6.51 | 5.19 | 4.42 |
| SN74123J | Dual retriggerable monostable multivibrator with clear | 8.64 | 6.88 | 5.87 |
| SN74123N | | 4.78 | 3.80 | 2.94 |
| SN74123W | | 8.64 | 6.88 | 5.87 |
| SN74141J | BCD-to-decimal decoder/driver | 12.96 | 10.32 | 8.80 |
| SN74141N | | 4.36 | 3.48 | 2.70 |
| SN74141W | | 12.96 | 10.32 | 8.80 |
| SN74145J | 15 V BCD-to-decimal decoder/driver | 14.25 | 11.35 | 9.67 |
| SN74145N | | 4.71 | 3.76 | 2.92 |
| SN74145W | | 14.25 | 11.35 | 9.67 |
| SN74150J | 16-bit data selector/multiplexer | 12.81 | 10.21 | 8.70 |
| SN74150N | | 6.98 | 5.57 | 4.32 |
| SN74150W | | 12.81 | 10.21 | 8.70 |
| SN74151J | 8-bit data selector/multiplexer with strobe | 8.90 | 7.09 | 6.05 |
| SN74151N | | 5.12 | 4.08 | 3.44 |
| SN74151W | | 8.90 | 7.09 | 6.05 |
| SN74153J | Dual 4-line-to-1-line data selector/multiplexer | 8.90 | 7.09 | 6.05 |
| SN74153N | | 4.67 | 3.72 | 3.13 |
| SN74153W | | 8.90 | 7.09 | 6.05 |
| SN74154J | 4-line-to-16-line (1 of 16) decoder/multiplexer | 9.80 | 7.80 | 6.65 |
| SN74154N | | 5.76 | 4.59 | 3.56 |
| SN74154W | | 9.80 | 7.80 | 6.65 |
| SN74155J | Dual 2-line-to-4-line decoder/multiplexer | 6.69 | 5.33 | 4.54 |
| SN74155N | | 4.45 | 3.55 | 2.99 |
| SN74155W | | 6.69 | 5.33 | 4.54 |
| SN74156J | Dual 2-line-to-4-line decoder/demultiplexer (open collector) | 6.69 | 5.33 | 4.54 |
| SN74156N | | 4.45 | 3.55 | 2.99 |
| SN74156W | | 6.69 | 5.33 | 4.54 |
| SN74157J | Quadruple 2-line-to-1-line data selectors/multiplexers | 3.90 | 3.11 | 2.65 |
| SN74157N | | 3.12 | 2.49 | 2.11 |
| SN74157W | | 3.90 | 3.11 | 2.65 |
| SN74160J | Synchronous decade counter with direct clear | 9.01 | 7.18 | 6.12 |
| SN74160N | | 3.55 | 2.83 | 2.20 |
| SN74160W | | 9.01 | 7.18 | 6.12 |
| SN74161J | Synchronous 4-bit binary counter with direct clear | 9.01 | 7.18 | 6.12 |
| SN74161N | | 3.55 | 2.83 | 2.20 |
| SN74161W | | 9.01 | 7.18 | 6.12 |
| SN74162J | Fully synchronous decade counter | 9.01 | 7.18 | 6.12 |
| SN74162N | | 3.55 | 2.83 | 2.20 |
| SN74162W | | 9.01 | 7.18 | 6.12 |
| SN74163J | Fully synchronous 4-bit binary counter | 9.01 | 7.18 | 6.12 |
| SN74163N | | 3.55 | 2.83 | 2.20 |
| SN74163W | | 9.01 | 7.18 | 6.12 |
| SN74164J | 8-bit parallel-out serial shift register | 10.01 | 7.97 | 6.80 |
| SN74164N | | 6.55 | 5.22 | 4.05 |
| SN74164W | | 10.01 | 7.97 | 6.80 |
| SN74165J | Parallel-load 8-bit shift register | 11.68 | 9.30 | 7.93 |
| SN74165N | | 6.55 | 5.22 | 4.05 |
| SN74165W | | 11.68 | 9.30 | 7.93 |
| SN74166J | Parallel-load 8-bit shift register | 10.01 | 7.97 | 6.80 |
| SN74166N | | 6.55 | 5.22 | 4.05 |
| SN74166W | | 10.01 | 7.97 | 6.80 |
| SN74167J | Synchronous decade decimal rate multiplier | 8.01 | 6.38 | 5.44 |
| SN74167N | | 6.41 | 5.10 | 4.32 |
| SN74167W | | 8.01 | 6.38 | 5.44 |
| SN74170J | 4-by-4 register file | 10.88 | 8.66 | 7.39 |
| SN74170N | | 8.70 | 6.93 | 5.87 |
| SN74170W | | 10.88 | 8.66 | 7.39 |
| SN74180J | 8-bit odd/even parity generator/checker | 14.17 | 11.28 | 9.62 |
| SN74180N | | 6.22 | 4.95 | 4.18 |
| SN74180W | | 14.17 | 11.28 | 9.62 |
| SN74181J | 4-bit arithmetic logic unit (ALU) and function generator | 30.38 | 24.19 | 20.63 |
| SN74181N | | 23.72 | 18.91 | 14.67 |
| SN74181W | | 30.38 | 24.19 | 20.63 |
| SN74182J | Look-ahead carry generator (for ALU) | 8.03 | 6.39 | 5.45 |
| SN74182N | | 5.21 | 4.15 | 3.22 |
| SN74182W | | 8.03 | 6.39 | 5.45 |
| SN74184J | BCD-to-binary converter | 4.34 | 3.45 | 2.95 |
| SN74184N | | 3.47 | 2.76 | 2.34 |
| SN74184W | | 4.34 | 3.45 | 2.95 |
| SN74185AJ | Binary-to-BCD converter | $ 4.34 | $ 3.45 | $ 2.95 |
| SN74185AN | | 3.47 | 2.76 | 2.34 |
| SN74185AW | | 4.34 | 3.45 | 2.95 |
| SN74190J | Synchronous up/down decade counter (single clock line) | 17.01 | 13.54 | 11.55 |
| SN74190N | | 7.13 | 5.68 | 4.41 |
| SN74190W | | 17.01 | 13.54 | 11.55 |
| SN74191J | Synchronous up/down 4-bit binary counter (single clock line) | 17.01 | 13.54 | 11.55 |
| SN74191N | | 7.13 | 5.68 | 4.41 |
| SN74191W | | 17.01 | 13.54 | 11.55 |
| SN74192J | Synch up/down decade counter (two clock lines) | 17.01 | 13.54 | 11.55 |
| SN74192N | | 8.00 | 6.38 | 4.95 |
| SN74193J | Synch up/down 4-bit binary counter (two clock lines) | 17.01 | 13.54 | 11.55 |
| SN74193N | | 8.00 | 6.38 | 4.95 |
| SN74194J | 4-bit parallel-in, parallel-out bidirectional shift register | 5.24 | 4.17 | 3.56 |
| SN74194N | | 3.55 | 2.83 | 2.20 |
| SN74194W | | 5.24 | 4.17 | 3.56 |
| SN74195J | 4-bit parallel-in, parallel-out shift register (J-K inputs to first stage) | 5.24 | 4.17 | 3.56 |
| SN74195N | | 2.62 | 2.09 | 1.62 |
| SN74195W | | 5.24 | 4.17 | 3.56 |
| SN74196J | 50-MHz presettable decade counters/latches | 5.94 | 4.73 | 4.03 |
| SN74196N | | 3.06 | 2.44 | 1.89 |
| SN74196W | | 5.94 | 4.73 | 4.03 |
| SN74197J | 50-MHz presettable 4-bit binary counters/latches | 5.94 | 4.73 | 4.03 |
| SN74197N | | 3.06 | 2.44 | 1.89 |
| SN74197W | | 5.94 | 4.73 | 4.03 |
| SN74198J | 8-bit parallel-in, parallel-out bidirectional shift register | 16.08 | 12.81 | 10.92 |
| SN74198N | | 7.71 | 6.15 | 4.77 |
| SN74198W | | 16.08 | 12.81 | 10.92 |
| SN74199J | 8-bit parallel-in, parallel-out shift register (J-K inputs to first stage) | 16.08 | 12.81 | 10.92 |
| SN74199N | | 7.71 | 6.15 | 4.77 |
| SN74199W | | 16.08 | 12.81 | 10.92 |

### SERIES 74H HIGH-SPEED DIGITAL—TTL

| | | | | |
|---|---|---|---|---|
| SN74H00J | Quad 2-input positive-NAND gate | $2.91 | $2.32 | $1.97 |
| SN74H00N | | .96 | .76 | .59 |
| SN74H00W | | 2.91 | 2.32 | 1.97 |
| SN74H01J | Quad 2-input positive-NAND gate (open collector) | 2.91 | 2.32 | 1.97 |
| SN74H01N | | .96 | .76 | .59 |
| SN74H01W | | 2.91 | 2.32 | 1.97 |
| SN74H04J | Hex inverter | 3.64 | 2.90 | 2.47 |
| SN74H04N | | 1.09 | .87 | .67 |
| SN74H04W | | 3.64 | 2.90 | 2.47 |
| SN74H05J | Hex inverter (open collector) | 3.64 | 2.90 | 2.47 |
| SN74H05N | | 1.09 | .87 | .67 |
| SN74H05W | | 3.64 | 2.90 | 2.47 |
| SN74H10J | Triple 3-input positive-NAND gate | 2.91 | 2.32 | 1.97 |
| SN74H10N | | .96 | .76 | .59 |
| SN74H10W | | 2.91 | 2.32 | 1.97 |
| SN74H11J | Triple 3-input positive-AND gate | 3.19 | 2.54 | 2.16 |
| SN74H11N | | .96 | .76 | .59 |
| SN74H11W | | 3.19 | 2.54 | 2.16 |
| SN74H20J | Dual 4-input positive-NAND gate | 2.46 | 1.96 | 1.67 |
| SN74H20N | | .96 | .76 | .59 |
| SN74H20W | | 2.46 | 1.96 | 1.67 |
| SN74H21J | Dual 4-input positive-AND gate | 3.19 | 2.54 | 2.16 |
| SN74H21N | | .96 | .76 | .59 |
| SN74H21W | | 3.19 | 2.54 | 2.16 |
| SN74H22J | Dual 4-input positive-NAND gate (open collector) | 2.46 | 1.96 | 1.67 |
| SN74H22N | | .96 | .76 | .59 |
| SN74H22W | | 2.46 | 1.96 | 1.67 |
| SN74H30J | 8-input positive-NAND gate | 2.46 | 1.96 | 1.67 |
| SN74H30N | | .96 | .76 | .59 |
| SN74H30W | | 2.46 | 1.96 | 1.67 |
| SN74H40J | Dual 4-input positive-NAND buffer | 3.19 | 2.54 | 2.16 |
| SN74H40N | | .96 | .76 | .59 |
| SN74H40W | | 3.19 | 2.54 | 2.16 |
| SN74H50J | Expandable dual 2-wide 2-input AND-OR-INVERT gate | 2.91 | 2.32 | 1.97 |
| SN74H50N | | .96 | .76 | .59 |
| SN74H50W | | 2.91 | 2.32 | 1.97 |
| SN74H51J | Dual 2-wide 2-input AND-OR-INVERT gate | 2.91 | 2.32 | 1.97 |
| SN74H51N | | .96 | .76 | .59 |
| SN74H51W | | 2.91 | 2.32 | 1.97 |
| SN74H52J | Expandable 2-2-2-3-input AND-OR gate | 2.91 | 2.32 | 1.97 |
| SN74H52N | | .96 | .76 | .59 |
| SN74H52W | | 2.91 | 2.32 | 1.97 |
| SN74H53J | Expandable 2-2-2-3-input AND-OR-INVERT gate | 2.91 | 2.32 | 1.97 |
| SN74H53N | | .96 | .76 | .59 |
| SN74H53W | | 2.91 | 2.32 | 1.97 |
| SN74H54J | 2-2-2-3-input AND-OR-INVERT gate | 2.91 | 2.32 | 1.97 |
| SN74H54N | | .96 | .76 | .59 |
| SN74H54W | | 2.91 | 2.32 | 1.97 |
| SN74H55J | Expandable 4-input AND-OR-INVERT gate | 2.91 | 2.32 | 1.97 |
| SN74H55N | | .96 | .76 | .59 |
| SN74H55W | | 2.91 | 2.32 | 1.97 |
| SN74H60J | Dual 4-input expander | 2.18 | 1.74 | 1.48 |
| SN74H60N | | .96 | .76 | .59 |
| SN74H60W | | 2.18 | 1.74 | 1.48 |

SERIES 74H DIGITAL CONT'D ON NEXT PAGE

**SEE FOLLOWING TI INTEGRATED CIRCUIT PAGES FOR ADDITIONAL ORDERING INFORMATION**

# Texas Instruments INTEGRATED CIRCUITS

## INDUSTRIAL TEMPERATURE RANGE DEVICES (0° C TO +70° C) CONT'D

### SERIES 74H HIGH-SPEED DIGITAL—TTL (CONT'D)

| TI Type | Circuit Functions | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| SN74H61J | Triple 3-input expanders | $ 2.18 | $ 1.74 | $ 1.48 |
| SN74H61N | | .96 | .76 | .59 |
| SN74H61W | | 2.18 | 1.74 | 1.48 |
| SN74H62J | 3-2-2-3-input AND-OR expander | 2.18 | 1.74 | 1.48 |
| SN74H62N | | .96 | .76 | .59 |
| SN74H62W | | 2.18 | 1.74 | 1.48 |
| SN74H71J | J-K master-slave flip-flop (AND-OR inputs) | 4.66 | 3.71 | 3.16 |
| SN74H71N | | 1.46 | 1.16 | .90 |
| SN74H71W | | 4.66 | 3.71 | 3.16 |
| SN74H72J | J-K master-slave flip-flop (AND inputs) | 4.66 | 3.71 | 3.16 |
| SN74H72N | | 1.27 | 1.01 | .78 |
| SN74H72W | | 4.66 | 3.71 | 3.16 |
| SN74H73J | Dual J-K master-slave flip-flop | 7.58 | 6.03 | 5.14 |
| SN74H73N | | 2.09 | 1.67 | 1.29 |
| SN74H73W | | 7.58 | 6.03 | 5.14 |
| SN74H74J | Dual D-type edge-triggered flip-flop | 5.83 | 4.64 | 3.95 |
| SN74H74N | | 2.09 | 1.67 | 1.29 |
| SN74H74W | | 5.83 | 4.64 | 3.95 |
| SN74H76J | Dual J-K master-slave flip-flop with preset and clear | 8.01 | 6.38 | 5.44 |
| SN74H76N | | 2.27 | 1.81 | 1.40 |
| SN74H75W | | 8.01 | 6.38 | 5.44 |
| SN74H78J | Dual J-K master-slave flip-flop (common clock) | 7.58 | 6.03 | 5.14 |
| SN74H78N | | 2.27 | 1.81 | 1.40 |
| SN74H78W | | 7.58 | 6.03 | 5.14 |
| SN74H87J | 4-bit true/complement, zero/one element | 9.47 | 7.54 | 6.43 |
| SN74H78N | | 7.28 | 5.80 | 4.50 |
| SN74H87W | | 9.47 | 7.54 | 6.43 |
| SN74H101J | J-K edge-triggered flip-flop (AND-OR inputs) | 4.66 | 3.71 | 3.16 |
| SN74H101N | | 1.36 | 1.09 | .84 |
| SN74H101W | | 4.66 | 3.71 | 3.16 |
| SN74H102J | J-K edge-triggered flip-flop (AND inputs) | 4.66 | 3.71 | 3.16 |
| SN74H102N | | 1.36 | 1.09 | .84 |
| SN74H102W | | 4.66 | 3.71 | 3.16 |
| SN74H103J | Dual J-K edge-triggered flip-flop | 7.58 | 6.03 | 5.14 |
| SN74H103N | | 2.14 | 1.70 | 1.32 |
| SN74H103W | | 7.58 | 6.03 | 5.14 |
| SN74H106J | Dual J-K edge-triggered flip-flop with preset and clear | 8.01 | 6.38 | 5.44 |
| SN74H106N | | 1.87 | 1.48 | 1.15 |
| SN74H106W | | 8.01 | 6.38 | 5.44 |
| SN74H108J | Dual J-K edge-triggered flip-flop (common clock) | 7.58 | 6.03 | 5.14 |
| SN74H108N | | 2.05 | 1.63 | 1.26 |
| SN74H108W | | 7.58 | 6.03 | 5.14 |
| SN74H183J | Dual carry-save full adder | 13.85 | 11.03 | 9.40 |
| SN74H183N | | 6.10 | 4.87 | 3.78 |
| SN74H183W | | 13.85 | 11.03 | 9.40 |

### SERIES 74L LOW-POWER DIGITAL—TTL

| | | | | |
|---|---|---|---|---|
| SN74L00J | Quad 2-input positive-NAND gate | $ 3.36 | $ 2.73 | $2.31 |
| SN74L00N | | .93 | .75 | .64 |
| SN74L00T | | 2.00 | 1.62 | 1.37 |
| SN74L01T | SN74L00T w/open collector | 2.00 | 1.62 | 1.37 |
| SN74L02J | Quad 2-input positive-NOR gate | 4.03 | 3.28 | 2.77 |
| SN74L02N | | 1.04 | .84 | .71 |
| SN74L02T | | 2.40 | 1.95 | 1.65 |
| SN74L03J | Quad 2-input positive-NAND gate (open collector) | 3.36 | 2.73 | 2.31 |
| SN74L03N | | .93 | .75 | .64 |
| SN74L04J | Hex inverter | 4.03 | 3.28 | 2.77 |
| SN74L04N | | 1.04 | .84 | .71 |
| SN74L04T | | 2.40 | 1.95 | 1.65 |
| SN74L10J | Triple 3-input positive-NAND gate | 3.36 | 2.73 | 2.31 |
| SN74L10N | | .93 | .75 | .64 |
| SN74L10T | | 2.00 | 1.62 | 1.37 |
| SN74L20J | Dual 4-input positive-NAND gate | 3.36 | 2.73 | 2.31 |
| SN74L20N | | .93 | .75 | .64 |
| SN74L20T | | 2.00 | 1.62 | 1.37 |
| SN74L30J | 8-input positive-NAND gate | 3.36 | 2.73 | 2.31 |
| SN74L30N | | .93 | .75 | .64 |
| SN74L30T | | 2.00 | 1.62 | 1.37 |
| SN74L42J | BCD-to-decimal decoder | 13.44 | 10.92 | 9.24 |
| SN74L42N | | 5.10 | 4.15 | 3.51 |
| SN74L47J | 15 V BCD-to-seven-segment decoder/driver | 13.44 | 10.92 | 9.24 |
| SN74L47N | | 5.10 | 4.15 | 3.51 |
| SN74L51J | Dual 2-wide AND-OR-INVERT gate | 3.36 | 2.73 | 2.31 |
| SN74L51N | | .93 | .75 | .64 |
| SN74L51T | | 2.00 | 1.62 | 1.37 |
| SN74L54J | 4-wide 3-2-2-3-input AND-OR-INVERT gate | 3.36 | 2.73 | 2.31 |
| SN74L54N | | .93 | .75 | .64 |
| SN74L54T | | 2.00 | 1.62 | 1.37 |
| SN74L55J | 2-wide 4-input AND-OR-INVERT gate | 3.36 | 2.73 | 2.31 |
| SN74L55N | | .93 | .75 | .64 |
| SN74L55T | | 2.00 | 1.62 | 1.37 |
| SN74L71J | R-S master-slave flip-flop | 4.70 | 3.82 | 3.23 |
| SN74L71N | | 1.31 | 1.07 | .90 |
| SN74L71T | | 2.80 | 2.27 | 1.92 |
| SN74L72J | J-K master-slave flip-flop | 4.70 | 3.82 | 3.23 |
| SN74L72N | | 1.31 | 1.07 | .90 |
| SN74L72T | | 2.80 | 2.27 | 1.92 |
| SN74L73J | Dual J-K master-slave flip-flop | 7.73 | 6.28 | 5.31 |
| SN74L73N | | 2.24 | 1.82 | 1.54 |
| SN74L73T | | 4.61 | 3.74 | 3.17 |

### SERIES 74L LOW-POWER DIGITAL—TTL (CONT'D)

| TI Type | Circuit Functions | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| SN74L74N | Dual D-type edge-triggered flip-flop | $ 1.87 | $ 1.52 | $ 1.29 |
| SN74L78J | Dual J-K master-slave flip-flop (common clock) | 7.73 | 6.28 | 5.31 |
| SN74L78N | | 2.24 | 1.82 | 1.54 |
| SN74L78T | | 4.61 | 3.74 | 3.17 |
| SN74L85J | 4-bit magnitude comparator | 16.80 | 13.65 | 11.55 |
| SN74L85N | | 6.82 | 5.54 | 4.69 |
| SN74L86J | Quad 2-input exclusive-OR gate | 7.06 | 5.73 | 4.85 |
| SN74L86N | | 2.38 | 1.94 | 1.64 |
| SN74L86T | | 4.19 | 3.41 | 2.88 |
| SN74L90J | Decade counter | 12.00 | 9.75 | 8.25 |
| SN74L90N | | 5.10 | 4.15 | 3.51 |
| SN74L90T | | 12.00 | 9.75 | 8.25 |
| SN74L91J | 8-bit shift register | 12.00 | 9.75 | 8.25 |
| SN74L91N | | 5.10 | 4.15 | 3.51 |
| SN74L91T | | 11.39 | 9.26 | 7.83 |
| SN74L93J | 4-bit binary counter | 12.00 | 9.75 | 8.25 |
| SN74L93N | | 5.10 | 4.15 | 3.51 |
| SN74L93T | | 11.01 | 8.94 | 7.57 |
| SN74L95J | 4-bit right-shift/left-shift register | 12.00 | 9.75 | 8.25 |
| SN74L95N | | 5.10 | 4.15 | 3.51 |
| SN74L95T | | 12.00 | 9.75 | 8.25 |
| SN74L98J | 4-bit data selector/storage register | 12.00 | 9.75 | 8.25 |
| SN74L98N | | 5.10 | 4.15 | 3.51 |
| SN74L99J | 4-bit right-shift/left-shift register | 12.00 | 9.75 | 8.25 |
| SN74L99N | | 5.10 | 4.15 | 3.51 |
| SN74L122J | Retriggerable monostable multivibrator | 10.08 | 8.19 | 6.93 |
| SN74L122N | | 2.24 | 1.82 | 1.54 |
| SN74L122T | | 6.00 | 4.87 | 4.12 |
| SN74L153J | Dual 4-line-to-1-line data selector/multiplexer | 13.44 | 10.92 | 9.24 |
| SN74L153N | | 5.10 | 4.15 | 3.51 |
| SN74L164J | 8-bit parallel-out serial shift register | 12.00 | 9.75 | 8.25 |
| SN74L164N | | 6.82 | 5.54 | 4.69 |
| SN74L164T | | 12.00 | 9.75 | 8.25 |

### SERIES 74S—SCHOTTKY-CLAMPED TTL

| TI Type | Circuit Functions | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| SN74S00N | Quad 2-input pos.-NAND gate | $ 3.89 | $3.10 | $2.64 |
| SN74S03N | SN74S00N with open collector | 3.89 | 3.10 | 2.64 |
| SN74S04N | Hex inverter | 4.67 | 3.72 | 3.17 |
| SN74S05N | Hex inverter (open collector) | 4.67 | 3.72 | 3.17 |
| SN74S10N | Triple 3-input pos.-NAND gate | 3.89 | 3.10 | 2.64 |
| SN74S11N | Triple 3-input pos.-AND gate | 3.89 | 3.10 | 2.64 |
| SN74S15N | SN74S11N with open collector | 3.89 | 3.10 | 2.64 |
| SN74S20N | Dual 4-input pos.-NAND gate | 3.89 | 3.10 | 2.64 |
| SN74S22N | SN74S20N with open collector | 3.89 | 3.10 | 2.64 |
| SN74S40N | Dual 4-input pos.-NAND buffer | 4.29 | 3.42 | 2.91 |
| SN74S64N | 4-2-3-2-input AND-OR-INVERT gate | 3.89 | 3.10 | 2.64 |
| SN74S65N | | 3.89 | 3.10 | 2.64 |
| SN74S74N | Dual D-type edge-triggered flip-flop | 8.98 | 7.16 | 6.10 |
| SN74S112N | Dual J-K negative-edge-triggered flip-flop with preset and clear | 10.53 | 8.38 | 7.15 |
| SN74S140N | Dual 4-input positive-NAND line driver | 6.44 | 5.13 | 4.37 |

### SERIES 15830 DIGITAL—DTL

| TI Type | Circuit Functions | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| SN15830N | Expandable dual 4-input NAND gate* | $0.90 | $0.90 | $0.75 |
| SN15831N | Gated J-K/R-S flip-flop* | 1.15 | 1.15 | 1.02 |
| SN15832N | Expandable dual 4-input NAND buffer gate | .90 | .90 | .75 |
| SN15834N | Hex inverter* | .98 | .98 | .85 |
| SN15835N | Hex inverter with expandable (open-base) or transistor inputs | .98 | .98 | .85 |
| SN15836N | Hex inverter* | .98 | .98 | .85 |
| SN15837N | Hex inverter† | .98 | .98 | .85 |
| SN15838N | Hex inverter with open-collector outputs | .98 | .98 | .85 |
| SN15844N | Expandable dual 4-input NAND power gates | .90 | .90 | .75 |
| SN15845N | Gated J-K/R-S flip-flop* | 1.15 | 1.15 | 1.02 |
| SN15846N | Quad 2-input NAND gate* | .90 | .90 | .75 |
| SN15848N | Gated J-K/R-S flip-flop† | 1.15 | 1.15 | 1.02 |
| SN15849N | Quad 2-input NAND gate† | .90 | .90 | .75 |
| SN15850N | Pulse-triggered binary flip-flop (active pull-up) | 3.75 | 3.75 | 3.50 |
| SN15851N | Gated negative-edge-triggered monostable multivibrator | 3.75 | 3.75 | 3.50 |

*6-kΩ pull-up resistors. †2-kΩ pull-up resistors.

SERIES 15830 DIGITAL CONT'D ON NEXT PAGE

SEE FOLLOWING TI INTEGRATED CIRCUIT PAGE FOR ADDITIONAL ORDERING INFORMATION

# Texas Instruments INTEGRATED CIRCUITS

## INDUSTRIAL TEMPERATURE RANGE DEVICES (0° C TO +70° C) CONT'D

### SERIES 15830 DIGITAL—DTL (CONT'D)

| TI Type | Circuits Function | Net Ea., Lots 1-99 | 100-999 |
|---|---|---|---|
| N15857N | Quad 2-input NAND buffer gate | $0.90 | $0.75 |
| N15858N | Quad 2-input NAND power gate | .90 | .75 |
| N15861N | Expandable dual 4-input NAND gate (2-kΩ pull-up resistors) | .90 | .75 |
| N15862N | Triple 3-input NAND gate (6-kΩ pull-up resistors) | .90 | .75 |
| N15863N | Triple 3-input NAND gate (2-kΩ pull-up resistors) | .90 | .75 |
| N151800N | Dual 5-input NAND gate (6-kΩ pull-up resistors) | .90 | .75 |
| N151801N | Dual 5-input NAND gate (2-kΩ pull-up resistors) | .90 | .75 |
| N151802N | Expandable 8-input NAND gate (6-kΩ pull-up resistors) | .90 | .75 |
| N151803N | Expandable 8-input NAND gate (2-kΩ pull-up resistors) | .90 | .75 |
| N151804N | 10-input NAND gate (6-kΩ pull-up resistors) | .90 | .75 |
| N151805N | 10-input NAND gate (2-kΩ pull-up resistors) | .90 | .75 |
| N151810N | Quad 2-input NOR gate (6-kΩ pull-up resistors) | .90 | .75 |
| N151811N | Quad 2-input NOR gate (2-kΩ pull-up resistors) | .90 | .75 |
| N158093N | Dual J-K flip-flop, individual clocks and presets (6-kΩ pull-up resistors) | 1.56 | 1.36 |
| N158094N | Dual J-K flip-flop, individual clocks and presets (2-kΩ pull-up resistors) | 1.56 | 1.36 |
| N158097N | Dual J-K flip-flop, common clocks and clears (6-kΩ pull-up resistors) | 1.56 | 1.36 |
| N158099N | Dual J-K flip-flop, common clocks and clears (2-kΩ pull-up resistors) | 1.56 | 1.36 |

### SERIES ECL2500 DIGITAL

| TI Type | Circuits Function | Net Each, Lots of 1-24 | 25-99 | 100 |
|---|---|---|---|---|
| ECL2500N | Dual 4-input OR/NOR gate | $ 6.14 | $ 4.87 | $ 4.18 |
| ECL2501N | 9-input OR/NOR gate | 6.14 | 4.87 | 4.18 |
| ECL2502N | Triple 2-input OR/NOR gate | 8.48 | 6.72 | 5.76 |
| ECL2503N | Quad 2-input NOR gate | 8.48 | 6.72 | 5.76 |
| ECL2504N | Quad delay/inverter gate | 8.48 | 6.72 | 5.76 |
| ECL2505N | Triple 3-input NOR gate | 7.42 | 5.88 | 5.04 |
| ECL2506N | 4-wide 3-input NOR/OR gate | 11.66 | 9.24 | 7.92 |
| ECL2507N | 5-wide 2-input NOR/OR gate | 10.81 | 8.57 | 7.34 |
| ECL2508N | 6-wide 2-input NOR/OR gate | 13.14 | 10.42 | 8.93 |
| ECL2509N | 4-wide 2-input OR-AND/NOR-OR gate | 9.75 | 7.73 | 6.62 |
| ECL2510N | 4-wide 3-3-3-2-input OR-AND/NOR-OR gate | 11.66 | 9.24 | 7.92 |
| ECL2511N | Quad 2-input OR gate | 8.16 | 6.47 | 5.54 |
| ECL2512N | Dual 3-wide 2-input NOR/OR gate with common input | 16.11 | 12.77 | 10.94 |
| ECL2513N | Dual 2-wide 2-input OR-AND/NOR-OR gate with common input | 9.75 | 7.73 | 6.62 |
| ECL2520N | Dual 2-input OR/NOR gate (3 OR outputs, 1 NOR output/gate) | 7.10 | 5.63 | 4.82 |
| ECL2521N | Dual 3-input OR gate (3 OR outputs/gate) | 7.63 | 6.05 | 5.18 |
| ECL2522N | Dual 4-input NOR gate (2 NOR outputs/gate) | 7.63 | 6.05 | 5.18 |
| ECL2523N | Dual 3-input NOR gate (3 NOR outputs/gate) | 7.63 | 6.05 | 5.18 |
| ECL2530N | Dual line receiver | 6.14 | 4.87 | 4.18 |
| ECL2531N | Dual line driver | 6.36 | 5.04 | 4.32 |
| ECL2536N | Dual HLL-to-ECL converter | 8.16 | 6.47 | 5.54 |
| ECL2537N | Dual ECL-to-HLL converter | 8.16 | 6.47 | 5.54 |
| ECL2540N | Dual D-type latch | 8.16 | 6.47 | 5.54 |

**SERIES SNG/SNF TTL DIGITAL CIRCUITS ALSO AVAILABLE ON REQUEST**

## MOS/LSI INTEGRATED CIRCUITS

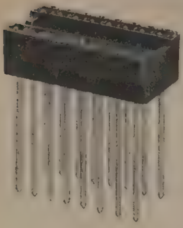
Many types of equipment previously not suitable for electronic control can now take full advantage of the latest electronics technology. Equipment costs can be kept low and equipment size can be reduced easily. MOS (Metal Oxide Semiconductor) circuits are ideal for digital applications including timers and counters, data transmission and switching equipment, recorders, calculators, controls and computer equipment. MOS is also suitable for analog applications such as telemetry and test equipment. The basic MOS device combines the best attributes of the pentode vacuum tube with all the advantages of the transistor. Have high-input impedance; small, simple to fabricate and consume little power.

Inherent advantages of MOS/LSI include: Increased circuit complexity per package; lower cost per circuit function; fewer subsystems to test; fewer parts to assemble and inspect; lower power drain per function and a choice of standard or custom products. The most significant feature is the large number of semiconductor circuit elements that can be put on a small chip. This high circuit density means large-scale integration—up to 5,000 devices on a silicon chip only 150 x 150 mils square. Each transistor in the MOS/LSI array requires as little as 1 square mil of chip area—a great reduction over the bipolar transistors requiring 49 to 50 square mils.

| TI Type | Circuit Functions | Net Ea., Lots of 1-24 | 25-99 |
|---|---|---|---|
| TMS1101JC<br>TMS1101NC | 256-bit random-access memory | $24.00<br>19.20 | $14.50<br>11.00 |
| TMS1103NC | Fully-decoded 1024-bit random-access memory | 26.00 | 15.75 |
| TMS2301JC<br>TMS2301NC | 2560-bit dynamic read-only memory | 43.00<br>32.50 | 26.00<br>19.50 |
| TMS2403JC<br>TMS2404JC | Row output character generator | 29.00<br>29.00 | 17.50<br>17.50 |
| TMS2501NC | 2560-bit static read-only memory | 21.60 | 13.00 |
| TMS2602NC | USASCII-to-Selectric/Selectric-to-USASCII code converter | 21.60 | 13.00 |
| TMS2603NC | EBCDIC-to-USASCII code converter | 21.60 | 13.00 |
| TMS2604NC | USASCII-to-EBCDIC/Selectric-to-EBCDIC code converter | 21.60 | 13.00 |
| TMS2605NC | USASCII, Baudot, Selectric, EBCDIC code generator | 21.60 | 13.00 |
| TMS3000LR | Dual 25-bit static shift register | 9.60 | 5.80 |
| TMS3001LR | Dual 32-bit static shift register | 9.60 | 5.80 |
| TMS3002LR | Dual 50-bit shift register | 9.60 | 5.80 |
| TMS3003LR | Dual 100-bit shift register | 9.60 | 5.80 |
| TMS3012JR<br>TMS3012NC | Dual 128-bit accumulator | 19.20<br>14.40 | 11.60<br>8.60 |
| TMS3016LR | Dual 16-bit static shift register | 9.60 | 5.80 |
| TMS3101LC<br>TMS3101NC | Dual 100-bit static shift register | 9.60<br>9.60 | 5.80<br>5.80 |
| TMS3102LC<br>TMS3102NC | Dual 80-bit static shift register | 9.60<br>9.60 | 5.80<br>5.80 |
| TMS3103LC<br>TMS3103NC | Dual 64-bit static shift register | 9.60<br>9.60 | 5.80<br>5.80 |
| TMS3112JC<br>TMS3112NC | Hex 32-bit static shift register | 28.80<br>19.20 | 17.20<br>11.60 |
| TMS3113JC<br>TMS3113NC | Dual 133-bit static accumulator | 19.20<br>14.40 | 11.60<br>8.60 |
| TMS3114JC<br>TMS3114NC | Dual 128-bit static accumulator | 19.20<br>14.40 | 11.60<br>8.60 |
| TMS3304LR<br>TMS3305LR | Triple 66-bit dynamic shift register | 9.60<br>9.60 | 5.80<br>5.80 |

| TI Type | Circuit Functions | Net Ea., Lots of 1-24 | 25-99 |
|---|---|---|---|
| TMS3309JC | Twin 512-bit dynamic shift register/accumulator | $28.80 | $17.20 |
| TMS3314JC | Triple (60+4) dynamic shift register | 19.20 | 11.60 |
| TMS3401LC<br>TMS3401NC | 512-bit dynamic shift register | 9.60<br>9.60 | 5.80<br>5.80 |
| TMS3402LC<br>TMS3402NC | 500-bit dynamic shift register | 9.60<br>9.60 | 5.80<br>5.80 |
| TMS3404JC<br>TMS3404NC | Dual 512-bit dynamic shift register | 28.80<br>19.20 | 17.20<br>11.60 |
| TMS3406LR | Dual 100-bit dynamic shift register | 9.60 | 5.80 |
| TMS3409JC<br>TMS3409NC | Quad 80-bit dynamic shift register | 19.20<br>14.40 | 11.60<br>8.60 |
| TMS3412JC<br>TMS3412NC | 1024-bit dynamic shift register (4 x 256 bits) | 28.80<br>19.20 | 17.20<br>11.60 |
| TMS3413LC<br>TMS3413NC | 1024-bit dynamic shift register (2 x 512 bits) | 19.20<br>19.20 | 11.60<br>11.60 |
| TMS3414LC<br>TMS3414NC | 1024-bit dynamic shift register (1 x 1024 bits) | 19.20<br>19.20 | 11.60<br>11.60 |
| TMS4000JC | High-speed content-addressable memory | 46.00 | 27.80 |
| TMS4003JR<br>TMS4003NC | 256-bit random-access memory | 46.00<br>36.00 | 27.80<br>21.80 |
| TMS4006JC | Digital storage buffer | 38.00 | 23.50 |
| TMS4020NC<br>TMS4023NC<br>TMS4025NC | 2048-bit dynamic random-access memory | 38.00<br>19.20<br>38.00 | 23.50<br>11.60<br>23.50 |
| TMS4103JC<br>TMS4103NC | Series character generator, USASCII code, 5 x 7 display | 28.80<br>21.60 | 17.50<br>13.00 |
| TMS4177JC<br>TMS4178NC | Series character generator, USASCII code, 7 x 10 display | 28.80<br>28.80 | 17.50<br>17.50 |
| TMS4179JC | Series character generator, EBCDIC code, 5 x 7 display | 28.80 | 17.50 |
| TMS6000JR | Common-source 10-channel analog switch | 28.80 | 17.50 |
| TMS6005JR<br>TMS6009JR | Six-channel analog switch | 14.40<br>19.20 | 8.60<br>11.60 |

# Texas Instruments INTEGRATED CIRCUIT HARDWARE


A

## WIRE-WRAP TYPE INTEGRATED CIRCUIT SOCKETS (FIG. A)

Low-profile sockets for low cost, reliable high-density production packaging of dual-in-line integrated circuits. Replaceable contacts, Wire-Wrap pins. **Contact Material:** 30 microinches minimum gold, over 50 microinches minimum nickel plating, over phosphor bronze spring contacts. **Terminals:** .025″ x .025″ Wire-Wrap pins. **Body Material:** Glass-filled nylon. **Operating Temperature:** −65° C to +150° C.

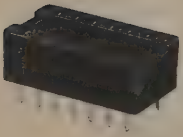
| Texas Instruments Type | No. of Contacts | Color | Overall Size Lgth. | Overall Size Width | Overall Size Height | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|---|---|
| IC-014WP-7611 | 14 | Black | .762″ | .440″ | .250″ | $0.99 | $0.78 | $0.65 |
| IC-014WP-7612 | 14 | White | .762″ | .440″ | .250″ | .99 | .78 | .65 |
| IC-016WP-7613 | 16 | Black | .862″ | .440″ | .250″ | 1.19 | .94 | .78 |
| IC-016WP-7614 | 16 | White | .862″ | .440″ | .250″ | 1.19 | .94 | .78 |

B

## HIGH RELIABILITY DUAL-IN-LINE SOCKETS (FIG. B)

Ultra-high reliability connectors with screw machine spring-loaded contacts. For dual-in-line integrated circuits. **Contact Material:** Gold plated beryllium copper springs, mounted in gold plated brass housings. **Terminals:** .025″ x .025″ Wire-Wrap pins. **Body Material:** Glass-filled nylon. **Operating Temperature:** −65° C to +150° C.

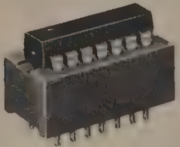
| Texas Instruments Type | No. of Contacts | Overall Size Lgth. | Overall Size Width | Overall Size Height | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|---|
| IC-014WP-7510 | 14 | .780″ | .490″ | .312″ | $2.95 | $2.50 | $2.30 |
| IC-016WP-7502 | 16 | .880″ | .490″ | .340″ | 3.54 | 3.00 | 2.70 |


C

## SOLDER TAIL DUAL-IN-LINE IC SOCKETS (FIG. C)

For testing and production packaging of dual-in-line integrated circuits. **Contact Material:** 200 microinches tin; or 30 microinches gold, over 50 microinches nickel plating; phosphor bronze spring contacts. **Terminals:** .025″ x .0065″ solder tail. **Body Material:** Glass-filled nylon. **Operating Temperature:** −65° C to +150° C.

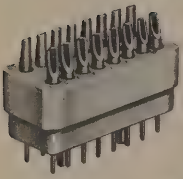
| Texas Instruments Type | No. of Contacts | Plating | Overall Size Lgth. | Overall Size Width | Overall Size Height | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|---|---|
| IC-014ST-7519 | 14 | Tin | .762″ | .440″ | .250″ | $0.65 | $0.48 | $0.39 |
| IC-014ST-7528 | 14 | Gold-over-nickel | .762″ | .440″ | .250″ | .70 | .53 | .44 |
| IC-016ST-7520 | 16 | Tin | .862″ | .440″ | .250″ | .78 | .58 | .47 |
| IC-016ST-7529 | 16 | Gold-over-nickel | .862″ | .440″ | .250″ | .84 | .64 | .53 |


D

## HIGH RELIABILITY SOLDER TAIL SOCKETS (FIG. D)

Ultra-high reliability dual-in-line IC connectors with solder tail termination. For testing and production packaging. **Contact Material:** Gold plated beryllium copper springs. **Terminals:** ¼″ solder type. **Body Material:** Glass-filled nylon. **Operating Temperature:** −65° C to +150° C.

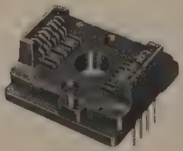
| Texas Instruments Type | No. of Contacts | Overall Size Lgth. | Overall Size Width | Overall Size Height | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|---|
| IC-014ST-7506 | 14 | .890″ | .500″ | .350″ | $1.20 | $0.90 | $0.78 |
| IC-016ST-7507 | 16 | .990″ | .500″ | .350″ | 1.40 | 1.05 | .92 |


E

## SOLDER CUP DUAL-IN-LINE CONNECTORS (FIG. E)

Pugs into all standard dual-in-line sockets, providing simple system testing or panel-to-panel interconnection. Solder cups for easy soldering of cable to connector. **Contact Material:** Gold plated brass, with solder cups. **Body Material:** Glass-filled nylon. **Operating Temperature:** −65° C to +150° C.

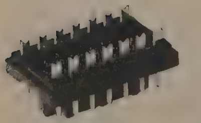
| Texas Instruments Type | No. of Contacts | Overall Size Lgth. | Overall Size Width | Overall Size Height | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|---|
| IC-014IP-7512 | 14 | .780″ | .490″ | .340″ | $4.15 | $3.30 | $2.95 |
| IC-016IP-7508 | 16 | .880″ | .490″ | .340″ | 4.50 | 3.55 | 3.10 |


F

## MECH PAK CONNECTOR (FIG. F)

Specially designed for use with ¼″ x ⅛″ 14-lead flat pack integrated circuits mounted in Texas Instruments Mech Pak Carrier. Ideal for testing and prototype work. **Contact Material:** Gold-plated beryllium copper. **Body Material:** Glass-filled diallyl phthalate. **Operating Temperature:** −65° C to +150° C.

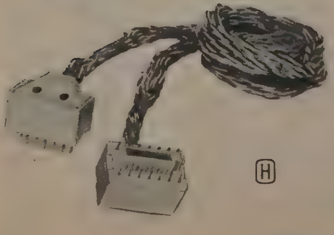
| Texas Instruments Type | Overall Size, with IC in Place Lgth. | Overall Size, with IC in Place Width | Overall Size, with IC in Place Height | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|
| IC-014FP-7500 | .950″ | .950″ | .400″ | $3.70 | $2.85 | $2.35 |


G

## DISCRETE COMPONENT PLATFORM (FIG. G)

Provides dual-in-line plug-in flexibility for discrete components (resistors, capacitors, etc.). The discrete components connect easily to platform, which can be plugged directly into IC panel system. **Contact Material:** Gold over nickel plating, over phosphor bronze contacts. **Body Material:** Glass-filled phenolic. **Operating Temperature:** −65° C to +150° C.

| Texas Instruments Type | Overall Size Lgth. | Overall Size Width | Overall Size Height | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|
| IC-014OC-7518 | .760″ | .460″ | .204″ | $1.45 | $1.25 | $1.12 |


H

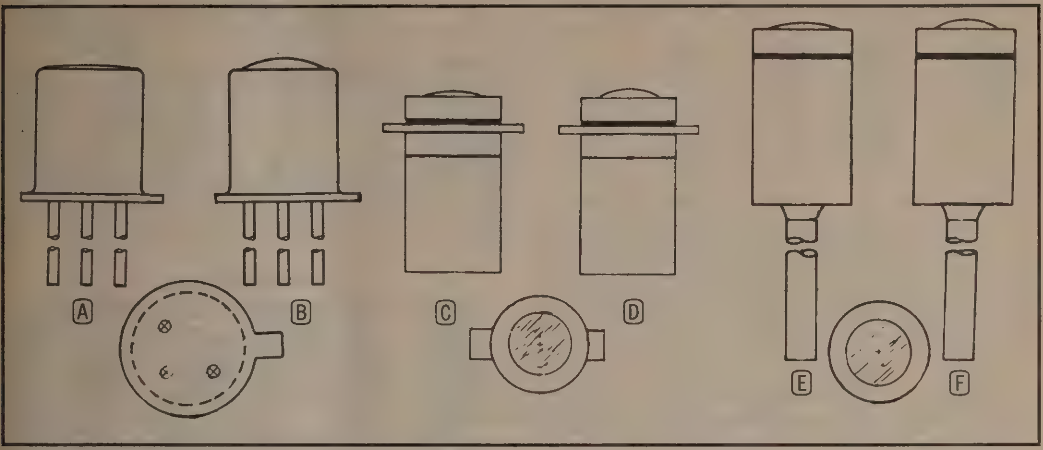
## INTERCONNECTING CABLE FOR IC PANELS (FIG. H)

Unique twisted-pair cable with connectors, plugs directly into dual-in-line integrated circuit sockets for panel-to-panel interconnection. Has twelve signal wires, each shielded by ground wire for cross-talk control. **Contact Material:** Gold over nickel plated phosphor bronze contacts. **Connector Body Material:** Glass-filled nylon. **Cable:** #30 AWG stranded twisted pair with high-temperature .005″ PVC insulation. **Voltage Rating:** 150 volts rms. **Operating Temperature:** 70° C maximum.

| Texas Instruments Type | Connector Size Lgth. | Connector Size Width | Connector Size Height | Cable Lgth.* | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-499 |
|---|---|---|---|---|---|---|---|---|
| IC-014CH-8011 | .813″ | .50″ | .437″ | 3 feet | $15.50 | $12.75 | $10.50 | $8.00 |

*Other lengths available from 1-16 feet; add 25c per foot for longer lengths, subtract 25c per foot for shorter lengths.

# CLAIREX® SILICON PHOTOTRANSISTORS



Silicon planar phototransistors in hermetic packages. Light Current ($I_L$): Light source is a frosted tungsten incandescent lamp at 2854° K. $t_r$ and $t_f$ light source is a gallium arsenide LED (light emitting diode) pulsed with a rise and fall time of $<0.3$ μsec. $I_C = 200$ mA max. Pulsed conditions, 300 μsec, 2% duty cycle (CLT2010–CLT2160 not pulsed). Size: Fig. A, 0.183″ (±.007″) dia. x 0.200″ (±.010″) h.; 0.500″ min. leads. Window 0.155″ (±.005″) dia. x 0.010″ h. max. Physical dimensions in accordance with JEDEC TO-18 outline except for window on top of can. Collector electrically connected to case. Leads gold plated Kovar. Fig. B, same as Fig. A except lens 0.147″ (±.011″) dia. x 0.040″ (±.010″) h. max. Fig. C, 0.060″ (±.003″) dia. x 0.110″ (±0.010″) h. Window 0.040″ (±.005″) dia. x 0.005″ h. max. Case gold plated Kovar. Fig. D, same as Fig. C except lens 0.040″ (±.005″) dia. x 0.025″ (±.004″). h. Fig. E, 0.060″ (±.003″) dia. x 0.588″ (±.015″) lg. Window 0.040″ (±.005″) dia. x 0.005″ h. max. Lead gold plated Kovar. Fig. F, same as Fig. E except lens 0.040″ (±.005″) dia. x 0.025″ (±.004″) h.

## NPN SILICON PLANAR EPITAXIAL PHOTOTRANSISTORS

Three terminal phototransistors in a hermetically sealed TO-18 case. Base lead is provided to enable more flexible circuit design. Offer a full range of high current sensitivity for low illumination levels. Applications include beam breakers, signal recognition, photo switching, counters, sorters, processing and control.

| | | | $I_L$ at $V_{CE} = 5$ V $H = 5$ mW/cm² | | Minimum | | | | | Typical | | Net Each, Lots of | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clairex Type | Fig. | Window or Lens | Min. mA | Max. mA | $BV_{CEO}$ V | $BV_{CBO}$ V | $BV_{ECO}$ V | $I_D$ at 10 V nA | $P_D$ at 25° $C_A$ mW | $t_r$ μsec | $t_f$ μsec | 1-99 | 100-499 |
| CLT2010 | A | W | 0.2 | 0.6 | 50 | 80 | 5 | 25 | 250 | 3 | 3 | $1.89 | $1.22 |
| CLT2020 | A | W | 0.4 | 1.2 | 30 | 60 | 5 | 25 | 250 | 3 | 3 | 2.02 | 1.31 |
| CLT2030 | A | W | 1.0 | 3.0 | 30 | 60 | 5 | 25 | 250 | 3 | 3 | 2.28 | 1.47 |
| CLT2130 | B | L | 0.6 | 1.8 | 50 | 80 | 5 | 25 | 250 | 3 | 3 | 2.14 | 1.38 |
| CLT2140 | B | L | 1.2 | 3.6 | 40 | 80 | 5 | 25 | 250 | 3 | 3 | 2.28 | 1.47 |
| CLT2150 | B | L | 2.4 | 7.2 | 40 | 80 | 5 | 25 | 250 | 3 | 3 | 2.42 | 1.56 |
| CLT2160 | B | L | 4.0 | 12.0 | 30 | 60 | 5 | 25 | 250 | 3 | 3 | 2.56 | 1.65 |

## NPN SILICON PLANAR EPITAXIAL DARLINGTON PHOTOTRANSISTORS

Same as above except this series is characterized for controlled, high sensitivity at very low irradiance levels. The flat window eliminates the need for critical sensor positioning in applications with low irradiance; lensed window reduces optical cross-talk from stray light.

| | | | $I_L$ at $V_{CE} = 5$ V | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | $H = .02$ mW/cm² | | $H = .2$ mW/cm² | | Minimum | | | | Net Each, Lots of | |
| Clairex Type | Fig. | Window or Lens | Min. mA | Max. mA | Min. mA | Max. mA | $BV_{CEO}$ V | $BV_{EBO}$ V | $I_D$ at 10 V nA | $P_D$ at 25° $C_A$ mW | 1-99 | 100-499 |
| CLR2050 | A | W | 6* | ......... | 0.6 | 1.8 | 40 | 10 | 100 | 250 | $2.49 | $1.92 |
| CLR2060 | A | W | 14* | ......... | 1.4 | 4.0 | 40 | 10 | 100 | 250 | 2.74 | 2.11 |
| CLR2170 | B | L | 0.2 | 0.5 | 2.0 | ......... | 40 | 10 | 100 | 250 | 2.64 | 2.03 |
| CLR2180 | B | L | 0.4 | 0.8 | 4.0 | ......... | 40 | 10 | 100 | 250 | 2.91 | 2.25 |

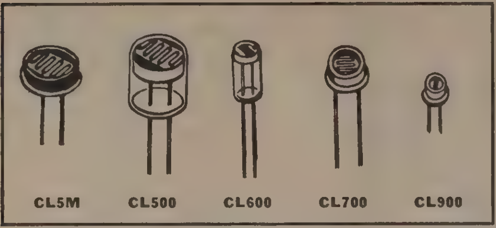
*$H = 2.0$ mW/cm².

## SILICON PLANAR EPITAXIAL PHOTOTRANSISTORS

Silicon phototransistors in miniature hermetic package designed for high-density mounting applications in card and tape readers, pattern and character recognition equipment, encoders and associated designs requiring stable characteristics. CLT3020, CLT3030, CLT4020 and CLT4030 types are characterized by a wide acceptance angle, fast switching and narrow tolerance ranges of sensitivity. Flat window minimizes the need for critical sensor positioning in many applications. CLT3160, CLT3170, CLT4160 and CLT4170 types are characterized by a narrow acceptance angle, fast switching and narrow tolerance ranges of sensitivity. Lensed window reduces optical cross-talk from stray light present in many applications.

| | | | $I_L$ at $V_{CE} = 5$ V | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | $H = 5$ mW/cm² | $H = 20$ mW/cm² | | Minimum | | | | Typical | | Net Each, Lots of | |
| Clairex Type | Fig. | Window or Lens | Min. mA | Min. mA | Max. mA | $BV_{CEO}$ V | $BV_{ECO}$ V | $I_D$ at 10 V nA | $P_D$ at 25° $C_A$ mW | $t_r$ μsec | $t_f$ μsec | 1-99 | 100-499 |
| CLT3020 | C | W | .10 | 0.40 | 1.2 | 50 | 5.0 | 10 | 50 | 1.5 | 1.5 | $3.60 | $2.43 |
| CLT3030 | C | W | .25 | 1.0 | 3.0 | 40 | 5.0 | 10 | 50 | 1.5 | 1.5 | 3.87 | 2.61 |
| CLT3160 | D | L | .50 | 2.0 | 7.0 | 50 | 5.0 | 10 | 50 | 1.5 | 1.5 | 3.60 | 2.43 |
| CLT3170 | D | L | 2.0 | 7.0 | ....... | 40 | 5.0 | 10 | 50 | 1.5 | 1.5 | 3.70 | 2.55 |
| CLT4020 | E | W | .10 | 0.40 | 1.2 | 50 | 5.0 | 10 | 50 | 1.5 | 1.5 | 2.91 | 2.24 |
| CLT4030 | E | W | .25 | 1.0 | 3.0 | 40 | 5.0 | 10 | 50 | 1.5 | 1.5 | 3.23 | 2.49 |
| CLT4160 | F | L | .50 | 2.0 | 7.0 | 50 | 5.0 | 10 | 50 | 1.5 | 1.5 | 2.82 | 2.17 |
| CLT4170 | F | L | 2.0 | 7.0 | ....... | 40 | 5.0 | 10 | 50 | 1.5 | 1.5 | 3.23 | 2.49 |

# CLAIREX® Photoconductor Cells



Variable resistors controlled by light for automation and control applications. Five series in both metal and glass packages meet most design requirements. Available in low resistance "L" types for transistor and other low voltage uses. Feature stable and closely controlled parameters. High ratio of light-to-dark current at low light levels. High sensitivity and fast response of cadmium selenide. **Operating Temperature:** −50° C to +75° C. **Size:** CL5M series, .490″ dia. x .183″ h.; CL500 series, .500″ dia. x ½″ lg.; CL600 series, .250″ dia. x ½″ lg.; CL700 series, TO-5 case .360″ dia. x .180″ h.; CL900 series, TO-18 case .210″ dia. x .150″ h.

## DESIGNERS' KIT

Recommended for all prototype design applications. Contains five different photoconductive cells: CL505, CL603A, CL704L, CL707 and CL902; plus designers data sheet and listing of all standard Clairex types.
**Clairex Designers' Kit**—Net Each....................**$10.00**

## SINGLE ELEMENT CELLS

| Clairex No.* | Sensitive Material | Pk. Spectral Response, A | Light Resistance* | Max. Voltage Rating, V | Power† mW |
|---|---|---|---|---|---|
| **CL5M2** | CdS | 5150 | 55K | 250 | 2000–500‡ |
| **CL5M2L** | CdS | 5150 | 9K | 170 | 2000–500‡ |
| **CL5M3** | CdSe | 7350 | 7.2K | 250 | 2000–500‡ |
| **CL5M4** | CdSe | 6900 | 1.5K | 250 | 2000–500‡ |
| **CL5M4L** | CdSe | 6900 | 0.25K | 170 | 2000–500‡ |
| **CL5M5** | CdS | 5500 | 9K | 250 | 2000–500‡ |
| **CL5M5L** | CdS | 5500 | 1.5K | 170 | 2000–500‡ |
| **CL5M7** | CdS | 6150 | 7.2K | 250 | 2000–500‡ |
| **CL502** | CdS | 5150 | 55K | 250 | 500–250 |
| **CL502L** | CdS | 5150 | 9K | 170 | 500–250 |
| **CL503** | CdSe | 7350 | 7.2K | 250 | 500-250‡ |
| **CL504** | CdSe | 6900 | 1.5K | 250 | 500-250‡ |
| **CL504L** | CdSe | 6900 | 0.25K | 170 | 500-250‡ |
| **CL505** | CdS | 5500 | 9K | 250 | 500-250‡ |
| **CL505L** | CdS | 5500 | 1.5K | 170 | 500-250‡ |
| **CL507** | CdS | 6150 | 7.2K | 250 | 500-250‡ |
| **CL602** | CdS | 5150 | 1 meg | 300 | 75 |
| **CL603** | CdSe | 7350 | 133K | 300 | 75 |
| **CL603A** | CdSe | 7350 | 75K | 300 | 75 |
| **CL603AL** | CdSe | 7350 | 3.5K | 170 | 75 |
| **CL604** | CdSe | 6900 | 30K | 300 | 75 |
| **CL604M** | CdSe | 6900 | 7.5K | 250 | 75 |
| **CL604L** | CdSe | 6900 | 1.5K | 170 | 75 |
| **CL605** | CdS | 5500 | 166K | 300 | 75 |
| **CL605L** | CdS | 5500 | 7.5K | 170 | 75 |
| **CL607** | CdS | 6150 | 133K | 300 | 75 |
| **CL607L** | CdS | 6150 | 3.5K | 170 | 75 |
| **CL702** | CdS | 5150 | 1 meg | 300 | 125 |
| **CL702L** | CdS | 5150 | 20K | 100 | 125 |
| **CL703** | CdSe | 7350 | 133K | 300 | 125 |
| **CL703A** | CdSe | 7350 | 67K | 300 | 125 |
| **CL703M** | CdSe | 7350 | 30K | 250 | 125 |
| **CL703L** | CdSe | 7350 | 2.7K | 170 | 125 |
| **CL704** | CdSe | 6900 | 30K | 300 | 125 |
| **CL704L** | CdSe | 6900 | .6K | 170 | 125 |
| **CL705** | CdS | 5500 | 166K | 300 | 125 |
| **CL705L** | CdS | 5500 | 3.3K | 170 | 125 |
| **CL705HL** | CdS | 5500 | 28K | 170 | 125 |
| **CL707** | CdS | 6150 | 133K | 300 | 125 |
| **CL707L** | CdS | 6150 | 2.7K | 170 | 125 |
| **CL707H** | CdS | 6200 | 600K | 300 | 125 |
| **CL707HM** | CdS | 6200 | 100K | 250 | 125 |
| **CL707HL** | CdS | 6200 | 10K | 170 | 125 |
| **CL902** | CdS | 5150 | 1 meg | 250 | 50 |
| **CL902L** | CdS | 5150 | 67K | 100 | 50 |
| **CL903** | CdSe | 7350 | 133K | 250 | 50 |
| **CL903A** | CdSe | 7350 | 67K | 250 | 50 |
| **CL903N** | CdSe | 7350 | 66K | 100 | 50 |
| **CL903L** | CdSe | 7350 | 6K | 100 | 50 |
| **CL904** | CdSe | 6900 | 30K | 250 | 50 |
| **CL904N** | CdSe | 6900 | 15K | 100 | 50 |
| **CL904L** | CdSe | 6900 | 2K | 100 | 50 |
| **CL905** | CdS | 5500 | 166K | 250 | 50 |
| **CL905N** | CdS | 5500 | 83K | 100 | 50 |
| **CL905L** | CdS | 5500 | 10K | 100 | 50 |
| **CL905HN** | CdS | 5500 | 700K | 100 | 50 |
| **CL905HL** | CdS | 5500 | 100K | 100 | 50 |
| **CL907** | CdS | 6150 | 133K | 250 | 50 |
| **CL907N** | CdS | 6150 | 66K | 100 | 50 |
| **CL907L** | CdS | 6150 | 6K | 100 | 50 |
| **CL907HN** | CdS | 6200 | 300K | 100 | 50 |
| **CL907HL** | CdS | 6200 | 24K | 100 | 50 |

*Average DC resistance (±33⅓%) measured at 2 foot-candles, 2854° K and 25° C ambient, from room light history. †At 25° C ambient; derated linearly to 0 at 75° C. ‡With and without heat sink.

## DUAL ELEMENT CELLS

| Clairex No.* | Sensitive Material | Pk. Spectral Response, A | Light Resistance* | Max. Voltage Rating, V | Power† mW |
|---|---|---|---|---|---|
| **CL702L/2** | CdS | 5150 | 46K | 100 | 75–125§ |
| **CL703/2** | CdSe | 7350 | 50K‡ | 300 | 75–125§ |
| **CL703L/2** | CdSe | 7350 | 6.5K‡ | 170 | 75–125§ |
| **CL704L/2** | CdSe | 6900 | 1.5K‡ | 170 | 75–125§ |
| **CL705/2** | CdS | 5500 | 166K‡ | 300 | 75–125§ |
| **CL705L/2** | CdS | 5500 | 7.5K‡ | 170 | 75–125§ |

*Average DC resistance (±33⅓%) measured at 2 foot-candles, 2854° K and 25° C ambient, from room light history. †At 25° C ambient; derated linearly to 0 at 75° C. ‡Each element. §Total power dissipation 125 mW; max. power across one-half, 75 mW.

## ★QUANTITY PRICES

| Clairex No. | Net Each, Lots of 1-99 | Net Each, Lots of 100-499 | Clairex No. | Net Each, Lots of 1-99 | Net Each, Lots of 100-499 |
|---|---|---|---|---|---|
| **CL5M2** | **$2.00** | **$1.55** | **CL703/2** | **$2.30** | **$1.95** |
| **CL5M2L** | **2.00** | **1.55** | **CL703L/2** | **2.30** | **1.95** |
| **CL5M3** | **1.50** | **1.25** | **CL704** | **1.50** | **1.25** |
| **CL5M4** | **1.50** | **1.25** | **CL704L** | **1.50** | **1.25** |
| **CL5M4L** | **1.50** | **1.25** | **CL704L/2** | **1.80** | **1.55** |
| **CL5M5** | **1.50** | **1.15** | **CL705** | **2.00** | **1.55** |
| **CL5M5L** | **1.50** | **1.15** | **CL705L** | **1.50** | **1.15** |
| **CL5M7** | **1.50** | **1.15** | **CL705/2** | **2.30** | **1.95** |
| **CL502** | **2.00** | **1.55** | **CL705L/2** | **1.80** | **1.45** |
| **CL502L** | **2.00** | **1.55** | **CL705HL** | **1.50** | **1.35** |
| **CL503** | **1.50** | **1.25** | **CL707** | **1.50** | **1.15** |
| **CL504** | **1.50** | **1.25** | **CL707L** | **1.50** | **1.15** |
| **CL504L** | **1.50** | **1.25** | **CL707H** | **1.50** | **1.35** |
| **CL505** | **1.50** | **1.15** | **CL707HM** | **1.50** | **1.35** |
| **CL505L** | **1.50** | **1.15** | **CL707HL** | **1.50** | **1.35** |
| **CL507** | **1.50** | **1.15** | **CL902** | **2.00** | **1.55** |
| **CL602** | **1.50** | **1.15** | **CL902L** | **2.00** | **1.55** |
| **CL603** | **1.75** | **1.50** | **CL903** | **1.50** | **1.25** |
| **CL603A** | **1.75** | **1.50** | **CL903A** | **1.50** | **1.25** |
| **CL603AL** | **1.75** | **1.50** | **CL903N** | **1.50** | **1.25** |
| **CL604** | **1.75** | **1.50** | **CL903L** | **1.50** | **1.25** |
| **CL604M** | **1.75** | **1.50** | **CL904** | **1.50** | **1.25** |
| **CL604L** | **1.75** | **1.50** | **CL904N** | **1.50** | **1.25** |
| **CL605** | **1.50** | **1.15** | **CL904L** | **1.50** | **1.25** |
| **CL605L** | **1.50** | **1.15** | **CL905** | **1.50** | **1.15** |
| **CL607** | **1.50** | **1.15** | **CL905N** | **2.00** | **1.55** |
| **CL607L** | **1.50** | **1.15** | **CL905L** | **1.50** | **1.15** |
| **CL702** | **2.00** | **1.55** | **CL905HN** | **1.50** | **1.35** |
| **CL702L** | **1.50** | **1.15** | **CL905HL** | **1.50** | **1.35** |
| **CL702L/2** | **1.80** | **1.45** | **CL907** | **1.50** | **1.15** |
| **CL703** | **1.50** | **1.25** | **CL907L** | **1.50** | **1.15** |
| **CL703A** | **1.50** | **1.25** | **CL907N** | **1.50** | **1.15** |
| **CL703M** | **1.50** | **1.25** | **CL907HN** | **1.50** | **1.35** |
| **CL703L** | **1.50** | **1.25** | **CL907HL** | **1.50** | **1.35** |

## HIGH SPEED "CHOPPER" CELLS

| Clairex No. | Net Each, Lots of 1-99 | Net Each, Lots of 100-499 | Clairex No. | Net Each, Lots of 1-99 | Net Each, Lots of 100-499 |
|---|---|---|---|---|---|
| **CL603C** | **$2.54** | **$1.91** | **CL703CS*** | **$2.66** | **$2.03** |
| **CL603CL** | **2.54** | **1.91** | **CL703CLS*** | **2.66** | **2.03** |
| **CL703C** | **2.54** | **1.91** | **CL903CS*** | **2.72** | **2.09** |
| **CL703CL** | **2.54** | **1.91** | **CL903CLS*** | **2.72** | **2.09** |
| **CL903C** | **2.54** | **1.91** | **CL906CS*** | **2.54** | **1.91** |
| **CL903CL** | **2.54** | **1.91** | **CL906CLS*** | **2.54** | **1.91** |

*Photocells with **S** have conductive glass windows and a third lead grounded to the case for complete shielding.

## PHOTOMOD® PHOTOCELL-LAMP MODULES

**Power Dissipation:** Up to 100 mW. **Cell Voltage:** 120 V max. with lamp off. **Module Temperature:** −25° C to 75° C max. operating as measured on the photocell.

| Clairex No.* | Resistance: Max. "On" Ohms | Resistance: Min. "5-sec. Off" Megs | Max. Time: Rise* Sec. | Max. Time: Decay† Sec. | Max. Lamp Volts‡ | Lamp Cur., mA |
|---|---|---|---|---|---|---|
| **CLM3006A** | 160 | 100 | .060 | .17 | 6 | 40 |
| **CLM4006A** | 55 | 1 | .080 | .17 | 6 | 40 |
| **CLM3012A** | 160 | 100 | .080 | .21 | 12 | 40 |
| **CLM4012A** | 30 | 1 | .080 | .18 | 12 | 40 |
| **CLM3120A** | 1150 | 100 | .005 | .18 | 120 | 2.5§ |
| **CLM4120A** | 160 | 1 | .005 | .55 | 120 | 2.5§ |
| **CLM5H10A** | 3000 | 10 | .120 | .070 | 10 | 17 |
| **CLM7H16A** | 550 | 10 | .090 | .100 | 16 | 17 |

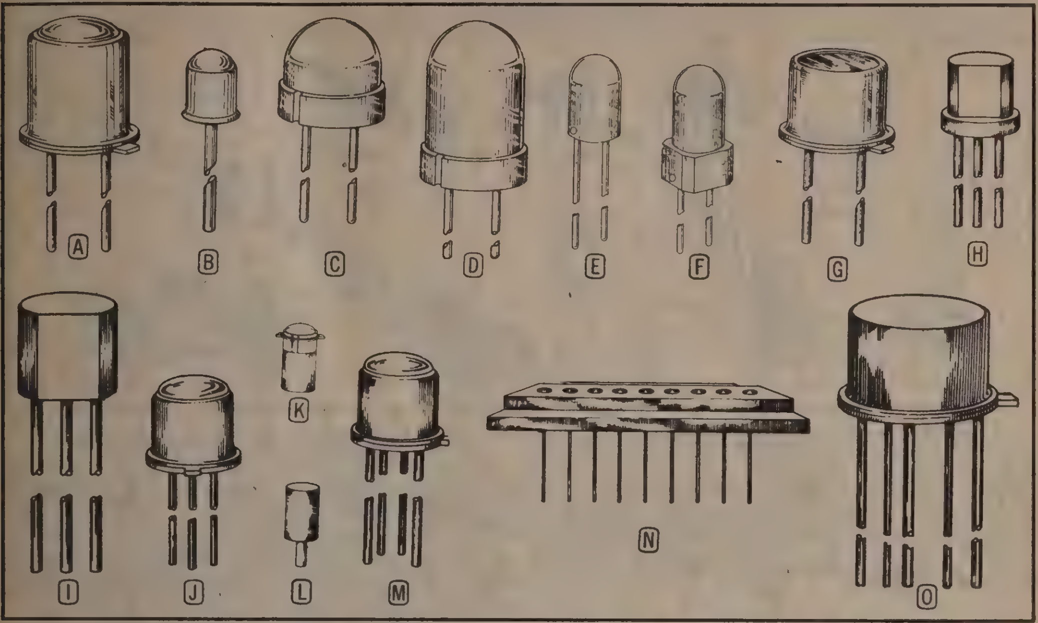
*Time to reach 110% of on resistance. †Time to reach 100K after lamp circuit is broken. ‡For 5,000 hour life. §Neon lamp.

## ●QUANTITY PRICES

| Clairex No. | Net Each, Lots of 1-99 | Net Each, Lots of 100-299 | Net Each, Lots of 300-999 |
|---|---|---|---|
| **Any Number Listed** | **$2.45** | **$1.76** | **$1.48** |

SOLID STATE

# OPTOELECTRONICS



## SOLID STATE LAMPS (LIGHT-EMITTING DIODES)

Withstand severe shock and vibration. Compatible with most optoelectronic detectors. Ideal for use in alarm, detection, switching and similar circuits. Visible output lamps SSL-3, -22, -22L, -12 and -212 are high efficiency gallium phosphide (GaP) and emit red light; all others are gallium arsenide (GaAs) infrared output lamps that are an excellent match for the spectral response of silicon detectors. Visible output lamps, plastic encapsulated; infrared types, hermetically sealed. All infrared lamps in Case A (**Fig. A**) are also available at the same price in Case G (**Fig. G**), which has a flat window.

| GE Type | Fig. | $V_F$ VDC | $I_F$ mA | $V_R$ at 10 mA Volts | Peak Wavelength Angstroms | Output at $I_F$ mW | Rise Time μsec | Size, Inches Dia. x Length | Net Each, Lots of 1-9 | Net Each, Lots of 10-99* |
|---|---|---|---|---|---|---|---|---|---|---|
| **SSL-3** | A | 1.35 | 100 | 2 | 9400/5400 | 1* | † | .230 x .235 | **$8.83** | **$5.89** |
| **SSL-4** | A, G | 1.25 | 100 | 2 | 9000 | .4 | .005 | .230 x .235♯ | **3.30** | **2.20** |
| **SSL-5A** | A, G | 1.35 | 100 | 2 | 9400 | 1.5 | .3 | .230 x .235♯ | **4.10** | **2.75** |
| **SSL-5B** | A, G | 1.35 | 100 | 2 | 9400 | 2.3 | .3 | .230 x .235♯ | **6.13** | **4.09** |
| **SSL-5C** | A, G | 1.35 | 100 | 2 | 9400 | 2.9 | .3 | .230 x .235♯ | **6.85** | **4.57** |
| **SSL-12** | F | 2.0 | 5 | 3 | 7000 | 1.0‡ | .5 | .095§ x .187 | **2.50** | **1.74** |
| **SSL-15** | B | 1.30 | 20 | 2 | 9400 | .5 | .7 | .097 x .115 | **6.66** | **3.66** |
| **SSL-22** | C | 2.15 | 10 | 3 | 7000 | 1.5‡ | .5 | .230 x .230 | **2.50** | **1.74** |
| **SSL-22L** | D | 2.15 | 10 | 3 | 7000 | 1.5‡ | .5 | .230 x .360 | **2.56** | **1.74** |
| **SSL-34** | A, G | 1.25 | 100 | 2 | 9000 | .9 | .010 | .230 x .235♯ | **3.75** | **2.50** |
| **SSL-35** | A, G | 1.35 | 100 | 2 | 9400 | 5.5 | .5 | .230 x .235♯ | **8.10** | **5.40** |
| **SSL-212** | E | 2.0 | 5 | 3 | 7000 | 1.0‡ | .5 | .080 x .125 | **2.50** | **1.74** |
| **SSL-315** | B | 1.30 | 20 | 2 | 9400 | 1.0 | .7 | .097 x .115 | **6.90** | **4.59** |

*Per 80 foot-lamberts. †150/4000. ‡Millicandela. §Square. ♯Figure G length .165".

## DETECTORS

### PHOTOTRANSISTORS

Hermetic packages; Fig. H and I are plastic. Min. $V_{CEO} = 25$ V except L14E3, 50 V; L14A502, 45 V; L14F, 40 V.

| GE Type | Fig. | Minimum $I_L$* mA | Minimum $I_L$† mA | Typical $t_r$‡ μs | Typical $t_f$ μs | Size, Inches Dia. x Lgth. | Net Ea. Lots of 1-99* |
|---|---|---|---|---|---|---|---|
| **L14B1** | H | 0.5 | 1.5 | 75 | 45 | .200 x .305 | **$1.10** |
| **L14D1§** | I | 0.5 | 1.5 | 75 | 45 | .200 x .205 | **.60** |
| **L14E3** | I | 0.4♯ | 1.2♯ | 15• | 9 | .200 x .205 | **1.08** |
| **L14A502** | J | 3.0 | 9.0 | 5 | 5 | .220 x .237 | **3.00** |
| **L14F** | J | 10.0 | 30 | 75 | 45 | .220 x .237 | **6.75** |
| **L15A600** | K | 0.5♯ | 1.5♯ | 3 | 3 | .060 x .109 | **3.15** |
| **L15D** | L | 0.5 | 1.5 | 75 | 45 | .060 x .100 | **3.00** |
| **L15E** | B | 1.5♯ | 4.5 | 3 | 3 | .097 x .115 | **3.00** |

*Photo current at $H = 2$ mW/cm²; tungsten at 2870° K. †Photo current GaAs source. ‡At $V_{CE} = 10$ V, $R_L = 100$ ohms, $I_L = 10$ mA GaAs source. §JEDEC 2N5777. ♯$H = 10$ mW/cm². •$V_{CE} = 30$ V, $R_L = 1$K ohm, $I_L = 800$ μA.

### LASCR—SILICON CONTROLLED RECTIFIERS

Maximum Temperature: Operating, 100° C; storage, 150° C. $I_{DC}$ at 25° C. Gate current to trigger from direct electrical supply is 20 μA typ., 200 μA max. at 25° C $T_J$. Effective irradiance to trigger decreases with increasing anode voltage and increasing gate to cathode resistance. PRV and $V_{BO} = 200$ V. Size, .220" dia. x .217" l.

| GE Type | Fig. | Max. $I_{DC}$ A | Effective Irradiance to Trigger† Min.-Max. | Net Ea., Lots of 1-99* |
|---|---|---|---|---|
| **L8G** | M | .44 | 0.68–10.0 mW/cm² | **$ 9.45** |
| **L9G** | M | .44 | 0.68– 4.2 mW/cm² | **10.45** |
| **L811G** | M* | .77 | 0.68–10.0 mW/cm² | **10.95** |
| **L911G** | M* | .77 | 0.68– 4.2 mW/cm² | **11.95** |

*Soldered to a diamond base heat sink. †At 25° C $T_J$, 6 VDC.

### SCS—SILICON CONTROLLED SWITCHES

Anode-cathode voltage = ±40 V max. $t_r = 10$ μsec typical. Irradiance to trigger = 1 mW/cm² at $R_g = 800$K ohms, $V_S = 10$ V.

| GE Type | Fig. | Max. DC Anode Current | Maximum $V_T$ V | Maximum $P_T$ mW | Size, Inches Dia. x Lgth. | Net Ea., Lots of 1-99* |
|---|---|---|---|---|---|---|
| **L14T5** | I | 100 mA | 1.5 | 200 | .200 x .205 | **$1.25** |
| **LIV** | M | 175 mA | 2.0 | 400 | .220 x .217 | **3.15** |

### PHOTOTRANSISTOR ARRAYS

$t_r = 75$ μsec, $t_f = 45$ μsec at $V_{CE} = 10$ V, $R_L = 100$ ohms and $I_L = 10$ mA, GaAs source. Special arrays available, data on request.

| GE Type | Fig. | Minimum $I_L$* mA | Minimum $I_L$† mA | $V_{CEO}$ V | Matching‡ $I_L$ (min.) / $I_L$ (max.) | Net Ea., Lots of 1-99* |
|---|---|---|---|---|---|---|
| **J300** | N§ | 0.5 | 1.5 | 25 | .75 | **$32.00** |
| **J300A** | N§ | 3.0 | 9.0 | 25 | .75 | **34.00** |

*Photo current at $H = 2$ mW/cm², tungsten at 2870° K. †Photo current, GaAs source. ‡Ratio of $I_L$ (max.)/$I_L$ (min.) at $H = 2$ mW/cm² for any array; .33 between arrays. §.950" w. x .150" h.

### PHOTON COUPLERS

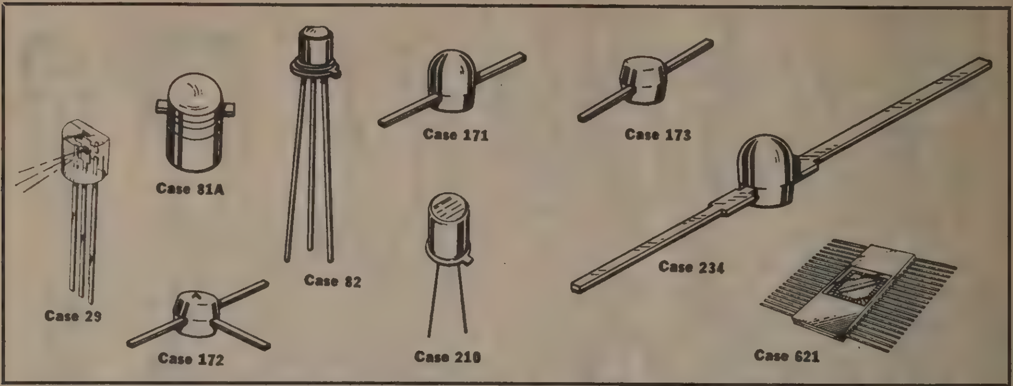
Hermetic TO-5, utilizing a transistor, darlington and SCR chip. Emitter: $P_T = 50$ mW max.; $I_F = 20$ mA max.; $V_F = 1.5$ V at 10 mA. Coupled: SSL to detector at 500 V = 1000 V.

| GE Type | Fig. | Detector Maximum $P_T$ mW | Detector Maximum $V_{CEO}$* V | Detector Maximum $I_D$ nA | Detector DC Transfer Ratio | Coupled $t_r$ μs | Coupled $t_f$ μs | Net Each, Lots of 1-99* |
|---|---|---|---|---|---|---|---|---|
| **H10A** | O† | 300 | 40 | 100 | 50% | 3 | 3 | **$8.00** |
| **H10B** | O† | 300 | 25 | 100 | 500% | 100 | 100 | **8.50** |
| **H10C** | O† | 500 | 200 | 10 μA switches | | 1 | ..... | **9.00** |

*At 100 μA. †.364" dia. x .250" lgth.

**★LARGER QUANTITY PRICES ON REQUEST**

# MOTOROLA Semiconductors OPTOELECTRONIC DEVICES



Optoelectronic devices are designed for use in computer, industrial and consumer equipment. Standard line of optoelectronic products include light emitters, light detectors and monolithic phototransistor and photodiode arrays. Also available are custom phototransistor and light emitting diode arrays using discrete devices mounted on printed circuit boards and custom monolithic arrays of photodiodes and phototransistors. Compactness, reliability and compatibility with integrated circuits keynote light emitting diode advantages as well as perfect spectral matching of infrared units to silicon detectors. They emit infrared or visible light when forward biased, fast switching types for flexibility in package, performance and price.

## LIGHT EMITTING DIODES

Visible red (6600 Angstrom typ. peak emission wavelength) gallium arsenide phosphide emitters for use in panel and circuit indicators, light modulators, alphanumeric displays and film annotation.

| Motorola Type | Case | Brightness at $I_F$ fL (Typ.) | Brightness at $I_F$ mA | Forward Voltage $V_F$ (Typ.) | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|
| **MLED50** | 234 | 750 | 20 | 1.6 | **$1.05** | **$0.70** |
| **MLED600** | 171 | 1100 | 50 | 1.6 | **1.27** | **.85** |
| **MLED610** | 81A | 1100 | 50 | 1.6 | **3.90** | **2.60** |

## INFRARED EMITTING DIODES

Infrared (9000 Angstrom typ. peak emission wavelength) gallium arsenide emitters provide high power output in light modulators, shaft or position encoders, punched card and tape readers, optical switching and logic circuits. They are spectrally matched for use with silicon detectors.

| Motorola Type | Case | Power Output at $I_F$ μW (Typ.) | Power Output at $I_F$ mA | Forward Voltage $V_F$(Typ.) | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|
| **MLED60** | 234 | 550 | 50 | 1.2 | **$1.60** | **$1.15** |
| **MLED900** | 171 | 550 | 50 | 1.2 | **1.60** | **1.15** |
| **MLED910** | 81A | 150 | 50 | 1.2 | **3.60** | **2.40** |
| **MLED930** | 82 | 650 | 100 | 1.2 | **4.90** | **3.30** |

## MONOLITHIC ARRAYS

Standard monolithic linear photodiode and phototransistor arrays are on 0.005″ center-to-center spacing. The active area is 0.005″ by 0.0045″ with 0.0005″ space between elements. Used extensively in optical character recognition applications, available to meet specific custom requirements with regard to spacing, active area, number of elements, etc. Ideal for OCR applications requiring very high density spacing, exceptional alignment and high optical resolution.

| Motorola Type | Case | Sensitivity at H* = 5.0 mW/cm² nA/mW/cm min. | Dark Current nA max. | Light Current† μA Typ. | Net Each, Lots of 1-99 | Net Each, Lots of 100-999 |
|---|---|---|---|---|---|---|
| **MRD6039D‡** | 621 | 14 | 2.0 | 0.15 | **$150.00** | **$100.00** |
| **MRD6039T§** | 621 | 300 | 10 | 3.0 | **175.00** | **116.00** |

*H is radiation flux density emitted from a tungsten source at 2870 K. †At H. ‡Diode. §Transistor.

## NPN SILICON PHOTOTRANSISTORS

Control light generated current flow with 21 different PIN phototransistors and photo Darlington's for optimized optical performance in DC to high frequency designs. Sensitive, fast and rugged detectors are also available in custom arrays of discrete devices preassembled and pre-tested to specifications. Phototransistors are high quality passivated annular devices providing a high order of stability and reliability. Sensitive throughout the visible and near infra-red spectral range with peak sensitivity typically at a wavelength of 0.8 micrometers. Much faster than the conventional photocells or mechanical contacts, these phototransistors have rise and fall times in low microseconds when pulsed with gallium arsenide light emitting diode.

### HIGH DENSITY PHOTOTRANSISTORS

Subminiature NPN silicon phototransistors designed for use in card and tape readers, pattern and character recognition equipment, shaft encoders or any design requiring radiation sensitivity, stable characteristics and high stability. Switching time 6.5 μsec max. Sensitivity and light current at H = 5.0 mW/cm²; dark current at H = 0. H is radiation flux density emitted from a tungsten source at 2870 K.

| Motorola Type | Case | Sensitivity mA/mW/cm² Min. | Dark Current nA Max. | Light Current mA Min. | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|
| **MRD100** | 172 | 0.04 | 100 | 0.2 | **$1.50** | **$1.00** |
| **MRD150** | 173 | 0.04 | 100 | 0.2 | **1.20** | **.80** |
| **MRD200** | 81A | 0.25 | 25 | 1.25 | **3.90** | **2.60** |
| **MRD210** | 81A | 0.05 | 25 | 0.25 | **3.45** | **2.30** |
| **MRD250** | 81A | 0.1 | 25 | 0.5 | **3.60** | **2.40** |
| **MRD600** | 81A | 0.04 | 25 | 0.2 | **3.15** | **2.10** |

### LOW DENSITY PHOTOTRANSISTORS

NPN silicon phototransistors designed for use in industrial inspection, processing and control systems, counters, sorters, switching and logic circuits or any design requiring radiation sensitivity, stable characteristics and moderate mounting density in arrays or single device applications.

| | | | | | | |
|---|---|---|---|---|---|---|
| **MRD300** | 82 | 0.8 | 25 | 4.0 | **$10.50** | **$7.00** |
| **MRD310** | 82 | 0.2 | 25 | 1.0 | **4.50** | **3.00** |
| **MRD450** | 171 | 0.2 | 100 | 1.0 | **1.13** | **.75** |
| **MRD810*** | 210 | 0.2 | 50 | 1.0 | **6.00** | **4.00** |
| **MRD3050†** | 82 | 0.02 | 100 | 0.1 | **1.20** | **.80** |
| **MRD3051†** | 82 | 0.04 | 100 | 0.2 | **1.35** | **.90** |
| **MRD3052†** | 82 | 0.02 –0.08 | 100 | .1–.4 | **1.80** | **1.20** |
| **MRD3053†** | 82 | 0.05 –0.2 | 100 | .25–1 | **1.80** | **1.20** |
| **MRD3054†** | 82 | 0.125–0.5 | 100 | .625–2.5 | **1.95** | **1.30** |
| **MRD3055†** | 82 | 0.3 | 100 | 1.5 | **2.10** | **1.40** |
| **MRD3056†** | 82 | 0.4 | 100 | 2.0 | **2.40** | **1.60** |

Switching time: *11 μsec; †5.5 μsec typical.

## SILICON PHOTO DARLINGTON AMPLIFIERS

Designed for use where extremely high sensitivity is required. Plastic side reading devices are the most economical detectors available. Sensitivity and light current at H = 2.0 mW/cm²; dark current at H = 0. Switching time, 400 μsec.

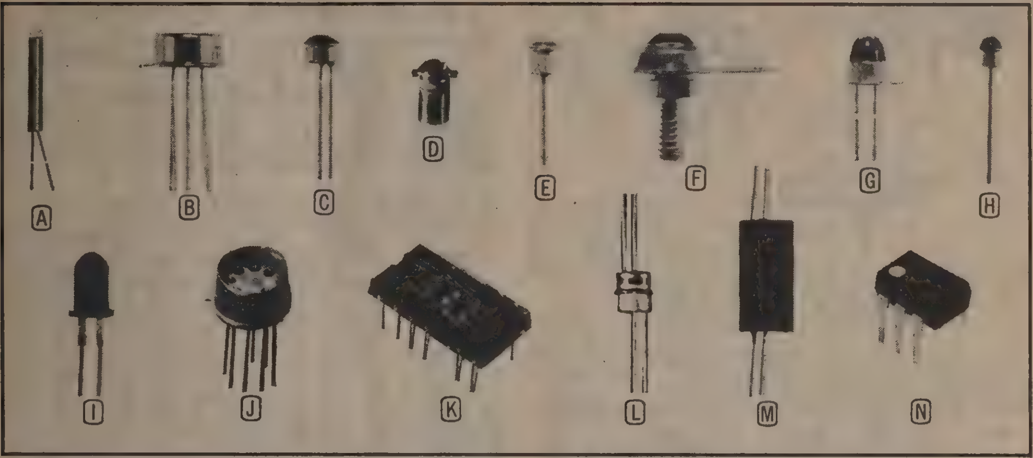
| Motorola Type | Case | Sensitivity mA/mW/cm² Typ. | Dark Current nA Max. | Light Current mA Typ. | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|
| **2N5777** | 29 | 2.0 | 100 | 4.0 | **$0.60** | **$0.50** |
| **2N5778** | 29 | 2.0 | 100 | 4.0 | **.70** | **.55** |
| **2N5779** | 29 | 4.0 | 100 | 8.0 | **1.00** | **.70** |
| **2N5780** | 29 | 4.0 | 100 | 8.0 | **1.20** | **.80** |

**CHECK cramer FOR ALL LARGE QUANTITY ORDERS. IN MANY INSTANCES WE CAN OFFER DISCOUNTS THAT ARE COMPETITIVE TO THE MANUFACTURER**

MOTOROLA DEVICES ARE STOCKED AT NEWTON, MA; NO. HAVEN, CT; HAUPPAUGE, ROCHESTER AND SYRACUSE, NY; SALT LAKE CITY, UT; GAITHERSBURG, MD; AND RALEIGH, NC

# Texas Instruments Products

## OPTOELECTRONIC DEVICES



## SILICON PLANAR AND PLANAR EPITAXIAL LIGHT SENSORS

Light current given is minimum value; all other values are maximum. H = 20 mW/cm². Source is an unfiltered tungsten linear-filament bulb operating at a color temperature of 2870° K.

| TI Type | Fig. | Current at Voltage | | | | $P_D$ mW | Net Ea., Lots | |
|---|---|---|---|---|---|---|---|---|
| | | Light | | Dark | | | | |
| | | mA | V | nA | V | | 1-99 | 100 Up |
| **H11** | A | 0.04* | ±10 | 500 | ±50 | 250 | $ 4.00 | $ 2.80 |
| **H35** | A | 0.06* | ±10 | 500 | ±50 | 250 | 5.00 | 3.50 |
| **H38** | A | 0.1* | ±10 | 10,000 | ±50 | 250 | 4.00 | 2.80 |
| **TIXL51** | B | 0.06 | 5 | 70 | 30 | 100 | 39.75 | 31.90 |
| **TIXL52** | B | 0.015 | 5 | 50 | 30 | 100 | 36.80 | 29.50 |
| **TIXL53** | B | 0.006 | 5 | 30 | 30 | 100 | 34.60 | 27.70 |
| **TIL58** | A | 1 | 5 | 25 | 30 | 50 | 8.90 | 7.75 |
| **H60** | A | 0.1* | ±10 | 500 | ±50 | 250 | 8.00 | 5.60 |
| **H61** | A | 0.2* | ±10 | 500 | ±50 | 250 | 9.00 | 6.25 |
| **H62** | A | 0.3* | ±10 | 500 | ±50 | 250 | 13.50 | 10.00 |
| **TIL63** | C | 0.4 | 5 | 25 | 30 | 50 | 1.00 | .67 |
| **TIL64** | C | 0.4 | 5 | 25 | 30 | 50 | 1.16 | .78 |
| **TIL65** | C | 10 | 5 | 25 | 30 | 50 | 1.18 | .79 |
| **TIL66** | C | 2.5 | 5 | 25 | 30 | 50 | 1.26 | .84 |
| **TIL67** | C | 6 | 5 | 25 | 30 | 50 | 1.50 | 1.00 |
| **LS400** | A | 1 | 5 | 25 | ±50 | 50 | 7.80 | 5.20 |
| **LS600** | D | 0.8* | 5 | 25 | 30 | 50 | 3.20 | 2.15 |
| **LSX900** | D | 0.006 | 30 | 9 | 50 | 50 | 8.85 | 5.90 |
| **1N2175** | A | 1.1* | ±10 | 500 | ±50 | 50 | 6.00 | 4.00 |
| **TIL601** | D | 0.5 | 5 | 25 | 30 | 50 | $3.52 | $2.36 |
| **TIL602** | D | 2 | 5 | 25 | 30 | 50 | 3.70 | 2.48 |
| **TIL603** | D | 4 | 5 | 25 | 30 | 50 | 3.80 | 2.60 |
| **TIL604** | D | 7 | 5 | 25 | 30 | 50 | 4.10 | 2.75 |
| **TIL605** | † | 0.5 | 5 | 25 | 30 | 50 | 3.70 | 2.48 |
| **TIL606** | † | 2 | 5 | 25 | 30 | 50 | 3.97 | 2.66 |
| **TIL607** | † | 4 | 5 | 25 | 30 | 50 | 4.15 | 2.77 |
| **TIL608** | † | 7 | 5 | 25 | 30 | 50 | 4.36 | 2.92 |
| **TIL609** | E | 0.5 | 5 | 25 | 30 | 50 | 3.52 | 2.36 |
| **TIL610** | E | 2 | 5 | 25 | 30 | 50 | 3.70 | 2.48 |
| **TIL611** | E | 4 | 5 | 25 | 30 | 50 | 3.88 | 2.60 |
| **TIL612** | E | 7 | 5 | 25 | 30 | 50 | 4.10 | 2.75 |
| **TIL613** | ‡ | 0.5 | 5 | 25 | 30 | 50 | 3.70 | 2.48 |
| **TIL614** | ‡ | 2 | 5 | 25 | 30 | 50 | 3.97 | 2.66 |
| **TIL615** | ‡ | 4 | 5 | 25 | 30 | 50 | 4.13 | 2.77 |
| **TIL616** | ‡ | 7 | 5 | 25 | 30 | 50 | 4.36 | 2.92 |

*H = 9 mW/cm², wavelength = 0.7 to 1 μm. †Fig. D less lens. ‡Fig. E less lens.

## GALLIUM ARSENIDE INFRARED SOURCES

| TI Type | Fig. | Minimum $P_O$ at $I_F$ | | Net Each, Lots of | |
|---|---|---|---|---|---|
| | | mW | mA | 1-99 | 100 Up |
| **TIL23** | D | 0.4 | 50 | $4.00 | $2.68 |
| **TIL24** | D | 1 | 50 | 5.50 | 3.70 |
| **TIXL26** | C | 1 | 35 | $ 3.20 | $2.20 |
| **TIXL27** | F | 15 | 300 | 14.00 | 9.50 |

## VISIBLE LIGHT SOURCES

| TI Type | Fig. | Lens | Luminance at $I_F$ | | Net Each, Lots of | |
|---|---|---|---|---|---|---|
| | | | | | 1-99 | 100 Up |
| **TIL203** | G | Clear | 375 fL | 20 mA | $1.90 | $1.60 |
| **TIL204** | G | Red | 375 fL | 20 mA | 1.90 | 1.60 |
| **TIL205** | H | Clear | 375 fL | 20 mA | 1.90 | 1.60 |
| **TIL206** | H | Red | 375 fL | 20 mA | 1.90 | 1.60 |
| **TIL207** | C | Clear | 375 fL | 20 mA | $1.90 | $1.60 |
| **TIL208** | C | Red | 375 fL | 20 mA | 1.90 | 1.60 |
| **TIL209** | I | Red | 15 μW* | 20 mA | .85 | .49 |
| **TIL210** | I | Red | 25 μW* | 20 mA | 1.25 | .78 |

*Po value.

## VISIBLE DISPLAYS

| TI Type | Fig. | Description | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-9 | 10-99 | 100 Up |
| **TIXL301** | J | 7-segment display | $12.45 | $ 9.80 | $ 8.30 |
| **TIL302** | K | 7-segment display, left decimal | 18.75 | 15.75 | 14.80 |
| **TIL303** | K | 7-segment display, right decimal | 10.35 | 10.35 | 8.70 |

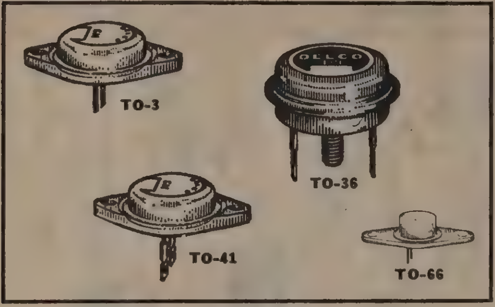
| TI Type | Fig. | Description | Net Each, Lots of | |
|---|---|---|---|---|
| | | | 1-99 | 100 Up |
| **TIL304** | * | ±1 visible display | $10.00 | $ 7.80 |
| **TIL305** | ...... | 5 x 7 alpha-numeric display | 16.75 | 13.00 |

*Similar to Fig. K.

## OPTOELECTRONIC VOLTAGE ISOLATORS

| TI Type | Fig. | Description | Net Each, Lots of | |
|---|---|---|---|---|
| | | | 1-99 | 100 Up |
| **TIL102** | B | Optically coupled isolators | $10.00 | $6.70 |
| **TIL103** | B | | 12.00 | 8.05 |
| **TIL107** | L | | 4.35 | 2.95 |
| **TIL108** | L | | 5.20 | 3.50 |
| **TIXL109** | M | Optically coupled isolators | $5.80 | $3.90 |
| **TIXL111** | N | | 5.00 | 3.35 |
| **TIXL112** | N | | 2.50 | 1.70 |

# Delco Electronics Semiconductors



## SILICON NPN HIGH ENERGY POWER TRANSISTORS

### 0.5 TO 15 AMPS HIGH VOLTAGE (TO-3)

$V_{CEO(sus)}$ at $I_C$=100 mA. $V_{EBO}$=5.0 volts at $I_{EBO}$=5.0 mA (DT430, -431, -431M, 2N5241 at $I_{EBO}$=2.0 mA).

| Delco Type | Max. $I_C$ A | $V_{CEO}$ (sus) V | $h_{FE}$ at $I_C$ Min. | $h_{FE}$ at $I_C$ A | Typ. $f_T$ MHz | $R_T$ °C/W | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|
| **DTS401** | 2.0 | 300 | 20 | 0.5 | ...... | 1.0 | $ 5.50 | $ 4.06 |
| **DTS402** | 3.5 | 700• | ...... | ...... | 1.9‡ | 0.75 | 8.20 | 6.06 |
| **DTS410** | 3.5 | 200 | 30 | 1.0 | 4.0 | 0.75 | 2.85 | 2.12 |
| **DTS411** | 3.5 | 300 | 30 | 1.0 | 4.0 | 0.75 | 3.40 | 2.50 |
| **DTS413** | 2.0 | 325 | 20 | 0.5 | 4.0 | 1.0 | 5.70 | 4.23 |
| **DTS423** | 3.5 | 325 | 30 | 1.0 | 4.0 | 0.75 | 6.75 | 5.00 |
| **DTS423M** | 3.5 | 325 | 30 | 1.0 | 3.0§ | 0.75 | 7.95 | 5.89 |
| **DTS424** | 3.5 | 350 | 30 | 1.0 | 4.0 | 0.75 | 7.80 | 5.78 |
| **DTS425** | 3.5 | 400 | 30 | 1.0 | 4.0 | 0.75 | 10.80 | 8.00 |
| **DTS430** | 5 | 300 | 15 | 2.5 | 4.0 | 0.7 | 7.75 | 5.73 |
| **DTS431** | 5 | 325 | 15 | 2.5 | 4.0 | 0.7 | 14.34 | 11.69 |
| **DTS431M** | 5 | 325 | 15 | 2.5 | 4.0 | 0.7 | 21.00 | 17.12 |
| **DTS701** | 0.5 | 600# | 20 | 0.15 | 1.5† | 1.5 | 9.50 | 7.04 |
| **DTS702** | 3 | 1200• | 2.5 | 2.0 | 1.5† | 1.5 | 12.50 | 9.26 |
| **DTS704** | 3 | 1000 | 2.5 | 2.0 | 1.5† | 1.0 | 12.96 | 9.60 |
| **DTS801** | 0.5 | 800 | 20 | 0.2 | 1.5† | 1.0 | 9.74 | 7.22 |
| **DTS802** | 5 | 1200• | 2.2 | 3.5 | 1.5† | 1.0 | 13.43 | 9.95 |
| **DTS804** | 5 | 1400• | 2.2 | 3.5 | 1.5† | 1.0 | 14.63 | 10.84 |
| **2N3902*** | 3.5 | 325 | 30 | 1.0 | 4.0 | 0.75 | 6.75 | 5.00 |
| **2N5157*** | 3.5 | 400 | 30 | 1.0 | 4.0 | 0.75 | 10.80 | 8.00 |
| **2N5241*** | 5.0 | 325 | 15 | 2.5 | 4.0 | 0.75 | 15.34 | 12.50 |

*JAN and JANTX types available. †Minimum $f_T$. ‡$t_F$ in μseconds. §AC gain at 1 MHz. #At $I_C$=250 mA. •$V_{CEX}$ at 25° C.

### 3.5 AMP HIGH VOLTAGE (TO-66)

$V_{EBO}$=5.0 volts at $I_{EBO}$=5.0 mA.

| Delco Type | Max. $I_C$ A | $V_{CEO}$ (sus) V | $h_{FE}$ at $I_C$ Min. | $h_{FE}$ at $I_C$ A | Typ. $f_T$ MHz | $R_T$ °C/W | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|
| **DTS660** | 3.5 | 200 | 30 | 1.0 | 4.0 | 1.5 | ** | ** |
| **DTS663** | 3.5 | 325 | 30 | 1.0 | 4.0 | 1.5 | ** | ** |
| **DTS665** | 3.5 | 400 | 30 | 1.0 | 4.0 | 1.5 | ** | ** |

**Prices available on request.

### 10 AMPS HIGH VOLTAGE (TO-36)

$I_C$=10 amps maximum. $V_{CEO(sus)}$ at $I_C$=100 mA. $V_{CEO}$ at $I_{CEO}$=5 mA. $V_{EBO}$=5.0 volts at $I_{EBO}$=50 mA. $f_T$=2 MHz minimum. Thermal resistance=0.7° C/watt maximum.

| Delco Type | $V_{CEO}$ (sus) V | $V_{CEO}$ V | $h_{FE}$ Min.* | $V_{CE(sat)}$ at $I_C$ V | $V_{CE(sat)}$ at $I_C$ A | $V_{BE}$ (sat) V | Net Each, Lots 1-99 | Net Each, Lots 100-999 |
|---|---|---|---|---|---|---|---|---|
| **2N2580** | 325 | 400 | 4 | 0.7 | 5.0 | 1.5 | $ 36.67 | $29.90 |
| **2N2580M** | 325 | 400 | 4 | 0.7 | 5.0 | 1.5 | 56.00 | 45.66 |
| **2N2581** | 325 | 400 | 10 | 0.7 | 5.0 | 1.7 | 86.00 | 70.11 |
| **2N2582** | 325 | 500 | 4 | 0.7 | 5.0 | 1.5 | 47.34 | 38.59 |
| **2N2583** | 325 | 500 | 10 | 1.0 | 10.0 | 1.7 | 107.34 | 87.50 |
| **2N3079** | 200 | 200 | 10† | 0 7 | 5.0 | 1.5 | 10.50 | 7.78 |
| **2N3080** | 300 | 300 | 10† | 0.7 | 5.0 | 1.5 | 14.47 | 11.80 |

*At $I_C$=10 amps. †At $I_C$=5 amps.

## GERMANIUM PNP NU-BASE POWER TRANSISTORS

**Nu-Base:** Types using Delco's process for high speed, high voltage transistors. **H. K.:** Delco's hydrokinetic alloy process for peak-power reserve.

### 10 AMPS HIGH POWER H. K. NU-BASE (TO-41)

$V_{CER}$ at $I_C$=0.5 amp. $V_{CBO}$ at $I_{CBO}$=10 mA. $V_{EBO}$=.75 volt at $I_{EBO}$=50 mA. $V_{CE(sat)}$=0.6 volt at $I_C$=5.0 amps.

| Delco Type | $V_{CER}$, $V_{CBO}$ V | $h_{FE}$ at $I_C$ Min. | $h_{FE}$ at $I_C$ A | $V_{BE}$ V | Typ. $f_T$ kHz | Ther. Res. °C/W | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|
| **2N1073** | 40 | 20 | 5.0 | 1.0 | 350 | 0.8 | $2.10 | $1.55 |
| **2N1073A** | 80 | 20 | 5.0 | 1.0 | 350 | 0.8 | 2.75 | 2.05 |
| **2N1073B** | 120 | 20 | 5.0 | 1.0 | 350 | 0.8 | 4.50 | 3.30 |

## GERMANIUM POWER TRANSISTORS (CONT'D)

### 15 AMPS HIGH POWER H. K. NU-BASE (TO-3)

Thermal resistance 0.8° C/W max. except DTG603M 1.0° C/W max.

| Delco Type | $V_{CEO(sus)}$ at $I_C$ V | $V_{CEO(sus)}$ at $I_C$ A | $V_{CE(sat)}$ at $I_C$ V | $V_{CE(sat)}$ at $I_C$ A | $V_{BE}$ V | Typ. $f_T$ kHz | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|
| **DTG603M*** | 80 | 5 | 0.75 | 25 | 1.4 | 850 | $5.25 | $3.88 |
| **DTG1010** | 110 | 5 | 0.5 | 12 | 1.0 | 250 | 5.84 | 4.33 |
| **DTG1110** | 80 | 8 | 0.5 | 10 | 1.0 | 450 | 2.85 | 2.12 |
| **DTG1200†** | 120 | 8 | 0.5 | 12 | 1.0 | 350 | 3.12 | 2.32 |

*$h_{FE}$=50 min. at $I_C$=5.0 amps. †$h_{FE}$=22.5 min. at $I_C$=8.0 amps.

### 25-50 AMPS HIGH POWER H. K. NU-BASE (TO-3)

$f_T$=850 kHz typ. except DTG2000 thru 2N5155 $f_T$=350 kHz typ.

| Delco Type | $V_{CEO(sus)}$ at $I_C$ V | $V_{CEO(sus)}$ at $I_C$ A | $h_{FE}$ at $I_C$ Min. | $h_{FE}$ at $I_C$ A | $V_{EBO}$* V | $V_{BE}$ V | $R_T$ °C/W | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|---|
| **DTG110A#** | 70† | 5 | 50 | 1.0 | 2.8 | .43 | 1.0 | $3.30 | $2.45 |
| **DTG110B#** | 40 | 5 | 65 | 1.0 | 2.0 | .33 | 0.8 | 1.90 | 1.40 |
| **DTG600** | 50 | 5 | 50 | 5.0 | 1.0 | 1.4 | 1.0 | 1.65 | 1.25 |
| **DTG601** | 60 | 5 | 50 | 5.0 | 1.0 | 1.4 | 1.0 | 2.05 | 1.50 |
| **DTG602** | 70 | 5 | 50 | 5.0 | 1.0 | 1.4 | 1.0 | 2.70 | 2.00 |
| **DTG603** | 80 | 5 | 50 | 5.0 | 1.0 | 1.4 | 1.0 | 3.40 | 2.45 |
| **DTG2000** | 30 | 8 | 25 | 8.0 | 1.0‡ | 1.0 | 0.8 | 1.80 | 1.35 |
| **DTG2100** | 60 | 8 | 25 | 8.0 | 1.0‡ | 1.0 | 0.8 | 2.10 | 1.60 |
| **DTG2200** | 80 | 8 | 25 | 8.0 | 1.0‡ | 1.0 | 0.8 | 2.50 | 1.85 |
| **DTG2300** | 100 | 8 | 25 | 8.0 | 1.0‡ | 1.0 | 0.8 | 2.95 | 2.20 |
| **DTG2400** | 120 | 8 | 25 | 8.0 | 1.0‡ | 1.0 | 0.8 | 3.56 | 2.64 |
| **DTG2400M** | 120 | 10 | 25 | 10.0 | 1.5§ | 1.0 | 1.0 | 5.43 | 4.02 |
| **DTG5000** | 80 | 10 | 60 | 10.0 | 1.7‡ | 1.7 | 0.7 | 13.70 | 10.15 |
| **DTG5100** | 100 | 10 | 60 | 10.0 | 1.7‡ | 1.7 | 0.7 | 14.90 | 11.04 |
| **DTG5200** | 60 | 10 | 80 | 10.0 | 1.7‡ | 1.7 | 0.7 | 12.35 | 9.15 |
| **DTG5300** | 60 | 10 | 40 | 10.0 | 1.7‡ | 1.7 | 0.7 | 10.85 | 8.04 |
| **2N5155** | 120 | 8 | 25 | 8.0 | 1.5§ | 1.0 | 0.8 | 3.75 | 2.78 |

*At $I_{EBO}$=100 mA. †$V_{CEO}$. ‡At $I_{EBO}$=200 mA. §At $I_{EBO}$=500 mA. #Specific gain color codes available.

## GERMANIUM PNP ALLOY BASE TRANSISTORS

**SPAC:** Delco's high reliability surface stabilization process.

### 3 TO 10 AMPS MEDIUM AND HIGH POWER (TO-3)

Thermal resistance 0.8° C/W.

| Delco Type | Max. $I_C$ A | $V_{CEO}$ at $I_C$ V | $V_{CEO}$ at $I_C$ A | $h_{FE}$ at $I_C$ Min. | $h_{FE}$ at $I_C$ A | $V_{BE}$ V | $f_{ae}$ kHz | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|---|
| **DTG110*** | 7 | 40† | .60 | 74 | 1.0 | 0.5 | 320§ | $1.50 | $1.12 |
| **2N255A** | 5 | 15† | .22 | 25‡ | .45 | ..... | ...... | .90 | .67 |
| **2N301** | 3 | 32 | .30 | 62.5 | .70 | ..... | 5# | 1.15 | .84 |
| **2N301A** | 3 | 32 | .30 | 62.5 | .70 | ..... | 5# | 2.82 | 2.10 |
| **2N379** | 7 | 40 | .10• | 20 | 2.0 | 1.3 | 3 | 1.90 | 1.39 |
| **2N380** | 7 | 30 | .10• | 20 | 2.0 | 1.3 | 3 | 1.70 | 1.26 |
| **2N392** | 5 | 45 | .30 | 60 | 3.0 | .7# | 6 | 1.88 | 1.39 |
| **2N456A** | 7 | 20 | .20 | 30 | 5.0 | 1.5 | 10# | 1.62 | 1.20 |
| **2N456B** | 7 | 30 | .50 | 30 | 5.0 | 1.5 | 200 | 1.62 | 1.20 |
| **2N457A** | 7 | 30 | .20 | 30 | 5.0 | 1.5 | 10# | 1.96 | 1.45 |
| **2N457B** | 7 | 40 | .50 | 30 | 5.0 | 1.5 | 200§ | 1.96 | 1.45 |
| **2N458A** | 7 | 40 | .20 | 30 | 5.0 | 1.5 | 10# | 2.36 | 1.75 |
| **2N458B** | 7 | 45 | .50 | 30 | 5.0 | 1.5 | 200§ | 2.36 | 1.75 |
| **2N554** | 5 | 30 | .30 | 30 | 1.0 | ..... | ...... | .90 | .67 |
| **2N669** | 3 | 30▲ | .30 | 250■ | .50 | ..... | 3 | 1.30 | .95 |
| **2N1011** | 5 | 40 | .30 | 30 | 3.0 | 1.0 | 5 | 1.95 | 1.45 |
| **2N1021** | 7 | 50 | .20 | 30 | 5.0 | 1.5 | 10# | 2.77 | 2.05 |
| **2N1021A** | 7 | 50 | .50 | 30 | 5.0 | 1.5 | 200§ | 2.77 | 2.05 |
| **2N1022** | 7 | 50 | .20 | 30 | 5.0 | 1.5 | 10# | 3.24 | 2.40 |
| **2N1022A** | 7 | 55 | .50 | 30 | 5.0 | 1.5 | 200§ | 3.24 | 2.40 |
| **2N1159** | 5 | 60 | 1.0 | 30 | 3.0 | 1.5 | 10# | 2.15 | 1.59 |
| **2N1160** | 7 | 60 | 1.0 | 20 | 5.0 | 1.5 | 10# | 2.50 | 1.84 |
| **2N1168** | 5 | 30 | .30 | 60# | 3.0 | 0.7# | 10# | 1.10 | .80 |
| **2N1534** | 5 | 20 | .50 | 35 | 3.0 | 1.5 | 8.5# | 1.45 | 1.05 |
| **2N1535** | 5 | 30 | .50 | 35 | 3.0 | 1.5 | 8.5# | 1.55 | 1.14 |
| **2N1536** | 5 | 40 | .50 | 35 | 3.0 | 1.5 | 8.5# | 1.70 | 1.25 |
| **2N1539** | 5 | 20 | .50 | 50 | 3.0 | 1.0 | 2 | 1.42 | 1.05 |
| **2N1540** | 5 | 30 | .50 | 50 | 3.0 | 1.0 | 2 | 1.58 | 1.18 |
| **2N1542** | 5 | 50 | .50 | 50 | 3.0 | 1.0 | 2 | 2.36 | 1.75 |
| **2N1544** | 5 | 20 | .50 | 75 | 3.0 | 0.6 | 2 | 1.65 | 1.24 |
| **2N1546** | 5 | 40 | .50 | 75 | 3.0 | 0.6 | 2 | 2.30 | 1.70 |
| **2N5156** | 10 | 60 | 10 | 25 | 5.0 | 0.8 | 320§ | 2.63 | 1.95 |

*Specific gain color codes available. †$V_{CER}$. ‡Power gain dB. §$f_T$ typical. #Typical. •$I_{CEO}$. ▲$V_{CES}$. ■Maximum value.

### 15 AMPS HIGH POWER (SPAC) (TO-36)

Thermal resistance 0.5° C/W. $V_{CEO}$ at $I_C$=1.0 amp. $h_{FE}$ at $I_C$=5.0 amps. $V_{CE(sat)}$ at $I_C$=12.0 amps.

| Delco Type | $V_{CEO}$ V | $V_{CBO}$ at $I_{CBO}$ V | $V_{CBO}$ at $I_{CBO}$ mA | $h_{FE}$ Min. | $V_{CE}$ (sat) V | $V_{BE}$ V | Typ. $f_{ae}$ kHz | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|---|
| **2N173** | 45 | 60 | 4 | 35 | 1.0 | 0.9 | 10 | $3.40 | $2.50 |
| **2N174** | 55 | 80 | 4 | 25 | 0.9 | 0.9 | 10 | 3.60 | 2.67 |
| **2N174A*** | 40† | 80 | 8 | 40‡ | 0.7 | 0.9 | 100§ | 3.80 | 2.79 |
| **2N277** | 25 | 40 | 8 | 35 | 0.3# | .65# | 10 | 1.50 | 1.10 |
| **2N278** | 30 | 50 | 4 | 35 | 1.0 | .65# | 10 | 2.80 | 2.07 |
| **2N441** | 25 | 40 | 8 | 20 | 0.3# | .65# | 10 | 1.15 | .84 |
| **2N442** | 30 | 50 | 4 | 20 | 0.3# | .65# | 10 | 1.50 | 1.11 |
| **2N443** | 45 | 60 | 4 | 20 | 1.0 | 0.9 | 10 | 1.90 | 1.39 |
| **2N1099** | 55 | 80 | 4 | 35 | 0.7 | 0.9 | 10 | 3.90 | 2.87 |
| **2N1100** | 65 | 100 | 4 | 25 | 0.7 | 0.9 | 10 | 4.50 | 3.34 |

*JAN type available. †At $I_C$=0.3 amp. ‡At $I_C$=1.2 amps. §$f_{ab}$. #Typical.

15 AMPS TYPE CONTINUED ON FOLLOWING PAGE

# Delco Electronics Semiconductors

## GERMANIUM PNP ALLOY BASE TRANSISTORS

### 15 AMPS HIGH POWER (SPAC) (TO-36) CONT'D

Thermal resistance 0.5° C/W. $V_{CEO}$ at $I_C = 1.0$ amp. $h_{FE}$ at $I_C = 5.0$ amps. $V_{CE(sat)}$ at $I_C = 12.0$ amps.

| Delco Type | $V_{CEO}$ V | $V_{CBO}$ at $I_{CBO}$ V | mA | $h_{FE}$ Min. | $V_{CE}$ (sat) V | $V_{BE}$ V | $f_{ae}$ kHz | Net Ea., Lots 1-99 | 100-999 |
|---|---|---|---|---|---|---|---|---|---|
| 2N1358* | 40 | 80 | 4 | 40 | 0.7 | 0.9 | 100† | $4.15 | $3.06 |
| 2N1538A | 40 | 100 | 4 | 25 | 0.7 | 0.9 | 5 | 6.00 | 4.45 |
| 2N1412* | 65 | 100 | 4 | 25 | 0.7 | 0.8 | 10‡ | 4.50 | 3.34 |
| 2N1970 | 50 | 100 | 4 | 17 | 1.0 | 0.9 | 10‡ | 1.90 | 1.40 |
| 2N2075 | 65 | 80 | 4 | 20 | 0.7 | 0.9 | 5 | 5.20 | 3.84 |
| 2N2076 | 55 | 70 | 4 | 20 | 0.7 | 0.9 | 5 | 3.60 | 2.67 |
| 2N2077 | 45 | 50 | 4 | 20 | 0.9 | 0.9 | 5 | 2.85 | 2.12 |
| 2N2078 | 25 | 40 | 4 | 20 | 0.9 | 0.9 | 5 | 1.90 | 1.39 |
| 2N2079 | 65 | 80 | 4 | 35 | 0.7 | 0.9 | 5 | 7.20 | 5.34 |
| 2N2080 | 55 | 70 | 4 | 35 | 0.7 | 0.9 | 5 | 5.10 | 3.78 |
| 2N2081 | 45 | 50 | 4 | 35 | 0.9 | 0.9 | 5 | 3.15 | 2.32 |
| 2N2082 | 25 | 40 | 4 | 35 | 0.9 | 0.9 | 5 | 2.40 | 1.78 |
| 2N2490 | 50 | 70 | 3 | 20 | 0.7 | 1.5 | 5 | 1.88 | 1.39 |
| 2N2491 | 40 | 60 | 3 | 35 | 0.7 | 1.5 | 5 | 2.63 | 1.95 |
| 2N2492 | 65 | 80 | 2 | 25 | 0.5 | 1.5 | 5 | 3.38 | 2.50 |
| 2N2493 | 75 | 100 | 3 | 25 | 0.5 | 1.5 | 5 | 6.00 | 4.45 |

*JAN type available. †$f_{ab}$. ‡Typical.

### 25, 35, 50 AMPS HIGH POWER (SPAC) (TO-36)

Thermal resistance 0.5° C/W. $V_{CEO}$ at $I_C = 1.0$ amp. $V_{CBO}$ at $I_{CBO} = 4$ mA. $h_{FE}$ at $I_C = 15$ amps. $V_{EBO} = 30$ volts at $I_{EBO} = 8$ mA. $V_{BE} = 1.5$ volts.

| Delco Type | Max. $I_C$ A | $V_{CEO}$ V | $V_{CBO}$ V | $h_{FE}$ Min. | $V_{CE(sat)}$ at $I_C$ V | A | Typ. $f_{ae}$ kHz | Net Ea., Lots 1-99 | 100-999 |
|---|---|---|---|---|---|---|---|---|---|
| 2N1518 | 25 | 40 | 50 | 15 | 0.7 | 25 | 4 | $4.05 | $3.00 |
| 2N1519 | 25 | 60 | 80 | 15 | 0.7 | 25 | 4 | 4.75 | 3.50 |
| 2N1520 | 35 | 40 | 50 | 17 | 0.6 | 35 | 4 | 5.40 | 4.00 |
| 2N1521 | 35 | 60 | 80 | 17 | 0.6 | 35 | 4 | 5.67 | 4.20 |
| 2N1522 | 50 | 40 | 50 | 25 | 0.5 | 50 | 4 | 3.40 | 2.50 |
| 2N1523 | 50 | 60 | 80 | 25 | 0.5 | 50 | 4 | 5.83 | 4.32 |

## SILICON RECTIFIERS

### 15 AMPS STUD MOUNT (FIG. A)

$I_{F(AV)} = 15$ amps maximum at 150° C case. $I_{R(AV)}$ at full load, full cycle at 150° C case. Add suffix **R** for reverse polarity.

| Delco Type | PRV V | $I_{R(AV)}$ mA | $V_{FM}$ V | Peak $I_{FWD}$* A | $R_T$ °C/W | Net Each, Lots 1-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| 1N3208 | 50 | 10 | 1.5 | 70 | 2.0 | $0.99 | $0.72 |
| 1N3209 | 100 | 10 | 1.5 | 70 | 2.0 | 1.14 | .82 |
| 1N3210 | 200 | 10 | 1.5 | 70 | 2.0 | 1.43 | 1.06 |

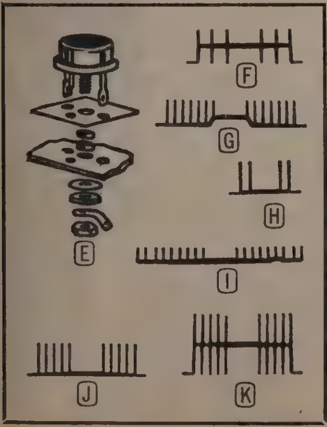
*Repetitive.

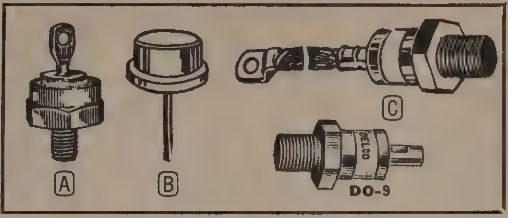
### 18 AMPS PRESS FIT (FIG. B)

$I_{F(AV)} = 25$ amps maximum at 100° C case. $I_{R(AV)}$ at full load, full cycle at 150° C case. $V_{FM}$ at maximum drop at 15 amps full cycle average at 25° C. Add suffix **R** for reverse polarity.

| Delco Type | PRV V | $I_{R(AV)}$ μA | $V_{FM}$ V | Peak $I_{FWD}$* A | $R_T$ °C/W | Net Each, Lots 1-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| 1N3491 | 50 | 10 | 0.7 | 110 | 1.0 | $0.49 | $0.35 |
| 1N3492 | 100 | 10 | 0.7 | 110 | 1.0 | .55 | .40 |
| 1N3493 | 200 | 8 | 0.7 | 110 | 1.0 | .87 | .63 |

*Repetitive.





## SILICON RECTIFIERS (CONTINUED)

### 160 AMPS STUD BASE (FIG. C)

Peak forward current 2500 amps ½ cycle non-repetitive. Add suffix **R** for reverse polarity.

| Delco Type | Max. $I_{F(AV)}$ A | PRV V | Trans. PRV V | $I_R$ (AV) mA | $V_{FM}$ V | $R_T$ °C/W | Net Each, Lots 1-99 | 100-999 |
|---|---|---|---|---|---|---|---|---|
| DRS163 | 160 | 300 | 400 | 15 | 1.45 | 0.24 | $ 7.88 | $ 5.84 |
| DRS164 | 160 | 400 | 525 | 15 | 1.45 | 0.24 | 9.38 | 6.95 |
| DRS165 | 160 | 500 | 650 | 15 | 1.45 | 0.24 | 10.88 | 8.06 |
| DRS166 | 160 | 600 | 800 | 12 | 1.45 | 0.24 | 12.38 | 9.17 |
| DRS167 | 160 | 700 | 925 | 12 | 1.45 | 0.24 | 13.88 | 10.28 |
| DRS168 | 160 | 800 | 1050 | 10 | 1.45 | 0.24 | 15.38 | 11.39 |
| DRS169 | 160 | 900 | 1200 | 10 | 1.45 | 0.24 | 16.88 | 12.50 |

### 200 AMPS STUD BASE (FIG. C)

Peak forward current 3500 amps ½ cycle non-repetitive. Add suffix **R** for reverse polarity.

| Delco Type | Max. $I_{F(AV)}$ A | PRV V | Trans. PRV V | $I_R$ (AV) mA | $V_{FM}$ V | $R_T$ °C/W | Net Each, Lots 1-99 | 100-999 |
|---|---|---|---|---|---|---|---|---|
| DRS203 | 200 | 300 | 400 | 15 | 1.4 | 0.24 | $ 8.63 | $ 6.39 |
| DRS204 | 200 | 400 | 425 | 15 | 1.4 | 0.24 | 10.13 | 7.50 |
| DRS205 | 200 | 500 | 650 | 15 | 1.4 | 0.24 | 11.63 | 8.62 |
| DRS206 | 200 | 600 | 800 | 12 | 1.4 | 0.24 | 13.13 | 9.73 |
| DRS207 | 200 | 700 | 925 | 12 | 1.4 | 0.24 | 14.63 | 10.84 |
| DRS208 | 200 | 800 | 1050 | 10 | 1.4 | 0.24 | 16.13 | 11.95 |
| DRS209 | 200 | 900 | 1200 | 10 | 1.4 | 0.24 | 17.63 | 13.06 |

### 250 AMPS STUD BASE (FIG. C)

Peak forward current 4500 amps ½ cycle non-repetitive. Add suffix **R** for reverse polarity.

| Delco Type | Max. $I_{F(AV)}$ A | PRV V | Trans. PRV V | $I_R$ (AV) mA | $V_{FM}$ V | $R_T$ °C/W | Net Each, Lots 1-99 | 100-999 |
|---|---|---|---|---|---|---|---|---|
| DRS243 | 250 | 300 | 400 | 15 | 1.4 | 0.24 | $ 9.38 | $ 6.95 |
| DRS244 | 250 | 400 | 525 | 15 | 1.4 | 0.24 | 10.88 | 8.06 |
| DRS245 | 250 | 500 | 560 | 15 | 1.4 | 0.24 | 12.38 | 9.17 |
| DRS246 | 250 | 600 | 800 | 12 | 1.4 | 0.24 | 13.88 | 10.28 |
| DRS247 | 250 | 700 | 925 | 12 | 1.4 | 0.24 | 15.38 | 11.39 |
| DRS248 | 250 | 800 | 1050 | 10 | 1.4 | 0.24 | 16.88 | 12.50 |
| DRS249 | 250 | 900 | 1200 | 10 | 1.4 | 0.24 | 18.38 | 13.52 |
| DRS250 | 250 | 800 | 1050 | 10 | 1.55 | 0.22 | 21.75 | 16.12 |
| DRS251 | 250 | 1000 | 1300 | 10 | 1.55 | 0.22 | 29.63 | 21.95 |
| DRS252 | 250 | 1200 | 1600 | 10 | 1.55 | 0.22 | 51.34 | 41.85 |
| DRS253 | 250 | 1400 | 2000 | 10 | 1.55 | 0.22 | 70.26 | 57.28 |
| DRS254 | 250 | 1600 | 2400 | 10 | 1.55 | 0.22 | 76.17 | 62.09 |

## 30 kW POWER ZENERS (DO-9)

Minimum $V_Z$ at 25 ADC. Maximum $V_Z$ pulse width = Ims. Clamping factor 1.4. $I_R = 5.0$ mA maximum.

| Delco Type DPZ30- | Min. $V_Z$ V | Max. $V_Z$ at A V | A | Delco Radio Type DPZ30- | Min. $V_Z$ V | Max. $V_Z$ at A V | A | Net Each, Lots 1-99 | 100-999 |
|---|---|---|---|---|---|---|---|---|---|
| 30R | 30 | 43 | 700 | 43R | 43 | 62 | 485 | $74.60 | $60.82 |
| 33R | 33 | 47 | 640 | 45R | 45 | 65 | 460 | 74.60 | 60.82 |
| 36R | 36 | 52 | 580 | 47R | 47 | 68 | 440 | 74.60 | 60.82 |
| 39R | 39 | 56 | 535 | 50R | 50 | 72 | 420 | 74.60 | 60.82 |

## HEAT SINKS AND ACCESSORIES

| Delco Type | Fig. | Description | $R_T$ °C/W | Maximum Size, Inches W. | D. | L. | Net Each, 1-999 |
|---|---|---|---|---|---|---|---|
| 7269634 | .... | Insulating spacer for heat sink | ...... | ...... | ...... | ...... | $0.05 |
| 7274633 | E | TO-36 (round base) mtg. kit | ...... | ...... | ...... | ...... | .15 |
| 7274775 | E | TO-3 (diamond base) mtg. kit | ...... | ...... | ...... | ...... | .15 |
| 7276383 | E | TO-37 (min. diamond base) mtg. kit | ...... | ...... | ...... | ...... | .25 |
| 7276396 | E | DO-5 (rectifier) mtg. kit | ...... | ...... | ...... | ...... | .25 |
| 7305209 | E | TO-41 (diamond base) mtg. kit | ...... | ...... | ...... | ...... | .15 |
| 7305210 | E | TO-3 (silicon) mtg. kit | ...... | ...... | ...... | ...... | .15 |
| 7270725 | F | Single punch, universal mount | 2.3 | 3.125 | 1.370 | 4.690 | .90 |
| 7281352 | F | Double punched, universal mount | 2.3 | 3.125 | 1.370 | 4.690 | 1.00 |
| 7270606 | F | Unpunched, unpainted | 2.3 | 3.125 | 1.370 | 4.690 | .75 |
| 7300811 | F | Double punched, Press Fit rectifiers | 2.3 | 3.125 | 1.370 | 4.690 | .90 |
| 7281361 | G | Double punched, universal mount | 1.6 | 3.125 | 1.080 | 6.135 | 1.50 |
| 7281364 | G | Unpunched, unpainted | 1.6 | 3.125 | 1.080 | 6.135 | 1.30 |
| 7281357 | H | Punched for diamond base only | 5.0 | 1.625 | 1.330 | 2.930 | .90 |
| 7281360 | H | Unpunched, unpainted | 5.0 | 1.625 | 1.330 | 2.930 | .65 |
| 7281351 | I | Double punched, universal mount | 2.2 | 3.125 | .750 | 6.775 | 1.50 |
| 7281354 | I | Unpunched, unpainted | 2.2 | 3.125 | .750 | 6.775 | 1.30 |
| 7281355 | J | Double punched, universal mount | 2.2 | 3.125 | 1.330 | 4.850 | 1.75 |
| 7281353 | J | Unpunched, unpainted | 2.2 | 3.125 | 1.330 | 4.850 | 1.50 |
| 7276040 | J | Punched for round base only | 3.5 | 1.531 | 1.330 | 4.850 | .90 |
| 7277151 | J | Punched for diamond base only | 3.5 | 1.531 | 1.330 | 4.850 | .90 |
| 7278482 | J | Unpunched, unpainted | 3.5 | 1.531 | 1.330 | 4.850 | .75 |
| 7281366 | K | Double punched, universal mount | 1.6 | 3.125 | 2.500 | 4.850 | 1.75 |
| 7281369 | K | Unpunched, unpainted | 1.6 | 3.125 | 2.500 | 4.850 | 1.50 |

# FAIRCHILD SEMICONDUCTOR SILICON PLANAR SEMICONDUCTORS

## COMPUTER DIODES

| Fairchild Type | $B_V$ V | $I_R$ at $V_R$ | | $I_F$ at 1.0 V mA | $t_{rr}$ ns | Net Ea., Lots | |
|---|---|---|---|---|---|---|---|
| | | mA | V | | | 1-99 | 100 Up |
| 1N251# | 40 | 100 | 10 | 5 | 150.0 | $0.21 | $0.16 |
| 1N252 | 25 | 100 | 5 | 10 | 4.0 | .21 | .16 |
| 1N659 | 60 | 5 | 50 | 6 | 6.0 | .21 | .16 |
| 1N814 | 50 | 100 | 20 | 5 | 25.0 | .27 | .20 |
| 1N903 | 60 | 100 | 40 | 10 | 4.0 | .45 | .34 |
| 1N903A | ....... | 100 | 40 | 20 | 4.0 | .45 | .34 |
| 1N904 | 50 | 100 | 30 | 10 | 4.0 | .45 | .34 |
| 1N904A | 35 | 100 | 30 | 30 | 4.0 | .45 | .34 |
| 1N905 | 40 | 100 | 20 | 10 | 4.0 | .45 | .34 |
| 1N905A | 40 | 100 | 20 | 20 | 4.0 | .45 | .34 |
| 1N906 | 40 | 100 | 20 | 10 | 4.0 | .24 | .18 |
| 1N906A | 40 | 100 | 20 | 20 | 4.0 | .24 | .18 |
| 1N907 | 50 | 100 | 30 | 10 | 4.0 | .24 | .18 |
| 1N907A | 50 | 100 | 30 | 20 | 4.0 | .24 | .18 |
| 1N908 | 60 | 100 | 40 | 10 | 4.0 | .24 | .18 |
| 1N914# | 100 | 25 | 20 | 10 | 4.0 | .21 | .16 |
| 1N914A | 100 | 25 | 20 | 20 | 4.0 | .23 | .17 |
| 1N914B | 100 | 25 | 20 | 100 | 4.0 | .23 | .17 |
| 1N916 | 100 | 25 | 20 | 10 | 4.0 | .27 | .20 |
| 1N916A | 100 | 25 | 20 | 20 | 4.0 | .27 | .20 |
| 1N916B | 100 | 25 | 20 | 30 | 4.0 | .27 | .20 |
| 1N3062 | 75 | 100 | 50 | 20 | 2.0 | .45 | .34 |
| 1N3063 | 75 | 100 | 50 | 10* | 4.0 | .23 | .17 |
| 1N3064• | 75 | 100 | 50 | 10 | 4.0 | .24 | .18 |
| 1N3065 | 75 | 100 | 50 | 20 | 4.0 | .45 | .34 |
| 1N3066 | 75 | 100 | 50 | 10 | 2.0 | .45 | .34 |
| 1N3067 | 30 | 100 | 30 | 5 | 4.0 | .23 | .17 |
| 1N3596 | 20 | 100 | 20 | 30 | 4.0 | .45 | .34 |
| 1N3600# | 75 | 100 | 50 | 200 | 3.0 | .58 | .43 |
| 1N3602 | 75 | 100 | 50 | 20 | 5.0 | .23 | .17 |
| 1N3603 | 45 | 100 | 35 | 30 | 5.0 | .23 | .17 |
| 1N3604 | 75 | 50 | 50 | 50 | 4.0 | .26 | .19 |
| 1N3605 | 40 | 50 | 30 | 20† | 2.0 | .26 | .19 |
| 1N3606 | 75 | 50 | 50 | 20† | 2.0 | .26 | .19 |
| 1N4086 | ....... | 250 | 70 | 200 | 4.0 | .58 | .43 |
| 1N4148• | 100 | 25 | 20 | 10 | 4.0 | .21 | .16 |
| 1N4149 | 100 | 25 | 20 | 10 | 4.0 | .58 | .43 |
| 1N4150 | 75 | 100 | 50 | 200 | 4.0 | .58 | .43 |
| 1N4151 | 75 | 50 | 50 | 50 | 4.0 | .27 | .20 |
| 1N4152 | 40 | 50 | 30 | 20† | 2.0 | .27 | .20 |
| 1N4153 | 75 | 50 | 50 | 20† | 2.0 | .27 | .20 |
| 1N4154 | 35 | 100 | 25 | 30 | 4.0 | .21 | .16 |
| 1N4244 | 20 | 100 | 10 | 20 | 0.75 | 1.88 | 1.40 |
| 1N4305 | 75 | 100 | 50 | 10* | 4.0 | .27 | .20 |
| 1N4322 | 75 | 100 | 50 | 200 | 4.0 | 2.63 | 1.96 |
| 1N4376 | 20 | 100 | 10 | 50‡ | 0.75 | 2.25 | 1.68 |
| 1N4446 | 100 | 25 | 20 | 20 | 4.0 | .21 | .16 |
| 1N4447 | 100 | 25 | 20 | 20 | 4.0 | .27 | .20 |
| 1N4448 | 100 | 25 | 20 | 100 | 4.0 | .27 | .20 |
| 1N4449 | 100 | 25 | 20 | 30 | 4.0 | .27 | .20 |
| 1N4450 | 40 | 50 | 30 | 200 | 4.0 | .58 | .43 |
| 1N4454• | 75 | 100 | 50 | 10 | 4.0 | .21 | .16 |
| 1N4531 | 100 | 25 | 20 | 10 | 4.0 | .21 | .16 |
| 1N4532 | 75 | 100 | 50 | 10 | 4.0 | .21 | .16 |
| 1N4533 | 40 | 50 | 30 | 20† | 2.0 | .27 | .20 |
| 1N4534 | 75 | 50 | 50 | 20† | 2.0 | .27 | .20 |
| 1N4536 | 35 | 100 | 25 | 30 | 4.0 | 2.46 | 1.84 |
| 1N4606 | 85 | 250 | 70 | 250‡ | 4.0 | .54 | .40 |
| 1N4607 | 85 | 250 | 70 | 400‡ | 4.0 | .90 | .67 |
| 1N4610 | 80 | 100 | 55 | 20 | 4.0 | .54 | .40 |
| 1N4727 | 80 | 100 | 20 | 10* | ......... | .21 | .16 |
| 1N4850 | 80 | 100 | 25 | 300 | 4.0 | .23 | .17 |
| 1N5282 | 80 | 100 | 65 | 500§ | 2.0 | 1.58 | 1.18 |

*At 0.85 V. †At 0.88 V. ‡At 1.1 V. §At 1.3 V. #JAN type also available. •JAN and JANTX types also available.

**Specifications available on the following types.**

## GENERAL PURPOSE DIODES

| Fairchild Type | Net Ea., Lots of 1-99 | Net Ea., Lots of 100 Up | Fairchild Type | Net Ea., Lots of 1-99 | Net Ea., Lots of 100 Up |
|---|---|---|---|---|---|
| 1N461, A | $0.38 | $0.28 | 1N661 | $0.90 | $0.67 |
| 1N462, A | .38 | .28 | 1N676 | .38 | .28 |
| 1N463, A | .38 | .28 | 1N678 | .60 | .45 |
| 1N464, A | .38 | .28 | 1N779 | .75 | .56 |
| 1N482 | .38 | .28 | 1N795 | .38 | 1.28 |
| 1N483 | .38 | .28 | 1N816 | .38 | .28 |
| 1N484 | .38 | .28 | 1N844 | .21 | .16 |
| 1N485 | .60 | .45 | 1N925 | .21 | .16 |
| 1N619 | .21 | .16 | 1N926 | .21 | .16 |
| 1N622 | .60 | .45 | | | |

## LOW LEAKAGE DIODES

| | | | | | |
|---|---|---|---|---|---|
| 1N456 | $0.38 | $0.28 | 1N483B† | $0.38 | $0.28 |
| 1N456A | .38 | .28 | 1N484A | .38 | .28 |
| 1N457* | .38 | .28 | 1N484B | .38 | .28 |
| 1N457A | .38 | .28 | 1N485A | .60 | .45 |
| 1N458* | .38 | .28 | 1N485B† | .60 | .45 |
| 1N458A | .38 | .28 | 1N486 | .60 | .45 |
| 1N459* | .38 | .28 | 1N486A | .60 | .45 |
| 1N459A | .38 | .28 | 1N486B* | .60 | .45 |
| 1N482, B | .38 | .28 | 1N890 | .38 | .28 |
| 1N483A | .38 | .28 | 1N3595* | 2.25 | 1.68 |

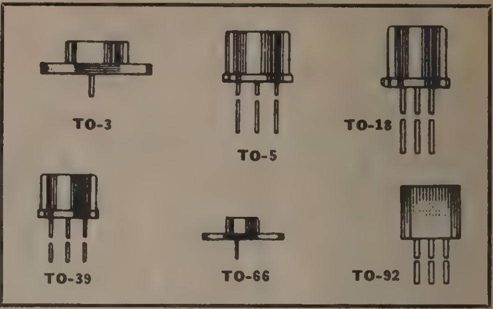
*JAN; JAN and JANTX types also available.

## HOT CARRIER DIODES

| | | | | | |
|---|---|---|---|---|---|
| 1N5390 | $1.88 | $1.40 | FH1100 | $1.00 | $0.67 |

## 1 AMP RECTIFIERS

| | | | | | |
|---|---|---|---|---|---|
| 1N4001 | $0.30 | $0.22 | 1N4004 | $0.45 | $0.34 |
| 1N4002 | .34 | .25 | 1N4005 | .55 | .40 |
| 1N4003 | .38 | .28 | | | |



## NPN HIGH-SPEED SATURATED SWITCHES

| Fairchild Type | Pkg. TO- | $V_{CEO}$ V | $t_s$ at $I_C$ | | $h_{FE}$ at $I_C$ | | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Max. ns | mA | Min. | mA | 1-99 | 100-999 | 1000 Up |
| 2N706‡ | 18 | 20* | 60 | 10 | 20 | 10 | $0.34 | $0.212 | $0.185 |
| 2N706A | 18 | 15 | 25 | 10 | 20 | 10 | .485 | .30 | .26 |
| 2N708 | 18 | 15 | 25 | 10 | 30 | 10 | .455 | .285 | .246 |
| 2N709 | 18 | 6 | 6 | 10 | 20 | 10 | .86 | .53 | .46 |
| 2N743 | 18 | 12 | 14 | 10 | 20 | 10 | .57 | .355 | .31 |
| 2N744 | 18 | 12 | 18 | 10 | 40 | 10 | .57 | .355 | .31 |
| 2N753 | 18 | 15 | 35 | 10 | 40 | 10 | .57 | .355 | .31 |
| 2N834 | 18 | 12 | 25 | 10 | 25 | 10 | .54 | .355 | .295 |
| 2N834A | 18 | 15 | 10 | 10 | 25 | 10 | 2.40 | 1.50 | 1.31 |
| 2N835 | 18 | 20 | 35 | 10 | 20 | 10 | .68 | .425 | .37 |
| 2N914 | 18 | 15 | 20 | 10 | 30 | 10 | .485 | .30 | .26 |
| 2N2368 | 18 | 15 | 10 | 10 | 20 | 10 | .485 | .30 | .26 |
| 2N2369A‡ | 18 | 15 | 13 | 10 | 40 | 10 | .43 | .265 | .231 |
| 2N2481 | 18 | 15 | 20 | 10 | 40 | 10 | .43 | .265 | .231 |
| 2N2845 | 18 | 30 | 40† | 150 | 30 | 150 | 1.43 | .89 | .77 |
| 2N2846 | 5 | 30 | 40† | 150 | 30 | 150 | 1.51 | .94 | .82 |
| 2N2847 | 18 | 20 | 40† | 150 | 40 | 150 | 1.42 | .92 | .80 |
| 2N2848 | 5 | 20 | 40† | 150 | 40 | 150 | 1.48 | .92 | .80 |
| 2N3009 | 52 | 15 | 18 | 10 | 30 | 30 | .91 | .57 | .495 |
| 2N3010 | 18 | 6 | 6 | 10 | 25 | 10 | 1.14 | .71 | .62 |
| 2N3011 | 18 | 12 | 13 | 10 | 30 | 10 | .57 | .355 | .31 |
| 2N3013‡ | 52 | 15 | 18 | 10 | 30 | 30 | 1.03 | .64 | .55 |
| 2N3014 | 52 | 20 | 18 | 10 | 30 | 30 | 1.00 | .62 | .54 |
| 2N3015 | 5 | 30 | 60† | 300 | 30 | 150 | .86 | .53 | .46 |
| 2N3252 | 5 | 30 | 70† | 500 | 30 | 500 | 3.00 | 1.86 | 1.62 |
| 2N3253 | 5 | 40 | 70† | 500 | 25 | 150 | 3.28 | 2.04 | 1.77 |
| 2N3444 | 5 | 50 | 70† | 500 | 20 | 500 | 4.05 | 2.50 | 2.20 |
| 2N3646 | 106 | 15 | 18 | 10 | 30 | 30 | .285 | .177 | .154 |
| 2N3722 | 5 | 60 | 100† | 500 | 40 | 100 | 2.30 | 1.42 | 1.23 |
| 2N3724 | 5 | 30 | 60† | 500 | 60 | 100 | .83 | .51 | .445 |
| 2N3725 | 5 | 50 | 60† | 500 | 60 | 100 | .94 | .58 | .51 |
| 2N3734 | 5 | 30 | 60† | 1 A | 30 | 300 | 2.50 | 1.54 | 1.34 |
| 2N4013 | 18 | 30 | 60† | 500 | 60 | 100 | 1.85 | 1.15 | 1.00 |
| 2N4014 | 18 | 50 | 60† | 500 | 60 | 100 | 2.00 | 1.24 | 1.08 |
| 2N4046 | 5 | 40 | 60† | 500 | 40 | 100 | 1.28 | .80 | .69 |
| 2N4047 | 5 | 50 | 60† | 500 | 40 | 100 | 1.43 | .89 | .77 |
| 2N4137 | 18 | 20 | 13 | 10 | 40 | 10 | 1.00 | .62 | .54 |
| 2N4264 | 92 | 15 | 20 | 10 | 40 | 10 | .45 | .28 | .243 |
| 2N4265 | 92 | 12 | 20 | 10 | 100 | 10 | .52 | .325 | .28 |
| 2N4274 | 106 | 12 | 13 | 10 | 35 | 10 | .285 | .177 | .154 |
| 2N4275 | 106 | 15 | 13 | 10 | 35 | 10 | .285 | .177 | .154 |
| 2N5769 | 92 | 15 | 13 | 10 | 40 | 10 | .285 | .177 | .154 |
| 2N5772 | 92 | 15 | 18 | 10 | 30 | 30 | .285 | .177 | .154 |
| 2N5845 | 92 | 40 | 60† | 500 | 25 | 500 | .71 | .445 | .385 |
| 2N5845A | 92 | 40 | 50† | 500 | 35 | 500 | .86 | .53 | .46 |
| MPS706 | 92 | 20* | 60 | 10 | 20 | 10 | .435 | .27 | .234 |
| MPS706A | 92 | 20* | 25 | 10 | 20 | 10 | .62 | .385 | .335 |
| MPS834 | 92 | .... | 25 | 10 | 25 | 10 | .50 | .31 | .27 |
| MPS2369 | 92 | 15 | 13 | 10 | 40 | 10 | .50 | .31 | .27 |
| MPS3646 | 92 | 15 | 18 | 10 | 30 | 30 | .52 | .34 | .33 |

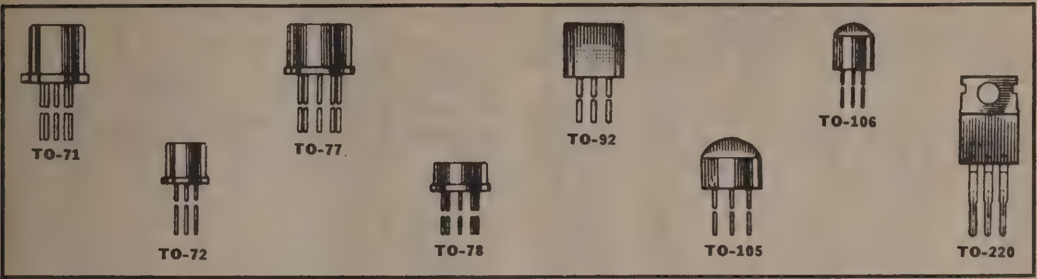
## PNP HIGH-SPEED SATURATED SWITCHES

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2N2894 | 18 | 12 | 90† | 30 | 30 | 30 | $0.68 | $0.425 | $0.37 |
| 2N2894A | 18 | 12 | 20 | 10 | 40 | 30 | 3.40 | 2.10 | 1.85 |
| 2N3012 | 18 | 12 | 75† | 30 | 30 | 30 | 1.25 | .78 | .68 |
| 2N3209 | 18 | 20 | 90† | 30 | 30 | 30 | 1.28 | .80 | .69 |
| 2N3304 | 18 | 6 | 30 | 10 | 30 | 10 | 1.38 | .92 | .80 |
| 2N3467 | 5 | 40 | 90† | 500 | 40 | 500 | 3.00 | 1.86 | 1.62 |
| 2N3468 | 5 | 50 | 90 | 500 | 25 | 500 | 5.15 | 3.20 | 2.75 |
| 2N3639 | 106 | 6 | 30 | 10 | 30 | 10 | .355 | .221 | .193 |
| 2N3640 | 106 | 12 | 50 | 10 | 30 | 10 | .425 | .265 | .23 |
| 2N4207 | 18 | 6 | 15 | 10 | 50 | 10 | 3.00 | 1.86 | 1.62 |
| 2N4208 | 18 | 12 | 20 | 10 | 30 | 10 | 3.30 | 2.05 | 1.77 |
| 2N4209 | 18 | 15 | 20 | 10 | 50 | 10 | 4.00 | 2.50 | 2.15 |
| 2N4258A | 106 | 12 | 15 | 10 | 30 | 10 | .57 | .355 | .31 |
| 2N4389 | 106 | 12 | 90† | 50 | 30 | 10 | .43 | .265 | .231 |
| 2N5055 | 106 | 12 | 20 | 10 | 30 | 30 | .43 | .265 | .231 |
| 2N5056 | 18 | 15 | 30 | 10 | 30 | 30 | 4.00 | 2.50 | 2.15 |
| 2N5057 | 18 | 15 | 30 | 10 | 40 | 30 | 4.55 | 2.85 | 2.45 |
| 2N5455 | 52 | 15 | 35 | 300 | 30 | 10 | 2.55 | 1.59 | 1.39 |
| 2N5456 | 52 | 25 | 35 | 300 | 30 | 10 | 3.00 | 1.86 | 1.62 |
| 2N5771 | 92 | 15 | 20 | 10 | 50 | 10 | .57 | .355 | .31 |
| 2N5910 | 106 | 20 | 20 | 10 | 30 | 10 | .57 | .35 | .305 |
| MPS3639 | 92 | 6 | 28† | 50 | 30 | 10 | .32 | .198 | .173 |
| MPS3640 | 92 | 12 | 35† | 50 | 30 | 10 | .44 | .29 | .26 |
| MPSL07 | 92 | 6 | 15 | 10 | 30 | 10 | .405 | .25 | .219 |
| MPSL08 | 92 | 12 | 20 | 10 | 30 | 10 | .55 | .34 | .295 |

*$V_{CER}$. †$t_{off}$. ‡JAN type also available.

**FAIRCHILD**
**SEMICONDUCTOR**

# NPN AND PNP SILICON PLANAR TRANSISTORS



## SILICON LF POWER TRANSISTORS

The following tables list a standard line of low frequency silicon power transistors available from Fairchild. Devices are listed by package, polarity, voltage and current. Devices are available with voltage ranges from 40 volts to 350 volts; current ranges from 1 amp to 30 amps and frequencies of 1 MHz to 80 MHz.

### NPN POLARITY (TO-3)

| Fairchild Type | Comp. | $V_{CEO}$ V | $h_{FE}$ at $I_C$ Min.-Max. | Amps | $P_D$ W | Net Ea., Lots 1-99 | 100 Up |
|---|---|---|---|---|---|---|---|
| 2N4913 | 2N4904 | 40 | 25–100 | 2.5 | ...... | $1.73 | $1.20 |
| 2N5301 | 2N4398 | 40 | 15–60 | 15.0 | 200 | 5.25 | 3.50 |
| 2N4914 | 2N4905 | 60 | 25–100 | 2.5 | 87.5 | 1.95 | 1.30 |
| 2N5302 | 2N4399 | 60 | 15–60 | 15.0 | 200 | 5.70 | 3.80 |
| 2N4915 | 2N4906 | 80 | 25–100 | 2.5 | 87.5 | 2.10 | 1.40 |

### PNP POLARITY (TO-3)

| Fairchild Type | Comp. | $V_{CEO}$ V | $h_{FE}$ at $I_C$ Min.-Max. | Amps | $P_D$ W | Net Ea., Lots 1-99 | 100 Up |
|---|---|---|---|---|---|---|---|
| 2N4904 | ......... | 40 | 25–100 | 2.5 | 87.5 | $2.31 | $1.71 |
| 2N4398 | 2N5301 | 40 | 15–60 | 15.0 | 200 | 6.75 | 5.00 |
| 2N4399 | 2N5302 | 60 | 15–60 | 15.0 | 200 | 8.75 | 6.50 |
| 2N4905 | 2N4914 | 60 | 25–100 | 2.5 | 87.5 | 3.08 | 2.28 |
| 2N4906 | 2N4915 | 80 | 25–100 | 2.5 | 87.5 | 3.85 | 2.85 |

### NPN POLARITY (TO-5)

| Fairchild Type | Comp. | $V_{CEO}$ V | $h_{FE}$ at $I_C$ Min.-Max. | Amps | $P_D$ W | Net Ea., Lots 1-99 | 100 Up |
|---|---|---|---|---|---|---|---|
| 2N4237 | 2N4234 | 40 | 30–150 | 0.25 | 6 | $ 1.35 | $0.90 |
| 2N4896 | ......... | 60 | 100–300 | 2.00 | 7 | 8.25 | 5.50 |
| 2N4897 | ......... | 80 | 40–120 | 2.00 | 7 | 10.85 | 6.75 |
| 2N3440 | ......... | 250 | 40–160 | 0.02 | 10 | 1.35 | .90 |
| 2N3439 | ......... | 350 | 40–160 | 0.02 | 10 | 2.00 | 1.35 |

### PNP POLARITY (TO-5)

| Fairchild Type | Comp. | $V_{CEO}$ V | $h_{FE}$ at $I_C$ Min.-Max. | Amps | $P_D$ W | Net Ea., Lots 1-99 | 100 Up |
|---|---|---|---|---|---|---|---|
| 2N4234 | 2N4237 | 40 | 30–150 | 0.25 | 6 | $1.80 | $1.20 |

### NPN POLARITY (TO-66)

| Fairchild Type | Comp. | $V_{CEO}$ V | $h_{FE}$ at $I_C$ Min.-Max. | Amps | $P_D$ W | Net Ea., Lots 1-99 | 100 Up |
|---|---|---|---|---|---|---|---|
| 2N4910 | 2N4898 | 40 | 20–100 | 0.5 | 25 | $1.05 | $0.70 |
| 2N4231 | ......... | 40 | 25–100 | 1.5 | 35 | 1.25 | .85 |
| 2N3054 | ......... | 55 | 25–100 | 0.5 | 25 | 1.10 | .82 |
| 2N3766 | ......... | 60 | 40–160 | 0.5 | 20 | 1.62 | 1.20 |

### PNP POLARITY (TO-66)

| Fairchild Type | Comp. | $V_{CEO}$ V | $h_{FE}$ at $I_C$ Min.-Max. | Amps | $P_D$ W | Net Ea., Lots 1-99 | 100 Up |
|---|---|---|---|---|---|---|---|
| 2N4898 | 2N4910 | 40 | 20–100 | 0.5 | 25 | $1.50 | $1.00 |
| 2N3740 | ......... | 60 | 30–100 | 0.25 | 25 | 1.80 | 1.20 |
| 2N3741 | ......... | 80 | 30–100 | 0.25 | 25 | 2.10 | 1.40 |

### NPN POLARITY (TO-220)

TO-220 package is plastic TO-66 package.

| Fairchild Type | Comp. | $V_{CEO}$ V | $h_{FE}$ at $I_C$ Min.-Max. | Amps | $P_D$ W | Net Ea., Lots 1-99 | 100 Up |
|---|---|---|---|---|---|---|---|
| 2N6121 | 2N6124 | 45 | 25–100 | 1.5 | 40 | $1.10 | $0.80 |
| 2N6122 | 2N6125 | 60 | 25–100 | 1.5 | 40 | 1.20 | .90 |
| 2N6123 | 2N6126 | 80 | 20–80 | 1.5 | 40 | 1.35 | 1.00 |

### PNP POLARITY (TO-220)

TO-220 package is plastic TO-66 package.

| Fairchild Type | Comp. | $V_{CEO}$ V | $h_{FE}$ at $I_C$ Min.-Max. | Amps | $P_D$ W | Net Ea., Lots 1-99 | 100 Up |
|---|---|---|---|---|---|---|---|
| 2N6124 | 2N6121 | 45 | 25–100 | 1.5 | 40 | $1.20 | $0.90 |
| 2N6125 | 2N6122 | 60 | 25–100 | 1.5 | 40 | 1.35 | 1.00 |
| 2N6126 | 2N6123 | 80 | 20–80 | 1.5 | 40 | 1.50 | 1.10 |

## DUAL SILICON TRANSISTORS

Standard NPN-PNP polarity silicon differential amplifier transistors and NPN-PNP polarity silicon Darlington amplifier transistors.

### NPN DIFFERENTIAL AMPLIFIERS

$P_D$ at 25° C.

| Fairchild Type | Pkg. TO- | $P_D$ mW | $V_{CEO}$ V | $h_{FE}$ at $I_C$ Min.-Max. | mA | Net Each, Lots 1-99 | 100 Up |
|---|---|---|---|---|---|---|---|
| 2N2060 | 77 | 600 | 60 | 30–90 | 0.1 | $ 4.10 | $ 2.75 |
| 2N2640 | 77 | 600 | 45 | 50–300 | 0.01 | 5.00 | 3.35 |
| 2N2642 | 77 | 600 | 45 | 100–300 | 0.01 | 8.50 | 5.65 |
| 2N2915A | 77 | 500 | 45 | 60–240 | 0.01 | 7.15 | 4.40 |
| 2N2916A | 77 | 500 | 45 | 150–600 | 0.01 | 8.15 | 5.00 |
| 2N2917 | 77 | 500 | 45 | 60–240 | 0.01 | 2.85 | 1.75 |
| 2N2918 | 77 | 500 | 45 | 150–600 | 0.01 | 3.55 | 2.20 |
| 2N2919 | 77 | 500 | 60 | 60–240 | 0.01 | 4.30 | 2.65 |
| 2N2919A | 77 | 500 | 60 | 60–240 | 0.01 | 8.50 | 5.25 |
| 2N2920 | 77 | 500 | 60 | 150–600 | 0.01 | 5.25 | 3.40 |
| 2N2920A | 77 | 500 | 60 | 150–600 | 0.01 | 10.00 | 6.15 |
| 2N2978 | 71 | 300 | 60 | 60–240 | 0.01 | 13.00 | 8.70 |
| 2N2979 | 71 | 300 | 60 | 150–600 | 0.01 | 16.50 | 11.00 |
| 2N3424 | 78 | 450 | 15 | 20–200 | 3.0 | 17.00 | 11.36 |
| 2N3908 | 77 | 600 | 60 | 200 min. | 1.0 | 7.15 | 4.75 |

## DUAL SILICON TRANSISTORS (CONT'D)

### PNP DIFFERENTIAL AMPLIFIERS

$P_D$ at 25° C.

| Fairchild Type | Pkg. TO- | $P_D$ mW | $V_{CEO}$ V | $h_{FE}$ at $I_C$ Min.-Max. | mA | Net Each, Lots 1-99 | 100 Up |
|---|---|---|---|---|---|---|---|
| 2N3727 | 78 | 500 | 60 | 135–350 | 1.0 | $ 7.50 | $5.00 |
| 2N3804 | 71 | 360 | 60 | 150–450 | 0.1 | 10.00 | 6.65 |
| 2N3805 | 71 | 360 | 60 | 300–900 | 0.1 | 14.30 | 9.55 |
| 2N3808 | 78 | 600 | 60 | 150–450 | 0.1 | 7.15 | 4.75 |
| 2N3809 | 78 | 360 | 60 | 300–900 | 0.1 | 8.50 | 5.65 |
| 2N3810 | 78 | 600 | 60 | 150–450 | 0.1 | 10.00 | 6.65 |
| 2N3811 | 78 | 360 | 60 | 300–900 | 0.1 | 14.30 | 9.55 |
| 2N4020 | 77 | 600 | 45 | 250–600 | 0.01 | 10.80 | 6.60 |
| 2N4021 | 77 | 600 | 60 | 100–350 | 0.01 | 10.80 | 6.60 |
| 2N4023 | 77 | 600 | 45 | 250–600 | 0.1 | 12.80 | 7.75 |

### NPN DARLINGTON AMPLIFIERS (TO-72)

In TO-72 pkg. except as otherwise noted. $P_D$ at 25° C.

| Fairchild Type | $P_D$ mW | $V_{CEO}$ V | $h_{FE}$ at $I_C$ Min.-Max. | mA | Net Each, Lots of 1-99 | 100-999 | 1000 Up |
|---|---|---|---|---|---|---|---|
| MPSA12* | 310 | 29 | 20,000 min. | 10 | $ 0.64 | $0.40 | $0.345 |
| MPSA13* | 310 | 30 | 5,000 min. | 10 | .45 | .28 | .243 |
| MPSA14* | 310 | 30 | 10,000 min. | 10 | .50 | .31 | .27 |
| 2N997 | 500 | 40 | 7,000–70,000 | 100 | 10.50 | 6.55 | ...... |
| 2N998 | 500 | 60 | 1,600– 8,000 | 10 | 10.50 | 6.55 | ...... |
| 2N999 | 500 | 60 | 7,000–70,000 | 100 | 14.50 | 9.05 | ...... |
| 2N2723 | 500 | 60 | 2,000–70,000 | 10 | 10.00 | 6.70 | ...... |
| 2N2724 | 500 | 60 | 7,000–50,000 | 10 | 11.00 | 7.35 | ...... |
| 2N2725 | 500 | 45 | 2,000–10,000 | 10 | 12.00 | 8.00 | ...... |

*In TO-92 package.

### PNP DARLINGTON AMPLIFIERS

$P_D$ at 25° C.

| Fairchild Type | Pkg. TO- | $P_D$ mW | $V_{CEO}$ V | $h_{FE}$ at $I_C$ Min. | mA | Net Each, Lots of 1-99 | 100-999 | 1000 Up |
|---|---|---|---|---|---|---|---|---|
| MPSA65 | 92 | 310 | 30 | 50,000 | 10 | $0.55 | $0.34 | $0.29 |
| MPSA66 | 92 | 310 | 30 | 75,000 | 10 | .59 | .37 | .30 |

### NPN HIGH VOLTAGE AMPLIFIERS

$P_D$ at 25° C.

| Fairchild Type | Pkg. TO- | $V_{CEO}$ V | $h_{FE}$ at $I_C$ Min.-Max. | mA | $P_D$ mW | Net Each, Lots of 1-99 | 100-999 | 1000 Up |
|---|---|---|---|---|---|---|---|---|
| 2N657 | 5 | 100 | 30–90 | 200 | 800 | $ 1.62 | $ 1.01 | $ 0.88 |
| JAN2N657 | 5 | 100 | 30–90 | 200 | 800 | 2.10 | 1.29 | 1.12 |
| 2N2008 | 5 | 110 | 40–120 | 50 | 800 | 10.00 | 6.70 | 6.45 |
| 2N2443 | 5 | 100 | 50–150 | 50 | 800 | 2.75 | 1.70 | 1.48 |
| 2N3114 | 5 | 150 | 30–120 | 30 | 800 | 2.78 | 1.42 | 1.23 |
| 2N3526 | 5 | 120 | 30 min. | 30 | 800 | 2.55 | 1.59 | 1.39 |
| 2N3742 | 5 | 300 | 20–200 | 30 | 1000 | 6.40 | 4.00 | 3.45 |
| 2N3923 | 5 | 150 | 30–120 | 25 | 800 | 4.00 | 2.50 | 2.15 |
| 2N4926 | 39 | 200 | 20–200 | 30 | 1000 | 2.00 | 1.24 | 1.08 |
| 2N4927 | 39 | 250 | 20–200 | 30 | 1000 | 2.30 | 1.42 | 1.23 |
| 2N5830 | 106 | 120 | 80–500 | 25 | 310 | .58 | .35 | .315 |
| 2N5831 | 106 | 160 | 80–250 | 10 | 310 | .65 | .405 | .355 |
| 2N5832 | 106 | 160 | 175–500 | 10 | 310 | .70 | .43 | .375 |
| 2N5833 | 106 | 200 | 50–250 | 10 | 310 | .80 | .495 | .43 |
| 2N5964 | 105 | 150 | 50–250 | 10 | 700 | .65 | .405 | .355 |
| 2N5965 | 105 | 180 | 50–250 | 10 | 700 | .80 | .495 | .43 |
| SE7055 | 39 | 220 | 40–150 | 10 | 1000 | 2.80 | 1.75 | 1.52 |
| SE7056 | 39 | 300 | 40–100 | 10 | 1000 | 3.10 | 1.91 | 1.66 |
| SE7057 | 39 | 450 | 30–70 | 10 | 1000 | 25.50 | 16.00 | 13.75 |
| SE7066 | 39 | 300 | 40–100 | 10 | 1750 | 3.25 | 1.96 | 1.71 |

### PNP HIGH VOLTAGE AMPLIFIERS

$P_D$ at 25° C except as otherwise noted.

| Fairchild Type | Pkg. TO- | $V_{CEO}$ V | $h_{FE}$ at $I_C$ Min.-Max. | mA | $P_D$ mW | Net Each, Lots of 1-99 | 100-999 | 1000 Up |
|---|---|---|---|---|---|---|---|---|
| 2N3495 | 5 | 120 | 40 min. | 10 | 600 | $12.75 | $ 8.50 | $8.25 |
| 2N3497 | 18 | 120 | 40 min. | 10 | 400 | 11.50 | 7.10 | 6.15 |
| 2N3634 | 5 | 140 | 50–150 | 50 | 1000 | 9.00 | 5.60 | 4.85 |
| 2N3635 | 5 | 140 | 100–300 | 50 | 1000 | 10.50 | 6.55 | 5.70 |
| 2N3636 | 5 | 175 | 50–150 | 50 | 1000 | 14.25 | 8.85 | 7.70 |
| 2N3637 | 5 | 175 | 100–300 | 50 | 1000 | 17.10 | 10.60 | 9.25 |
| 2N3743 | 5 | 300 | 25–250 | 30 | 1000 | 12.00 | 8.40 | 7.30 |
| 2N3930 | 18 | 180 | 80–300 | 10 | 400 | 6.40 | 4.00 | 3.45 |
| 2N3931 | 39 | 180 | 80–300 | 10 | 400 | 6.40 | 4.00 | 3.45 |
| 2N4888 | 105 | 150 | 40–400 | 10 | 300 | .52 | .32 | .28 |
| 2N4889 | 105 | 150 | 80–300 | 10 | 300 | .74 | .46 | .40 |
| 2N5415 | 5 | 200 | 30–150 | 50 | 1000* | 3.30 | 2.40 | 2.00 |
| 2N5416 | 5 | 300 | 30–120 | 50 | 1000* | 4.95 | 3.55 | 3.00 |

*$P_D$ at 50° C.

FAIRCHILD
SEMICONDUCTOR

# NPN AND PNP SILICON PLANAR TRANSISTORS

## NPN RF-IF AMPLIFIERS AND OSCILLATORS

| Fairchild Type | Pkg. TO- | V | Min. PG at f dB | Min. PG at f Hz | Max. NF at f dB | Max. NF at f MHz | Max. $C_{obo}$ pF | Net Each, Lots of 1-99 | 100-999 | 1000 Up |
|---|---|---|---|---|---|---|---|---|---|---|
| 2N917 | 72 | 15 | 9 | 200 | 6.0 | 60 | 1.7 | $0.71 | $0.445 | $0.385 |
| 2N918 | 72 | 15 | 15 | 200 | 6.0 | 60 | 1.7 | .74 | .46 | .40 |
| 2N3137 | 5 | 20 | 6 | 250 | ..... | ..... | 3.5 | 5.40 | 2.10 | 1.85 |
| 2N3563 | 106 | 12 | 14 | 200 | 4.0 | 60 | 1.7 | .285 | .177 | .154 |
| 2N5570 | 92 | 15 | 15 | 500 | 6.0 | 60 | 1.7 | .285 | .177 | .154 |
| MPS918 | 92 | 15 | 15 | 200 | 6.0 | 60 | 1.7 | .80 | .495 | .43 |
| MPS3563 | 92 | 12 | 30 | 500 | 6.0 | 60 | 1.7 | .365 | .227 | .197 |
| PE3100 | 92 | 30 | ..... | ..... | ..... | ..... | 0.85 | .64 | .395 | .345 |
| PE5010 | 92 | 30 | 20 | 200 | 3.3 | 200 | 0.5 | 1.03 | .64 | .55 |
| PE5015 | 92 | 20 | 20 | 100 | 4.0 | 100 | 0.5 | .88 | .55 | .475 |
| PE5025 | 92 | 30 | 25 | 45 | ..... | ..... | 1.0 | .64 | .395 | .345 |
| PE5029 | 92 | 30 | 28 | 45 | 6.0 | 45 | 0.4 | .77 | .48 | .415 |
| PE5030B | 92 | 40 | 28 | 45 | ..... | ..... | 0.4 | .94 | .58 | .51 |
| PE5031 | 92 | 30 | 19 | 200 | 4.5 | 200 | 0.4 | .81 | .50 | .44 |
| SE5006 | 106 | 40 | 20 | 100 | ..... | ..... | 1.6 | .425 | .265 | .23 |
| SE5020 | 72 | 20 | 20 | 200 | 3.3 | 200 | 0.5 | 5.95 | 3.20 | 2.75 |
| SE5050 | 72 | 20 | 20 | 100 | 4.0 | 100 | 0.5 | 2.12 | 1.85 | 1.72 |
| SE5055 | 72 | 20 | 27 | 45 | 5.0 | 45 | 0.22 | 5.15 | 3.20 | 2.75 |

## NPN LOW LEVEL AMPLIFIERS

| Fairchild Type | Pkg. TO- | $V_{CBO}$ V | $h_{FE}$ at $I_C$ Min.-Max. | $h_{FE}$ at $I_C$ mA | Net Each, Lots of 1-99 | 100-999 | 1000 Up |
|---|---|---|---|---|---|---|---|
| 2N930 | 18 | 45 | 100-300 | 0.01 | $0.455 | $0.285 | $0.245 |
| JAN2N930 | 18 | 45 | 100-300 | 0.01 | .54 | .335 | .295 |
| 2N2484 | 18 | 60 | 100-500 | 0.01 | .51 | .23 | .275 |
| JAN2N2484 | 18 | 60 | 100-500 | 0.01 | .60 | .37 | .325 |
| 2N3117 | 18 | 60 | 250-500 | 0.01 | 2.80 | 1.75 | 1.52 |
| 2N3565 | 106 | 25 | 70 min. | 1.00 | .228 | .142 | .123 |
| 2N5088 | 92 | 30 | 300-900 | 0.01 | .71 | .445 | .385 |
| 2N5089 | 92 | 25 | 400-1200 | 0.10 | .93 | .58 | .50 |
| 2N5209 | 92 | 50 | 100-300 | 0.10 | .62 | .385 | .335 |
| 2N5210 | 92 | 50 | 200-600 | 0.10 | .69 | .43 | .375 |
| 2N5961 | 92 | 60 | 100 min. | 0.01 | .50 | .31 | .27 |
| 2N5962 | 92 | 45 | 450 min. | 0.01 | .64 | .40 | .345 |
| 2N5963 | 92 | 30 | 900 min. | 0.01 | .90 | .56 | .485 |
| FT107B | 18 | 45 | 450 min. | 0.01 | .83 | .51 | .445 |
| FT107C | 18 | 60 | 100 min. | 0.01 | .51 | .32 | .275 |
| MPS6520 | 92 | 25 | 100 min. | 2.00 | .78 | .485 | .41 |
| MPS6521 | 92 | 25 | 150 min. | 2.00 | .86 | .53 | .45 |
| MPS6571 | 92 | 20 | 250-1000 | 0.01 | .57 | .355 | .30 |
| MPSA09 | 92 | 50 | 100-600 | 0.01 | .52 | .325 | .28 |

## PNP LOW LEVEL AMPLIFIERS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2N3962 | 18 | 60 | 60 min. | 0.001 | $0.91 | $0.57 | $0.49 |
| 2N3963 | 18 | 80 | 60 min. | 0.001 | 1.43 | .89 | .77 |
| 2N3964 | 18 | 45 | 180 min. | 0.001 | 1.48 | .92 | .80 |
| 2N3965 | 18 | 60 | 180 min. | 0.001 | 2.05 | 1.27 | 1.11 |
| 2N4248 | 106 | 40 | 50 min. | 0.10 | .288 | .142 | .123 |
| 2N4249 | 106 | 60 | 100-300 | 0.10 | .285 | .177 | .154 |
| 2N4250 | 106 | 40 | 250-700 | 0.10 | .34 | .212 | .185 |
| 2N4250A | 106 | 60 | 250-700 | 0.10 | .50 | .31 | .27 |
| 2N4964 | 106 | 40 | 30-120 | 0.01 | .37 | .23 | .20 |
| 2N4965 | 106 | 40 | 80-400 | 0.01 | .37 | .23 | .20 |
| 2N5086 | 92 | 50 | 150-500 | 0.10 | .71 | .445 | .385 |
| 2N5087 | 92 | 50 | 250-800 | 0.10 | .76 | .47 | .41 |
| MPS6522 | 92 | 25 | 100 min. | 0.10 | .86 | .53 | .45 |
| MPS6523 | 92 | 25 | 150 min. | 0.10 | .93 | .58 | .49 |

## NPN GP AMPLIFIERS AND SWITCHES

$h_{FE}$ at $I_C$ = 150 mA except as otherwise noted. $P_D$ at 25° C. TO-5 package, except as otherwise noted.

| Fairchild Type | $V_{CEO}$ V | $h_{FE}$ Min.-Max. | Min. $f_T$ MHz | $P_D$ mW | Net Each, Lots of 1-99 | 100-999 | 1000 Up |
|---|---|---|---|---|---|---|---|
| 2N697 | 40* | 40-120 | 50 | 600 | $0.51 | $0.32 | $0.275 |
| JAN2N697 | 40* | 40-120 | 60 | 600 | .60 | .37 | .325 |
| 2N699B‡ | 80 | 40-120 | 60 | 870 | 4.35 | 2.70 | 2.35 |
| 2N718A‡ | 50 | 40-120 | 60 | 500 | .60 | .37 | .325 |
| JAN2N718A‡ | 30 | 40-120 | 60 | 500 | .74 | .46 | .40 |
| 2N720A‡ | 80 | 40-120 | 60 | 500 | 1.32 | .85 | .74 |
| JAN2N720A‡ | 80 | 40-120 | 60 | 500 | 1.45 | .90 | .79 |
| 2N870‡ | 60 | 40-120 | 50 | 500 | 1.48 | .92 | .80 |
| 2N871‡ | 60 | 100-300 | 60 | 500 | 1.43 | .89 | .77 |
| 2N956‡ | 50* | 100-300 | 70 | 500 | .66 | .405 | .355 |
| 2N1613 | 50* | 40-120 | 80 | 800 | .54 | .335 | .295 |
| JAN2N1613 | 30 | 40-120 | 60 | 800 | .68 | .425 | .37 |
| 2N1711 | 50 | 100-300 | 70 | 800 | .57 | .355 | .31 |
| 2N1711A | 32 | 100-300 | 70 | 800 | 4.00 | 2.50 | 2.15 |
| JAN2N1711 | 30 | 100-300 | 70 | 800 | .71 | .445 | .385 |
| 2N1893 | 80 | 40-120 | 50 | 800 | .85 | .53 | .46 |
| JAN2N1893 | 80 | 40-120 | 60 | 800 | 1.00 | .62 | .54 |
| 2N2218 | 30 | 40-120 | 250 | 800 | .57 | .355 | .31 |
| 2N2218A | 40 | 40-120 | 250 | 800 | .63 | .39 | .34 |
| 2N2219 | 30 | 100-300 | 250 | 800 | .54 | .335 | .295 |
| 2N2219A | 40 | 100-300 | 350 | 800 | .60 | .37 | .325 |
| JAN2N2219A | 50 | 100-300 | 250 | 800 | .68 | .425 | .37 |
| 2N2221‡ | 30 | 40-120 | 250 | 500 | .455 | .285 | .246 |
| 2N2221A‡ | 40 | 40-120 | 250 | 500 | .51 | .32 | .275 |
| 2N2222‡ | 30 | 100-300 | 250 | 500 | .40 | .25 | .216 |
| 2N2222A‡ | 40 | 100-300 | 300 | 500 | .455 | .285 | .246 |
| JAN2N2222A‡ | 50 | 100-300 | 250 | 500 | .54 | .335 | .295 |
| 2N3019 | 80 | 100-300 | 100 | 800 | 1.14 | .71 | .62 |
| 2N3020 | 80 | 40-120 | 80 | 800 | 1.62 | 1.01 | .88 |
| 2N3053 | 50* | 50-250 | 100 | ..... | .54 | .335 | .29 |
| 2N3107 | 60 | 100-300 | 70 | 800 | 1.14 | .71 | .62 |
| 2N3108 | 60 | 40-120 | 60 | 800 | 1.14 | .71 | .62 |
| 2N3109 | 40 | 100-300 | 70 | 800 | 1.14 | .71 | .62 |
| 2N3110 | 40 | 40-120 | 60 | 800 | 1.12 | .71 | .62 |
| 2N3566§ | 30 | 150-600† | 40 | 300 | .255 | .159 | .139 |

*$V_{CER}$. †$I_C$ = 10 mA. ‡TO-18 package. §TO-105 package.

## NPN GENERAL PURPOSE AMPLIFIERS AND SWITCHES (CONTINUED)

### PACKAGE TO-92

$P_D$ = 625 mW at 25° C unless otherwise noted.

| Fairchild Type | $V_{CEO}$ V | $h_{FE}$ at $I_C$ Min.-Max. | $h_{FE}$ at $I_C$ mA | Min. $f_T$ MHz | Net Each, Lots of 1-99 | 100-999 | 1000 Up |
|---|---|---|---|---|---|---|---|
| 2N3567*† | 40 | 40-120 | 150 | 60 | $0.255 | $0.159 | $0.139 |
| 2N3568*† | 60 | 40-120 | 150 | 60 | .37 | .23 | .20 |
| 2N3569*† | 30 | 100-300 | 150 | 60 | .315 | .195 | .169 |
| 2N3641*‡ | 30 | 40-120 | 150 | 250 | .315 | .195 | .169 |
| 2N3642*‡ | 45 | 40-120 | 150 | 250 | .315 | .195 | .169 |
| 2N3643*‡ | 30 | 100-300 | 150 | 250 | .315 | .195 | .169 |
| 2N3903§ | 40 | 50-150 | 10 | 250 | .51 | .32 | .275 |
| 2N3904§ | 40 | 100-300 | 10 | 300 | .51 | .32 | .275 |
| 2N4123§ | 30 | 50-150 | 2 | 250 | .34 | .212 | .185 |
| 2N4124§ | 25 | 120-360 | 2 | 300 | .34 | .212 | .185 |
| 2N4400§ | 40 | 50-150 | 150 | 200 | .57 | .355 | .31 |
| 2N4409§ | 50 | 60-400 | 1 | 60 | .64 | .40 | .345 |
| 2N4410§ | 80 | 60-400 | 10 | 60 | .90 | .56 | .485 |
| MPS3693 | 45 | 40-160 | 10 | 200 | .44 | .29 | .28 |
| MPS3694 | 45 | 100-400 | 10 | 200 | .44 | .29 | .28 |
| MPS6512 | 30 | 50-100 | 2 | 250 | .52 | .325 | .27 |
| MPS6513 | 30 | 90-180 | 2 | 150 | .55 | .34 | .28 |
| MPS6514 | 25 | 150-300 | 2 | 390 | .57 | .355 | .30 |
| MPS6515 | 25 | 250-500 | 2 | 390 | .62 | .385 | .32 |
| MPS6530 | 40 | 40-120 | 100 | 390 | .62 | .385 | .32 |
| MPS6531 | 40 | 90-270 | 100 | 390 | .71 | .445 | .37 |
| MPS6532 | 30 | 30 min. | 100 | 390 | .52 | .325 | .27 |
| MPS6560 | 25 | 50-200 | 500 | 60 | .48 | .31 | .27 |
| MPS6561 | 20 | 50-200 | 350 | 60 | .45 | .295 | .255 |
| MPS6565 | 45 | 40-150 | 10 | 200 | .50 | .31 | .26 |
| MPS6566 | 45 | 100-400 | 10 | 200 | .55 | .34 | .28 |
| MPSA05 | 60 | 50 min. | 100 | 50 | .50 | .31 | .27 |
| MPSA06 | 80 | 50 min. | 100 | 50 | .57 | .355 | .31 |
| MPSA10 | 40 | 40-400 | 5 | 50 | .255 | .159 | .139 |
| MPSA20 | 40 | 40-400 | 5 | 125 | .31 | .191 | .166 |

*TO-105 package. †$P_D$ = 300 mW. ‡$P_D$ = 350 mW. §$P_D$ = 310 mW.

## PNP GP AMPLIFIERS AND SWITCHES

$P_D$ at 25° C. TO-18 package except as noted.

| Fairchild Type | $V_{CEO}$ V | $h_{FE}$ at $I_C$ Min.-Max. | $h_{FE}$ at $I_C$ mA | Min. $f_T$ MHz | $P_D$ mW | Net Ea., Lots 1-99 | 100-999* |
|---|---|---|---|---|---|---|---|
| 2N869A | 18 | 40-120 | 30 | 400 | 360 | $1.57 | $0.97 |
| JAN2N869A | 18 | 40-120 | 10 | 400 | 360 | 1.65 | 1.03 |
| 2N995A | 15 | 35-140 | 20 | 100 | 360 | 3.40 | 2.10 |
| 2N1132* | 35 | 30-90 | 150 | 60 | 600 | .71 | .445 |
| 2N1132A† | 40 | 30-90 | 150 | 60 | 600 | 2.30 | 1.42 |
| 2N2904† | 40 | 40-120 | 150 | 200 | 600 | .54 | .335 |
| 2N2904A† | 60 | 40-120 | 150 | 200 | 600 | .54 | .335 |
| 2N2905† | 40 | 100-300 | 150 | 200 | 600 | .57 | .335 |
| 2N2905A† | 60 | 100-300 | 150 | 200 | 600 | .63 | .39 |
| JAN-2N2905A† | 60 | 100-300 | 150 | 200 | 600 | .71 | .445 |
| 2N2906 | 40 | 40-120 | 150 | 200 | 400 | .43 | .265 |
| 2N2906A | 60 | 40-120 | 150 | 200 | 400 | .43 | .265 |
| 2N2907 | 40 | 100-300 | 150 | 200 | 400 | .43 | .265 |
| 2N2907A | 60 | 100-300 | 150 | 200 | 400 | .485 | .30 |
| JAN-2N2907A | 60 | 100-300 | 150 | 200 | 400 | .57 | .355 |
| 2N3250 | 40 | 50-150 | 10 | 250 | 360 | .83 | .51 |
| 2N3250A | 60 | 50-160 | 10 | 250 | 360 | .88 | .55 |
| 2N3251 | 40 | 100-300 | 10 | 300 | 360 | 1.11 | .69 |
| 2N3251A | 60 | 100-300 | 10 | 300 | 360 | 1.23 | .76 |
| 2N3494† | 80 | 35 min. | 100 | 200 | 600 | 9.75 | 6.20 |
| 2N3496 | 80 | 35 min. | 100 | 200 | 400 | 9.75 | 6.20 |
| 2N3638‡ | 25 | 30 min. | 50 | 100 | 300 | .255 | .159 |
| 2N3638A‡ | 25 | 100 min. | 50 | 150 | 300 | .285 | .177 |
| 2N3644‡ | 45 | 115-300 | 50 | 200 | 300 | .34 | .212 |
| 2N3645‡ | 60 | 115-300 | 50 | 200 | 300 | .34 | .212 |
| 2N3905§ | 40 | 50-150 | 10 | 200 | 310 | .53 | .33 |
| 2N3906§ | 40 | 100-300 | 10 | 250 | 310 | .53 | .33 |
| 2N4030§ | 60 | 40-120 | 100 | 100 | 800 | .90 | .61 |
| 2N4031† | 80 | 40-120 | 100 | 100 | 800 | 1.08 | .67 |
| 2N4032† | 60 | 100-300 | 100 | 150 | 800 | 1.05 | .70 |
| 2N4033† | 80 | 100-300 | 100 | 150 | 800 | 1.32 | .88 |
| 2N4121• | 40 | 70-200 | 10 | 400 | 200 | .285 | .177 |
| 2N4122• | 40 | 150-300 | 10 | 450 | 200 | .314 | .195 |
| 2N4125§ | 30 | 50-150 | 2 | 200 | 310 | .34 | .212 |
| 2N4126§ | 25 | 120-360 | 2 | 250 | 310 | .34 | .212 |
| 2N4354‡ | 60 | 50-500 | 10 | 100 | 350 | .45 | .285 |
| 2N4355‡ | 60 | 100-400 | 10 | 100 | 350 | .51 | .32 |
| 2N4356‡ | 80 | 50-250 | 10 | 100 | 350 | .51 | .32 |
| 2N4402§ | 40 | 50-150 | 150 | 150 | 310 | .57 | .355 |
| 2N4403§ | 40 | 100-300 | 150 | 200 | 310 | .71 | .445 |
| MPS3638§ | 25 | 30 min. | 50 | 100 | 625 | .39 | .24 |
| MPS3638A§ | 25 | 100 min. | 50 | 150 | 625 | .59 | .39 |
| MPS6516§ | 40 | 50-100 | 2 | 200 | 625 | .57 | .335 |
| MPS6517§ | 40 | 90-180 | 2 | 200 | 625 | .59 | .37 |
| MPS6518§ | 40 | 150-300 | 2 | 340 | 625 | .64 | .40 |
| MPS6519§ | 25 | 250-500 | 2 | 340 | 625 | .71 | .445 |
| MPS6533M§ | 40 | 40-120 | 100 | 260 | 625 | .66 | .41 |
| MPS6534M§ | 40 | 90-270 | 100 | 260 | 625 | .76 | .47 |
| MPS6535M§ | 30 | 30 min. | 100 | 260 | 625 | .57 | .355 |
| MPS6562§ | 25 | 50-200 | 500 | 60 | 625 | .54 | .34 |
| MPS6563§ | 20 | 50-200 | 350 | 60 | 625 | .51 | .325 |

*TO-39. †TO-5. ‡TO-105. §TO-92. •TO-106. ***Larger quantity prices on request.**

**FAIRCHILD**

# RF AND MICROWAVE/SMALL SIGNAL AND POWER TRANSISTORS

| Fairchild Type | Package | Description | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 1-24 | 25-99 | 100-249 | 250-499 | 500-999 | 1000 |
| 2N2857 | TO-72 | UHF, VHF, IF small signal | $ 3.65 | $ 3.65 | $ 2.80 | $ 2.80 | $ 2.80 | $ 2.30 |
| 2N3375 | TO-60 | General purpose RF power | 9.65 | 9.65 | 7.40 | 7.40 | 7.40 | 6.10 |
| 2N3570 | TO-72 | UHF, VHF, IF small signal | 9.50 | 9.50 | 7.25 | 7.25 | 7.25 | 6.00 |
| 2N3571 | TO-72 | UHF, VHF, IF small signal | 3.95 | 3.95 | 3.05 | 3.05 | 3.05 | 2.50 |
| 2N3572 | TO-72 | UHF, VHF, IF small signal | 3.50 | 3.50 | 2.65 | 2.65 | 2.65 | 2.20 |
| 2N3632 | TO-60 | General purpose RF power | 13.45 | 13.45 | 10.30 | 10.30 | 10.30 | 8.50 |
| 2N3683 | TO-72 | UHF, VHF, IF small signal | 2.70 | 2.70 | 2.05 | 2.05 | 2.05 | 1.70 |
| 2N3833 | TI-Line | 2 GHz oscillator | 23.10 | 23.10 | 17.70 | 17.70 | 17.70 | 14.60 |
| 2N3834 | TI-Line | 2 GHz oscillator | 18.95 | 18.95 | 14.50 | 14.50 | 14.50 | 12.00 |
| 2N3839 | TO-72 | UHF, VHF, IF small signal | 8.55 | 8.55 | 6.55 | 6.55 | 6.55 | 5.40 |
| 2N3866 | TO-39 | General purpose RF power | 1.60 | 1.60 | 1.15 | 1.15 | 1.15 | 1.00 |
| 2N3880 | TO-72 | UHF, VHF, IF small signal | 4.75 | 4.75 | 3.65 | 3.65 | 3.65 | 3.00 |
| 2N3926 | TO-60 | General purpose RF power | 10.40 | 10.40 | 8.00 | 8.00 | 8.00 | 6.50 |
| 2N3927 | TO-60 | General purpose RF power | 11.70 | 11.70 | 9.00 | 9.00 | 9.00 | 7.40 |
| 2N4427 | TO-39 | General purpose RF power | 1.75 | 1.75 | 1.30 | 1.30 | 1.30 | 1.10 |
| 2N4428 | TO-39 | 1 W at 1 GHz amplifier | 8.40 | 6.90 | 6.00 | ........ | ........ | ........ |
| 2N4429 | Strip-Line | MT5763 | 17.10 | 14.00 | 12.20 | ........ | ........ | ........ |
| 2N4430 | Strip-Line | MT5764 | 25.60 | 21.00 | 18.30 | ........ | ........ | ........ |
| 2N4431 | Strip-Line | MT5765 | 52.30 | 43.00 | 37.40 | ........ | ........ | ........ |
| 2N4440 | TO-60 | General purpose RF amplifier | 12.50 | 12.50 | 9.55 | 9.55 | 9.55 | 7.90 |
| 2N5025 | TO-60 | 20 W 50 MHz amplifier | 23.85 | 23.85 | 18.25 | 18.25 | 18.25 | 15.10 |
| 2N5026 | TO-60 | 25 W 80 MHz amplifier | 27.25 | 27.25 | 20.85 | 20.85 | 20.85 | 17.25 |
| 2N5031 | TO-72 | UHF, VHF, IF small signal | 11.85 | 11.85 | 9.10 | 9.10 | 9.10 | 7.50 |
| 2N5032 | TO-72 | UHF, VHF, IF small signal | 7.90 | 7.90 | 6.05 | 6.05 | 6.05 | 5.00 |
| 2N5090 | TO-60 | General purpose RF power | 10.60 | 10.60 | 8.10 | 8.10 | 8.10 | 6.70 |
| 2N5108 | TO-39 | 1 GHz 1 W amplifier | 10.75 | 10.75 | 8.25 | 8.25 | 8.25 | 6.80 |
| 2N5109 | TO-39 | 1 GHz Class A amplifier | 3.20 | 3.20 | 2.55 | 2.55 | 2.55 | 2.10 |
| 2N5179 | TO-72 | UHF, VHF, IF small signal | .87 | .87 | .65 | .65 | .65 | .55 |
| 2N5470 | Sm-Coax | 2 GHz 1 W amplifier | 61.00 | 61.00 | 52.00 | 52.00 | 52.00 | 43.00 |
| 2N5481 | Strip-Line | MT5481 | 30.10 | 24.80 | 21.55 | ........ | ........ | ........ |
| 2N5482 | Strip-Line | MT5482 | 43.00 | 35.40 | 30.80 | ........ | ........ | ........ |
| 2N5483 | Strip-Line | MT5483 | 86.00 | 70.80 | 61.60 | ........ | ........ | ........ |
| 2N5595 | Strip-Line | MT5595 | 76.00 | 62.50 | 54.35 | ........ | ........ | ........ |
| 2N5596 | Strip-Line | MT5596 | 138.00 | 113.00 | 98.55 | ........ | ........ | ........ |
| 2N5761 | Micro-Strip | 4 GHz low noise | 64.00 | 53.00 | 46.50 | ........ | ........ | ........ |
| 2N5762 | Micro-Strip | 4 GHz low noise | 19.00 | 19.00 | 15.10 | ........ | ........ | ........ |
| 2N5764 | Strip-Line | MT5764 | 25.60 | 21.00 | 18.30 | ........ | ........ | ........ |
| 2N5765 | Strip-Line | MT5765 | 52.30 | 43.00 | 37.40 | ........ | ........ | ........ |
| 2N5920 | Sm-Coax | 2 GHz 2 W amplifier | 75.00 | 75.00 | 57.60 | 57.60 | 57.60 | 48.80 |
| 2N5921 | Lg-Coax | 2 GHz 5 W amplifier | 104.00 | 104.00 | 80.00 | 80.00 | 80.00 | 65.00 |

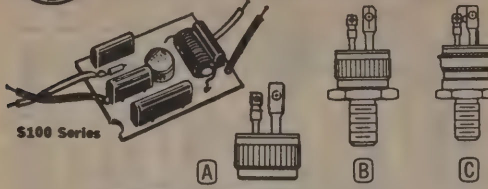
| Fairchild Type | Package | Description | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-24 | 25-99 | 100-249 |
| MT1038 | TO-46 | 1 W at 1 GHz oscillator | $ 9.90 | $ 8.20 | $ 7.10 |
| MT1038A | TO-46 | | 14.80 | 12.20 | 10.60 |
| MT1039 | TO-46 | | 7.95 | 6.65 | 5.70 |
| MT1050 | Micro-Coax | | 24.95 | 20.55 | 17.85 |
| MT1060 | TO-46 | UHF, VHF, IF oscillator | 6.25 | 5.15 | 4.45 |
| MT1060A | TO-46 | | 8.60 | 7.10 | 6.15 |
| MT1061 | TO-72 | UHF, VHF, IF small signal | 6.25 | 5.15 | 4.45 |
| MT1061A | TO-72 | | 8.60 | 7.10 | 6.16 |
| MT1062 | TI-Line | | 15.20 | 12.20 | 10.90 |
| MT1063 | Channel | | 13.40 | 11.00 | 9.60 |
| MT1070 | Micro-Coax | UHF, VHF, IF oscillator | 20.00 | 16.40 | 14.30 |
| MT1100 | Flange | 1 GHz 100 W pulse CB | 210.00 | 172.00 | 150.00 |
| MT1115 | Micro-Coax | 50 mW at 3 GHz oscillator | 68.70 | 56.30 | 49.00 |
| MT1116 | Micro-Coax | 100 mW at 3 GHz oscillator | 86.80 | 71.10 | 62.00 |
| MT1200 | Flange | 1 GHz 200 W pulse CB | 348.00 | 287.00 | 250.00 |
| MT1401 | Strip-Line | 1 W 470 MHz amplifier | 12.35 | 10.20 | 8.85 |
| MT1404 | Strip-Line | 4 W 370 MHz amplifier | 14.00 | 11.50 | 10.00 |
| MT1412 | Strip-Line | 12 W 470 MHz amplifier | 18.80 | 15.50 | 13.50 |
| MT1425 | Strip-Line | 25 W 470 MHz amplifier | 36.25 | 29.80 | 25.95 |
| MT2001 | Flange | 2 GHz 1 W amplifier CB* | 65.00 | 65.00 | 54.35 |
| MT2003 | Flange | 2 GHz 3 W amplifier CB* | 85.00 | 85.00 | 69.00 |
| MT2005 | Flange | 2 GHz 5 W amplifier CB* | 104.00 | 104.00 | 87.15 |
| MT2038 | Micro-Pak | 1 GHz 125 mW amplifier | 5.60 | 4.60 | 3.95 |
| MT2060 | Micro-Pak | UHF, VHF, IF small signal | 4.10 | 3.35 | 2.95 |
| MT2115 | TO-72 | 1 GHz low noise amplifier | 12.90 | 10.60 | 9.25 |
| MT2116 | TO-72 | | 25.60 | 21.05 | 18.35 |
| MT2160 | Micro-Strip | UHF, VHF, IF small signal | 11.20 | 9.20 | 7.90 |
| MT2401 | Strip-Line | 1 W 400 MHz amplifier | 12.35 | 10.20 | 8.85 |
| MT2403 | Strip-Line | 3 W 400 MHz amplifier | 15.25 | 12.60 | 10.95 |
| MT2412 | Strip-Line | 12 W 400 MHz amplifier | 26.35 | 21.70 | 18.90 |
| MT2425 | Strip-Line | 25 W 400 MHz amplifier | 50.75 | 41.75 | 36.35 |

*Common base.

| Fairchild Type | Package | Description | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-24 | 25-99 | 100-249 |
| MT2500 | TI-Line | 2 GHz low noise | $ 52.30 | $ 43.00 | $ 37.40 |
| MT2501 | TI-Line | | 23.80 | 19.60 | 17.00 |
| MT4013 | Micro-Coax | 4 GHz oscillator | 40.00 | 32.90 | 28.60 |
| MT4014 | Micro-Coax | | 61.70 | 50.90 | 44.10 |
| MT4015 | Micro-Coax | | 100.00 | 82.10 | 71.50 |
| MT4415 | Micro-Strip | 4 GHz low noise | 19.00 | 19.00 | 15.10 |
| MT4417 | Micro-Strip | | 16.80 | 13.80 | 11.85 |
| MT4500 | TI-Line | 2 GHz low noise | 61.70 | 50.90 | 44.10 |
| MT4578 | Micro-Strip | 4 GHz low noise | 148.00 | 118.00 | 92.00 |
| MT4579 | Micro-Coax | 5 GHz 50 mW oscillator | 148.00 | 118.00 | 92.00 |
| MT5150 | Strip-Line | 1.5 GHz CATV | 9.80 | 8.05 | 2.35 |
| MT5170 | TO-39 | 1.5 GHz CATV | 3.30 | 2.70 | 2.35 |
| MT5480 | TO-46 | 1.7 GHz osc. | 8.05 | 6.65 | 5.80 |
| MT5481 | Strip-Line | 1 W 2 GHz amplifier CE* | 30.10 | 24.80 | 21.55 |
| MT5482 | Strip-Line | 2.5 W 2 GHz amplifier CE* | 43.00 | 35.40 | 30.80 |
| MT5483 | Strip-Line | 5 W 2 GHz amplifier CE* | 86.00 | 70.80 | 61.60 |
| MT5595 | Strip-Line | 10 W 1 GHz amplifier CE* | 76.00 | 62.50 | 54.35 |
| MT5596 | Strip-Line | 20 W 1 GHz amplifier CE* | 138.00 | 113.00 | 98.55 |
| MT5763 | Strip-Line | 1 W 1 GHz amplifier CE* | 17.10 | 14.00 | 12.20 |
| MT5764 | Strip-Line | 3 W 1 GHz amplifier CE* | 25.60 | 21.00 | 18.30 |
| MT5765 | Strip-Line | 5 W 1 GHz amplifier CE* | 52.30 | 43.00 | 37.40 |
| MT5766 | Strip-Line | 1 W 2 GHz amplifier CB† | 30.10 | 24.80 | 21.55 |
| MT5767 | Strip-Line | 2.5 W 2 GHz amplifier CB† | 43.00 | 35.40 | 30.80 |
| MT5768 | Strip-Line | 5 W 2 GHz amplifier CB† | 61.70 | 50.90 | 44.10 |
| MT8015 | Micro-Coax | 4 GHz oscillator | 60.00 | 49.55 | 42.00 |
| MT8116 | Micro-Coax | 3 GHz oscillator | 86.80 | 71.10 | 62.00 |
| MT8990 | TO-72 | BFX89, BFY90 | 1.60 | 1.60 | 1.20 |
| MSA6505 | TO-60 | 10 W 100 MHz amplifier‡ | 16.15 | 13.30 | 11.55 |
| MSA7502 | TO-60 | 25 W 80 MHz§ | 28.40 | 23.35 | 20.35 |
| MSA7505 | TO-60 | 10 W 400 MHz§ | 16.35 | 13.45 | 11.70 |
| MSA8503 | Strip-Line | 50 W 175 MHz§ | 52.15 | 42.90 | 37.35 |
| MSA8505 | Strip-Line | 10 W 400 MHz§ | 15.05 | 12.40 | 10.80 |
| MSA8506 | Strip-Line | 25 W 175 MHz§ | 17.20 | 14.15 | 12.30 |
| MSA8507 | Strip-Line | 12 W 175 MHz§ | 15.05 | 12.40 | 10.80 |
| MSA8508 | Strip-Line | 3 W 175 MHz§ | 12.90 | 10.60 | 9.25 |

*Common emitter. †Common base. ‡Class A, §Amplifier.

# GENERAL ELECTRIC Special Silicon Products



## REFERENCE AMPLIFIERS (TO-12)

Designed for applications in power supplies where they can serve the dual function of a voltage reference element and an error voltage amplifier. Integrated devices comprised of zener diode and NPN transistor in a single pellet. Cancellation of temperature coefficients between the zener diode and transistor result in a transfer characteristic having a very low net TC. Circuit Characteristics: $V_{CB}=3$ V, $I_C=0.5$ mA (RA3 Series, 0.1 mA), $I_Z=0$ (RA3 Series, 5 mA), $R_B=1$ K. For further information see PIB 35.35.

| GE Type | Temperature Coeff. %/° C | Temperature Range ° C | Min.-Max. $V_{REF}$ V | Min. $G_{MC}$ µhmo | $h_{FE}$ $V_{CE}=3$ V $I_C=.5$mA | $I_{CB}$ $V_{CB}=30$ V Typ. | $I_{CB}$ $V_{CB}=30$ V Max. |
|---|---|---|---|---|---|---|---|
| RA1 | .02 | 0 to 70 | 6.3–7.7 | 3000 | 10–120 | .004 | 1.0 |
| RA1A | .005 | | | | | | |
| RA1B | .002 | | | | | | |
| RA1C | .001 | | | | | | |
| RA2 | .02 | −55 to +150 | 6.65–7.35 | 6000 | 40–120 | .004 | 0.1 |
| RA2A | .005 | | | | | | |
| RA2B | .002 | | | | | | |
| RA3 | .02 | −55 to +150 | 6.65–7.35 | 2000 | 30–90* | .006† | 0.1† |
| RA3A | .005 | | | | | | |
| RA3B | .002 | | | | | | |

*$V_{CE}=3$ V, $I_C=.1$ mA. †$V_{CB}=45$ V.

## STANDARD TRIAC CIRCUIT ASSEMBLIES

Components are mounted on a printed circuit board and equipped with an extruded aluminum heatsink. All current carrying components electrically isolated from heatsink. Applications include resistance heat control, shaded pole or permanent-split capacitor type motor speed control, series universal type motor speed control, incandescent lamp dimming, etc.

$V_{rms}=120$ V (suffix 1, 3, 5); 240 V (suffix 2, 4, 6).

| GE Type 6 Amp | GE Type 10 Amp | GE Type 15 Amp | Description |
|---|---|---|---|
| S100A1<br>S100A2 | S100A3<br>S100A4 | S100A5<br>S100A6 | Basic variable voltage control |
| S100B1<br>S100B2 | S100B3<br>S100B4 | S100B5<br>S100B6 | Extended range variable voltage circuit |
| S100C1<br>S100C2 | S100C3<br>S100C4 | S100C5<br>S100C6 | Extended range variable voltage circuit RFI suppressed |
| S100D1<br>S100D2 | S100D3<br>S100D4 | S100D5<br>S100D6 | Variable voltage circuit and static switch RFI suppressed |
| S100E1<br>S100E2 | S100E3<br>S100E4 | S100E5<br>S100E6 | Blower motor speed control with set low speed RFI suppressed |
| S100F1<br>S100F2 | S100F3<br>S100F4 | S100F5<br>S100F6 | Basic variable voltage circuit with RFI suppression |
| S100G1<br>S100G2 | S100G3<br>S100G4 | S100G5<br>S100G6 | AC static switch |

## SILICON GATE-CONTROLLED AC SWITCHES

Bi-directional triodes (triacs) for gate control of AC power. $P_{GM}=10$ watts; $P_{G(AV)}=0.5$ watt. $T_{STG}=-40°$ C to $+125°$ C.

### TRIACS IN PRESS FIT CASE (FIG. A)

| GE Type | rms Current On-State | $V_{FOM}$* at Max. Allowable Operating $T_J$ | $I_{FM(surge)}$† | Oper. Temp. $T_J$ |
|---|---|---|---|---|
| SC36F | 3 Amps | ±50 V | 30 Amps | −40° C to +100° C |
| SC36A | | ±100 V | | |
| SC36B | | ±200 V | | |
| SC36D | | ±400 V | | |
| SC41B‡ | 6 Amps | ±200 V | 50 Amps | −40° C to +100° C |
| SC41D‡ | | ±400 V | | |
| SC41E‡ | | ±500 V | | |
| SC46B‡ | 10 Amps | ±200 V | 80 Amps | −40° C to +100° C |
| SC46D‡ | | ±400 V | | |
| SC46E‡ | | ±500 V | | |
| SC51B‡ | 15 Amps | ±200 V | 100 Amps | −40° C to +115° C |
| SC51D‡ | | ±400 V | | |
| SC51E‡ | | ±500 V | | |
| SC61B‡ | 25 Amps | ±200 V | 250 Amps | −40° C to +115° C |
| SC61D‡ | | ±400 V | | |
| SC61E‡ | | ±500 V | | |

### TRIACS IN STUD CASE (FIG. B)

| GE Type | rms Current On-State | $V_{FOM}$* at Max. Allowable Operating $T_J$ | $I_{FM(surge)}$† | Oper. Temp. $T_J$ |
|---|---|---|---|---|
| SC35F | 3 Amps | ±50 V | 30 Amps | −40° C to +100° C |
| SC35A | | ±100 V | | |
| SC35B | | ±200 V | | |
| SC35D | | ±400 V | | |
| SC40B‡ | 6 Amps | ±200 V | 50 Amps | −40° C to +100° C |
| SC40D‡ | | ±400 V | | |
| SC40E‡ | | ±500 V | | |
| SC45B‡ | 10 Amps | ±200 V | 80 Amps | −40° C to +100° C |
| SC45D‡ | | ±400 V | | |
| SC45E‡ | | ±500 V | | |
| SC50B‡ | 15 Amps | ±200 V | 100 Amps | −40° C to +115° C |
| SC50D‡ | | ±400 V | | |
| SC50E‡ | | ±500 V | | |
| SC60B‡ | 25 Amps | ±200 V | 250 Amps | −40° C to +115° C |
| SC60D‡ | | ±400 V | | |
| SC60E‡ | | ±500 V | | |

### TRIACS IN ISOLATED CASE (FIG. C)

| GE Type | rms Current On-State | $V_{FOM}$* at Max. Allowable Operating $T_J$ | $I_{FM(surge)}$† | Oper. Temp. $T_J$ |
|---|---|---|---|---|
| SC40B2 | 6 Amps | ±200 V | 50 Amps | −40° C to +100° C |
| SC40D2 | | ±400 V | | |
| SC40E2 | | ±500 V | | |
| SC45B2 | 10 Amps | ±200 V | 80 Amps | −40° C to +100° C |
| SC45D2 | | ±400 V | | |
| SC45E2 | | ±500 V | | |
| SC50B2 | 15 Amps | ±200 V | 100 Amps | −40° C to +115° C |
| SC50D2 | | ±400 V | | |
| SC50E2 | | ±500 V | | |
| SC60B2 | 25 Amps | ±200 V | 250 Amps | −40° C to +115° C |
| SC60D2 | | ±400 V | | |
| SC60E2 | | ±500 V | | |

*Values apply for zero gate voltage only. Maximum case-to-ambient thermal resistance for which $V_{FOM}$ ratings apply equal 18° C/watt. †One full cycle of a 60 Hz sine wave. ‡Add suffix for special gate selection: **-12**—for use with GE PA424 IC zero voltage switch; **-13**—selected triggering in all four modes; **-14**—for 400 Hz operation.

| GE Type | Net Each, Lots of 1-9 | 10-99 | 100-999 |
|---|---|---|---|
| RA1 | $ 4.50 | $ 3.00 | $ 2.70 |
| RA1A | 7.95 | 5.30 | 4.75 |
| RA1B | 14.10 | 9.40 | 8.45 |
| RA1C | 27.75 | 18.50 | 16.65 |
| RA2 | 7.95 | 5.30 | 4.75 |
| RA2A | 22.50 | 15.00 | 13.50 |
| RA2B | 49.50 | 33.00 | 29.70 |
| RA3 | 8.25 | 5.50 | 4.95 |
| RA3A | 23.40 | 15.60 | 14.05 |
| RA3B | 54.00 | 36.00 | 32.40 |

| GE Type | Net Each, Lots 1-99 | 100-999 |
|---|---|---|
| S100A1 | $ 6.90 | $ 4.60 |
| S100A2 | 8.95 | 5.95 |
| S100A3 | 7.45 | 4.95 |
| S100A4 | 9.85 | 6.55 |
| S100A5 | 9.50 | 6.35 |
| S100A6 | 13.20 | 8.80 |
| S100B1 | 7.80 | 5.20 |
| S100B2 | 9.75 | 6.50 |
| S100B3 | 8.35 | 5.55 |
| S100B4 | 10.70 | 7.15 |
| S100B5 | 10.40 | 6.95 |
| S100B6 | 14.05 | 9.40 |
| S100C1, E1 | 8.80 | 5.85 |
| S100C2, E2 | 10.80 | 7.20 |
| S100C3, E3 | 9.30 | 6.20 |
| S100C4, E4 | 11.70 | 7.80 |
| S100C5, E5 | 12.45 | 8.30 |
| S100C6, E6 | 15.75 | 10.45 |
| S100D1, F1 | 8.20 | 5.45 |
| S100D2, F2 | 10.20 | 6.80 |
| S100D3, F3 | 8.70 | 5.80 |
| S100D4, F4 | 11.20 | 7.45 |

| GE Type | Net Each, Lots 1-99 | 100-999 |
|---|---|---|
| S100D5, F5 | $ 11.85 | $ 7.90 |
| S100D6, F6 | 15.15 | 10.10 |
| S100G1 | 5.70 | 3.80 |
| S100G2 | 7.75 | 5.15 |
| S100G3 | 6.25 | 4.15 |
| S100G4 | 8.65 | 5.75 |
| S100G5 | 8.30 | 5.55 |
| S100G6 | 12.00 | 8.00 |
| SC35A* | 2.52 | 1.68 |
| SC35B* | 2.70 | 1.80 |
| SC35D* | 3.39 | 2.26 |
| SC35F* | 2.36 | 1.57 |
| SC36A | 2.07 | 1.38 |
| SC36B | 2.25 | 1.50 |
| SC36D | 2.94 | 1.96 |
| SC36F | 1.91 | 1.27 |
| SC40B* | 2.94 | 1.96 |
| SC40B2 | 4.20 | 2.80 |
| SC40B12* | 2.94 | 1.96 |
| SC40B13*, 14* | 3.68 | 2.45 |
| SC40B22 | 4.20 | 2.80 |
| SC40B23, 24 | 5.25 | 3.50 |
| SC40D* | 3.77 | 2.51 |
| SC40D2* | 5.03 | 3.35 |
| SC40D12* | 3.77 | 2.51 |
| SC40D13*, 14* | 4.71 | 3.14 |
| SC40D22 | 5.03 | 3.35 |
| SC40D23, 24 | 6.29 | 4.19 |
| SC40E* | 4.22 | 2.81 |
| SC40E2 | 5.48 | 3.65 |
| SC40E12* | 4.22 | 2.81 |
| SC40E13*, 14* | 5.27 | 3.51 |
| SC40E22 | 5.48 | 3.65 |
| SC40E23, 24 | 6.85 | 4.56 |
| SC41B, 12 | 2.58 | 1.72 |
| SC41B13, 14 | 3.23 | 2.16 |

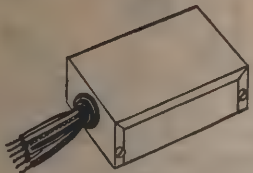
| GE Type | Net Each, Lots 1-99 | 100-999 |
|---|---|---|
| SC41D, 12 | $3.41 | $ 2.27 |
| SC41D13, 14 | 4.27 | 2.84 |
| SC41E, 12 | 3.86 | 2.57 |
| SC41E13, 14 | 4.83 | 3.22 |
| SC45B* | 3.69 | 2.46 |
| SC45B2 | 4.95 | 3.30 |
| SC45B12* | 3.69 | 2.46 |
| SC45B13*, 14* | 4.61 | 3.08 |
| SC45B22 | 4.95 | 3.30 |
| SC45B23, 24 | 6.19 | 4.13 |
| SC45D* | 4.35 | 2.90 |
| SC45D2 | 5.61 | 3.74 |
| SC45D12* | 4.35 | 2.90 |
| SC45D13*, 14* | 5.44 | 3.63 |
| SC45D22 | 5.61 | 3.74 |
| SC45D23, 24 | 7.01 | 4.68 |
| SC45E* | 5.22 | 3.48 |
| SC45E2 | 6.48 | 4.32 |
| SC45E12 | 5.22 | 3.48 |
| SC45E13*, 14* | 6.53 | 4.35 |
| SC45E22 | 6.48 | 4.32 |
| SC45E23, 24 | 8.10 | 5.40 |
| SC46B, 12 | 3.33 | 2.22 |
| SC46B13, 14 | 4.16 | 2.78 |
| SC46D, 12 | 3.99 | 2.66 |
| SC46D13, 14 | 4.99 | 3.33 |
| SC46E, 12 | 4.86 | 3.24 |
| SC46E13, 14 | 6.08 | 4.05 |
| SC50B* | 3.90 | 2.60 |
| SC50B2 | 5.16 | 3.44 |
| SC50B12* | 3.90 | 2.60 |
| SC50B13*, 14* | 4.88 | 3.25 |
| SC50B22 | 5.16 | 3.44 |
| SC50B23, 24 | 6.45 | 4.30 |
| SC50D* | 4.59 | 3.06 |
| SC50D2 | 5.85 | 3.90 |
| SC50D12* | 4.59 | 3.06 |
| SC50D13*, 14* | 5.74 | 3.83 |

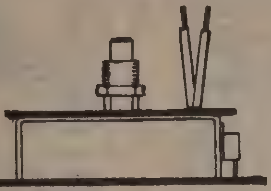
| GE Type | Net Each, Lots 1-99 | 100-999 |
|---|---|---|
| SC50D22 | $ 5.85 | $ 3.90 |
| SC50D23, 24 | 7.31 | 4.88 |
| SC50E* | 5.52 | 3.68 |
| SC50E2 | 6.78 | 4.52 |
| SC50E12* | 5.52 | 3.68 |
| SC50E13*, 14* | 6.90 | 4.60 |
| SC50E22 | 6.78 | 4.52 |
| SC50E23, 24 | 8.48 | 5.65 |
| SC51B, 12 | 3.54 | 2.36 |
| SC51B13, 14 | 4.25 | 2.95 |
| SC51D, 12 | 4.23 | 2.82 |
| SC51D13, 14 | 5.29 | 3.53 |
| SC51E, 12 | 5.16 | 3.44 |
| SC51E13, 14 | 6.45 | 4.30 |
| SC60B* | 6.85 | 4.56 |
| SC60B2 | 8.11 | 5.40 |
| SC60B12* | 6.85 | 4.56 |
| SC60B13*, 14* | 8.57 | 5.70 |
| SC60B22 | 8.11 | 4.50 |
| SC60B23, 24 | 10.14 | 6.75 |
| SC60D* | 9.50 | 6.34 |
| SC60D2 | 10.78 | 7.19 |
| SC60D12* | 9.50 | 6.34 |
| SC60D13*, 14* | 11.88 | 7.93 |
| SC60D22 | 10.78 | 7.19 |
| SC60D23, 24 | 13.48 | 8.99 |
| SC60E* | 11.20 | 7.46 |
| SC60E2 | 12.45 | 8.30 |
| SC60E12* | 11.20 | 7.46 |
| SC60E13*, 14* | 14.00 | 9.33 |
| SC60E22 | 12.45 | 8.30 |
| SC60E23, 24 | 15.56 | 10.38 |
| SC61B, 12 | 6.30 | 4.20 |
| SC61B13, 14 | 7.88 | 5.25 |
| SC61D, 12 | 8.98 | 5.98 |
| SC61D13, 14 | 11.23 | 7.48 |
| SC61E, 12 | 10.65 | 7.10 |
| SC61E13, 14 | 13.31 | 8.88 |

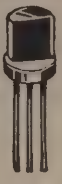
*Prices include mounting hardware.

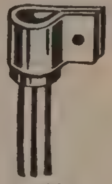
**GENERAL ELECTRIC**

# SOLID STATE SUB-ASSEMBLIES AND SILICON SIGNAL TRANSISTORS


**S200, S300 Series**


**S400 Series**


**TO-98**


**TO-98 in Heat Sink**

## SOLID STATE AC POWER CONTROLLERS

Zero voltage switching provides low RFI levels. All solid state control, including monolithic integrated firing circuit, for long life and high reliability. High input impedance allows use of sensors operating at any point from 5K to 100K ohms.

| GE Type | Line Voltage 60 Hz Vrms | Line Voltage Peak V | Max. Cur. A | Min. On* A | Max. $P_D$ W | $V_1$† Max. V | $V_1$† Typ. V |
|---|---|---|---|---|---|---|---|
| S200A1 | 120 | 200 | 10 | 4.2 | 15 | 10 | 8 |
| S200A2 | 240 | 400 | 10 | 4.2 | 16.8 | 10 | 8 |
| S200A3 | 120 | 200 | 15 | 4.2 | 21.8 | 10 | 8 |
| S200A4 | 240 | 400 | 15 | 4.2 | 23.6 | 10 | 8 |
| S200A21 | 277 | 500 | 10 | 4.2 | 17.5 | 10 | 8 |
| S200A41 | 277 | 500 | 15 | 4.2 | 24.2 | 10 | 8 |

*Resistive load of at least 4.2 amps rms rating be connected at all times. Inductive loads cannot be controlled with these modules. †Voltage developed between $S_1$ and $S_2$. Sensor resistance has one side common with AC line ($S_1$ is common with $L_1$).

## SOLID STATE PHASE CONTROL POWER MODULE

Capable of operating with variable resistance sensors (thermistors, photoresistors, humidity sensitive resistors, etc.) as well as DC tachometer signals. Consists of a monolithic integrated control circuit and a triac power switching semiconductor device with all additional parts needed to afford full AC phase control of resistive or induction motor loads. RFI suppression network included to minimize conducted and radiated RFI. User need only provide a variable resistance sensor and a reference control resistor. Control can be made responsive to variations in temperature, light level, humidity or other physical parameters. With extruded aluminum heatsink, electrically isolated from all current carrying components. Detailed information on actual mode of operation available on request. Values given are maximum except as otherwise noted.

| GE Type | Line Voltage Nom. V | Line Voltage Peak V | Rated Load Current | Power Dissi-pation* | $V_1$ (V Developed Between S1, S4) V | $V_1$ (V Developed Between S1, S4) V |
|---|---|---|---|---|---|---|
| S300A1 | 120 | 200 | 6 A | 10.5 W | 11.5 | 9.4 typ. |
| S300A2 | 240 | 400 | 6 A | 12.5 W | 11.5 | 9.4 typ. |
| S300A3 | 120 | 200 | 10 A | 15.0 W | 11.5 | 9.4 typ. |
| S300A4 | 240 | 400 | 10 A | 16.8 W | 11.5 | 9.4 typ. |
| S300A5 | 120 | 200 | 15 A | 17.5 W | 11.5 | 9.4 typ. |
| S300A6 | 240 | 400 | 15 A | 21.8 W | 11.5 | 9.4 typ. |

*At full rated current.

## SOLID STATE FAN MOTOR SPEED CONTROL

The S400 line of speed controls consists of an AC power semiconductor (SC141B triac) and all necessary control circuitry and heatsinking to afford manual speed control of fan motors of the permanent split capacitor and shaded pole types. All devices mounted on a PC board and are designed for direct mounting by means of the potentiometer bushing provided. Rated at 5.0 amps, 120 V rms. Feature UL Recognized line switch; min. output voltage set point potentiometer; PC board 1/16" XXXP material UL Recognized; copper heatsink for proper cooling of triac.

**GE Types S400A1S and S400A1SC**—Incorporate radio frequency interference suppression.

**GE Type S400A1SC**—Line voltage compensation automatically compensates for variations in line voltage.

## SOLID STATE THYRATRONS

| GE Type | Peak Anode Voltage | Cathode Current | Max. Temp. $T_A$ | May Replace |
|---|---|---|---|---|
| S26 | 200 V | 1.0 A rms at 30° C | 125° C | 2D21 |
| S27 | 200 V | 1.0 A rms at 30° C | 125° C | 2050 |

## TYPE D13V

## INTEGRATED VOLTAGE REGULATOR (IVR)

The IVR consists of two NPN transistors, a zener diode and a resistor on a monolithic chip mounted in a TO-98 three-lead plastic package. It is designed for use as a shunt voltage regulating element and reference amplifier with simple resistor programming. Characteristics: Regulated Voltage Range: 10 volts min.; 40 volts max. TC of Regulated Voltage: 0.3%/°C typ.; 0.1%/°C max. Thevenin Impedance: 10 ohms typ.; 50 ohms max. Thevenin Reference Voltage: 8.5 volts typ.; 10 volts max. Total Average Power: 400 mW.

TO-98 plastic packaged devices engineered to deliver excellent performance with maximum value. NPN construction except as otherwise noted. All TO-98 devices can be supplied with leads formed to fit either a TO-5 or TO-18 socket; prices on request.

## SMALL SIGNAL AMPLIFIERS

### AUDIO TO 30 MHz

$P_T = 360$ mW.

| GE Type | $h_{FE}$ $I_C = 2$ mA | $V_{CEO}$ V | Typ. $V_{CE(SAT)}$ V | NF dB | Typical $C_{ob}$ pF | Typical $f_t$ MHz |
|---|---|---|---|---|---|---|
| 2N2711 | 30–90 | 18 | 0.2 | ....... | 7 | 120 |
| 2N2712 | 75–225 | 18 | 0.2 | ....... | 7 | 120 |
| 2N2923 | 90–180 | 25 | 0.2 | 15† | 7 | 120 |
| 2N2924 | 150–300 | 25 | 0.2 | 15† | 7 | 120 |
| 2N2925 | 235–470 | 25 | 0.2 | 15† | 7 | 120 |
| 2N2926* | 35–470 | 18 | 0.2 | ....... | 7 | 120 |
| 2N3390 | 400–800 | 25 | 0.2 | ....... | 7 | 120 |
| 2N3391 | 250–500 | 25 | 0.2 | 1.9 | 7 | 120 |
| 2N3391A | 250–500 | 25 | 0.2 | 5.0 | 7 | 120 |
| 2N3392 | 150–300 | 25 | 0.2 | 15† | 7 | 120 |
| 2N3393 | 90–180 | 25 | 0.2 | 15† | 7 | 120 |
| 2N3394 | 55–110 | 25 | 0.2 | 15† | 7 | 120 |
| 2N3395* | 150–500 | 25 | 0.2 | ....... | 7 | 120 |
| 2N3396* | 90–500 | 25 | 0.2 | ....... | 7 | 120 |
| 2N3397* | 55–500 | 25 | 0.2 | ....... | 7 | 120 |
| 2N3398* | 55–800 | 25 | 0.2 | ....... | 7 | 120 |
| 2N3721 | 60–660 | 18 | 0.2 | ....... | 7 | 120 |
| 2N3900 | 250–500 | 18 | 0.2 | 1.9 | 7 | 120 |
| 2N3900A | 250–500 | 18 | 0.2 | 5.0 | 7 | 120 |
| 2N3901 | 350–700 | 18 | 0.2 | 5.0 | 7 | 120 |
| 2N5172 | 100–500 | 25 | 0.25‡ | ....... | 7 | 120 |
| 2N5998 | 150–300 | 25 | 0.1 | 0.5 | 4 | 350 |
| 2N5999# | 150–300 | 25 | 0.1 | 0.5 | 4 | 350 |
| 2N6008 | 250–500 | 25 | 0.1 | 0.5 | 4 | 350 |
| 2N6009# | 250–500 | 25 | 0.1 | 0.5 | 4 | 350 |

*Supplied in narrow spread, distinctively color-coded beta groups. †Input impedance, ohms. ‡Maximum. #PNP.

## HIGH FREQUENCY AMPLIFIERS AND OSCILLATORS

### 262.5 kHz TO 100 MHz EPITAXIAL

| GE Type | $h_{FE}$ $I_C = 2$ mA | $V_{CEO}$ V | Typ. $V_{CE(SAT)}$ V | Max. NF dB | Typical $C_{ob}$ pF | Typical $f_t$ MHz |
|---|---|---|---|---|---|---|
| 2N3843 | 20–40 | 30 | 0.065 | 10.2 | 2.8 | 135 |
| 2N3843A | 20–40 | 30 | 0.065 | 8.5 | 2.8 | 135 |
| 2N3844 | 35–70 | 30 | 0.065 | 10.2 | 2.8 | 135 |
| 2N3844A | 35–70 | 30 | 0.065 | 8.5 | 2.8 | 135 |
| 2N3845 | 60–120 | 30 | 0.065 | 10.2 | 2.8 | 135 |
| 2N3845A | 60–120 | 30 | 0.065 | 8.5 | 2.8 | 135 |
| 2N3854 | 35–70 | 18 | 0.085 | 16* | 2.5 | 300 |
| 2N3854A | 35–70 | 30 | 0.085 | 16* | 2.5 | 300 |
| 2N3855 | 60–120 | 18 | 0.085 | 16* | 2.5 | 350 |
| 2N3855A | 60–120 | 30 | 0.085 | 16* | 2.5 | 350 |
| 2N3856 | 100–200 | 18 | 0.085 | 16* | 2.5 | 375 |
| 2N3856A | 100–200 | 30 | 0.085 | 16* | 2.5 | 375 |
| 2N3858 | 60–120 | 30 | 0.055 | 10* | 2.5 | 135 |
| 2N3859 | 100–200 | 30 | 0.055 | 10* | 2.5 | 135 |
| 2N3860 | 150–300 | 30 | 0.055 | 10* | 2.5 | 135 |
| 2N5232 | 250–500 | 50 | 0.055 | ....... | 2.5 | 135 |
| 2N5232A | 250–500 | 50 | 0.055 | 5 | 2.5 | 135 |
| 2N5249 | 400–800 | 50 | 0.055 | ....... | 2.5 | 135 |
| 2N5249A | 400–800 | 50 | 0.055 | 5 | 2.5 | 135 |
| 2N5309 | 60–120§ | 50 | 0.055 | ....... | 2.5 | 135 |
| 2N5310 | 100–300§ | 50 | 0.055 | ....... | 2.5 | 135 |
| 2N5311 | 250–500§ | 50 | 0.055 | ....... | 2.5 | 135 |
| **100 MHz TO 950 MHz EPITAXIAL** | | | | | | |
| 2N3662 | 20 min.† | 12 | 0.6‡ | 4 | 1.2 | 700 |
| 2N3663 | 20 min.† | 12 | 0.6‡ | 4 | 1.2 | 700 |
| D16G6 | 20 min.# | 12 | 0.6‡ | 4 | 1.5 | 500 |

*$C_{ib}$, pF. †$I_C = 8$ mA, $V_{CE} = 10$ V. ‡Maximum. §$I_C = 10$ μA. #$I_C = 5$ mA, $V_{CE} = 10$ V.

## HIGH SPEED SWITCHES

Low storage times; epitaxial gold doped.

| GE Type | $h_{FE}$ $I_C = 10$ mA | $V_{CEO}$ V | Max. $V_{CE(SAT)}$ V | $P_T$ mW | Typical $C_{ob}$ pF | Typical $f_t$ MHz |
|---|---|---|---|---|---|---|
| 2N3605 | 30 min. | 14 | 0.25 | 360 | 4 | 350 |
| 2N3605A | 30–120 | 15 | 0.25 | 360 | 6 | 300 |
| 2N3606 | 30 min. | 14 | 0.25 | 360 | 4 | 350 |
| 2N3606A | 30–120 | 15 | 0.25 | 360 | 6 | 300 |
| 2N3607 | 30 min. | 14 | 0.25 | 360 | 4 | 350 |

**GENERAL ELECTRIC**

# NPN AND PNP SILICON SIGNAL TRANSISTORS, MANUALS

TO-98 and TO-18 (Fig. A) plastic encapsulated devices engineered to deliver excellent performance with maximum value. All signal devices can be supplied with formed leads to fit either TO-5 or TO-18 sockets. Data and pricing on request.

## NPN LARGE SIGNAL AMPLIFIERS AND MEDIUM SPEED SWITCHES—EPITAXIAL (TO-98)

| GE Type | $h_{FE}$ $I_C = 2$ mA | $V_{CEO}$ V | Max. $V_{CE(SAT)}$ V | $P_T$ mW | Typical $C_{cbo}$ pF | Typical $f_t$ MHz |
|---|---|---|---|---|---|---|
| 2N2713 | 30–90 | 18 | 0.3 | 360 | 6.0 | 120 |
| 2N2714 | 75–225 | 18 | 0.3 | 360 | 6.0 | 120 |
| 2N3402* | 75–225 | 25 | 0.3 | 900 | 6.0 | 120 |
| 2N3403* | 180–540 | 25 | 0.3 | 900 | 6.0 | 120 |
| 2N3404* | 75–225 | 50 | 0.3 | 900 | 6.0 | 120 |
| 2N3405* | 180–540 | 50 | 0.3 | 900 | 6.0 | 120 |
| 2N3414 | 75–225 | 25 | 0.3 | 360 | 6.0 | 120 |
| 2N3415 | 180–540 | 25 | 0.3 | 360 | 6.0 | 120 |
| 2N3416 | 75–225 | 50 | 0.3 | 360 | 6.0 | 120 |
| 2N3417 | 180–540 | 50 | 0.3 | 360 | 6.0 | 120 |
| 2N4256 | 100–500 | 30† | 0.25 | 360 | 4.0 | 135 |
| 2N4424 | 180–540 | 40 | 0.3 | 360 | 6.0 | 120 |
| 2N4425* | 180–540 | 40 | 0.3 | 900 | 6.0 | 120 |
| 2N5418 | 40–120 | 25 | 0.25 | 360 | 6.0 | 140 |
| 2N5419 | 100–300 | 25 | 0.25 | 360 | 6.0 | 140 |
| 2N5420 | 250–500 | 25 | 0.25 | 360 | 6.0 | 140 |

*TO-98 in heat sink. †$V_{CES}$ value. ‡$I_C = 50$ mA.

## NPN DARLINGTON AMPLIFIERS (TO-98)

Monolithic Darlington amplifiers ideal for preamplifier input stages requiring high input impedances of several megohms. Available with heatsink which raises $P_T$ to 560 mW. $h_{ie}$ value at f = 1 KHz.

| GE Type | $h_{FE}$ $I_C = 2$ mA $V_{CE} = 5$ V | Max. $BV_{CEO}$ V | Max. $h_{ie}$ $I_C = 2$ mA $V_{CE} = 5$ V | $P_T$ at 25° C mW | Max. $C_{cbo}$ pF |
|---|---|---|---|---|---|
| D16P1 | 2,000 min. | 12 | 400K ohms | 400 | 10 |
| 2N5305 | 2,000–20,000 | 25 | 500K ohms | 400 | 10 |
| 2N5306 | 7,000–70,000 | 25 | 500K ohms | 400 | 10 |
| 2N5306A† | 7,000–70,000 | 25 | 500K ohms | 400 | 10 |
| 2N5307 | 2,000–20,000 | 40 | 600K ohms | 400 | 10 |
| 2N5308 | 7,000–70,000 | 40 | 600K ohms | 400 | 10 |
| 2N5308A† | 7,000–70,000 | 40 | 600K ohms | 400 | 10 |

†Low noise versions.

## PNP SILICON TRANSISTORS (TO-98)

| GE Type | $h_{FE}$ | $V_{CEO}$ V | $P_T$ mW | $V_{CE(SAT)}$ V | Typical $C_{cbo}$ pF | Typical $f_t$ MHz |
|---|---|---|---|---|---|---|
| 2N5354 | 40–120 | 25 | 360 | .25 | 8 | 340 |
| 2N5355 | 100–300 | 25 | 360 | .25 | 8 | 340 |
| 2N5356 | 250–500 | 25 | 360 | .25 | 8 | 340 |
| 2N5365 | 40–120 | 40 | 360 | .25 | 5.5 | 340 |
| 2N5366 | 100–300 | 40 | 360 | .25 | 5.5 | 340 |
| 2N5367 | 250–500 | 40 | 360 | .25 | 5.5 | 340 |
| D29A12 | 250–500 | 60 | 360 | .25 | 5.5 | 340 |

## NPN HIGH VOLTAGE APPLICATIONS (TO-98)

| GE Type | $h_{FE}$ $I_C = 2$ mA | $V_{CEO}$ V | Max. $V_{CE(SAT)}$ V | $P_T$ mW | Typical $C_{cbo}$ pF | Typical $f_t$ MHz |
|---|---|---|---|---|---|---|
| 2N3858A | 60–120 | 60 | 0.25 | 360 | 2.5 | 135 |
| 2N3859A | 100–200 | 60 | 0.25 | 360 | 2.5 | 135 |
| 2N3877 | 20 min. | 70 | 1.0 | 360 | 2.5 | 135 |
| 2N3877A | 20 min. | 85 | 1.0 | 360 | 2.5 | 135 |
| 2N5174 | 40–600* | 75 | 0.95 | 360 | 2.5 | 135 |
| 2N5175 | 55–160* | 100 | 0.95 | 360 | 2.5 | 135 |
| 2N5176 | 140–300* | 100 | 0.95 | 360 | 2.5 | 135 |

*$I_C = 10$ mA.

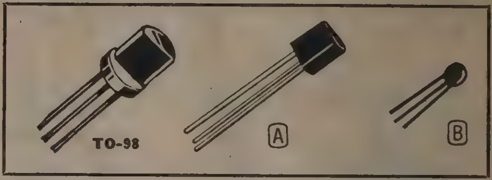
## NPN-PNP COMPLEMENTARY PAIRS

$P_T = 500$ mW except 2N6000 Series $P_T = 400$ mW. Available with heatsink (exc. 2N6000 Series) which raises $P_T$ to 1 W at 25° C $T_C$.

### TO-98

| GE Type Polarity NPN | GE Type Polarity PNP | $h_{FE}$ $I_C = 2$ mA | $V_{CEO}$ V | Max. $V_{CE(SAT)}$ V | Typical $C_{cbo}$ pF | Typical $f_t$ MHz |
|---|---|---|---|---|---|---|
| D33D21 | D29E1 | 60–200 | 25 | 0.75 | 9.4 | 150 |
| D33D22 | D29E2 | 150–500 | 25 | 0.75 | 9.4 | 165 |
| D33D24 | D29E4 | 60–120 | 40 | 0.75 | 9.4 | 120 |
| D33D25 | D29E5 | 100–200 | 40 | 0.75 | 9.4 | 135 |
| D33D26 | D29E6 | 150–300 | 40 | 0.75 | 9.4 | 150 |
| D33D27 | D29E7 | 250–500 | 40 | 0.75 | 9.4 | 165 |
| D33D29 | D29E9 | 60–120 | 60 | 0.75 | 9.4 | 115 |
| D33D30 | D29E10 | 100–200 | 60 | 0.75 | 9.4 | 135 |
| **TO-18 (FIG. A)** | | | | | | |
| 2N5810 | 2N5811 | 60–200 | 25 | 0.75 | 9.0 | 200 |
| 2N5812 | 2N5813 | 150–500 | 25 | 0.75 | 9.0 | 200 |
| 2N5814 | 2N5815 | 60–120 | 40 | 0.75 | 9.0 | 200 |
| 2N5816 | 2N5817 | 100–200 | 40 | 0.75 | 9.0 | 200 |
| 2N5818 | 2N5819 | 150–300 | 40 | 0.75 | 9.0 | 200 |
| 2N5820 | 2N5821 | 60–120 | 60 | 0.75 | 9.0 | 200 |
| 2N5822 | 2N5823 | 100–200 | 60 | 0.75 | 9.0 | 200 |
| 2N6000 | 2N6001 | 100–300* | 25 | 0.175† | 5.0 | 250 |
| 2N6002 | 2N6003 | 250–500* | 25 | 0.175† | 5.0 | 300 |
| 2N6004 | 2N6005 | 100–300* | 40 | 0.175† | 5.0 | 250 |
| 2N6006 | 2N6007 | 250–500* | 40 | 0.175† | 5.0 | 300 |
| 2N6010 | 2N6011 | 100–300* | 40 | 0.130‡ | 9.0 | 200 |
| 2N6012 | 2N6013 | 250–500* | 40 | 0.130‡ | 9.0 | 250 |
| 2N6014 | 2N6015 | 100–300* | 60 | 0.130‡ | 9.0 | 200 |
| 2N6016 | 2N6017 | 250–500* | 60 | 0.130‡ | 9.0 | 250 |

*$I_C = 10$ mA. †NPN; PNP, 0.350 V. ‡NPN; PNP, 0.300 V.



## NPN AMPLIFIERS AND SWITCHES (FIG. A)

In TO-18 plastic package. Electrical replacements for hermetic transistors. $P_T = 360$ mW at $T_A = 25°$ C.

### HIGH SPEED SWITCHES—EPITAXIAL

$V_{CEO} = 15$ volts except GET3646, $V_{CEO} = 20$ volts.

| GE Type | $h_{FE}$ $I_C = 10$ mA | Max. $V_{CE(SAT)}$ V | Typical $C_{cbo}$ pF | Typical $f_t$ MHz | Maximum $t_{on}$ nsec | Maximum $t_{off}$ nsec | Maximum $t_s$ nsec |
|---|---|---|---|---|---|---|---|
| GET706 | 20 min. | .250 | 6.0 | 350 | 40 | 75 | 35 |
| GET708 | 30–120 | .250 | 5.5 | 350 | 40 | 75 | 25 |
| GET914 | 30–120 | .250 | 5.5 | 350 | 40 | 40 | 20 |
| GET2369 | 40–120 | .250 | 4.5 | 400 | 15 | 22 | 18 |
| GET3013 | 30–120* | .180 | 4.5 | 400 | 15 | 16 | 18 |
| GET3014 | 30–120* | .180 | 4.5 | 400 | 16 | 25 | 18 |
| GET3646 | 30–120* | .200 | 4.5 | 400 | 18 | 28 | 18 |

*$I_C = 30$ mA.

### GENERAL PURPOSE AMPLIFIERS AND SWITCHES

| GE Type | $h_{FE}$ at $I_C$ Min.-Max. | $h_{FE}$ at $I_C$ mA | $V_{CEO}$ V | Max. $V_{CE(SAT)}$ V | Typical $C_{cbo}$ pF | Typical $f_t$ MHz |
|---|---|---|---|---|---|---|
| GET929 | 60–120 | 10* | 50 | .125 | 2.5 | 135 |
| GET930 | 100–300 | 10* | 50 | .125 | 2.5 | 135 |
| GET2221 | 40–120 | 150 | 30 | .300 | 5.6 | 250 |
| GET2221A | 40–120 | 150 | 40 | .300 | 5.6 | 250 |
| GET2222 | 100–300 | 150 | 30 | .300 | 5.6 | 250 |
| GET2222A | 100–300 | 150 | 40 | .300 | 5.6 | 250 |
| GET2484 | 250 min. | 1 | 60 | .350 | 2.5 | 135 |
| GET3638† | 20 min. | 1 | 25 | .250 | 5.8 | 340 |
| GET3638A† | 100 min. | 10 | 25 | .250 | 5.8 | 340 |
| 2N5824 | 60–120 | 2 | 40 | .125 | 1.9 | 150 |
| 2N5825 | 100–300 | 2 | 40 | .125 | 1.9 | 150 |
| 2N5826 | 150–450 | 2 | 40 | .125 | 1.9 | 150 |
| 2N5827 | 250–500 | 2 | 40 | .125 | 1.9 | 250 |
| 2N5828 | 400–800 | 2 | 40 | .125 | 1.9 | 250 |

*uA. †PNP.

## SILICON PLANAR EPITAXIAL PASSIVATED

### NPN MICROTAB (FIG. B)

D26B and D26C series designed specifically for fast switching applications. D26E series well suited for high voltage, high gain amplifiers and switches. P26G1 suitable for use as oscillators in UHF television tuners, etc. $P_T = 90$ mW. $C_{ob}$ value at f = 1 MHz.

| GE Type | $h_{FE}$ at $I_C$ Min.-Max. | $h_{FE}$ at $I_C$ µA | Maximum $V_{CEO}$ V | Maximum $V_{EBO}$ V | Maximum $V_{CBO}$ V | Maximum $V_{CE(SAT)}$ V | Maximum $C_{ob}$ pF | Maximum NF dB |
|---|---|---|---|---|---|---|---|---|
| D26B1 | 20–60 | 10* | 15 | 4.5 | 40 | 0.25 | 4 | † |
| D26B2 | 40–120 | 10* | 15 | 4.5 | 40 | .25 | 4 | ‡ |
| D26C1 | 30–90 | 10* | 18 | 5 | 18 | 0.2 | 7 | .... |
| D26C2 | 60–180 | 10* | 18 | 5 | 18 | 0.2 | 7 | .... |
| D26C3 | 140–300 | 10* | 18 | 5 | 18 | 0.2 | 7 | .... |
| D26C4 | 250–500 | 10* | 18 | 5 | 18 | 0.25 | 7 | .... |
| D26C5 | 400–800 | 10* | 18 | 5 | 18 | 0.25 | 7 | .... |
| D26E1 | 100–300 | 10 | 45 | 5 | 45 | 1.00 | 8 | 3 |
| D26E2 | 40–90 | 100 | 18 | 5 | 18 | .25 | 4 | 6 |
| D26E3 | 70–145 | 100 | 18 | 5 | 18 | .25 | 4 | 5 |
| D26E4 | 115–220 | 100 | 18 | 5 | 18 | .25 | 4 | 4 |
| D26E5 | 180–330 | 100 | 18 | 5 | 18 | .25 | 4 | 3 |
| D26E6 | 40–330 | 100 | 18 | 5 | 18 | .25 | 4 | 6 |
| D26G1 | 20 min. | 3* | 15 | 3 | 30 | .4 | 3 | 6 |

*mA. †$t_{on} = 12$ nsec max.; $t_{off} = 15$ nsec max. ‡$t_{on} = 12$ nsec max.; $t_{off} = 18$ nsec max.

### PNP MICROTAB (FIG. B)

PNP complement to NPN D26C series. For amplifier, driver and general purpose switching applications. $P_T = 90$ mW.

| GE Type | $h_{FE}$ at $I_C$ Min.-Max. | $h_{FE}$ at $I_C$ mA | Maximum $V_{CEO}$ V | Maximum $V_{EBO}$ V | Maximum $V_{CBO}$ V | Maximum $V_{CE(SAT)}$ V | Maximum $I_{EBO}$ nA |
|---|---|---|---|---|---|---|---|
| D30A1 | 30–90 | 10 | −18 | −4 | −18 | −.25 | −100 |
| D30A2 | 60–180 | 10 | −18 | −4 | −18 | −.25 | −100 |
| D30A3 | 140–300 | 10 | −18 | −4 | −18 | −.25 | −100 |
| D30A4 | 250–500 | 10 | −18 | −4 | −18 | −.25 | −100 |
| D30A5 | 400–800 | 10 | −18 | −4 | −18 | −.25 | −100 |

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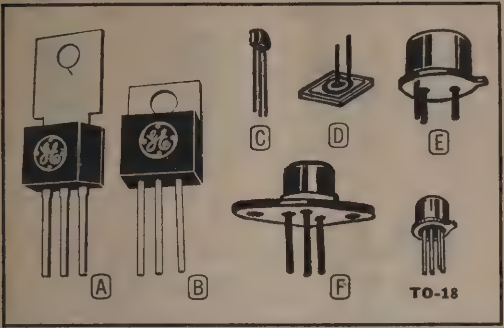
# GENERAL ELECTRIC SILICON POWER TRANSISTORS, CONTROLLED SWITCHES



Power Tab (Fig. A) and Power Pac (Fig. B) plastic encapsulated devices engineered to deliver excellent performance with maximum value. Can be supplied with formed leads to fit TO-5 or TO-66 configurations. Data and pricing on request.

Microminiature package versions of discrete transistors and diodes, including TO-46, TO-50, network packages, ceramic tabs (Fig. C) and kovar tabs (Fig. D), are available in most popular types. For microminiature types not listed, write for publication no. **450-40.**

## SILICON POWER TAB TRANSISTORS (FIG. A)

D40D/D41D and D42C/D43C are complementary. D40N application as CRT video output. D40C, D40D, D41D, D42C, D43C application as audio output, 3-watt to 20-watt; regulators, drivers, inverters, motor controls, lamp controls and relays.

$h_{FE}$ at $V_{CE}=5$ V and $I_C=200$ mA. $V_{CE(SAT)}$ at $I_C=500$ mA and $I_B=0.5$ mA. $P_T$ at 25° C tab.

| GE Type | $h_{FE}$ | Min. $V_{CEO}$ V | $I_C$ Cont. A | $I_C$ Peak A | Max. $V_{CE(SAT)}$ V | $C_{CBO}$ pF | $f_t$ MHz | $P_T$ W |
|---|---|---|---|---|---|---|---|---|
| **D40C1** | 10K–60K | 30 | 0.5 | 1.0 | 1.5 | 5 | 60 | 6.0 |
| **D40C2** | 40K min. | 30 | 0.5 | 1.0 | 1.5 | 5 | 60 | 6.0 |
| **D40C4** | 10K–60K | 40 | 0.5 | 1.0 | 1.5 | 5 | 60 | 6.0 |
| **D40C5** | 10K min. | 40 | 0.5 | 1.0 | 1.5 | 5 | 60 | 6.0 |
| **D40C7** | 10K–60K | 50 | 0.5 | 1.0 | 1.5 | 5 | 60 | 6.0 |

$h_{FE}$ at $V_{CE}=10$V and $I_C=20$ mA. $V_{CE(SAT)}$ at $I_C=20$ mA and $I_B=2$ mA. $P_T$ at 25° C tab.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **D40N1** | 30–90 | 300* | 0.1 | .. | 2.5 | 3 | 80 | 6.25 |
| **D40N3** | 30–90 | 250* | 0.1 | .. | 2.5 | 3 | 80 | 6.25 |

$h_{FE}$ at $V_{CE}=2$ V and $I_C=100$ mA. $V_{CE(SAT)}$ at $I_C=500$ mA and $I_B=50$ mA. $P_T$ at 25° C tab.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **D40D1** | 50–150 | 30 | 1.0 | 1.5 | 0.5 | 8 | 200 | 6.0 |
| **D40D2** | 120–360 | 30 | 1.0 | 1.5 | 0.5 | 8 | 200 | 6.0 |
| **D40D3** | 290 min. | 30 | 1.0 | 1.5 | 0.5 | 8 | 200 | 6.0 |
| **D40D4** | 50–150 | 45 | 1.0 | 1.5 | 0.5 | 8 | 200 | 6.0 |
| **D40D5** | 120–360 | 45 | 1.0 | 1.5 | 0.5 | 8 | 200 | 6.0 |
| **D40D7** | 50–150 | 60 | 1.0 | 1.5 | 0.5 | 8 | 200 | 6.0 |
| **D40D8** | 120–360 | 60 | 1.0 | 1.5 | 0.5 | 8 | 200 | 6.0 |

$h_{FE}$ at $V_{CE}=2$ V and $I_C=100$ mA. $V_{CE(SAT)}$ at $I_C=-500$ mA and $I_B=-50$ mA. $P_T$ at 25° C tab.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **D41D1** | 50–150 | −30 | −1.0 | −1.5 | −0.5 | 8 | 150 | 6.0 |
| **D41D2** | 120–360 | −30 | −1.0 | −1.5 | −0.5 | 8 | 150 | 6.0 |
| **D41D3** | 290 min. | −30 | −1.0 | −1.5 | −0.5 | 8 | 150 | 6.0 |
| **D41D4** | 50–150 | −45 | −1.0 | −1.5 | −0.5 | 8 | 150 | 6.0 |
| **D41D5** | 120–360 | −45 | −1.0 | −1.5 | −0.5 | 8 | 150 | 6.0 |
| **D41D7** | 50–150 | −60 | −1.0 | −1.5 | −0.5 | 8 | 150 | 6.0 |
| **D41D8** | 120–360 | −60 | −1.0 | −1.5 | −0.5 | 8 | 150 | 6.0 |

*$V_{CER}$.

$h_{FE}$ at $V_{CE}=1$ V and $I_C=200$ mA. $V_{CE(SAT)}$ at $I_C=1$ A and $I_B=100$ mA. $P_T$ at 25° C tab.

| GE Type | $h_{FE}$ | Min. $V_{CEO}$ V | $I_C$ Cont. A | $I_C$ Peak A | Max. $V_{CE(SAT)}$ V | $C_{CBO}$ pF | $f_t$ MHz | $P_T$ W |
|---|---|---|---|---|---|---|---|---|
| **D42C1** | 25 min. | 30 | 3.0 | 5.0 | 0.5 | 100 | 50 | 12.5 |
| **D42C2** | 40–120 | 30 | 3.0 | 5.0 | 0.5 | 100 | 50 | 12.5 |
| **D42C3** | 40–120* | 30 | 3.0 | 5.0 | 0.5 | 100 | 50 | 12.5 |
| **D42C4** | 25 min. | 45 | 3.0 | 5.0 | 0.5 | 100 | 50 | 12.5 |
| **D42C5** | 40–120 | 45 | 3.0 | 5.0 | 0.5 | 100 | 50 | 12.5 |
| **D42C6** | 40–120* | 45 | 3.0 | 5.0 | 0.5 | 100 | 50 | 12.5 |
| **D42C7** | 25 min. | 60 | 3.0 | 5.0 | 0.5 | 100 | 50 | 12.5 |
| **D42C8** | 40–120 | 60 | 3.0 | 5.0 | 0.5 | 100 | 50 | 12.5 |

$h_{FE}$ at $V_{CE}=-1$ V and $I_C=-200$ mA. $V_{CE(SAT)}$ at $I_C=-1$ A and $I_B=-100$ mA. $P_T$ at 25° C tab.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **D43C1** | 25 min. | −30 | −3.0 | −5.0 | −0.5 | 100 | 40 | 12.5 |
| **D43C2** | 40–120 | −30 | −3.0 | −5.0 | −0.5 | 100 | 40 | 12.5 |
| **D43C3** | 40–120† | −30 | −3.0 | −5.0 | −0.5 | 100 | 40 | 12.5 |
| **D43C4** | 25 min. | −45 | −3.0 | −5.0 | −0.5 | 100 | 40 | 12.5 |
| **D43C5** | 40–120 | −45 | −3.0 | −5.0 | −0.5 | 100 | 40 | 12.5 |
| **D43C6** | 40–120† | −45 | −3.0 | −5.0 | −0.5 | 100 | 40 | 12.5 |
| **D43C7** | 25 min. | −60 | −3.0 | −5.0 | −0.5 | 100 | 40 | 12.5 |
| **D43C8** | 40–120 | −60 | −3.0 | −5.0 | −0.5 | 100 | 40 | 12.5 |

*$h_{FE}=20$ min. at 1 V, 2 A. †$h_{FE}=20$ min. at −1 V, −2 A.

## SILICON POWER PAC TRANSISTORS (FIG. B)

D44C/D45C are complementary. Application as audio output, regulators, drivers, inverters, motor and lamp controls and relays. D44R applications include 120 VAC line operated amplifiers; low thru high frequency inverters/converters; TV and other display tube deflection and many others.

$h_{FE}$ at $V_{CE}=1$ V and $I_C=200$ mA. $V_{CE(SAT)}$ at $I_C=1$ A and $I_B=100$ mA. $P_T$ at 25° C tab.

| GE Type | $h_{FE}$ | Min. $V_{CEO}$ V | $I_C$ Cont. A | $I_C$ Peak A | Max. $V_{CE(SAT)}$ V | $C_{CBO}$ pF | $f_t$ MHz | $P_T$ W |
|---|---|---|---|---|---|---|---|---|
| **D44C1** | 25 min. | 30 | 4.0 | 6.0 | 0.5 | 100 | 50 | 30.0 |
| **D44C2** | 40–120 | 30 | 4.0 | 6.0 | 0.5 | 100 | 50 | 30.0 |
| **D44C3** | 40–120* | 30 | 4.0 | 6.0 | 0.5 | 100 | 50 | 30.0 |
| **D44C4** | 25 min. | 45 | 4.0 | 6.0 | 0.5 | 100 | 50 | 30.0 |
| **D44C5** | 40–120 | 45 | 4.0 | 6.0 | 0.5 | 100 | 50 | 30.0 |
| **D44C6** | 40–120* | 45 | 4.0 | 6.0 | 0.5 | 100 | 50 | 30.0 |
| **D44C7** | 25 min. | 60 | 4.0 | 6.0 | 0.5 | 100 | 50 | 30.0 |
| **D44C8** | 40–120 | 60 | 4.0 | 6.0 | 0.5 | 100 | 50 | 30.0 |

$h_{FE}$ at $V_{CE}=10$ V and $I_C=500$ mA. $V_{CE(SAT)}$ at $I_C=500$ mA and $I_B=50$ mA. $P_T$ at 25° C tab.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **D44R1** | 30–90 | 250 | 1.0 | ...... | 1.0 | 25 | 20 | 31.25 |
| **D44R2** | 75–175 | 250 | 1.0 | ...... | 1.0 | 25 | 20 | 31.25 |
| **D44R3** | 30–90 | 300 | 1.0 | ...... | 1.0 | 25 | 20 | 31.25 |
| **D44R4** | 75–175 | 300 | 1.0 | ...... | 1.0 | 25 | 20 | 31.25 |

$h_{FE}$ at $V_{CE}=-1$ V and $I_C=-200$ mA. $V_{CE(SAT)}$ at $I_C=-1$ A and $I_B=-100$ mA. $P_T$ at 25° C tab.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **D45C1** | 25 min. | −30 | −4.0 | −6.0 | −0.5 | 125 | 40 | 30.0 |
| **D45C2** | 40–120 | −30 | −4.0 | −6.0 | −0.5 | 125 | 40 | 30.0 |
| **D45C3** | 40–120† | −30 | −4.0 | −6.0 | −0.5 | 125 | 40 | 30.0 |
| **D45C4** | 25 min. | −45 | −4.0 | −6.0 | −0.5 | 125 | 40 | 30.0 |
| **D45C5** | 40–120 | −45 | −4.0 | −6.0 | −0.5 | 125 | 40 | 30.0 |
| **D45C6** | 40–120† | −45 | −4.0 | −6.0 | −0.5 | 125 | 40 | 30.0 |
| **D45C7** | 25 min. | −60 | −4.0 | −6.0 | −0.5 | 125 | 40 | 30.0 |
| **D45C8** | 40–120 | −60 | −4.0 | −6.0 | −0.5 | 125 | 40 | 30.0 |

*$h_{FE}=20$ min. at 1 V, 2 A. †$h_{FE}=20$ min. at −1 V, −2 A.

## SILICON POWER TRANSISTORS

### NPN PASSIVATED MESA

Typical $f_t$ for all types, 15 MHz.

| GE Type | Fig. | Min. Volts $V_{CEO}$ $I_C=$ 250 μA | Min. Volts $V_{EBO}$ $I_E=$ 250 μA | Maximum $I_{CBO}$ $V_{CB}=$ 30 V μA | Maximum Pwr. Free Air at 25° C Watts | Maximum Dissip. $T_C$ at 25° C Watts | Maximum $V_{CE}$ (SAT) Volts | $h_{FE}$* $V_{CE}=$ 10 V $I_C=$ 200mA |
|---|---|---|---|---|---|---|---|---|
| 2N497* | E | 60 | 8 | 10 | 0.8 | 4 | 5 | 12–36 |
| 2N497A | E | 60 | 8 | 10 | 1.0 | 5 | 2 | 12–36 |
| 2N498* | E | 100 | 8 | 10 | 0.8 | 4 | 5 | 12–36 |
| 2N498A | E | 100 | 8 | 10 | 1.0 | 5 | 2 | 12–36 |
| 2N656* | E | 60 | 8 | 10 | 0.8 | 4 | 5 | 30–90 |
| 2N656A | E | 60 | 8 | 10 | 1.0 | 5 | 2 | 30–90 |
| 2N657* | E | 100 | 8 | 10 | 0.8 | 4 | 5 | 30–90 |
| 2N657A | E | 100 | 8 | 10 | 1.0 | 5 | 2 | 30–90 |

*Pulsed measurement. *JAN type available.

| GE Type | Fig. | Min. Volts $V_{CEO}$ $I_C=$ 250 μA | Min. Volts $V_{CEX}$ $I_C=$ 250 mA | Maximum $I_{CBO}$ $V_{CB}=$ 30 V μA | Maximum Pwr. Free Air at 25° C Watts | Maximum Dissip. $T_C$ at 100° C Watts | Maximum $V_{CE}$ (SAT) Volts | $h_{FE}$* $V_{CE}=$ 10 V $I_C=$ 200mA |
|---|---|---|---|---|---|---|---|---|
| 2N2017 | E | 60 | 8§ | 10 | 1.0 | 5▲ | 2 | 75–200 |
| 2N2106 | E | 60♯ | 8§ | 200● | 1.0 | 5▲ | 5 | 12–36 |
| 2N2107 | E | 60♯ | 8§ | 200● | 1.0 | 5▲ | 2 | 30–90 |
| 2N2108 | E | 60♯ | 8§ | 200● | 1.0 | 5▲ | 2 | 75–200 |
| 2N2196 | F | 60♯ | 80 | 250⁑ | 2.0 | 10 | 2 | 30–90 |
| 2N2197 | F | 60♯ | 80 | 250⁑ | 2.0 | 10 | 2 | 75–200 |
| 2N2201 | F | 100 | 120 | 200⁑ | 2.0 | 10 | 1.7 | 30–90 |
| 2N2239 | F | 50‡ | 8§ | 250⁑ | 1.0 | 10 | 3 | 30–200 |
| 2N2726 | E | 200† | 10§ | 1Ɪ | 1.0 | 5 | 2.0 | 30–90 |
| 2N2727 | E | 200† | 10§ | 1Ɪ | 1.0 | 5 | 2.0 | 75–150 |
| 2N3589 | F | 200† | 200♦ | 1Ɪ | 2.0 | 10 | 2 | 30–90 |
| 2N3590 | F | 200† | 200♦ | 1Ɪ | 2.0 | 10 | 2 | 75–150 |
| D7A30 | E | 40 | 8§ | 10 | 1.0 | 5 | 1.0■ | 12–36 |
| D7A31 | E | 30 | 8§ | 10 | 1.0 | 5 | 1.0■ | 30–90 |
| D7A32 | E | 30 | 8§ | 10 | 1.0 | 5 | 1.0■ | 75–200 |

*Pulsed measurement. †$V_{CER}$ at $I_C=50$ mA, R = 5K. ‡$V_{CER}$, R = 5 K. §$V_{EBO}$ at $I_E=250$ μA. ♯$V_{CER}$ at $I_C=16$ mA, R = 1 K. ●$T_A=125$° C. ▲25° C. ■Typical. ♦$V_{CBO}$ at $I_C=100$ μA, $I_E=0$. Ɪ$V_{CB}=100$ V. ⁑$T_A$ C° = 150.

## SILICON PLANAR CONTROLLED SWITCHES

Four-terminal TO-18 package.

| GE Type | Anode Blk. V | Cont. DC $I_F$ mA | Peak Recur. $I_F$ A* | Peak Cath. Gate Cur. mA | Dissipation mW | $I_B$ at VAC V | $I_B$ $R_{GC}=$ 10K μA | Maximum $V_{GC}$ $I_{GC}=$ 20 μA V | Maximum $V_{GA}$ $I_{GA}=$ 1 μA V |
|---|---|---|---|---|---|---|---|---|---|
| 3N81 | 65 | 200 | 1.0 | 500 | 400 | 65 | 20 | 5 | 65 |
| 3N82 | 100 | 200 | 1.0 | 500 | 400 | 100 | 20 | 5 | 100 |
| 3N83 | 70 | 50 | 0.1 | 50 | 200 | 70 | 20† | 5 | 70 |
| 3N84 | 40 | 175 | 0.5 | 100 | 320 | 40 | 20† | 5 | 40 |
| 3N85 | 100 | 175 | 0.5 | 100 | 320 | 100 | 20† | 5 | 100 |
| 3N86 | 65 | 200 | 1.0 | 500 | 400 | 65 | 20 | 5 | 65 |

*At 100 μsec. †Measured at 125° C; all others at 150° C.

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# GENERAL ELECTRIC SILICON AND GERMANIUM SEMICONDUCTORS AND CHIPS

## SILICON BILATERAL SWITCHES (SBS)

### 6-10 VOLT BIDIRECTIONAL PLANAR TRIGGER DIODE

$V_F$ at 200 mA = 1.7 volts.

| GE Type | JEDEC Outline | Max. $I_F$(CONT) mA | $T_J$ −55° C to °C | $V_S$ V | Max. $I_S$ μA | $I_B$ at 5 V μA |
|---|---|---|---|---|---|---|
| 2N4991 | TO-98 | 175 | +125 | 6–10 | 500 | 1.0 |
| 2N4992 | TO-98 | 200 | +150 | 7.5–9 | 120 | 0.1 |
| 2N4993 | TO-18 | 200 | +150 | 6–10 | 500 | 1.0 |

## SILICON UNILATERAL SWITCHES (SUS)

### 6-10 VOLT PLANAR TRIGGER DIODE

$V_{ACR}$ = 30 volts maximum. $V_F$ at 200 mA = 1.5 volts.

| GE Type | JEDEC Outline | Max. $I_F$(CONT) mA | $T_J$ −55° C to °C | $V_S$ V | Max. $I_S$ μA | $I_B$ at 5 V μA |
|---|---|---|---|---|---|---|
| 2N4983 | TO-18 | 175 | +125 | 6–10 | 500 | 1.0 |
| 2N4984 | TO-18 | 200 | +150 | 7.5–9 | 150 | 0.1 |
| 2N4985 | TO-18 | 200 | +150 | 7.5–8.2 | 300 | 0.01 |
| 2N4986 | TO-18 | 175 | +125 | 7–9 | 200 | 0.1 |
| 2N4987 | TO-98 | 175 | +125 | 6–10 | 500 | 1.0 |
| 2N4988 | TO-98 | 200 | +150 | 7.5–9 | 150 | 0.1 |
| 2N4989 | TO-98 | 200 | +150 | 7.5–8.2 | 300 | 0.1 |
| 2N4990 | TO-98 | 175 | +125 | 7–9 | 200 | 0.1 |

## SILICON DUAL DIODES (TO-98)

$P_T$ = 200 mW at 25° C.

### TV HORIZONTAL PHASE DISCRIMINATORS

| GE Type | Features | $V_F$ at 1 mA Volt | $V_R$ V | Typ. $C_{OB}$ pF at 10 V |
|---|---|---|---|---|
| 1N4951 | Inherent match, static and dynamic. Common cathode. | 0.85 max. | 20 | 1.1 |
| 1N4952 | | 0.85 max. | 50 | 1.1 |

### REFERENCE DIODE

**GE Type F16H1**—Common anode. $V_Z$ = 5.6 to 6.8 V. $dV_Z/dT$ < .025%/° C.

## GERMANIUM TRANSISTORS

### NPN RATE GROWN (FIG. A)

$I_{CBO}$ at $I_E$ = 0 and $V_{CB}$ = 15 V.

| GE Type | $h_{FE}$ $V_{CE}$ = 1 V $I_C$ = 1 mA | Min. $BV_{CER}$ V | Max. $I_{CBO}$ μA | $P_G$ at 455 kHz dB | Max. $P_D$ mW | Typ. $f_{hfb}$ MHz |
|---|---|---|---|---|---|---|
| 2N78 | 45–135 | 15* | 3 | 26.0–31.0 | 65 | 9 |
| 2N78A* | 45–135 | 20* | 3 | 26.0–31.0 | 65 | 9 |
| 2N167A* | 17–90† | 30* | 1.5 | ............ | 75 | 9 |
| 2N169 | 34–200 | 15 | 5 | 23.5 | 65 | 9 |
| 2N169A | 34–200 | 25 | 5 | 23.5 | 65 | 9 |

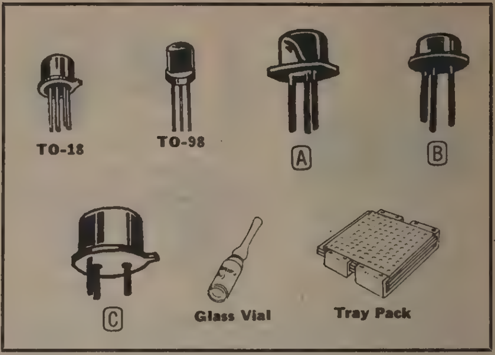
*$BV_{CEO}$ at $I_C$ = 300 μA. †$I_C$ = 8 mA. *JAN type available.

### PNP ALLOY

$BV_{CER}$ at $I_C$ = 600 μA and $R_{BE}$ = 10K except as otherwise noted.

| GE Type | Fig. | $h_{FE}$ $V_{CE}$ = 1 V $I_C$ = 20 mA | Typ. $f_{hfb}$ MHz | Min. $BV_{CER}$ V | Maximum | | |
|---|---|---|---|---|---|---|---|
| | | | | | $I_{CBO}$ at $V_{CB}$ μA | V | $P_T$ mW |
| 2N43A** | B | 34–65 | 1.3 | 30 | 16 | 45 | 240 |
| 2N44** | B | 18–43 | 1.0 | 30 | 16 | 45 | 240 |
| 2N188A* | B | 34–65 | 1.2 | 25 | 16 | 25 | 200 |
| 2N191* | B | 53–121 | 1.2 | 25 | 16 | 25 | 200 |
| 2N241A* | B | 50–125 | 1.3 | 25 | 16 | 25 | 200 |
| 2N319 | C | 25–42 | 2.0 | 20 | 16 | 25 | 225 |
| 2N320 | C | 34–65 | 2.5 | 20 | 16 | 25 | 225 |
| 2N321 | C | 53–121 | 3.0 | 20 | 16 | 25 | 225 |
| 2N322 | C | 34–65 | 3.0 | 16 | 16 | 16 | 200 |
| 2N323 | C | 53–121 | 3.5 | 16 | 16 | 16 | 200 |
| 2N324 | C | 72–198 | 4.0 | 16 | 16 | 16 | 200 |
| 2N396A* | C | 30–150† | 8.0 | 20‡ | 6 | 20 | 200 |
| 2N404 | C | ............ | 8.0 | 24§ | 5 | 12 | 150 |
| 2N404A | C | ............ | 8.0 | 35§ | 5 | 20 | 150 |
| 2N413 | C | 20–100† | 6.0 | 18‡ | 5 | 12 | 150 |
| 2N414 | C | 30–120† | 7.0 | 15‡ | 5 | 12 | 150 |
| 2N461* | C | 32–199# | 4.0 | 35• | 15 | 45 | 200 |
| 2N508 | C | 100–200 | 4.5 | 16 | 7 | 16 | 200 |
| 2N508A | C | 100–200 | 4.5 | 25 | 7 | 25 | 200 |
| 2N524 | C | 25–42 | 2.5 | 30 | 10 | 30 | 225 |
| 2N525 | C | 34–65 | 3.0 | 30 | 10 | 30 | 225 |
| 2N526* | C | 53–90 | 3.5 | 30 | 10 | 30 | 225 |
| 2N527 | C | 72–121 | 4.0 | 30 | 10 | 30 | 225 |
| 2N1175 | C | 70–140 | 4.0 | 25 | 12 | 30 | 200 |
| 2N1175A | C | 70–140 | 4.0 | 25 | 12 | 30 | 200 |
| 2N1303* | C | 20 min.† | 7.0 | 25§ | 6 | 25 | 150 |
| 2N1305* | C | 40–200† | 8.0 | 20§ | 6 | 25 | 150 |
| 2N1307* | C | 60–300† | 12.0 | 15§ | 6 | 25 | 150 |
| 2N1413 | C | 25–42 | 3.2 | 25 | 12 | 30 | 200 |
| 2N1414 | C | 34–65 | 3.6 | 25 | 12 | 30 | 200 |
| 2N1415 | C | 53–90 | 4.0 | 25 | 12 | 30 | 200 |
| 2N1614* | B | 18–43 | 1.3 | 40▴ | 25 | 65 | 240 |
| 2N1924 | C | 34–65 | 3.0 | 40 | 10 | 45 | 225 |
| 2N1925 | C | 53–90 | 3.5 | 40 | 10 | 45 | 225 |
| 2N1926 | C | 72–121 | 4.0 | 40 | 10 | 45 | 225 |

*Not recommended for new designs. †$V_{CE}$ = 1 V, $I_C$ = 10 mA. ‡$BV_{CEO}$. §$V_{RT}$. #$V_{CB}$ = 5 V, $I_E$ = 1 mA, f = 1 kHz. •R = 1K. ▴$V_{RT}$ = 60 V. *JAN type available.



## SEMICONDUCTOR CHIPS

Transistor and diode chips suitable for custom circuitry. Feature gold backing of 3000Å, minimum thickness, for transistor collector contact and diode cathode contact. Aluminum metalization for transistor emitter and base contacts and diode anode contact. Maximum conditions for mounting chips—425° C for a maximum of five minutes in an inert atmosphere. Chips are shipped in glass vials sealed with a nitrogen back-fill. This standard offering features optimum chip protection. Also available in "Tray Packs" in quantities of 100, 400 or 1,000.

### SILICON PLANAR OXIDE-PASSIVATED DIODE CHIPS

| GE Type | Description |
|---|---|
| 1N914A Chip<br>1N914B Chip | High-speed switching in computer and general purpose applications |
| 1N3064 Chip | Very high speed switching in computer and general purpose applications |
| 1N3600 Chip | High conductance and high-speed switching in logic, core, hammer driver circuits and general purpose applications |
| 1N3605 Chip | High-speed switching in computer and general purpose applications; high conductance, fast recovery time, low leakage and low capacitance |
| 1N4150 Chip | Similar to 1N3600 Chip |
| 1N4152 Chip | Similar to 1N3605 Chip |
| 1N4454 Chip | Similar to 1N3064 Chip |
| 1N4532 Chip | Similar to 1N3064 Chip |
| 1N4533 Chip | Similar to 1N3605 Chip |
| 1N4606 Chip | Similar to 1N3600 Chip except high voltage |

### SILICON PLANAR PASSIVATED TRANSISTOR CHIPS

| GE Type | Description |
|---|---|
| 2N708 Chip | NPN for high-speed switching, also suitable as small signal device |
| 2N918 Chip | NPN for high frequency applications |
| 2N929 Chip | NPN for low-level amplifiers |
| 2N930 Chip | NPN for low-level amplifiers |
| 2N2222 Chip | NPN for high-speed switching, amplifier and core driver applications |
| 2N2484 Chip | NPN for low-level, high gain preamplifier use in hybrid and microminiature circuits |
| 2N2714 Chip | NPN for general purpose applications |
| 2N2905 Chip<br>2N2906 Chip<br>2N2907 Chip | PNP for amplifiers, drivers and general purpose switching (electrically similar to JEDEC series only) |
| 2N3414 Chip<br>2N3415 Chip<br>2N3416 Chip<br>2N3417 Chip | NPN for general purpose circuits, specially suited for high-level linear amplifiers or medium-speed switching circuits in control applications |
| 2N3855A Chip<br>2N3856A Chip | NPN for RF, IF and converters in AM and FM radio receivers and TV video amplifiers |
| 2N3859 Chip<br>2N3860 Chip | NPN for AM radio, IF and converter applications |
| 2N3975 Chip<br>2N3976 Chip | NPN for medium-speed switching and large signal RF amplifiers |
| 2N5172 Chip | NPN for general purpose applications |
| 2N5232 Chip | NPN for low noise preamp and small signal amplifier |
| 2N5306 Chip | NPN darlington chip for preamp input stages |
| M22P2<br>M22P3<br>M22P4 | NPN chip for general low signal levels |
| M73P1 | NPN darlington chip for preamp input stages and medium-speed switching control circuits |

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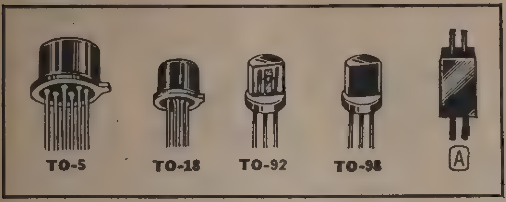
# GENERAL ELECTRIC Silicon Semiconductors



## SILICON DUAL AND MULTICHIP DEVICES

### NPN DIFFERENTIAL AMPLIFIERS

Six-terminal pkg.; two isolated pellets.

| GE Type |  | Beta Match | Minimum |  |  |
|---|---|---|---|---|---|
| TO-5 | TO-18 |  | $V_{CEO}$ V | $h_{FE}$ at $I_C$ |  |
| 2N2060† | D12A104 | 10% | 60 | 30 | 100 µA |
| 2N2223, A | ............ | 20% | 60 | 25 | 100 µA |
| 2N2453, A | ............ | 10% | 30 | 80 | 10 µA |
| 2N2480 | ............ | 20% | 40 | 20 | 100 µA |
| 2N2480A | 2N3513 | 20% | 40 | 35 | 100 µA |
| 2N2639 | ............ | 10% | 45* | 50 | 10 µA |
| 2N2640 | ............ | 20% | 45* | 50 | 10 µA |
| 2N2641 | ............ | ........ | 45* | 50 | 10 µA |
| 2N2642 | ............ | 10% | 45* | 100 | 10 µA |
| 2N2643 | ............ | 20% | 45* | 100 | 10 µA |
| 2N2644 | ............ | ........ | 45* | 100 | 10 µA |
| 2N2652 | ............ | 15% | 60 | 35 | 100 µA |
| 2N2652A | 2N3516 | 10% | 60 | 35 | 100 µA |
| 2N2910 | ............ | 20% | 25 | 70 | 100 µA |
| 2N2913 | ............ | ........ | 45 | 100 | 100 µA |
| 2N2914 | ............ | ........ | 45 | 225 | 100 µA |
| 2N2915 | ............ | 10% | 45 | 100 | 100 µA |
| 2N2916 | ............ | 10% | 45 | 225 | 100 µA |
| 2N2917 | ............ | 20% | 45 | 100 | 100 µA |
| 2N2918 | ............ | 20% | 45 | 225 | 100 µA |
| 2N2919 | ............ | 10% | 60 | 100 | 100 µA |
| 2N2920 | ............ | 10% | 60 | 225 | 100 µA |
| 2N3521 | 2N3522 | 20% | 45 | 155 | 10 µA |
| D12A8 | D12A108 | 40% | 30 | 30 | 100 µA |
| D12E026 | D12E126 | ........ | 30 | 60 | 1 mA |
| D12E109 | ............ | 10% | 30 | 80 | 10 µA |

*Maximum. †JAN type available.

### NPN CHOPPERS

Five-terminal packages containing two matched pellets.

| GE Type | JEDEC Outline | Maximum |  | Min. $V_{EEO}$† Volts | Max. $r_S$‡ Ohms | Max. $I_{CBO}$ or $I_{CBO2}$§ nA |
|---|---|---|---|---|---|---|
|  |  | $V_O$* µV | at °C |  |  |  |
| 2N2356 | TO-5 | 300 | −55 to +125 | 20 | 40 | 10 |
| 2N2356A | TO-5 | 50 | −55 to +125 | 20 | 40 | 10 |

*$I_{B1} = I_{B2} = 1$ mA, $I_{E1} = I_{E2} = 0$. †$I_{E1E2} = 1$ mA, $I_{B1} = I_{B2}$. ‡$I_{B1} = 1$ mA, $I_{EE} = 0.1$ mA. §$V_{CB1}$ or $V_{CB2} = 25$ V.

### NPN DARLINGTONS (TO-18)

Four-terminals; two pellets connected in Darlington configuration.

| GE Type | Minimum $V_{CEO}$ at $I_C$ |  | $h_{FE}$ at $I_C$ of |  |  | Maximum $I_{CBO}$ at $PV_{CB}$ |  |
|---|---|---|---|---|---|---|---|
|  | Volts | mA | 100 mA Min.-Max. | 10 mA Min.-Max. | 1 mA Min. | nA | Volts |
| 2N997 | 40 | 30 | 7000–70k | 4000 min. | ..... | 10 | 60 |
| 2N998 | 60 | 20 | 2000 min. | 1600–8000 | 800 | 10 | 90 |
| 2N999 | 60 | 30 | 7000–70k | 4000 min. | ..... | 10 | 60 |
| 2N2785 | 40 | 20 | 2000–20k | 1200 min. | 600 | 50 | 30 |

## NPN SILICON PHOTOTRANSISTORS

$I_L$ at $H = 10$ mW/cm²; $V_{CE} = 5$ V. $I_D$ at $V_{CE} = 30$ V; $I_B = 0$. $t_{on} = t_d + t_r$; $t_{off} = t_s + t_f$.

| GE Type | JEDEC Outline | Max. Ratings at 25° C |  |  | Min. $I_L$ µA | Max. $I_D$ nA | Typical |  |
|---|---|---|---|---|---|---|---|---|
|  |  | $V_{CEO}$ V | $I_L$ mA | $P_D$ mW |  |  | $t_{on}$ µsec | $t_{off}$ µsec |
| L14A502 | TO-18 | 45 | 50 | 300 | 3000 | 10 | 7 | 5.5 |
| L14E1 | TO-92 | 50 | 100 | 180 | 50 | 100 | 6 | 6 |
| L14E2 | TO-92 | 50 | 100 | 180 | 100 | 100 | 15 | 10 |
| L14E3 | TO-92 | 50 | 100 | 180 | 400 | 100 | 20 | 15 |
| L14E4 | TO-92 | 50 | 100 | 180 | 50 | 100 | ..... | ..... |

## NPN SILICON PHOTO-DARLINGTON AMPLIFIERS

$I_D$ at $V_{CE} = 12$ V; $I_B = 0$. $t_{on} = t_d + t_r$; $t_{off} = t_s + t_f$.

|  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|
| 2N5777 | TO-92 | 25 | 250 | 200 | .5* | 100 | 105 | 45 |
| 2N5778 | TO-92 | 40 | 250 | 200 | .5* | 100 | 105 | 45 |
| 2N5779 | TO-92 | 25 | 250 | 200 | 2.0* | 100 | 105 | 45 |
| 2N5780 | TO-92 | 40 | 250 | 200 | 2.0* | 100 | 105 | 45 |
| L14F1 | TO-18 | 25 | 250 | 300 | 20† | 100 | 105 | 45 |
| L14F2 | TO-18 | 40 | 250 | 300 | 20† | 100 | 105 | 45 |
| L14F3 | TO-18 | 25 | 250 | 300 | 50† | 100 | 105 | 45 |
| L14F4 | TO-18 | 40 | 250 | 300 | 50† | 100 | 105 | 45 |

*mA at $H = 2$ mW/cm²; $V_{CE} = 5$ V. †mA at $H = .5$ mW/cm²; $V_{CE} = 5$ V.

## SILICON UNIJUNCTION TRANSISTORS

"N" type silicon bar mounted between two ohmic base contacts with a "P" type emitter near base two. Three-terminal package.

| GE Types Bar Structure |  | $R_{BBO}$ $V_{BB} = 3$V $I_E = 0$ kohms | Intrin. Stand-off Ratio† | $I_V$ Min. mA | $I_P$ Max. Emitter µA | $I_{EO}$ Max. |  |
|---|---|---|---|---|---|---|---|
| TO-18 | TO-5 |  |  |  |  | µA | $V_{B2E}$‡ |
| 2N2417 | 2N489 | 4.7–6.8 | .51–.62 | 8 | 12 | 2 | 60 |
| 2N2417A | 2N489A* |  |  |  | 12 | 2 | 60 |
| 2N2417B | 2N489B |  |  |  | 6 | 0.2 | 30 |
| 2N2418 | 2N490 | 6.2–9.1 | .51–.62 | 8 | 12 | 2 | 60 |
| 2N2418A | 2N490A* |  |  |  | 12 | 2 | 60 |
| 2N2418B | 2N490B |  |  |  | 6 | 0.2 | 30 |
| ........ | 2N490C |  |  |  | 2 | 0.02 | 30 |
| 2N2419 | 2N491 | 4.7–6.8 | .56–.68 | 8 | 12 | 2 | 60 |
| 2N2419A | 2N491A* |  |  |  | 12 | 2 | 60 |
| 2N2419B | 2N491B |  |  |  | 6 | 0.2 | 30 |
| 2N2420 | 2N492 | 6.2–9.1 | .56–.68 | 8 | 12 | 2 | 60 |
| 2N2420A | 2N492A* |  |  |  | 12 | 2 | 60 |
| 2N2420B | 2N492B |  |  |  | 6 | 0.2 | 30 |
| ........ | 2N492C |  |  |  | 2 | 0.02 | 30 |
| 2N2421 | 2N493 | 4.7–6.8 | .62–.75 | 8 | 12 | 2 | 60 |
| 2N2421A | 2N493A* |  |  |  | 12 | 2 | 60 |
| 2N2421B | 2N493B |  |  |  | 6 | 0.2 | 30 |
| 2N2422 | 2N494 | 6.2–9.1 | .62–.75 | 8 | 12 | 2 | 60 |
| 2N2422A | 2N494A* |  |  |  | 12 | 2 | 60 |
| 2N2422B | 2N494B |  |  |  | 6 | 0.2 | 30 |
| ........ | 2N494C |  |  |  | 2 | 0.02 | 30 |
| ........ | 2N1671 | 4.7–9.1 | .47–.62 | 8 | 25 | 12 | 30 |
| ........ | 2N1671A |  |  |  | 25 | 12 | 30 |
| ........ | 2N1671B |  |  |  | 6 | 0.2 | 30 |
| ........ | 2N1671C |  |  |  | 2 | 0.02 | 30 |
| ........ | 2N2160 | 4.0–12.0 | .47–.80 | 8 | 25 | 12 | 30 |
| 2N2646* | ........ | 4.7–9.1 | .56–.75 | 4 | 5 | 12 | 30 |
| 2N2647* | ........ | 4.7–9.1 | .68–.82 | 8 | 2 | 0.2 | 30 |
| D5E37* | ........ | 4.0–12.0 | .47–.85 | 4 | 25 | 12 | 30 |
| D5E43* | ........ | 4.7–9.1 | .68–.82 | 6 | 2 | 1.0 | 30 |
| D5E44* | ........ |  |  | 4 | 5 | 12 | 30 |
| D5E45* | ........ |  |  | 8 | 2 | 0.5 | 30 |

*Cube structure. †$V_{BB} = 10$ V. ‡$T_J = 25°$ C. *JAN type available.

Ultra-stable, uniform silicon complementary unijunction transistors for low frequency oscillators, timers and frequency dividers.

| GE Type | JEDEC Outline | $R_{BBO}$ kohms | Intrinsic Standoff Ratio | $I_{EO}$ at 5 V nA | $V_{EB1(SAT)}$ at 50 mA V |
|---|---|---|---|---|---|
| D5K1 | TO-18 | 5.5–8.2 | .58–.62 | 10 | 1.5 |
| D5K2 | TO-18 | 5–15 | .58–.62 | 10 | 1.5 |

## PROGRAMMABLE UNIJUNCTION—PUT (TO-98)

Passivated PNPN devices with anode, anode gate and cathode terminals. Recommended for SCR trigger, pulse and timing circuits, oscillators, sensing and sweep circuits. Gate-cathode forward voltage and gate-anode reverse voltage = 40 V. Anode-cathode voltage = ±40 V.

| GE Type | $I_{GAO}$ $V_S = 40$ V nA | Max. Values at $V_S = 10$ V |  |  | $I_{F(CONT)}$ mA | $P_T$ W |
|---|---|---|---|---|---|---|
|  |  | $I_P$ µA | $V_T$ V | $I_V$ µA |  |  |
| 2N6027 | 10 | 2 | .2–1.6 | 50 | 150 | 300 |
| 2N6028 | 10 | 0.15 | .2–.6 | 25 | 150 | 300 |

## PNPN SILICON LIGHT SENSITIVE SCS

| GE Type | Anode to Cathode Fwd. and Reverse | Conducting* |  | Triggering† |  |
|---|---|---|---|---|---|
|  |  | $V_{FWD}$ at 175 mA Anode | Holding Current | Cathode Gate Cur. to Fine | Effective Irradiance to Fine |
| L1V | 40 V | 2.3 V | 2.0 mA | 10 µA | 10 mW/cm² |

Max. Ratings at: *$R_{GH_2} = 27{,}000$ ohms; †$V_{AC} = 800$ ohms.

## SILICON SIGNAL DIODES

### MATCHED PAIRS (FIG. A)

Capacitance = 2 pF at 0 volts. $t_{rr} = 2$ nsec at $I_f = 10$ mA, $V_R = 6$ V, $R_L = 100$ ohms, recovery to 1.0 mA.

| GE Type | Min. $B_V$ at 5 µA V | $V_f$ at $L_f$ |  | Max. $I_R$ at 25° C |  | Max. $V_F$* $I_F = 10$–50 mA mV |
|---|---|---|---|---|---|---|
|  |  | V | mA | nA | V |  |
| 1N4306 | 75 | 0.44–0.55 | 0.10 | 50 | 50 | 20 |
| MP-2 | 75 | 0.56–0.67 | 1.00 | 100 | 30 | 50 |

*Maximum difference between diodes in pairs at $T_A = -55°$ C to +125° C.

### MATCHED QUAD

Capacitance = 2 pF at 0 volts. $t_{rr} = 2$ nsec at $I_f = 10$ mA, $V_R = 6$V, $R_L = 100$ ohms, recovery to 1.0 mA.

| GE Type | Max. $B_V$ at 5 µA V | $V_f$ at $L_f$ |  | Max. $I_R$ at 25° C |  | Max. $V_F$* $I_F = 10$–50 mA mV |
|---|---|---|---|---|---|---|
|  |  | V | mA | nA | V |  |
| 1N4307 | 75 | 0.44–0.55 | 0.10 | 50 | 50 | 20 |

*Maximum difference between diodes in quads at $T_A = -55°$ C to +125° C.

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**GENERAL ELECTRIC**

# SILICON AND GERMANIUM DIODES

## SILICON SIGNAL DIODES (PEP)

### STANDARD DO-7 (FIG. A)

| GE Type | Min. SAT Volts | Max. Rev. Cur., μA at V (at 25° C) | Max. Fwd. Cur., mA at Volts | Total Cap. pF at Volts | Rev. Recovery, Nanosec |
|---|---|---|---|---|---|
| 1N251 | 40 | 0.2 at −10 | 5 at 1.0 | .......... | 150 |
| 1N252 | 30 | 0.1 at −5 | 10 at 1.0 | .......... | 150 |
| 1N625 | 30 | 1 at −20 | 4 at 1.0 | .......... | 1000 |
| 1N626 | 50 | 1 at −35 | 4 at 1.0 | .......... | 1000 |
| 1N814 | 50 | 0.1 at −20 | 2 at 1.0 | .......... | 250 |
| 1N903 | 40 | 0.1 at −40 | 10 at 1.0 | 1.0 at −6 | 4 |
| 1N903A | 40 | 0.1 at −40 | 20 at 1.0 | 1.0 at −6 | 4 |
| 1N904 | 30 | 0.1 at −30 | 10 at 1.0 | 1.0 at −6 | 4 |

### DHD (FIG. B)

Double heatsink diodes. Specify DO-7 (Fig. A) or DHD (Fig. B) package for 1N914 and 1N916 series. $t_{rr}$ value recovery to 1.0 mA reverse, switching from 10 mA fwd to −6.0 V, $R_L$ = 100 ohms.

| GE Type | Min. $B_V$ |  | $V_F$ at $I_F$ |  | Max. $I_R$ at 25° C |  | Max. Cap. at 0 V pF | $t_{rr}$ nsec |
|---|---|---|---|---|---|---|---|---|
|  | V | μA | V | mA | nA | V |  |  |
| 1N914 | 100 | 100 | 1.0 | 10 | 25 | 20 | 4 | 4 |
| 1N914A | 100 | 100 | 1.0 | 20 | 25 | 20 | 4 | 4 |
| 1N914B | 100 | 100 | 1.0 | 100 | 25 | 20 | 4 | 4 |
| 1N916 | 100 | 100 | 1.0 | 10 | 25 | 20 | 2 | 4 |
| 1N916A | 100 | 100 | 1.0 | 20 | 25 | 20 | 2 | 4 |
| 1N916B | 100 | 100 | 1.0 | 30 | 25 | 20 | 2 | 4 |
| 1N4148* | 100 | 100 | 1.0 | 10 | 25 | 20 | 4 | 4 |
| 1N4149 | 100 | 100 | 1.0 | 10 | 25 | 20 | 2 | 4 |
| 1N4150* | 50 | 1 | 1.0 | 200 | 100 | 50 | 2.5 | 6† |
| 1N4151 | 75 | 5 | 1.0 | 50 | 50 | 50 | 2 | 2 |
| 1N4152 | 40 | 5 | 0.88 | 20 | 50 | 30 | 2 | 2 |
| 1N4153* | 75 | 5 | 0.88 | 20 | 50 | 50 | 2 | 2 |
| 1N4154 | 35 | 5 | 1.0 | 30 | 100 | 25 | 4 | 2 |
| 1N4305 | 75 | 5 | 0.85 | 10 | 100 | 50 | 2 | 2 |
| 1N4444 | 70 | 5 | 1.0 | 100 | 50 | 50 | 2 | 7‡ |
| 1N4446 | 100 | 100 | 1.0 | 20 | 25 | 20 | 4 | 4 |
| 1N4447 | 100 | 100 | 1.0 | 20 | 25 | 20 | 2 | 4 |
| 1N4448 | 100 | 100 | 1.0 | 100 | 25 | 20 | 4 | 4 |
| 1N4449 | 100 | 100 | 1.0 | 30 | 25 | 20 | 2 | 4 |
| 1N4450 | 40 | 5 | 1.0 | 200 | 50 | 30 | 4 | 4‡ |
| 1N4451 | 40 | 5 | 1.0 | 300 | 50 | 30 | 6 | 10‡ |
| 1N4454* | 75 | 5 | 1.0 | 10 | 100 | 50 | 2 | 4‡ |
| 1N4606 | 85 | 100 | 1.0 | 200 | 100 | 50 | 4 | 4‡ |
| 1N4607 | 85 | 100 | 1.0 | 350 | 100 | 50 | 4 | 10‡ |
| 1N4608 | 85 | 100 | 1.0 | 450 | 100 | 50 | 4 | 10‡ |
| 1N4727 | 30 | 5 | 0.85 | 10 | 100 | 20 | 4 | § |
| 1N4863 | 70 | 5 | 1.2 | 100 | 50 | 50 | 2 | 7‡ |
| 1N4864 | 125 | 100 | 1.1 | 100 | 100 | 80 | 1.3 | 4 |
| DZ800 | 2 | 5 | 0.8 | 10 | 2# | 2 | 4 | § |
| DZ805 | 15 | 5 | 0.8 | 10 | 2# | 12 | 4 | § |
| DZ806 | 25 | 5 | 0.8 | 10 | 2# | 22 | 4 | § |
| DA1701 | 100 | 100 | 1.0 | 50 | 50 | 50 | 1 | 2 |
| DA1702 | 75 | 5 | 1.0 | 50 | 50 | 50 | 1 | 2 |
| DA1703 | 40 | 5 | 1.0 | 50 | 50 | 30 | 2 | 2 |
| DA1704 | 25 | 5 | 1.1 | 50 | 100 | 20 | 3 | 4 |
| DT230A | 100 | ..... | 1.1 | 250 | 1000 | 250 | 5 | 300 |
| DT230B | 200 | ..... | 1.1 | 250 | 1000 | 250 | 5 | 300 |
| DT230F | 50 | ..... | 1.1 | 250 | 1000 | 250 | 5 | 300 |
| DT230G | 150 | ..... | 1.1 | 250 | 1000 | 250 | 5 | 300 |
| DT230H | 250 | ..... | 1.0 | 200 | 1000 | 250 | 5 | 300 |
| DT230H1 | 250 | ..... | 1.1 | 250 | 1000 | 250 | 5 | 300 |

*JAN and JANTX type available. †$I_F$ = 10 mA, $I_R$ = 1 mA, recovery to 0.1 mA. ‡$I_F$ = $I_R$ = 10 mA, recovery to 1.0 mA. §$Q_S$ = 40 pC. #μA.

### MULTIPELLET STABISTORS (FIG. B)

Power dissipation = 400 mW. Derate 2.67 mW/° C for $T_A$ above 25° C. Capacitance value at f = 1 MHz.

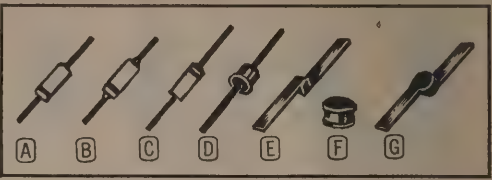
| GE Type | Min. $B_V$ |  | Max. $V_R$ V | $V_F$ $I_F$ = 10 mA V | Max. $I_R$ at 25° C |  | Max. Cap. at 0 V pF |
|---|---|---|---|---|---|---|---|
|  | V | μA |  |  | nA | V |  |
| 1N4156 | 30 | 5 | 20 | 1.38–1.58 | 50 | 20 | 25 |
| 1N4157 | 30 | 5 | 20 | 2.12–2.32 | 50 | 20 | 20 |
| 1N4453 | 30 | 5 | 20 | .690–.800 | 50 | 20 | 30 |
| 1N4829 | 30 | 100 | 20 | 1.16–1.61 | 100 | 20 | 25 |
| 1N4830 | 30 | 100 | 20 | 1.90–2.35 | 100 | 20 | 20 |
| 1N5179 | 30 | 5 | 20 | 2.60–3.20 | 50 | 20 | 20 |
| MPD200 | 30 | 5 | 30 | 1.39–1.54 | 30 | 30 | 15 typ. |
| MPD300 | 60 | 5 | 60 | 2.10–2.33 | 30 | 30 | 10 typ. |
| MPD400 | 90 | 5 | 90 | 2.80–3.07 | 30 | 30 | 7 typ. |
| STB567 | 12 | 5 | 12 | 1.31–1.61 | ..... | .... | ......... |
| STB568 | 12 | 5 | 12 | 2.09–2.31 | ..... | .... | ......... |
| STB569 | 12 | 5 | 20 | 2.72–3.01 | ..... | .... | ......... |

### MHD (FIG. C)

Milli heatsink diodes rated 500 mW at 25° C free air.

| GE Type | DHD Type | Max. $I_R$ at 25° C | GE Type | DHD Type | Max. $I_R$ at 25° C |
|---|---|---|---|---|---|
| 1N4531* | 1N914 | 25 nA | MA1701 | DA1701 | 50 nA |
| 1N4532 | 1N4454 | 100 nA | MA1702 | DA1702 | 50 nA |
| 1N4533 | 1N4152 | 50 nA | MA1703 | DA1703 | 50 nA |
| 1N4534 | 1N4153 | 50 nA | MA1704 | DA1704 | 100 nA |
| 1N4536 | 1N4154 | 100 nA |  |  |  |

*JAN and JANTX types available.



## GERMANIUM TUNNEL DIODES

Ideal for high speed switching, 1000 times faster than computer diodes; microwave oscillators and mixers; communications—tuners, converters, detectors and amplifiers; level sensing—sampling (scopes), Schmidt triggers and counters; computer circuits—sense amplifiers, flip-flops, AND-NOR gates.

### GENERAL PURPOSE (FIG. D)

Series inductance, 0.5 nH. Typical peak voltage, 65 mV except TD-9, 60 mV typical; "A" types, 65 mV ±7.

| GE Type | Peak Point $I_P$ |  | Maximum |  |  | * | Typ. $f_{no}$ GHz |
|---|---|---|---|---|---|---|---|
|  | mA | ±% | Valley Point mA | Cap. pF | Series Resis. Ohms |  |  |
| 1N3712 | 1.0 | 10 | 0.18 | 10 | 4.0 | 8 | 2.3 |
| 1N3713* | 1.0 | 2.5 | 0.14 | 5 | 4.0 | 8.5 ± 1 | 3.2 |
| 1N3714 | 2.2 | 10 | 0.48 | 25 | 3.0 | 18 | 2.2 |
| 1N3715* | 2.2 | 2.5 | 0.31 | 10 | 3.0 | 19 ± 3 | 3.0 |
| 1N3716 | 4.7 | 10 | 1.04 | 50 | 2.0 | 40 | 1.8 |
| 1N3717* | 4.7 | 2.5 | 0.60 | 25 | 2.0 | 41 ± 5 | 3.4 |
| 1N3718 | 10.0 | 10 | 2.20 | 90 | 1.5 | 80 | 1.6 |
| 1N3719* | 10.0 | 2.5 | 1.40 | 50 | 1.5 | 85 ± 10 | 2.8 |
| 1N3720 | 22.0 | 10 | 4.80 | 150 | 1.0 | 180 | 1.6 |
| 1N3721* | 22.0 | 2.5 | 3.10 | 100 | 1.0 | 190 ± 30 | 2.6 |
| TD-9 | 0.5 | 10 | 10.0 | 5 | 6.0 | 4.0 | 1.3 |

*Typ. negative conductance -G mhos x $10^{-3}$. *JAN type available.

### ULTRA-HIGH SPEED SWITCHING DO-18 (FIG. E)

Subminiature epoxy package with series inductance of 1.5 nH. Also available in pill package (Fig. F) with series inductance of 0.15 nH; specify TD-271, TD-271A, TD-276A.

| GE Type | Peak Point mA (±10%) | Maximum |  | Voltage, mV |  | Typical |  |
|---|---|---|---|---|---|---|---|
|  |  | Valley Point mA | Cap. pF | Peak Point Typ. | Fwd $I_F$ = $I_P$ | Series Resis. Ohms | Rise Time psec |
| TD-251 | 2.2 | 0.31 | 3.0 | 70 | 500–650 | 5.0 | 430 |
| TD-251A | 2.2 | 0.31 | 1.0 | 110* | 500–650 | 7.0 | 160 |
| TD-252 | 4.7 | 0.60 | 4.0 | 80 | 500–650 | 3.5 | 320 |
| TD-252A | 4.7 | 0.60 | 1.0 | 120* | 500–650 | 4.0 | 74 |
| TD-253 | 10.0 | 1.40 | 9.0 | 75 | 500–650 | 1.7 | 350 |
| TD-253A | 10.0 | 1.40 | 5.0 | 80 | 520–650 | 2.0 | 190 |
| TD-253B | 10.0 | 1.40 | 2.0 | 120* | 550–650 | 2.5 | 68 |
| TD-254 | 22.0 | 3.80 | 18.0 | 90 | 600 typ. | 1.8 | 185 |
| TD-254A | 22.0 | 3.80 | 4.0 | 120* | 550–650 | 2.0 | 64 |
| TD-255 | 50.0 | 8.50 | 25.0 | 110 | 625 typ. | 1.4 | 100 |
| TD-255A | 50.0 | 8.50 | 5.0 | 130 | 640 typ. | 1.5 | 35 |
| TD-256 | 100 | 17.50 | 35.0 | 150 | 650 typ. | 1.1 | 57 |
| TD-256A | 100 | 17.50 | 6.0 | 180 | 660 typ. | 1.2 | 22 |

*Maximum.

### MICROWAVE (FIG. F)

High performance microwave pill package supplied with leads when specified. Dimensions are within JEDEC DO-20 outline with leads (Fig. G). Series inductance of 0.15 nH. Package capacitance, 0.25 pF. Typical peak point current, 1.85 mA. Negative resistance, 60–80 ohms.

| GE Type | Maximum |  | Min. Resis. Cutoff | GE Type | Maximum |  | Min. Resis. Cutoff |
|---|---|---|---|---|---|---|---|
|  | $C_J$ pF | $R_S$ Ohms |  |  | $C_J$ pF | $R_S$ Ohms |  |
| TD-401 | 3.5 | 3 | 5 GHz | TD-405 | .60 | 6 | 25 GHz |
| TD-402 | 1.8 | 4 | 10 GHz | TD-406 | .48 | 6 | 30 GHz |
| TD-402 | 1.0 | 5 | 15 GHz | TD-407 | .37 | 6 | 35 GHz |
| TD-404 | .75 | 5 | 20 GHz | TD-408 | .30 | 6 | 40 GHz |

## GERMANIUM BACK DIODES

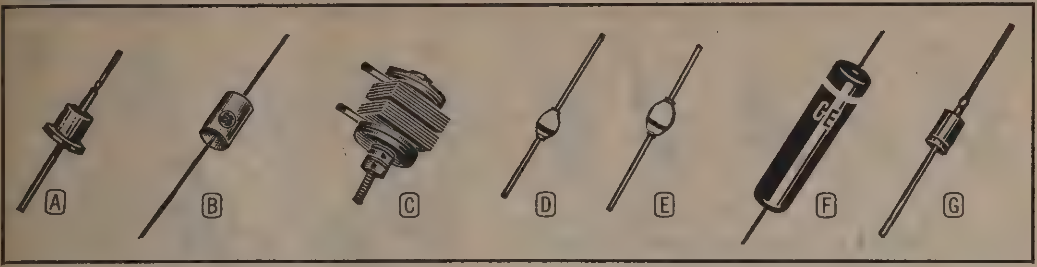
**BD-1 thru BD-7 (Fig. D)**—Miniature axial package. Series inductance, 1.5 nH. General purpose usage as detectors, mixers and switching circuits.

**BD-402 thru BD-407 (Fig. F)**—Microwave pill package. Series inductance, 0.15 nH. Suggested usage as high frequency detectors, mixers and switching circuits.

| Fig. D |  |  |  | Fig. F |  |  |  |
|---|---|---|---|---|---|---|---|
| GE Type | Maximum |  | Min. $V_{R1}$* mV | GE Type | Maximum |  | Min. $V_{R1}$* mV |
|  | $I_P$ mA | Total C, pF |  |  | $I_P$ mA | Total C, pF |  |
| BD-1 | 1.0 | 20 | 440 | BD-402 | 0.5 | 3 | 420 |
| BD-2 | 0.5 | 10 | 420 | BD-403 | 0.2 | 1 | 400 |
| BD-3 | 0.2 | 10 | 400 | BD-404 | 0.1 | 1 | 380 |
| BD-4 | 0.1 | 10 | 380 | BD-405 | 0.05 | 1 | 350 |
| BD-5 | 0.05 | 10 | 350 | BD-406 | 0.02 | 1 | 330 |
| BD-6 | 0.02 | 10 | 330 | BD-407 | 0.01 | 1 | 330 |
| BD-7 | 0.01 | 10 | 300 |  |  |  |  |
| 1N4090† | 0.2 | 1.5 | 430 |  |  |  |  |

*$I_R$ = $I_P$ max. †Low noise mixer, Fig. E.

# GENERAL ELECTRIC RECTIFIER, THYRECTOR AND ZENER DIODES



## GERMANIUM LOW CURRENT RECTIFIER DIODES

Max. peak 1-cycle surge = 25 amps.

| JEDEC Type | Fig. | PRV Volts | Max. $I_{DC}$ at 55° $C_A$ mA | Max. Rev. Cur., mA * | Max. Full Load Voltage Drop | Max. Oper. Temp. |
|---|---|---|---|---|---|---|
| **1N91** | A | 100 | 150 | 1.35 | .22 V | 95° C |
| **1N92** | A | 200 | 100 | 0.95 | .19 V | 95° C |
| **1N93*** | A | 300 | 75 | 0.6 | .18 V | 95° C |

*Full cycle avg. *JAN1N93A type available.

## SELENIUM THYRECTOR DIODES

Steady state rating defined as normal input conditions. If non-sinusoidal wave input is present, peak voltage input values should be used to select model. AC leakage is based upon sinusoidal input. 6RS20SP dia., 37/64″; 6RS21SA, 1″ square.

| GE Type | Fig. | Steady State Rating | | | Size, Inches L |
|---|---|---|---|---|---|
| | | Input rms V | Input Peak V | Leakage mA AC | |
| **6RS20SP1B1** | B | 30 | 42.4 | 1.2 | 1 3/8 |
| **6RS20SP2B2** | B | 60 | 84.8 | 1.2 | 1 3/8 |
| **6RS20SP3B3** | B | 90 | 127.2 | 1.2 | 1 3/8 |
| **6RS20SP4B4** | B | 120 | 169.6 | 1.2 | 1 3/8 |
| **6RS20SP5B5** | B | 150 | 212.0 | 1.2 | 1 3/8 |
| **6RS20SP6B6** | B | 180 | 254.4 | 1.2 | 1 39/64 |
| **6RS20SP7B7** | B | 210 | 296.8 | 1.2 | 1 39/64 |
| **6RS20SP8B8** | B | 240 | 339.2 | 1.2 | 1 39/64 |
| **6RS20SP9B9** | B | 270 | 381.6 | 1.2 | 1 39/64 |
| **6RS20SP10B10** | B | 300 | 424.4 | 1.2 | 1 39/64 |
| **6RS20SP11B11** | B | 330 | 466.6 | 1.2 | 1 27/32 |
| **6RS20SP12B12** | B | 360 | 509.0 | 1.2 | 1 27/32 |
| **6RS20SP13B13** | B | 390 | 551.4 | 1.2 | 1 27/32 |
| **6RS20SP14B14** | B | 420 | 593.8 | 1.2 | 1 27/32 |
| **6RS20SP15B15** | B | 450 | 636.3 | 1.2 | 1 27/32 |
| **6RS20SP16B16** | B | 480 | 678.7 | 1.2 | 2 5/64 |
| **6RS20SP17B17** | B | 510 | 721.1 | 1.2 | 2 5/64 |
| **6RS20SP18B18** | B | 540 | 763.5 | 1.2 | 2 5/64 |
| **6RS20SP19B19** | B | 570 | 805.9 | 1.2 | 2 5/64 |
| **6RS20SP20B20** | B | 600 | 848.4 | 1.2 | 2 5/64 |
| **6RS21SA1D1** | C | 25 | 35 | 12 | 1 7/16 |
| **6RS21SA2D2** | C | 50 | 70 | 12 | 1 1/2 |
| **6RS21SA3D3** | C | 75 | 105 | 12 | 1 5/8 |
| **6RS21SA4D4** | C | 100 | 140 | 12 | 1 11/16 |
| **6RS21SA5D5** | C | 125 | 175 | 12 | 1 3/4 |
| **6RS21SA6D6** | C | 150 | 210 | 12 | 1 7/8 |
| **6RS21SA7D7** | C | 175 | 245 | 12 | 1 15/16 |
| **6RS21SA8D8** | C | 200 | 280 | 12 | 2 |
| **6RS21SA9D9** | C | 225 | 315 | 12 | 2 1/16 |
| **6RS21SA10D10** | C | 250 | 350 | 12 | 2 3/16 |
| **6RS21SA11D11** | C | 275 | 385 | 12 | 2 1/4 |
| **6RS21SA12D12** | C | 300 | 420 | 12 | 2 5/16 |
| **6RS21SA13D13** | C | 325 | 455 | 12 | 2 3/8 |
| **6RS21SA14D14** | C | 350 | 490 | 12 | 2 1/2 |
| **6RS21SA15D15** | C | 375 | 525 | 12 | 2 9/16 |
| **6RS21SA16D16** | C | 400 | 560 | 12 | 2 5/8 |
| **6RS21SA17D17** | C | 425 | 595 | 12 | 2 3/4 |
| **6RS21SA18D18** | C | 450 | 630 | 12 | 2 13/16 |
| **6RS21SA19D19** | C | 475 | 665 | 12 | 2 7/8 |
| **6RS21SA20D20** | C | 500 | 700 | 12 | 2 15/16 |

## SILICON PASSIVATED RECTIFIERS (FIG. D)

GER Series 1 amp rated, axial leaded general purpose rectifier. Dual heatsink construction provides rigid mechanical support for the pellet and excellent thermal characteristics. Passivation and protection of the silicon pellets P-N junction are provided by solid glass; no organic materials are present within the hermetically sealed package. Replacement for 1N4001 thru 1N4007. $I_O$ = 1000 mA at 75° C; $V_F$ = 1.1 V at 25° C; $I_R$ = 0.01 mA at rated $V_R$ and 25° C.

| GE Type | $V_{RM}$ (wkg) | GE Type | $V_{RM}$ (wkg) |
|---|---|---|---|
| **GER4001** | 50 V | **GER4005** | 600 V |
| **GER4002** | 100 V | **GER4006** | 800 V |
| **GER4003** | 200 V | **GER4007** | 1000 V |
| **GER4004** | 400 V | | |

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## SILICON SOLID GLASS RECTIFIER DIODES

### A14 (FIG. D)

At 25° C: $I_R$ = 5 μA max.; $V_F$ = 1.0 V at 1.0 A (A14 Series). $I_R$ = 150 μA max.; $V_F$ = 1.3 V at 1.0 A (1N4200 Series).

| JEDEC or GE Type | PRV V | Max. $I_{DC}$ at $T_A$ | | JEDEC or GE Type | PRV V | Max. $I_{DC}$ at $T_A$ | |
|---|---|---|---|---|---|---|---|
| | | A | °C | | | A | °C |
| **1N5059 (A14B)** | 200 | 1.0 | 100 | **A14P** | 1000 | 1.0 | 90 |
| **1N5060 (A14D)** | 400 | 1.0 | 100 | **1N4245*** | 200 | 1.0 | 100 |
| **1N5061 (A14M)** | 600 | 1.0 | 100 | **1N4246*** | 400 | 1.0 | 100 |
| **1N5062 (A14N)** | 800 | 1.0 | 100 | **1N4247*** | 600 | 1.0 | 100 |
| **A14F** | 50 | 1.0 | 100 | **1N4248** | 800 | 1.0 | 100 |
| **A14A** | 100 | 1.0 | 100 | **1N4249** | 1000 | 1.0 | 100 |

*JAN type available.

### A114F (FIG. D)

Max. $t_{rr}$ = 200 nsec.

| JEDEC or GE Type | PRV V | Max. $I_{DC}$ at $T_A$ | | JEDEC or GE Type | PRV V | Max. $I_{DC}$ at $T_A$ | |
|---|---|---|---|---|---|---|---|
| | | Amps | °C | | | Amps | °C |
| **A114F** | 50 | 1.0 | 55 | **A114D** | 400 | 1.0 | 55 |
| **A114A** | 100 | 1.0 | 55 | **A114E** | 500 | 1.0 | 55 |
| **A114B** | 200 | 1.0 | 55 | **A114M** | 600 | 1.0 | 55 |
| **A114C** | 300 | 1.0 | 55 | | | | |

### A15 (FIG. E)

Max. peak 1-cycle surge = 125 amps.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **A15F** | 50 | 3.0 | 70 | **1N5625** | 400 | 3.0 | 70 |
| **A15A** | 100 | 3.0 | 70 | **1N5626** | 600 | 3.0 | 70 |
| **1N5624** | 200 | 3.0 | 70 | **1N5627** | 800 | 3.0 | 70 |

### MPR (2-PELLET A14)

Max. peak 1-cycle surge = 25 amps. Utilizes class A14 construction.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **MPR-10** | 1000 | 0.5 | 100 | **MPR-15** | 1500 | 0.5 | 100 |
| **MPR-12** | 1200 | 0.5 | 100 | | | | |

### A14 MODULE (POTTED BLOCKS)

Many other circuits and voltages also available on request.

| GE Type | Circuit | PRV V | Max. $I_{DC}$ at $T_A$ | |
|---|---|---|---|---|
| | | | Amps | °C |
| **A1423BB1AB1** | Single phase FW bridge | 200 | 1.5 | 50 |
| **A1423MB1AB1** | Single phase FW bridge | 600 | 1.5 | 50 |
| **A1423BF1AB1** | Three phase FW bridge | 200 | 1.4 | 50 |
| **A1423MF1AB1** | Three phase FW bridge | 600 | 1.4 | 50 |
| **A1425MH5AB1** | Half wave series string | 3000 | 0.5 | 50 |
| **A1425MH10AB1** | Half wave series string | 6000 | 0.4 | 50 |
| **A1425PBH5AB1** | Half wave series string | 6000 | 0.2 | 50 |
| **A1425PBH10AB1** | Half wave series string | 12000 | 0.16 | 50 |

## AVALANCHE PROTECTED RECTIFIERS (FIG. F)

Specifications are JEDEC registration data.

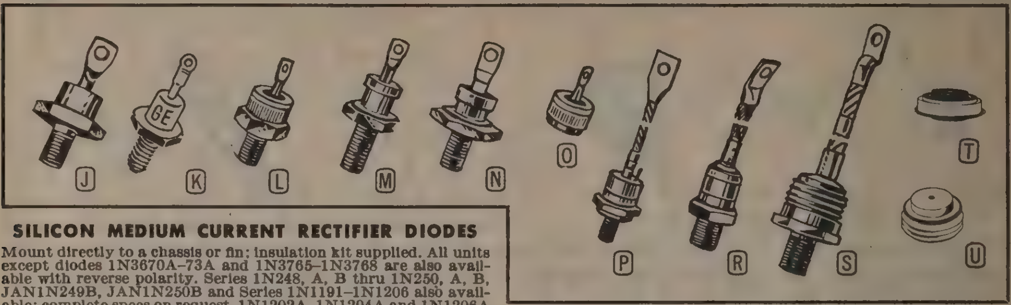
| JEDEC Type | Max. PRV V | Max. $I_{DC}$ | | JEDEC Type | Max. PRV V | Max. $I_{DC}$ | |
|---|---|---|---|---|---|---|---|
| | | $T_A$ = 25° C mA | $T_A$ = 100° C mA | | | $T_A$ = 25° C mA | $T_A$ = 100° C mA |
| **1N1730** | 1000 | 200 | 100 | **1N2382** | 4000 | 150 | 75 |
| **1N1731** | 1500 | 200 | 100 | **1N2383** | 6000 | 100 | 50 |
| **1N1732** | 2000 | 200 | 100 | **1N2384** | 8000 | 70 | 35 |
| **1N1733** | 3000 | 150 | 75 | **1N2385** | 10000 | 70 | 35 |
| **1N1734** | 5000 | 100 | 50 | | | | |

## 1 WATT SILICON ZENER DIODES (FIG. G)

Tolerance ± 10%; Z4X5.1B-1N1776 available ± 5% (add suffix A); Z4XL6.2B-Z4XL22B available ± 20% (no suffix, Z4XL6.2).

| JEDEC or GE Type | Nominal $V_{ZT}$ at $I_{ZT}$ Volts | $I_{ZT}$ mA | JEDEC or GE Type | Nominal $V_{ZT}$ at $I_{ZT}$ Volts | $I_{ZT}$ mA |
|---|---|---|---|---|---|
| **Z4X5.1B** | 5.1 | 100 | **1N1775** | 15.0 | 50 |
| **1N1765** | 5.6 | 100 | **1N1776** | 16.0 | 50 |
| **1N1766** | 6.2 | 100 | **Z4XL6.2B** | 6.2 | 20 |
| **1N1767** | 6.8 | 100 | **Z4XL7.5B** | 7.5 | 20 |
| **1N1768** | 7.5 | 100 | **Z4XL9.1B** | 9.1 | 20 |
| **1N1769** | 8.2 | 100 | **Z4XL12B** | 12.0 | 20 |
| **1N1770** | 9.1 | 50 | **Z4XL14B** | 14.0 | 20 |
| **1N1771** | 10.0 | 50 | **Z4XL16B** | 16.0 | 20 |
| **1N1772** | 11.0 | 50 | **Z4XL18B** | 18.0 | 20 |
| **1N1773** | 12.0 | 50 | **Z4XL20B** | 20.0 | 20 |
| **1N1774** | 13.0 | 50 | **Z4XL22B** | 22.0 | 20 |
| **Z4X14B** | 14.0 | 50 | | | |

# GENERAL ELECTRIC SILICON RECTIFIER DIODES AND SCR'S



## SILICON MEDIUM CURRENT RECTIFIER DIODES

Mount directly to a chassis or fin; insulation kit supplied. All units except diodes 1N3670A–73A and 1N3765–1N3768 are also available with reverse polarity. Series 1N248, A, B thru 1N250, A, B, JAN1N249B, JAN1N250B and Series 1N1191–1N1206 also available; complete specs on request. 1N1202A, 1N1204A and 1N1206A also available to JAN and JANTX specifications. 1N1614–1N1616 available to JAN specifications.

| JEDEC or GE Type | Fig. | PRV V* | Maximum IDC‡ A | Maximum Peak 1 Hz Surge | JEDEC or GE Type | Fig. | PRV V* | Maximum IDC‡ A | Maximum Peak 1 Hz Surge |
|---|---|---|---|---|---|---|---|---|---|
| 1N248C | J | 55 | 20■ | 350 A | 1N2155 | J | 100 | 25▲ | 400 A |
| 1N249C | J | 110 | 20■ | 350 A | 1N2156 | J | 200 | 25▲ | 400 A |
| 1N250C | J | 220 | 20■ | 350 A | 1N2157 | J | 300 | 25▲ | 400 A |
| 1N1183 | J | 50 | 35• | 500 A | 1N2158 | J | 400 | 25▲ | 400 A |
| 1N1184† | J | 100 | 35• | 500 A | 1N2159 | J | 500 | 25▲ | 400 A |
| 1N1185 | J | 150 | 35• | 500 A | 1N2160 | J | 600 | 25▲ | 400 A |
| 1N1186† | J | 200 | 35• | 500 A | 1N3208 | L | 50 | 15♦ | 250 A |
| 1N1187 | J | 300 | 35• | 500 A | 1N3209 | L | 100 | 15♦ | 250 A |
| 1N1188† | J | 400 | 35• | 500 A | 1N3210 | L | 200 | 15♦ | 250 A |
| 1N1189 | J | 500 | 35• | 500 A | 1N3211 | L | 300 | 15♦ | 250 A |
| 1N1190 | J | 600 | 35• | 500 A | 1N3212 | L | 400 | 15♦ | 250 A |
| 1N1195A | J | 300 | 20■ | 350 A | 1N3213 | L | 500 | 15♦ | 250 A |
| 1N1196A | J | 400 | 20■ | 350 A | 1N3214 | L | 600 | 15♦ | 250 A |
| 1N1197A | J | 500 | 20■ | 350 A | 1N3670A | M | 700 | 12■ | 240 A |
| 1N1198A | J | 600 | 20■ | 350 A | 1N3671A | M | 800 | 12■ | 240 A |
| 1N1199A | K | 50 | 12■ | 240 A | 1N3672A | M | 900 | 12■ | 240 A |
| 1N1200A | K | 100 | 12■ | 240 A | 1N3673A | M | 1000 | 12■ | 240 A |
| 1N1201A | K | 150 | 12■ | 240 A | 1N3765 | N | 700 | 35• | 500 A |
| 1N1202A† | K | 200 | 12■ | 240 A | 1N3766 | N | 800 | 35• | 500 A |
| 1N1203A | K | 300 | 12■ | 240 A | 1N3767 | N | 900 | 35• | 500 A |
| 1N1204A† | K | 400 | 12■ | 240 A | 1N3768 | N | 1000 | 35• | 500 A |
| 1N1205A | K | 500 | 12■ | 240 A | 1N5331 | M | 1200 | 12■ | 240 A |
| 1N1206A† | K | 600 | 12■ | 240 A | 1N5332 | N | 1200 | 35• | 500 A |
| 1N1341A | K | 50 | 6■ | 150 A | A40Aɪ | L | 100 | 20§ | 300 A |
| 1N1342A | K | 100 | 6■ | 150 A | A40Bɪ | L | 200 | 20§ | 300 A |
| 1N1343A | K | 150 | 6■ | 150 A | A40Cɪ | L | 300 | 20§ | 300 A |
| 1N1344A | K | 200 | 6■ | 150 A | A40Dɪ | L | 400 | 20§ | 300 A |
| 1N1345A | K | 300 | 6■ | 150 A | A40Eɪ | L | 500 | 20§ | 300 A |
| 1N1346A | K | 400 | 6■ | 150 A | A40Fɪ | L | 50 | 20§ | 300 A |
| 1N1347A | K | 500 | 6■ | 150 A | A40Mɪ | L | 600 | 20§ | 300 A |
| 1N1348A | K | 600 | 6■ | 150 A | A44Aʃ | O | 100 | 20§ | 300 A |
| 1N1612 | K | 50 | 5■ | 150 A | A44Bʃ | O | 200 | 20§ | 300 A |
| 1N1613 | K | 100 | 5■ | 150 A | A44Cʃ | O | 300 | 20§ | 300 A |
| 1N1614* | K | 200 | 5■ | 150 A | A44Dʃ | O | 400 | 20§ | 300 A |
| 1N1615* | K | 400 | 5■ | 150 A | A44Eʃ | O | 500 | 20§ | 300 A |
| 1N1616* | K | 600 | 5■ | 150 A | A44Fʃ | O | 50 | 20§ | 300 A |
| 1N2135A* | J | 400 | 20■ | 350 A | A44Mʃ | O | 600 | 20§ | 300 A |
| 1N2154 | J | 50 | 25▲ | 400 A | | | | | |

### FAST RECOVERY TYPES

Max. recovery time, 200 nsec except A28 Series, 100 nsec. For reverse polarity add suffix **R** (1N3879**R**, A28A**R**).

| JEDEC or GE Type | Fig. | PRV V* | Maximum IDC‡ A | Maximum Peak 1 Hz Surge | JEDEC or GE Type | Fig. | PRV V* | Maximum IDC‡ A | Maximum Peak 1 Hz Surge |
|---|---|---|---|---|---|---|---|---|---|
| 1N3879 | K | 50 | 6 | 75 A | 1N3902 | J | 300 | 20 | 225 A |
| 1N3880* | K | 100 | 6 | 75 A | 1N3903 | J | 400 | 20 | 225 A |
| 1N3881* | K | 200 | 6 | 75 A | 1N3909* | J | 50 | 30 | 300 A |
| 1N3882 | K | 300 | 6 | 75 A | 1N3910* | J | 100 | 30 | 300 A |
| 1N3883* | K | 400 | 6 | 75 A | 1N3911* | J | 200 | 30 | 300 A |
| 1N3889 | K | 50 | 12 | 150 A | 1N3912* | J | 300 | 30 | 300 A |
| 1N3890† | K | 100 | 12 | 150 A | 1N3913* | J | 400 | 30 | 300 A |
| 1N3891† | K | 200 | 12 | 150 A | A28A | K | 100 | 12♯ | 240 A |
| 1N3892 | K | 300 | 12 | 150 A | A28B | K | 200 | 12♯ | 240 A |
| 1N3893† | K | 400 | 12 | 150 A | A28C | K | 300 | 12♯ | 240 A |
| 1N3899 | J | 50 | 20 | 225 A | A28D | K | 400 | 12♯ | 240 A |
| 1N3900 | J | 100 | 20 | 225 A | A28F | K | 50 | 12♯ | 240 A |
| 1N3901 | J | 200 | 20 | 225 A | | | | | |

*Repetitive. †JAN and JANTX types available. ‡Stud single phase at 100° C except: §110° C; ♯135° C; •140° C; ▲145° C; ■150° C; ♦150° C Tc. For reverse polarity, change to: ɪA41; ʃA45. *JAN type available.

## LIGHT ACTIVATED SCR'S

Effective irradiance (mW/cm²) to trigger at 25° C TJ, 6 VDC, 0.68–10.0 (L9 and L911 Series, 0.68–4.2). L8, L9, TO-5 outline; others same except diamond base heatsink.

| PRV/ $V_{BO}$ | (Max. $I_{DC}$ = .44 A, 25° C) Type | Type | (Max. $I_{DC}$ = .77 A, 25° C) Type | Type |
|---|---|---|---|---|
| 25 | L8U | L9U | L811U | L911U |
| 50 | L8F | L9F | ............. | L911F |
| 100 | L8A | L9A | L811A | L911A |
| 150 | L8G | L9G | L811G | L911G |
| 200 | L8B | L9B | L811B | L911B |

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## SILICON HIGH CURRENT RECTIFIER DIODES

Also available in reverse polarity: Use **A71, A91** or add suffix **R** to JEDEC no. Type A291 reverse polarity only; type A295 available with flat base (A296 series) and reverse polarity.

| GE Type | JEDEC Type | Fig. | PRV Rep. V | * | JEDEC or GE Type | Fig. | PRV Rep. V | * |
|---|---|---|---|---|---|---|---|---|
| A70A | ......... | P | 100 | 100 | A291PC | S | 1300 | 250 |
| A70B | 1N3289† | P | 200 | 100 | A291PD | S | 1400 | 250 |
| A70C | 1N3290 | P | 300 | 100 | A291PE | S | 1500 | 250 |
| A70D | 1N3291† | P | 400 | 100 | A291PM | S | 1600 | 250 |
| A70E | 1N3292 | P | 500 | 100 | A291PN | S | 1800 | 250 |
| A70M | 1N3293† | P | 600 | 100 | A291PS | S | 1700 | 250 |
| A70N | 1N3294† | P | 800 | 100 | 1N4044 | P | 50 | 275 |
| A70P | 1N3295† | P | 1000 | 100 | 1N4045 | P | 100 | 275 |
| A70PA | ......... | P | 1100 | 100 | 1N4046 | P | 150 | 275 |
| A70PB | 1N3296 | P | 1200 | 100 | 1N4047 | P | 200 | 275 |
| A70S | ......... | P | 700 | 100 | 1N4048 | P | 250 | 275 |
| A70T | ......... | P | 900 | 100 | 1N4049 | P | 300 | 275 |
| ....... | 1N3260 | R | 50 | 160 | 1N4050 | P | 400 | 275 |
| ....... | 1N3261 | R | 100 | 160 | 1N4051 | P | 500 | 275 |
| ....... | 1N3262 | R | 150 | 160 | 1N4052 | P | 600 | 275 |
| ....... | 1N3263 | R | 200 | 160 | 1N4053 | P | 700 | 275 |
| ....... | 1N3264 | R | 250 | 160 | 1N4054 | P | 800 | 275 |
| ....... | 1N3265 | R | 300 | 160 | 1N4055 | P | 900 | 275 |
| ....... | 1N3266 | R | 350 | 160 | 1N4056 | P | 1000 | 275 |
| ....... | 1N3267 | R | 400 | 160 | A295A | S | 100 | 500 |
| ....... | 1N3268 | R | 500 | 160 | A295B | S | 200 | 500 |
| ....... | 1N3269 | R | 600 | 160 | A295C | S | 300 | 500 |
| ....... | 1N3270 | R | 700 | 160 | A295D | S | 400 | 500 |
| ....... | 1N3271 | R | 800 | 160 | A295E | S | 500 | 500 |
| ....... | 1N3272 | R | 900 | 160 | A295M | S | 600 | 500 |
| ....... | 1N3273 | R | 1000 | 160 | A295N | S | 800 | 500 |
| A90A | 1N3735 | R | 100 | 250 | A295P | S | 1000 | 500 |
| A90B | 1N3736 | R | 200 | 250 | A295S | S | 700 | 500 |
| A90C | 1N3737 | R | 300 | 250 | A295T | S | 900 | 500 |
| A90D | 1N3738 | R | 400 | 250 | A295PA | S | 1100 | 500 |
| A90E | 1N3739 | R | 500 | 250 | A295PB | S | 1200 | 500 |
| A90M | 1N3740 | R | 600 | 250 | A295PC | S | 1300 | 500 |
| A90N | 1N3741 | R | 800 | 250 | A295PD | S | 1400 | 500 |
| A90P | 1N3742 | R | 1000 | 250 | A295PE | S | 1500 | 500 |
| A90PA | ......... | R | 1100 | 250 | A295PM | S | 1600 | 500 |
| A90PB | ......... | R | 1200 | 250 | A295PN | S | 1800 | 500 |
| A90S | ......... | R | 700 | 250 | A295PS | S | 1700 | 500 |
| A90T | ......... | R | 900 | 250 | | | | |

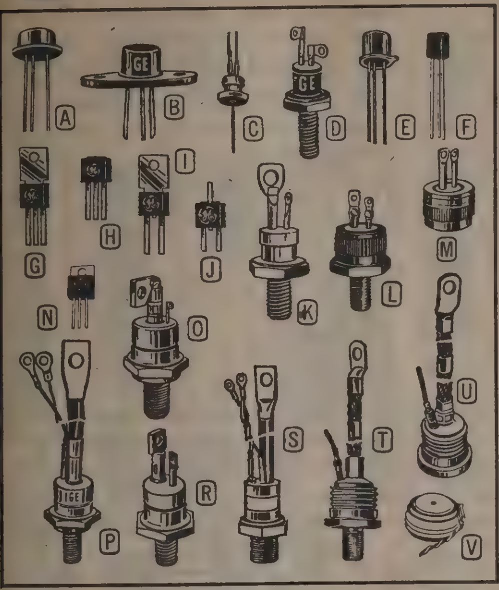
*Max. current ½ wave, amps average. †JAN type available.

### PRESSURE-MOUNTED PACKAGES

High power rectifier diodes feature high current, high voltage and pressure contacts. Reversibility of package eliminates need for special reverse polarity units. Average forward current = 400 A, 1-phase average except A540, 1000 A and A570, 1500 A. A396 fast recovery type. Additional PRV ratings available on request.

| GE Type | Fig. | PRV Rep. V | 1-phase $I_R$ mA | GE Type | Fig. | PRV Rep. V | 1-phase $I_R$ mA |
|---|---|---|---|---|---|---|---|
| A390A | T | 100 | 16 | A540D | U | 400 | 20 |
| A390B | T | 200 | 16 | A540E | U | 500 | 20 |
| A390C | T | 300 | 16 | A540L | U | 2000 | 20 |
| A390D | T | 400 | 16 | A540M | U | 600 | 20 |
| A390E | T | 500 | 15 | A540N | U | 800 | 20 |
| A390M | T | 600 | 12.5 | A540P | U | 1000 | 20 |
| A390N | T | 800 | 10.0 | A540PA | U | 1100 | 20 |
| A390P | T | 1000 | 8.0 | A540PB | U | 1200 | 20 |
| A390PA | T | 1100 | 8.0 | A540PC | U | 1300 | 20 |
| A390PB | T | 1200 | 8.0 | A540PD | U | 1400 | 20 |
| A390S | T | 700 | 12.5 | A540PE | U | 1500 | 20 |
| A390T | T | 900 | 10.5 | A540PM | U | 1600 | 20 |
| A396A | T | 100 | 16.0 | A540PN | U | 1800 | 20 |
| A396B | T | 200 | 16.0 | A540PS | U | 1700 | 20 |
| A396C | T | 300 | 16.0 | A540PT | U | 1900 | 20 |
| A396D | T | 400 | 16.0 | A540S | U | 700 | 20 |
| A396E | T | 500 | 15.0 | A540T | U | 900 | 20 |
| A396M | T | 600 | 12.5 | A570A | U | 100 | 20 |
| A396N | T | 800 | 10.0 | A570B | U | 200 | 20 |
| A396P | T | 1000 | 10.0 | A570C | U | 300 | 20 |
| A396S | T | 700 | 12.5 | A570D | U | 400 | 20 |
| A396T | T | 900 | 10.0 | A570E | U | 500 | 20 |
| A540A | U | 100 | 20.0 | A570F | U | 50 | 20 |
| A540B | U | 200 | 20.0 | A570M | U | 600 | 20 |
| A540C | U | 300 | 20.0 | | | | |

# GENERAL ELECTRIC SILICON CONTROLLED RECTIFIERS



## LOW CURRENT SCR'S

Series C106**C** (1, 2, 3, 4) for AC only.

| GE Type | JEDEC No. | Fig. | PRV and $V_{BO}$ | Max. $I_{DC}$ A | GE or JEDEC Type | Fig. | PRV and $V_{BO}$ | Max. $I_{DC}$ A |
|---|---|---|---|---|---|---|---|---|
| ........ | 2N1595 | A | 50 | 1.6 | 2N885 | E | 30 | .5 |
| ........ | 2N1596 | A | 100 | 1.6 | 2N886 | E | 60 | .5 |
| ........ | 2N1597 | A | 200 | 1.6 | 2N887 | E | 100 | .5 |
| ........ | 2N1598 | A | 300 | 1.6 | 2N888 | E | 150 | .5 |
| ........ | 2N1599 | A | 400 | 1.6 | 2N889 | E | 200 | .5 |
| C5U* | 2N2322 | A | 25 | 1.6 | C6U‡ | A | 25 | 1.6 |
| C5F* | 2N2323* | A | 50 | 1.6 | C6F‡ | A | 50 | 1.6 |
| C5A* | 2N2324* | A | 100 | 1.6 | C6A‡ | A | 100 | 1.6 |
| C5G* | 2N2325 | A | 150 | 1.6 | C6G‡ | A | 150 | 1.6 |
| C5B* | 2N2326* | A | 200 | 1.6 | C6B‡ | A | 200 | 1.6 |
| C5H* | 2N2327 | A | 250 | 1.6 | C12U† | D | 25 | 6 |
| C5C* | 2N2328 | A | 300 | 1.6 | C12F† | D | 50 | 6 |
| C5D* | 2N2329 | A | 400 | 1.6 | C12A† | D | 100 | 6 |
| ........ | 2N2322A | A | 25 | 1.6 | C12G† | D | 150 | 6 |
| ........ | 2N2323A* | A | 50 | 1.6 | C12B† | D | 200 | 6 |
| ........ | 2N2324A* | A | 100 | 1.6 | C12H† | D | 250 | 6 |
| ........ | 2N2325A | A | 150 | 1.6 | C12C† | D | 300 | 6 |
| ........ | 2N2326A* | A | 200 | 1.6 | C15U | D | 25 | 8 |
| ........ | 2N2327A | A | 250 | 1.6 | C15F | D | 50 | 8 |
| ........ | 2N2328A | A | 300 | 1.6 | C15A | D | 100 | 8 |
| C7U | 2N2344 | A | 25 | .6 | C15G | D | 150 | 8 |
| C7F | 2N2345 | A | 50 | .6 | C15B | D | 200 | 8 |
| C7A | 2N2346 | A | 100 | .6 | C15C | D | 300 | 8 |
| C7G | 2N2347 | A | 150 | .6 | C15D | D | 400 | 8 |
| C7B | 2N2348 | A | 200 | .6 | C15E | D | 500 | 8 |
| C8U | 2N1929 | C | 25 | 1.1 | C15M | D | 600 | 8 |
| C8F | 2N1930 | C | 50 | 1.1 | C103Y | F | 30 | 0.8 |
| C8A | 2N1931 | C | 100 | 1.1 | C103YY | F | 60 | 0.8 |
| C8G | 2N1932 | C | 150 | 1.1 | C103A | F | 100 | 0.8 |
| C8B | 2N1933 | C | 200 | 1.1 | C103B | F | 200 | 0.8 |
| C8H | 2N1934 | C | 250 | 1.1 | C106Q1 | G | 15 | 2.0 |
| C8C | 2N1935 | C | 300 | 1.1 | C106Y1 | G | 30 | 2.0 |
| C10U | 2N1770A | D | 25 | 7.4 | C106F1 | G | 50 | 2.0 |
| C10F | 2N1771A• | D | 50 | 7.4 | C106A1 | G | 100 | 2.0 |
| C10A | 2N1772A• | D | 100 | 7.4 | C106B1 | G | 200 | 2.0 |
| C10G | 2N1773A | D | 150 | 7.4 | C106C1 | G | 300 | 2.0 |
| C10B | 2N1774A• | D | 200 | 7.4 | C106Q2 | H | 15 | 2.0 |
| C10H | 2N1775A | D | 250 | 7.4 | C106Y2 | H | 30 | 2.0 |
| C10C | 2N1776A• | D | 300 | 7.4 | C106F2 | H | 50 | 2.0 |
| C10D | 2N1777A• | D | 400 | 7.4 | C106A2 | H | 100 | 2.0 |
| C11U | 2N1770 | D | 25 | 6 | C106B2 | H | 200 | 2.0 |
| C11F | 2N1771 | D | 50 | 6 | C106C2 | H | 300 | 2.0 |
| C11A | 2N1772 | D | 100 | 6 | C106Q3 | I | 15 | 2.0 |
| C11G | 2N1773 | D | 150 | 6 | C106Y3 | I | 30 | 2.0 |
| C11B | 2N1774 | D | 200 | 6 | C106F3 | I | 50 | 2.0 |
| C11H | 2N1775 | D | 250 | 6 | C106A3 | I | 100 | 2.0 |
| C11C | 2N1776 | D | 300 | 6 | C106B3 | I | 200 | 2.0 |
| C11D | 2N1777 | D | 400 | 6 | C106C3 | I | 300 | 2.0 |
| C11E | 2N1778 | D | 500 | 6 | C106Q4 | J | 15 | 2.0 |
| C11M | 2N2619 | D | 600 | 6 | C106Y4 | J | 30 | 2.0 |
| ........ | 2N877 | E | 30 | .5 | C106F4 | J | 50 | 2.0 |
| ........ | 2N878 | E | 60 | .5 | C106A4 | J | 100 | 2.0 |
| ........ | 2N879 | E | 100 | .5 | C106B4 | J | 200 | 2.0 |
| ........ | 2N880 | E | 150 | .5 | C106C4 | J | 300 | 2.0 |
| ........ | 2N881 | E | 200 | .5 | | | | |

*For diamond base heatsink version (Fig. B) of C5 Series use **C511-**. †Turn-off time guaranteed at 12 μsec max.; for inverter applications. ‡For diamond base heatsink version (Fig. B) of C6 Series use **C611-**. *JAN; •JAN and JANTX types available.

## LOW CURRENT SCR'S (CONT'D)

Maximum $I_{DC}$ 2.0 amps.

| GE Type | Fig. | PRV, $V_{BO}$ | GE Type | Fig. | PRV, $V_{BO}$ |
|---|---|---|---|---|---|
| C107Y1 | G | 30 | C107Y3 | I | 30 |
| C107F1 | G | 50 | C107F3 | I | 50 |
| C107A1 | G | 100 | C107A3 | I | 100 |
| C107B1 | G | 200 | C107B3 | I | 200 |
| C107Y2 | H | 30 | C107Y4 | J | 30 |
| C107F2 | H | 50 | C107F4 | J | 50 |
| C107A2 | H | 100 | C107A4 | J | 100 |
| C107B2 | H | 200 | C107B4 | J | 200 |

## MEDIUM CURRENT SCR'S (FIG. K)

Series C20, C30, C31 and C34 type 2, Fig. L; Series C22, C32, C33 and C34 type 1, Fig. M; Series C122, Fig. N.

| GE Type | JEDEC No. | PRV and $V_{BO}$ | Max. $I_{DC}$ A | GE Type | JEDEC No. | PRV and $V_{BO}$ | Max. $I_{DC}$ A |
|---|---|---|---|---|---|---|---|
| C20U | .......... | 25 | 10 | C36F | 2N1843 | 50 | 16 |
| C20F | .......... | 50 | 10 | C36A | 2N1844 | 100 | 16 |
| C20A | .......... | 100 | 10 | C36G | 2N1845 | 150 | 16 |
| C20B | .......... | 200 | 10 | C36B | 2N1846 | 200 | 16 |
| C20C | .......... | 300 | 10 | C36H | 2N1847 | 250 | 16 |
| C20D | .......... | 400 | 10 | C36C | 2N1848 | 300 | 16 |
| C22U | .......... | 25 | 10 | C36D | 2N1849 | 400 | 16 |
| C22F | .......... | 50 | 10 | C36E | 2N1850 | 500 | 16 |
| C22A | .......... | 100 | 10 | C36M | .......... | 600 | 16 |
| C22B | .......... | 200 | 10 | C36S | .......... | 700 | 16 |
| C22C | .......... | 300 | 10 | C36N | .......... | 800 | 16 |
| C22D | .......... | 400 | 10 | ........ | 2N1842A | 25 | 25 |
| C30U* | .......... | 25 | 25 | ........ | 2N1843A | 50 | 25 |
| C30F* | .......... | 50 | 25 | ........ | 2N1844A | 100 | 25 |
| C30A* | .......... | 100 | 25 | ........ | 2N1845A | 150 | 25 |
| C30B* | .......... | 200 | 25 | ........ | 2N1846A | 200 | 25 |
| C30C* | .......... | 300 | 25 | ........ | 2N1847A | 250 | 25 |
| C30D* | .......... | 400 | 25 | ........ | 2N1848A | 300 | 25 |
| C30E* | .......... | 500 | 25 | ........ | 2N1849A | 400 | 25 |
| C32U† | .......... | 25 | 25 | ........ | 2N1850A | 500 | 25 |
| C32F† | .......... | 50 | 25 | C37U | .......... | 25 | 25 |
| C32A† | .......... | 100 | 25 | C37F | .......... | 50 | 25 |
| C32B† | .......... | 200 | 25 | C37A | .......... | 100 | 25 |
| C32C† | .......... | 300 | 25 | C37B | .......... | 200 | 25 |
| C32D† | .......... | 400 | 25 | C37C | .......... | 300 | 25 |
| C32E† | .......... | 500 | 25 | C37D | .......... | 400 | 25 |
| C34U1§ | .......... | 25 | 25 | C37E | .......... | 500 | 25 |
| C34F1§ | .......... | 50 | 25 | C37M | .......... | 600 | 25 |
| C34A1§ | .......... | 100 | 25 | C37S | .......... | 700 | 25 |
| C34B1§ | .......... | 200 | 25 | C37N | .......... | 800 | 25 |
| C34C1§ | .......... | 300 | 25 | ........ | 2N5204 | 600 | 35 |
| C34D1§ | .......... | 400 | 25 | ........ | 2N5205 | 800 | 35 |
| C34E1§ | .......... | 500 | 25 | ........ | 2N5206 | 1000 | 35 |
| C34U2§ | .......... | 25 | 25 | ........ | 2N5207 | 1200 | 35 |
| C34F2§ | .......... | 50 | 25 | C38U | .......... | 25 | 35 |
| C34A2§ | .......... | 100 | 25 | C38F | .......... | 50 | 35 |
| C34B2§ | .......... | 200 | 25 | C38A | .......... | 100 | 35 |
| C34C2§ | .......... | 300 | 25 | C38G | .......... | 150 | 35 |
| C34D2§ | .......... | 400 | 25 | C38B | .......... | 200 | 35 |
| C34E2§ | .......... | 500 | 25 | C38H | .......... | 250 | 35 |
| C35U | .......... | 25 | 35 | C38C | .......... | 300 | 35 |
| C35F | .......... | 50 | 35 | C38D | .......... | 400 | 35 |
| C35A | .......... | 100 | 35 | C38E | .......... | 500 | 35 |
| C35G | .......... | 150 | 35 | C122F | .......... | 50 | 8.0 |
| C35B | .......... | 200 | 35 | C122A | .......... | 100 | 8.0 |
| C35H | .......... | 250 | 35 | C122B | .......... | 200 | 8.0 |
| C35C | .......... | 300 | 35 | C122D | .......... | 400 | 8.0 |
| C35D | .......... | 400 | 35 | C137E | .......... | 500 | 35 |
| C35E | .......... | 500 | 35 | C137M | .......... | 600 | 35 |
| C35M | .......... | 600 | 35 | C137S | .......... | 700 | 35 |
| C35S | .......... | 700 | 35 | C137N | .......... | 800 | 35 |
| C35N | .......... | 800 | 35 | C137T | .......... | 900 | 35 |
| ........ | 2N681 | 25 | 25 | C137P | .......... | 1000 | 35 |
| ........ | 2N682* | 50 | 25 | C137PA | .......... | 1100 | 35 |
| ........ | 2N683* | 100 | 25 | C137PB | .......... | 1200 | 35 |
| ........ | 2N684 | 150 | 25 | C140F | 2N3649 | 50 | 25 |
| ........ | 2N685* | 200 | 25 | C140A | 2N3650 | 100 | 25 |
| ........ | 2N686* | 250 | 25 | C140B | 2N3651 | 200 | 25 |
| ........ | 2N687* | 300 | 25 | C140C | 2N3652 | 300 | 25 |
| ........ | 2N688* | 400 | 25 | C140D | 2N3653 | 400 | 25 |
| ........ | 2N689* | 500 | 25 | C141F‡ | 2N3654‡ | 50 | 25 |
| ........ | 2N690 | 600 | 25 | C141A‡ | 2N3655‡ | 100 | 25 |
| ........ | 2N691 | 700 | 25 | C141B‡ | 2N3656‡ | 200 | 25 |
| ........ | 2N692 | 800 | 25 | C141C‡ | 2N3657‡ | 300 | 25 |
| C36U | 2N1842 | 25 | 16 | C141D‡ | 2N3658‡ | 400 | 25 |

For max. required gate signal to 9 mA change no. to: ***C31-**; †**C33-**. ‡Inverter type; turn-off time guaranteed at 10 μsec max. §Inverter type; turn-off time guaranteed at 20 μsec max. *JAN type available,

## HIGH CURRENT SCR'S

Maximum $I_{RMS}$ 55 amps.

| GE Type | | PRV and $V_{BO}$ | GE Type | | | PRV and $V_{BO}$ |
|---|---|---|---|---|---|---|
| Fig. O | Fig. P | | Fig. O | Fig. P | Fig. R | |
| C45U | C46U | 25 | C45E | C46E | C145E | 500 |
| C45F | C46F | 50 | C45M | C46M | C145M | 600 |
| C45A | C46A | 100 | C45S | C46S | C145S | 700 |
| C45G | C46G | 150 | C45N | C46N | C145N | 800 |
| C45B | C46B | 200 | C45T | C46T | C145T | 900 |
| C45H | C46H | 250 | ........ | ........ | C145P | 1000 |
| C45C | C46C | 300 | ........ | ........ | C145PA | 1100 |
| C45D | C46D | 400 | ........ | ........ | C145PB | 1200 |

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# GENERAL ELECTRIC SILICON CONTROLLED RECTIFIERS

## HIGH CURRENT SCR'S

Max. $I_{RMS}$ 110 amps. Guaranteed Turn-Off Time: Inverter type C155 and C157 Series, less than 20 μsec; inverter type C154 and C156 Series, less than 10 μsec.

| GE Type |  | PRV, $V_{BO}$ V | GE Type |  | PRV, $V_{BO}$ V |
|---|---|---|---|---|---|
| Fig. P | Fig. O |  | Fig. P | Fig. O |  |
| C150E | C152E | 500 | C154C | C156C | 300 |
| C150M | C152M | 600 | C154D | C156D | 400 |
| C150S | C152S | 700 | C154E | C156E | 500 |
| C150N | C152N | 800 | C154M | C156M | 600 |
| C150T | C152T | 900 | C155A | C157A | 100 |
| C150P | C152P | 1000 | C155B | C157B | 200 |
| C150PA | C152PA | 1100 | C155C | C157C | 300 |
| C150PB | C152PB | 1200 | C155D | C157D | 400 |
| C150PC | C152PC | 1300 | C155E | C157E | 500 |
| C154A | C156A | 100 | C155M | C157M | 600 |
| C154B | C156B | 200 |  |  |  |

Current rating 110 amps rms.

| GE Type |  | JEDEC No. | PRV, $V_{BO}$ V | GE Type |  | PRV, $V_{BO}$ V |
|---|---|---|---|---|---|---|
| Fig. O | Fig. P | Fig. P |  | Fig. P | Fig. O |  |
| C52U | C50U | 2N1909 | 25 | C158A | C159A | 100 |
| C52F | C50F | 2N1910* | 50 | C158B | C159B | 200 |
| C52A | C50A | 2N1911* | 100 | C158C | C159C | 300 |
| C52G | C50G | 2N1912 | 150 | C158D | C159D | 400 |
| C52B | C50B | 2N1913* | 200 | C158E | C159E | 500 |
| C52H | C50H | 2N1914 | 250 | C158M | C159M | 600 |
| C52C | C50C | 2N1915* | 300 | C158S | C159S | 700 |
| C52D | C50D | 2N1916* | 400 | C158N | C159N | 800 |
| C52E | C50E | .......... | 500 | C158T | C159T | 900 |
| C52M | C50M | .......... | 600 | C158P | C159P | 1000 |
| C52S | C50S | .......... | 700 | C158PA | C159PA | 1100 |
| C52N | C50N | .......... | 800 | C158PB | C159PB | 1200 |
| C52T | C50T | .......... | 900 | JEDEC No. |  | V |
| C62U | C60U | 2N2023 | 25 | 2N2031* | .......... | 50 |
| C62F | C60F | 2N2024 | 50 | .......... | 2N1792* | 50† |
| C62A | C60A | 2N2025 | 100 | .......... | 2N1793* | 100† |
| C62G | C60G | 2N2026 | 150 | .......... | 2N1794 | 150† |
| C62B | C60B | 2N2027 | 200 | .......... | 2N1795* | 200† |
| C62H | C60H | 2N2028 | 250 | .......... | 2N1796 | 250† |
| C62C | C60C | 2N2029 | 300 | .......... | 2N1797* | 300† |
| C62D | C60D | 2N2030 | 400 | .......... | 2N1798* | 400† |
| C62E | C60E | .......... | 500 |  |  |  |

*JAN type available. †PRV (given) 20% higher than $V_{BO}$ rating.

Current rating 235 amps rms. C185 series high speed inverter.

| GE Type | Fig. | PRV, $V_{BO}$ V | GE Type | Fig. | PRV, $V_{BO}$ V |
|---|---|---|---|---|---|
| C180A | S | 100 | C185D | S | 400 |
| C180B | S | 200 | C185E | S | 500 |
| C180C | S | 300 | C185M | S | 600 |
| C180D | S | 400 | C280S | T | 700 |
| C180E | S | 500 | C280N | T | 800 |
| C180M | S | 600 | C280T | T | 900 |
| C180S | S | 700 | C280P | T | 1000 |
| C180N | S | 800 | C280PA | T | 1100 |
| C180T | S | 900 | C280PB | T | 1200 |
| C180P | S | 1000 | C280PC | T | 1300 |
| C180PA | S | 1100 | C280PD | T | 1400 |
| C180PB | S | 1200 | C280PE | T | 1500 |
| C180PC | S | 1300 | C280PM | T | 1600 |
| C185A | S | 100 | C280PS | T | 1700 |
| C185B | S | 200 | C280PN | T | 1800 |
| C185C | S | 300 |  |  |  |

Current rating 470 amps rms.

| GE Type |  | PRV, $V_{BO}$ V | GE Type |  | PRV, $V_{BO}$ V |
|---|---|---|---|---|---|
| Fig. T | Fig. U |  | Fig. T | Fig. U |  |
| C290A | C291A | 100 | C290S | C291S | 700 |
| C290B | C291B | 200 | C290N | C291N | 800 |
| C290C | C291C | 300 | C290T | C291T | 900 |
| C290D | C291D | 400 | C290P | C291P | 1000 |
| C290E | C291E | 500 | C290PA | C291PA | 1100 |
| C290M | C291M | 600 | C290PB | C291PB | 1200 |

## PRESS-PAK SCR's (FIG. V)

| GE Family | $I_{AVG}$ A | $t_q$ μsec | GE Family | $I_{AVG}$ A | $t_q$ μsec |
|---|---|---|---|---|---|
| C350 | 115 | .......... | C358 | 110 | 40 |
| C354 | 115 | 10 | C380 | 235 | .......... |
| C355 | 115 | 20 | C385 | 250 | 20 |

| General Electric Type |  |  |  |  |  | PRV, $V_{BO}$ V |
|---|---|---|---|---|---|---|
| C350 | C354 | C355 | C358 | C380 | C385 |  |
| C350A | C354A | C355A | C358A | C380A | C385A | 100 |
| C350B | C354B | C355B | C358B | C380B | C385B | 200 |
| C350C | C354C | C355C | C358C | C380C | C385C | 300 |
| C350D | C354D | C355D | C358D | C380D | C385D | 400 |
| C350E | C354E | C355E | C358E | C380E | C385E | 500 |
| C350M | C354M | C355M | C358M | C380M | C385M | 600 |
| C350S | .......... | .......... | C358S | C380S | .......... | 700 |
| C350N | .......... | .......... | C358N | C380N | .......... | 800 |
| C350T | .......... | .......... | C358T | C380T | .......... | 900 |
| C350P | .......... | .......... | C358P | C380P | .......... | 1000 |
| C350PA | .......... | .......... | C358PA | C380PA | .......... | 1100 |
| C350PB | .......... | .......... | C358PB | C380PB | .......... | 1200 |
| C350PC | .......... | .......... | .......... | C380PC | .......... | 1300 |

## PRESSURE MOUNTED SCR's (FIG. V)

| GE Family | $I_{RMS}$ A | $t_q$ μsec | GE Family | $I_{RMS}$ A | $t_q$ μsec |
|---|---|---|---|---|---|
| C398 | 550 | 30 | C506 | 625 | 40 |
| C501 | 850 | 300 | C507 | 625 | 100 |

| General Electric Type |  |  |  | PRV, $V_{BO}$ V |
|---|---|---|---|---|
| C398 | C501 | C506 | C507 |  |
| .......... | .......... | C506A | C507A | 100 |
| .......... | .......... | C506B | C507B | 200 |
| .......... | .......... | C506C | C507C | 300 |
| .......... | .......... | C506D | C507D | 400 |
| C398E | .......... | C506E | C507E | 500 |
| C398M | .......... | C506M | C507M | 600 |
| C398S | C501S | .......... | C507S | 700 |
| C398N | C501N | .......... | C507N | 800 |
| C398T | C501T | .......... | C507T | 900 |
| C398P | C501P | .......... | C507P | 1000 |
| C398PA | C501PA | .......... | C507PA | 1100 |
| C398PB | C501PB | .......... | C507PB | 1200 |
| .......... | C501PC | .......... | C507PC | 1300 |
| .......... | C501PD | .......... | C507PD | 1400 |
| .......... | C501PE | .......... | .......... | 1500 |
| .......... | C501PM | .......... | .......... | 1600 |
| .......... | C501PS | .......... | .......... | 1700 |

| GE Family | $I_{RMS}$ A | $t_q$ μsec | GE Family | $I_{RMS}$ A | $t_q$ μsec |
|---|---|---|---|---|---|
| C508 | 625 | 60 | C520 | 1125 | 150 |
| C510 | 450 | 15 | C530 | 1000 | 150 |

| General Electric Type |  |  |  | PRV, $V_{BO}$ V |
|---|---|---|---|---|
| C508 | C510 | C520 | C530 |  |
| .......... | .......... | C520F | C530F | 50 |
| C508A | C510A | C520A | C530A | 100 |
| .......... | .......... | C520G | .......... | 150 |
| C508B | C510B | C520B | C530B | 200 |
| .......... | .......... | C520H | .......... | 250 |
| C508C | C510C | C520C | C530C | 300 |
| C508D | C510D | C520D | C530D | 400 |
| C508E | C510E | .......... | C530E | 500 |
| C508M | C510M | .......... | C530M | 600 |
| C508S | C510S | .......... | .......... | 700 |
| C508N | .......... | .......... | .......... | 800 |
| C508T | .......... | .......... | .......... | 900 |
| C508P | .......... | .......... | .......... | 1000 |
| C508PA | .......... | .......... | .......... | 1100 |
| C508PB | .......... | .......... | .......... | 1200 |

## MILITARY SPECIFICATIONS

| JEDEC No. | MIL-S-19500/ | JEDEC No. | MIL-S-19500/ |
|---|---|---|---|
| JAN1N93A | 293 | JAN2N78A | 90 |
| JAN1N249B<br>JAN1N250B | 134 | JAN2N167A | 11 |
| JAN1N1184, 6<br>JANTX1N1184, 6<br>JAN1N1188<br>JANTX1N1188 | 297 | JAN2N335<br>JAN2N336 | 37 |
| JAN1N1202A<br>JANTX1N1202A<br>JAN1N1204A<br>JANTX1N1204A<br>JAN1N1206A<br>JANTX1N1206A | 260 | JAN2N338 | 69 |
| JAN1N1614–6 | 162 | JAN2N396A | 64 |
| JAN1N2135A | 134 | JAN2N461 | 45 |
| JAN1N3289<br>JAN1N3291<br>JAN1N3293–5 | 246C | JAN2N489A–JAN2N494A | 75 |
| JAN1N3713, 5<br>JAN1N3717, 9<br>JAN1N3721 | 269 | JAN2N497<br>JAN2N498 | 74 |
| JAN1N3880, 1<br>JAN1N3883 | 266 | JAN2N526 | 60 |
| JAN1N3890, 1<br>JANTX1N3890, 1<br>JAN1N3893<br>JANTX1N3893 | 304 | JAN2N656<br>JAN2N657 | 74 |
| JAN1N3909–JAN1N3913 | 308 | JAN2N682, 3<br>JAN2N685–JAN2N689 | 108 |
| JAN1N4148<br>JANTX1N4148 | 116 | JAN2N1303, 5<br>JAN2N1307 | 126 |
| JAN1N4153<br>JANTX1N4153 | 337 | JAN2N1771A<br>JANTX2N1771A<br>JAN2N1772A<br>JANTX2N1772A<br>JAN2N1774A<br>JANTX2N1774A<br>JAN2N1776A, 7A<br>JANTX2N1776A<br>JANTX2N1777A | 168 |
| JAN1N4245–7 | 286 | JAN2N1792, 3<br>JAN2N1795<br>JAN2N1797, 8 | 204 |
| JAN1N4454<br>JANTX1N4454 | 144 | JAN2N1910, 1<br>JAN2N1913<br>JAN2N1915, 6 | 204 |
| JAN1N4531<br>JANTX1N4531 | 116 | JAN2N2031 | 204 |
| JAN2N43A, 4A | 6 | JAN2N2060 | 270 |
|  |  | JAN2N2323, A<br>JAN2N2324, A<br>JAN2N2326, A | 276 |

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# GENERAL ELECTRIC OEM Semiconductor Pricing

| GE Type | Net Each, Lots of | | |
|---|---|---|---|
| | 1-99 | 100-999 | 1000-9999 |
| 1N91 | $0.90 | $0.60 | $0.50 |
| 1N92 | 1.95 | 1.30 | 1.15 |
| 1N93 | 2.70 | 1.80 | 1.60 |
| JAN1N93A | 3.45 | 2.30 | 2.10 |
| 1N248, A, B, C*† | 1.65 | 1.10 | ...... |
| 1N249, A, B*† | 1.73 | 1.15 | ...... |
| 1N249C* | 2.03 | 1.35 | ...... |
| 1N250, A, B* | 2.48 | 1.65 | ...... |
| 1N250C*† | 2.78 | 1.85 | ...... |
| 1N251, -2 | .65 | .43 | .22 |
| 1N625 | .43 | .29 | .19 |
| 1N626 | .43 | .30 | .27 |
| 1N814 | .80 | .54 | .20 |
| 1N903 | 1.02 | .68 | .31 |
| 1N903A | 1.17 | .78 | .31 |
| 1N904 | .99 | .66 | .29 |
| 1N914§ | .30 | .20 | .14 |
| 1N914A§ | .40 | .26 | .15 |
| 1N914A‡ | .64 | .32 | .116 |
| 1N914B§ | .80 | .54 | .17 |
| 1N914B‡ | .86 | .43 | .156 |
| 1N916§ | .52 | .34 | .16 |
| 1N916A§ | .58 | .38 | .17 |
| 1N916B§ | 1.07 | .71 | .27 |

| GE Type | Net Each, Lots | |
|---|---|---|
| | 1-99 | 100-999 |
| 1N1183*† | $ 1.95 | $1.30 |
| 1N1184*† | 2.40 | 1.60 |
| JAN1N1184† | 3.90 | 2.60 |
| JANTX 1N1184† | 5.40 | 3.60 |
| 1N1185*† | 2.92 | 1.95 |
| 1N1186*† | 3.45 | 2.30 |
| JAN1N1186† | 5.47 | 3.65 |
| JANTX1N1186† | 6.97 | 4.65 |
| 1N1187*† | 4.72 | 3.15 |
| 1N1188*† | 5.85 | 3.90 |
| JAN1N1188† | 8.89 | 5.93 |
| JANTX1N1188† | 10.39 | 6.93 |
| 1N1189*† | 6.45 | 4.30 |
| 1N1190*† | 6.90 | 4.60 |
| 1N1191, A*† | 1.65 | 1.10 |
| 1N1192, A*† | 1.73 | 1.15 |
| 1N1193, A*† | 2.10 | 1.40 |
| 1N1194, A*† | 2.48 | 1.65 |
| 1N1195, A*† | 4.02 | 2.68 |
| 1N1196, A*† | 4.95 | 3.30 |
| 1N1197, A*† | 6.15 | 4.10 |
| 1N1198, A*† | 6.68 | 4.45 |
| 1N1199, A*† | 1.24 | .83 |
| 1N1200, A*† | 1.41 | .94 |
| 1N1201, A*† | 1.81 | 1.21 |
| 1N1202, A*† | 2.62 | 1.75 |
| JAN1N1202A† | 3.96 | 2.64 |
| JANTX 1N1202A† | 5.61 | 3.74 |
| 1N1203, A*† | 3.60 | 2.40 |
| 1N1204, A*† | 4.57 | 3.05 |
| JAN1N1204A† | 5.55 | 3.70 |
| JANTX 1N1204A† | 7.21 | 4.81 |
| 1N1205, A*† | 5.32 | 3.55 |
| 1N1206, A*† | 6.37 | 4.25 |
| JAN1N1206A† | 8.25 | 5.50 |
| JANTX 1N1206A† | 9.91 | 6.61 |
| 1N1341, A*† | 1.12 | .75 |
| 1N1342, A*† | 1.27 | .85 |
| 1N1343, A*† | 1.63 | 1.09 |
| 1N1344, A*† | 2.22 | 1.48 |
| 1N1345, A*† | 3.16 | 2.11 |
| 1N1346, A*† | 3.96 | 2.64 |
| 1N1347, A*† | 4.65 | 3.10 |
| 1N1348, A*† | 5.48 | 3.65 |
| 1N1612*† | 1.08 | .72 |
| 1N1613*† | 1.24 | .83 |
| 1N1614*† | 1.90 | 1.27 |
| JAN 1N1614† | 3.03 | 2.02 |
| 1N1615*† | 3.75 | 2.50 |
| JAN 1N1615† | 5.25 | 3.50 |
| 1N1616*† | 5.55 | 3.70 |
| JAN 1N1616† | 7.16 | 4.77 |
| 1N1730 | 4.80 | 3.20 |
| 1N1731 | 6.00 | 4.00 |
| 1N1732 | 6.75 | 4.50 |
| 1N1733 | 7.80 | 5.20 |
| 1N1734 | 11.62 | 7.75 |

| GE Type | Net Each, Lots of | | |
|---|---|---|---|
| | 1-99 | 100-999 | 1000-9999 |
| 1N1765–1N1768 | $2.40 | $1.60 | $1.44 |
| 1N1765A–1N1768A | 3.00 | 2.00 | 1.80 |
| 1N1769–1N1776 | 3.00 | 2.00 | 1.75 |
| 1N1769A–1N1776A | 3.60 | 2.40 | 2.10 |
| 1N2154*† | 2.38 | 1.59 | ...... |
| 1N2155*† | 3.00 | 2.00 | ...... |
| 1N2156*† | 4.38 | 2.92 | ...... |
| 1N2157*† | 5.25 | 3.50 | ...... |
| 1N2158*† | 5.92 | 3.95 | ...... |
| 1N2159*† | 6.15 | 4.10 | ...... |
| 1N2160*† | 6.30 | 4.20 | ...... |
| 1N2382 | 9.75 | 6.50 | ...... |
| 1N2383 | 14.25 | 9.50 | ...... |
| 1N2384 | 17.25 | 11.50 | ...... |
| 1N2385 | 21.00 | 14.00 | ...... |
| 1N3064‡ | .80 | .40 | .144 |
| 1N3065 | 1.35 | .90 | .23 |
| 1N3208*† | 2.10 | 1.40 | ...... |
| 1N3209*† | 2.25 | 1.50 | ...... |
| 1N3210*† | 2.40 | 1.60 | ...... |
| 1N3211*† | 2.64 | 1.76 | ...... |
| 1N3212*† | 3.05 | 2.10 | ...... |
| 1N3213*† | 3.75 | 2.50 | ...... |
| 1N3214*† | 4.50 | 3.00 | ...... |

| GE Type | Net Each, Lots | |
|---|---|---|
| | 1-9 | 10-99 |
| 1N3260* | $17.00 | $10.25 |
| 1N3261* | 18.00 | 11.00 |
| 1N3262* | 19.00 | 11.50 |
| 1N3263* | 20.50 | 12.50 |
| 1N3264* | 22.00 | 13.25 |
| 1N3265* | 23.50 | 14.25 |
| 1N3266* | 24.50 | 14.75 |
| 1N3267* | 26.00 | 15.75 |
| 1N3268* | 29.00 | 17.50 |
| 1N3269* | 32.50 | 19.50 |
| 1N3270* | 35.00 | 21.00 |
| 1N3271* | 37.50 | 22.50 |
| 1N3272* | 41.00 | 24.75 |
| 1N3273* | 45.50 | 27.50 |
| 1N3289* | 14.50 | 8.75 |
| JAN1N3289 | 42.00 | 25.25 |
| 1N3290* | 15.50 | 9.50 |
| 1N3291* | 16.50 | 10.00 |
| JAN1N3291 | 46.00 | 27.75 |
| 1N3292* | 17.50 | 10.50 |
| 1N3293* | 19.50 | 11.75 |
| JAN1N3293 | 56.00 | 33.75 |
| 1N3294* | 24.00 | 14.50 |
| JAN1N3294 | 66.00 | 39.75 |
| 1N3295* | 28.50 | 17.25 |
| JAN1N3295 | 78.00 | 47.00 |
| 1N3296* | 32.50 | 19.50 |

| GE Type | Net Each, Lots of | | |
|---|---|---|---|
| | 1-99 | 100-999 | 1000-9999 |
| 1N3600‡ | $0.77 | $0.385 | $0.14 |
| 1N3605‡ | .88 | .44 | .16 |
| 1N3606 | .75 | .50 | .19 |
| 1N3670, A*† | 7.87 | 5.25 | ...... |
| 1N3671, A*† | 8.77 | 5.85 | ...... |
| 1N3672, A*† | 9.45 | 6.30 | ...... |
| 1N3673, A*† | 9.90 | 6.60 | ...... |
| JAN1N3673 | 11.40 | 7.60 | ...... |
| 1N3712 | 3.60 | 2.40 | 2.18 |
| 1N3713 | 5.45 | 3.60 | 3.27 |
| JAN1N3713 | 5.78 | 3.87 | 3.49 |
| 1N3714 | 3.16 | 2.12 | 1.91 |
| 1N3715 | 5.01 | 3.32 | 3.00 |
| JAN1N3715 | 5.40 | 3.60 | 3.24 |
| 1N3716 | 2.25 | 1.50 | 1.35 |
| 1N3717 | 4.25 | 2.83 | 2.56 |
| JAN1N3717 | 4.69 | 3.11 | 2.80 |
| 1N3718 | 2.74 | 1.83 | 1.65 |
| 1N3719 | 4.25 | 2.83 | 2.56 |
| JAN1N3719 | 4.69 | 3.11 | 2.80 |
| 1N3720 | 3.64 | 2.42 | 2.18 |
| 1N3721 | 4.25 | 2.83 | 2.56 |
| JAN1N3721 | 4.69 | 3.11 | 2.80 |

| GE Type | Net Each, Lots | |
|---|---|---|
| | 1-9 | 10-99 |
| 1N3735* | $21.00 | $12.75 |
| 1N3736* | 24.50 | 14.75 |
| 1N3737* | 27.50 | 16.50 |
| 1N3738* | 30.50 | 18.50 |
| 1N3739* | 34.00 | 20.50 |
| 1N3740* | 38.00 | 23.00 |
| 1N3741* | 44.50 | 26.75 |
| 1N3742* | 52.50 | 31.50 |
| 1N3743* | 61.00 | 36.75 |

| GE Type | Net Each, Lots | |
|---|---|---|
| | 1-99 | 100-999 |
| 1N3765*† | $ 8.55 | $5.70 |
| 1N3766*† | 9.75 | 6.50 |
| 1N3767*† | 10.72 | 7.15 |
| 1N3768*† | 11.62 | 7.75 |
| 1N3879*† | 2.55 | 1.70 |
| 1N3880*† | 2.93 | 1.95 |
| JAN1N3880† | 3.60 | 2.40 |
| 1N3881*† | 3.75 | 2.50 |
| JAN1N3881† | 4.95 | 3.30 |
| 1N3882*† | 4.50 | 3.00 |
| 1N3883*† | 5.25 | 3.50 |
| JAN1N3883† | 6.75 | 4.50 |
| 1N3889*† | 3.15 | 2.10 |
| 1N3890*† | 3.75 | 2.50 |
| JAN1N3890† | 4.80 | 3.20 |
| JANTX1N3890† | 6.45 | 4.30 |
| 1N3891*† | 4.72 | 3.15 |
| JAN1N3891† | 5.93 | 3.95 |
| JANTX1N3891† | 7.58 | 5.05 |
| 1N3892*† | 5.70 | 3.80 |
| 1N3893*† | 6.75 | 4.50 |
| JAN1N3893† | 8.25 | 5.50 |
| JANTX1N3893† | 9.90 | 6.60 |
| 1N3899*† | 4.50 | 3.00 |
| 1N3900*† | 5.25 | 3.50 |
| 1N3901*† | 6.75 | 4.50 |
| 1N3902*† | 8.25 | 5.50 |
| 1N3903*† | 9.90 | 6.60 |
| 1N3909*† | 5.10 | 3.40 |
| JAN1N3909† | 6.30 | 4.20 |
| 1N3910*† | 6.00 | 4.00 |
| JAN1N3910† | 7.35 | 4.90 |
| 1N3911*† | 7.80 | 5.20 |
| JAN1N3911† | 9.45 | 6.30 |
| 1N3912*† | 9.60 | 6.40 |
| JAN1N3912† | 11.55 | 7.70 |
| 1N3913*† | 11.40 | 7.60 |
| JAN1N3913† | 13.65 | 9.10 |

| GE Type | Net Each, Lots | |
|---|---|---|
| | 1-9 | 10-99 |
| 1N4044* | $17.00 | $10.25 |
| 1N4045* | 18.00 | 11.00 |
| 1N4046* | 19.00 | 11.50 |
| 1N4047* | 20.50 | 12.50 |
| 1N4048* | 22.00 | 13.25 |
| 1N4049* | 23.50 | 14.25 |
| 1N4050* | 30.50 | 18.50 |
| 1N4051* | 35.00 | 21.00 |
| 1N4052* | 38.00 | 23.00 |
| 1N4053* | 41.00 | 24.75 |
| 1N4054* | 44.50 | 26.75 |
| 1N4055* | 48.50 | 29.25 |
| 1N4056* | 52.50 | 31.50 |

| GE Type | Net Each, Lots of | | |
|---|---|---|---|
| | 1-99 | 100-999 | 1000-9999 |
| 1N4087 | $4.00 | $2.67 | $0.94 |
| 1N4090 | 3.35 | 2.20 | 2.00 |
| 1N4148, JAN | .30 | .20 | .14 |
| JANTX 1N4148 | 1.67 | 1.12 | .95 |
| 1N4149 | .52 | .34 | .16 |
| 1N4150 | 2.10 | 1.40 | .39 |
| JAN1N4150 | 2.10 | 1.40 | .39 |
| JANTX 1N4150 | 3.60 | 2.40 | 1.60 |
| 1N4151 | .75 | .50 | .19 |
| 1N4152 | .60 | .40 | .18 |
| 1N4153 | .75 | .50 | .19 |
| JAN1N4153 | .75 | .50 | .19 |
| JANTX 1N4153 | 1.75 | 1.26 | .98 |
| 1N4154 | .33 | .22 | .15 |
| 1N4156 | .75 | .50 | .33 |
| 1N4157 | 1.04 | .69 | .39 |
| 1N4245 | .38 | .29 | .21 |
| JAN1N4245 | .75 | .48 | .34 |
| 1N4246 | .45 | .35 | .24 |
| JAN1N4246 | .90 | .58 | .41 |
| 1N4247 | .59 | .46 | .33 |
| JAN1N4247 | 1.38 | .88 | .63 |
| 1N4248 | .97 | .65 | .46 |
| 1N4249 | 1.12 | .75 | .53 |
| 1N4305 | .60 | .40 | .17 |
| 1N4306 | 7.00 | 4.66 | 4.20 |
| 1N4307 | 15.00 | 10.00 | 9.00 |
| 1N4444 | 1.51 | .99 | .89 |
| 1N4446 | .36 | .24 | .15 |
| 1N4447 | .58 | .38 | .17 |
| 1N4448 | .75 | .50 | .17 |
| 1N4449 | 1.07 | .71 | .27 |
| 1N4450 | 1.45 | .97 | .40 |
| 1N4451 | 1.28 | .85 | .75 |
| 1N4453 | .54 | .36 | .26 |
| 1N4454 | .24 | .16 | .12 |
| JAN1N4454 | .24 | .16 | .12 |
| JANTX 1N4454 | 2.10 | 1.40 | 1.25 |

| GE Type | Net Each, Lots of | | |
|---|---|---|---|
| | 1-99 | 100-999 | 1000-9999 |
| 1N4531 | $0.45 | $0.30 | $0.14 |
| JAN1N4531 | .45 | .30 | .14 |
| JANTX 1N4531 | 2.00 | 1.34 | 1.20 |
| 1N4532 | .65 | .43 | .14 |
| 1N4533 | .69 | .46 | .24 |
| 1N4534 | 1.00 | .67 | .31 |
| 1N4536 | .42 | .28 | .18 |
| 1N4606 | 1.20 | .80 | .30 |
| 1N4606‡ | .96 | .48 | .18 |
| 1N4607 | 1.31 | .87 | .35 |
| 1N4608 | 1.44 | .94 | .89 |
| 1N4727 | .40 | .26 | .14 |
| 1N4829 | .69 | .46 | .26 |
| 1N4830 | .93 | .62 | .36 |
| 1N4863 | 1.02 | .68 | .58 |
| 1N4864 | 1.37 | .91 | .81 |
| 1N4951 | .36 | .24 | .20 |
| 1N4952 | .41 | .27 | .23 |
| 1N5059 | .36 | .28 | .20 |
| 1N5060 | .43 | .33 | .23 |
| 1N5061 | .57 | .40 | .32 |
| 1N5062 | .80 | .53 | .42 |
| 1N5179 | 1.32 | .88 | .49 |
| 1N5331*† | 10.50 | 7.00 | ...... |
| 1N5332*† | 12.60 | 8.40 | ...... |
| 1N5624 | .75 | .50 | .38 |
| 1N5625 | 1.00 | .67 | .51 |
| 1N5626 | 1.40 | .95 | .73 |
| 1N5627 | 3.75 | 2.50 | 1.90 |
| 2N43, A | 4.90 | 3.26 | 2.93 |
| JAN2N43A | 5.90 | 3.94 | 3.50 |
| 2N44 | 3.47 | 2.31 | 2.07 |
| JAN2N44A | 5.50 | 3.67 | 3.30 |
| 2N78 | 3.01 | 2.01 | 1.82 |
| 2N78A | 3.30 | 2.20 | 2.00 |
| JAN2N78A | 3.99 | 2.67 | 2.40 |
| 2N167, A | 6.24 | 4.16 | 3.76 |
| JAN2N167A | 7.45 | 4.95 | 4.50 |
| 2N169 | 2.28 | 1.52 | 1.37 |
| 2N169A | 2.95 | 1.95 | 1.76 |
| 2N188A | 1.95 | 1.30 | 1.18 |
| 2N191 | 1.07 | .72 | .59 |
| 2N241A | 1.16 | .78 | .65 |
| 2N319 | .44 | .29 | .26 |
| 2N320 | .59 | .39 | .35 |
| 2N321 | .65 | .43 | .39 |
| 2N322 | .42 | .28 | .25 |
| 2N323 | .59 | .39 | .35 |
| 2N324 | .72 | .48 | .38 |
| 2N396‡, A | .62 | .41 | .37 |
| JAN2N396A | .74 | .49 | .39 |
| 2N397‡ | 1.11 | .74 | .54 |
| 2N404 | .42 | .28 | .24 |
| 2N404A | .58 | .39 | .31 |
| 2N413, -4 | .42 | .29 | .24 |
| JAN2N461 | 1.92 | 1.28 | 1.15 |
| 2N489 | 7.10 | 4.75 | 4.30 |
| 2N489A | 7.65 | 5.10 | 4.60 |
| JAN2N489A | 7.80 | 5.20 | 4.70 |
| 2N489B | 9.15 | 6.10 | 5.50 |
| 2N490 | 7.80 | 5.20 | 4.70 |
| 2N490A | 8.35 | 5.55 | 5.00 |
| JAN2N490A | 8.55 | 5.70 | 5.10 |
| 2N490B | 9.85 | 6.55 | 5.90 |
| 2N490C | 11.85 | 7.90 | 7.10 |
| 2N491 | 8.40 | 5.60 | 5.05 |
| 2N491A | 8.90 | 5.95 | 5.35 |
| JAN2N491A | 9.15 | 6.10 | 5.45 |
| 2N491B | 10.40 | 6.95 | 6.25 |
| 2N492 | 9.90 | 6.60 | 5.95 |
| 2N492A | 10.40 | 6.95 | 6.25 |
| JAN2N492A | 10.55 | 7.05 | 6.35 |
| 2N492B | 11.90 | 7.95 | 7.15 |
| 2N492C | 13.90 | 9.25 | 8.35 |
| 2N493 | 10.75 | 7.20 | 6.45 |
| 2N493A | 11.20 | 7.50 | 6.75 |
| JAN2N493A | 11.40 | 7.60 | 6.85 |
| 2N493B | 12.75 | 8.50 | 7.65 |
| 2N494 | 10.90 | 7.30 | 6.55 |
| 2N494A | 11.40 | 7.60 | 6.85 |
| JAN2N494A | 11.60 | 7.70 | 6.95 |
| 2N494B | 12.90 | 8.60 | 7.75 |
| 2N494C | 14.95 | 9.95 | 8.95 |
| 2N497§ | 2.39 | 1.60 | 1.36 |
| 2N497A | 2.59 | 1.74 | 1.46 |
| 2N498§ | 2.40 | 1.60 | 1.45 |
| 2N498A | 3.92 | 2.61 | 2.37 |
| 2N508 | .69 | .46 | .39 |
| 2N508A | .81 | .54 | .44 |
| 2N524 | .59 | .39 | .35 |
| 2N525 | .80 | .53 | .48 |
| 2N526 | 1.00 | .67 | .59 |
| JAN2N526 | 1.10 | .73 | .63 |
| 2N527 | 1.00 | .67 | .60 |
| 2N656§ | 2.42 | 1.61 | 1.46 |
| JAN2N656 | 2.48 | 1.66 | 1.51 |
| 2N656A | 2.75 | 1.82 | 1.65 |
| 2N657§ | 2.65 | 1.75 | 1.59 |
| JAN2N657 | 2.69 | 1.79 | 1.63 |
| 2N657A | 3.30 | 2.20 | 2.00 |

*Available in reverse polarity at same price; to order, add suffix **R**, i.e., 1N248**R**, 1N248**R**A, 1N248**R**B, etc. †Prices include mounting hardware. For insulating hardware, add **5c** per unit, any quantity. ‡Semiconductor chip. §DHD package; DO-7 available.

# GENERAL ELECTRIC OEM Semiconductor Pricing

| GE Type | Net Each, Lots of 1-99 | 100-999 | 1000-9999 |
|---|---|---|---|
| 2N681† | $2.35 | $1.57 | ...... |
| 2N682† | 2.85 | 1.90 | ...... |
| JAN2N682† | 3.93 | 2.62 | ...... |
| 2N683† | 3.60 | 2.40 | ...... |
| JAN2N683† | 4.68 | 3.12 | ...... |
| 2N684† | 4.23 | 2.82 | ...... |
| 2N685† | 4.86 | 3.24 | ...... |
| JAN2N685† | 5.94 | 3.96 | ...... |
| 2N686† | 5.41 | 3.61 | ...... |
| JAN2N686† | 6.50 | 4.33 | ...... |
| 2N687† | 5.82 | 3.88 | ...... |
| JAN2N687† | 6.92 | 4.61 | ...... |
| 2N688† | 6.80 | 4.53 | ...... |
| JAN2N688† | 7.88 | 5.25 | ...... |
| 2N689† | 8.11 | 5.41 | ...... |
| JAN2N689† | 9.20 | 6.13 | ...... |
| 2N690† | 8.74 | 5.83 | ...... |
| 2N691† | 14.49 | 9.66 | ...... |
| 2N692† | 19.15 | 12.77 | ...... |
| 2N708* | 1.54 | .77 | $0.28 |
| 2N877 | 3.00 | 2.00 | ...... |
| 2N878 | 3.30 | 2.20 | ...... |
| 2N879 | 5.40 | 3.60 | ...... |
| 2N880 | 6.30 | 4.20 | ...... |
| 2N881 | 7.50 | 5.00 | ...... |
| 2N885 | 8.62 | 5.75 | ...... |
| 2N886 | 10.50 | 7.00 | ...... |
| 2N887 | 13.12 | 8.75 | ...... |
| 2N888 | 14.77 | 9.85 | ...... |
| 2N889 | 15.97 | 10.65 | ...... |
| 2N918* | 1.92 | .35 | .26 |
| 2N929* | 1.76 | .88 | .32 |
| 2N930* | 1.86 | .34 | .25 |
| 2N997 | 10.50 | 7.00 | ...... |
| 2N998 | 12.50 | 8.50 | ...... |
| 2N999 | 14.85 | 9.60 | ...... |
| 2N1175 | .93 | .62 | .52 |
| 2N1175A | 1.35 | .90 | .80 |
| 2N1303 | .45 | .30 | .25 |
| JAN2N1303 | .47 | .31 | .28 |
| 2N1305 | .52 | .35 | .28 |
| JAN2N1305 | .54 | .37 | .32 |
| 2N1307 | .66 | .44 | .34 |
| JAN2N1307 | .71 | .47 | .40 |
| 2N1413, 14 | .69 | .46 | .41 |
| 2N1415 | .80 | .53 | .48 |
| 2N1595 | 1.65 | 1.10 | ...... |
| 2N1596 | 2.40 | 1.60 | ...... |
| 2N1597 | 4.80 | 3.20 | ...... |
| 2N1598 | 7.50 | 5.00 | ...... |
| 2N1599 | 9.90 | 6.60 | ...... |
| 2N1671 | 2.95 | 1.97 | 1.80 |
| 2N1671A | 3.20 | 2.13 | 1.95 |
| 2N1671B | 3.55 | 2.36 | 2.15 |
| 2N1671C | 8.25 | 5.50 | 4.95 |

| GE Type | Net Each, Lots 1-99 | 100-999 |
|---|---|---|
| 2N1770† | $ 1.95 | $ 1.30 |
| 2N1770A† | 2.47 | 1.65 |
| 2N1771† | 2.17 | 1.45 |
| 2N1771A† | 2.70 | 1.80 |
| JAN2N1771A† | 4.05 | 2.70 |
| JANTX 2N1771A† | 6.52 | 4.35 |
| 2N1772† | 3.00 | 2.00 |
| 2N1772A† | 3.60 | 2.40 |
| JAN2N1772A† | 5.40 | 3.60 |
| JANTX 2N1772A† | 7.87 | 5.25 |
| 2N1773† | 4.35 | 2.90 |
| 2N1773A† | 5.25 | 3.50 |
| 2N1774† | 5.40 | 3.60 |
| 2N1774A† | 6.45 | 4.30 |
| JAN2N1774A† | 9.67 | 6.45 |
| JANTX 2N1774A† | 12.15 | 8.10 |
| 2N1775† | 6.37 | 4.25 |
| 2N1775A† | 7.57 | 5.05 |
| 2N1776† | 7.12 | 4.75 |
| 2N1776A† | 8.47 | 5.65 |
| JAN2N1776A† | 11.77 | 7.85 |
| JANTX 2N1776A† | 13.80 | 9.20 |
| 2N1777† | 7.87 | 5.25 |
| 2N1777A† | 9.45 | 6.30 |
| JAN2N1777A† | 14.25 | 9.50 |
| JANTX 2N1777A† | 16.80 | 11.20 |
| 2N1778† | 9.75 | 6.50 |

| GE Type | Net Each, Lots 1-9 | 10-99 |
|---|---|---|
| 2N1792 | $20.00 | $12.00 |
| JAN2N1792 | 37.00 | 22.25 |
| 2N1793 | 22.00 | 13.25 |
| JAN2N1793 | 40.00 | 24.00 |
| 2N1794 | 24.00 | 14.50 |
| 2N1795 | 26.00 | 15.75 |

| GE Type | Net Each, Lots of 1-9 | 10-99 |
|---|---|---|
| JAN2N1795 | $48.00 | $29.00 |
| 2N1796 | 29.50 | 17.75 |
| 2N1797 | 32.50 | 19.50 |
| JAN2N1797 | 56.50 | 34.00 |
| 2N1798 | 39.00 | 23.50 |
| JAN2N1798 | 71.50 | 43.00 |

| GE Type | Net Each, Lots 1-99 | 100-999 |
|---|---|---|
| 2N1842† | $2.10 | $1.40 |
| 2N1842A† | 2.25 | 1.30 |
| 2N1843† | 2.32 | 1.55 |
| 2N1843A† | 2.62 | 1.75 |
| 2N1844† | 3.07 | 2.05 |
| 2N1844A† | 3.37 | 2.25 |
| 2N1845† | 3.75 | 2.50 |
| 2N1845A† | 3.90 | 2.60 |
| 2N1846† | 4.35 | 2.90 |
| 2N1846A† | 4.50 | 3.00 |
| 2N1847† | 4.95 | 3.30 |
| 2N1847A† | 5.17 | 3.45 |
| 2N1848† | 5.40 | 3.60 |
| 2N1848A† | 5.55 | 3.70 |
| 2N1849† | 6.22 | 4.15 |
| 2N1849A† | 6.60 | 4.40 |
| 2N1850† | 7.35 | 4.90 |
| 2N1850A† | 7.65 | 5.10 |

| GE Type | Net Each, Lots 1-9 | 10-99 |
|---|---|---|
| 2N1909 | $18.50 | $11.25 |
| 2N1910 | 20.00 | 12.00 |
| JAN2N1910 | 37.00 | 22.25 |
| 2N1911 | 22.00 | 13.25 |
| JAN2N1911 | 40.00 | 24.00 |
| 2N1912 | 24.00 | 14.50 |
| 2N1913 | 26.00 | 15.75 |
| JAN2N1913 | 48.00 | 29.00 |
| 2N1914 | 29.50 | 17.75 |
| 2N1915 | 32.50 | 19.50 |
| JAN2N1915 | 56.50 | 34.00 |
| 2N1916 | 39.00 | 23.50 |
| JAN2N1916 | 71.50 | 43.00 |

| GE Type | Net Each, Lots of 1-99 | 100-999 | 1000-9999 |
|---|---|---|---|
| 2N1924 | $ 1.35 | $ 0.90 | $0.81 |
| 2N1925 | 1.56 | 1.04 | .94 |
| 2N1926 | 1.82 | 1.21 | 1.09 |
| 2N1929 | 6.15 | 4.10 | ...... |
| 2N1930 | 7.65 | 5.10 | ...... |
| 2N1931 | 10.65 | 7.10 | ...... |
| 2N1932 | 13.20 | 8.80 | ...... |
| 2N1933 | 15.00 | 10.00 | ...... |
| 2N1934 | 18.00 | 12.00 | ...... |
| 2N1935 | 21.97 | 14.65 | ...... |

| GE Type | Net Each, Lots 1-9 | 10-99 |
|---|---|---|
| 2N2023 | $22.00 | $13.25 |
| 2N2024 | 28.50 | 17.25 |
| 2N2025 | 32.50 | 19.50 |
| 2N2026 | 35.00 | 21.00 |
| 2N2027 | 37.00 | 22.25 |
| 2N2028 | 39.00 | 23.50 |
| 2N2029 | 41.50 | 25.00 |
| 2N2030 | 48.00 | 29.00 |
| JAN2N2031 | 30.50 | 18.25 |

| GE Type | Net Each, Lots of 1-99 | 100-999 | 1000-9999 |
|---|---|---|---|
| 2N2060§ | $4.30 | $2.65 | $2.35 |
| JAN2N2060§ | 5.00 | 3.10 | ...... |
| 2N2106 | 2.56 | 1.72 | 1.55 |
| 2N2107 | 2.61 | 1.74 | 1.56 |
| 2N2160 | 1.49 | .99 | .89 |
| 2N2196 | 4.95 | 3.30 | 2.97 |
| 2N2222* | 1.66 | .30 | .23 |
| 2N2223§ | 4.30 | 2.65 | ...... |
| 2N2223A§ | 5.30 | 3.25 | ...... |
| 2N2322 | 1.65 | 1.10 | ...... |
| 2N2322A | 2.25 | 1.50 | ...... |
| 2N2323 | 1.80 | 1.20 | ...... |
| JAN2N2323 | 3.30 | 2.20 | ...... |
| 2N2323A | 2.55 | 1.70 | ...... |
| JAN2N2323A | 3.75 | 2.50 | ...... |
| 2N2324 | 2.85 | 1.90 | ...... |
| JAN2N2324 | 4.35 | 2.90 | ...... |
| 2N2324A | 4.20 | 2.80 | ...... |

| GE Type | Net Each, Lots 1-99 | 100-999 |
|---|---|---|
| JAN2N2324A | $ 5.70 | $ 3.80 |
| 2N2325 | 4.20 | 2.80 |
| 2N2325A | 6.00 | 4.00 |
| 2N2326 | 5.40 | 3.60 |
| JAN2N2326 | 7.65 | 5.10 |
| 2N2326A | 8.00 | 5.20 |
| JAN2N2326A | 11.55 | 7.70 |

| GE Type | Net Each, Lots 1-99 | 100-999 |
|---|---|---|
| 2N2327 | $ 6.90 | $4.60 |
| 2N2327A | 11.10 | 7.40 |
| 2N2328 | 8.40 | 5.60 |
| 2N2328A | 12.00 | 8.00 |
| 2N2329 | 11.10 | 7.40 |
| 2N2344 | 3.45 | 2.30 |
| 2N2345 | 3.90 | 2.60 |
| 2N2346 | 5.10 | 3.40 |
| 2N2347 | 9.15 | 6.10 |
| 2N2348 | 12.00 | 8.00 |
| 2N2356 | 7.50 | 5.50 |
| 2N2356A | 8.50 | 6.50 |
| 2N2417 | 7.10 | 4.75 |
| 2N2417A | 7.65 | 5.10 |
| 2N2417B | 9.15 | 6.10 |
| 2N2418 | 7.80 | 5.20 |
| 2N2418A | 8.35 | 5.55 |
| 2N2418B | 9.85 | 6.55 |
| 2N2419 | 8.40 | 5.60 |
| 2N2419A | 8.90 | 5.95 |
| 2N2419B | 10.40 | 6.95 |
| 2N2420 | 9.80 | 6.55 |
| 2N2420A | 10.40 | 6.95 |
| 2N2420B | 11.90 | 7.95 |
| 2N2421 | 10.75 | 7.20 |
| 2N2421A | 11.20 | 7.50 |
| 2N2421B | 12.75 | 8.50 |
| 2N2422 | 10.90 | 7.30 |
| 2N2422A | 11.40 | 7.60 |
| 2N2422B | 12.90 | 8.60 |
| 2N2453 | 9.57 | 6.38 |
| 2N2453A | 11.25 | 7.50 |

| GE Type | Net Each, Lots of 1-99 | 100-999 | 1000-9999 |
|---|---|---|---|
| 2N2480§ | $ 4.85 | $ 3.25 | ...... |
| 2N2480A§ | 5.70 | 3.80 | ...... |
| 2N2484* | 1.86 | .34 | $0.25 |
| 2N2619 | 12.30 | 8.20 | ...... |
| 2N2639 | 3.45 | 2.10 | ...... |
| 2N2640 | 2.85 | 1.75 | ...... |
| 2N2641 | 1.95 | 1.30 | ...... |
| 2N2642 | 9.00 | 6.75 | ...... |
| 2N2643 | 3.45 | 2.10 | ...... |
| 2N2644 | 2.25 | 1.40 | ...... |

| GE Type | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
|---|---|---|---|
| 2N2646 | $1.00 | $0.67 | $0.58 |

| GE Type | Net Each, Lots of 1-99 | 100-999 | 1000-9999 |
|---|---|---|---|
| 2N2647 | $ 1.89 | $ 1.26 | $1.05 |
| 2N2652 | 8.00 | 7.00 | ...... |
| 2N2652A | 8.75 | 7.85 | ...... |
| 2N2711,12 | .41 | .27 | .23 |
| 2N2713 | .45 | .30 | .25 |
| 2N2714 | .47 | .32 | .26 |
| 2N2714* | 1.10 | .55 | .20 |
| 2N2726 | 5.94 | 3.96 | 3.56 |
| 2N2727 | 6.16 | 4.13 | 3.71 |
| 2N2785 | 9.00 | 6.50 | ...... |
| 2N2840 | 6.35 | 4.25 | ...... |
| 2N2903 | 6.30 | 3.50 | ...... |
| 2N2907* | 2.64 | .48 | .36 |
| 2N2910 | 6.65 | 4.25 | ...... |
| 2N2913 | 1.95 | 1.30 | ...... |
| 2N2914 | 2.25 | 1.40 | ...... |
| 2N2915 | 4.30 | 2.65 | ...... |
| 2N2916 | 5.15 | 3.15 | ...... |
| 2N2917 | 2.85 | 1.75 | ...... |
| 2N2918 | 3.55 | 2.20 | ...... |
| 2N2919 | 4.30 | 2.65 | ...... |
| 2N2920 | 11.75 | 7.43 | ...... |
| 2N2923 | .29 | .20 | .16 |
| 2N2924 | .32 | .21 | .18 |
| 2N2925 | .38 | .26 | .21 |
| 2N2926♯ | .27 | .18 | .15 |
| 2N3390 | .95 | .63 | .53 |
| 2N3391 | .43 | .29 | .24 |
| 2N3391A | .47 | .32 | .26 |
| 2N3392, 3 | .29 | .20 | .16 |
| 2N3394 | .27 | .18 | .15 |
| 2N3395, 6♯ | .50 | .33 | .28 |
| 2N3397♯ | .47 | .32 | .26 |

| GE Type | Net Each, Lots of 1-99 | 100-999 | 1000-9999 |
|---|---|---|---|
| 2N3398† | $ 0.54 | $ 0.36 | $0.30 |
| 2N3402 | .36 | .24 | .20 |
| 2N3403 | .38 | .26 | .21 |
| 2N3404 | .50 | .33 | .28 |
| 2N3405 | .61 | .40 | .34 |
| 2N3414 | .32 | .21 | .18 |
| 2N3414* | 1.98 | .99 | .36 |
| 2N3415 | .34 | .23 | .19 |
| 2N3415* | 2.20 | 1.10 | .40 |
| 2N3416 | .45 | .30 | .25 |
| 2N3416* | 2.42 | 1.21 | .44 |

| GE Type | Net Each, Lots of 1-99 | 100-999 | 1000-9999 |
|---|---|---|---|
| 2N3417 | $0.56 | $0.38 | $0.31 |
| 2N3417* | 3.30 | 1.65 | .60 |
| 2N3521 | 19.00 | 16.40 | ...... |
| 2N3522 | 22.00 | 18.40 | ...... |
| 2N3589 | 7.60 | 5.20 | 4.75 |
| 2N3649‡ | 6.15 | 4.10 | ...... |
| 2N3650‡ | 8.02 | 5.35 | ...... |
| 2N3651‡ | 12.15 | 8.10 | ...... |
| 2N3652‡ | 15.30 | 10.20 | ...... |
| 2N3653‡ | 20.85 | 13.90 | ...... |
| 2N3654‡ | 6.82 | 4.55 | ...... |
| 2N3655‡ | 8.85 | 5.90 | ...... |
| 2N3656‡ | 13.27 | 8.85 | ...... |
| 2N3657‡ | 16.70 | 11.15 | ...... |
| 2N3658‡ | 22.80 | 15.20 | ...... |
| 2N3662 | .52 | .35 | .29 |
| 2N3663 | .56 | .38 | .31 |
| 2N3721 | .41 | .27 | .23 |
| 2N3843 | .43 | .29 | .24 |
| 2N3843A | .45 | .30 | .25 |
| 2N3844 | .45 | .30 | .25 |
| 2N3844A | .47 | .32 | .26 |
| 2N3845 | .47 | .32 | .26 |
| 2N3845A | .50 | .33 | .28 |
| 2N3854 | .34 | .23 | .19 |
| 2N3854A | .36 | .24 | .20 |
| 2N3855 | .36 | .24 | .20 |
| 2N3855A | .38 | .26 | .21 |
| 2N3855A* | 1.54 | .77 | .28 |
| 2N3856 | .38 | .26 | .21 |
| 2N3856A | .41 | .27 | .23 |
| 2N3856A* | 1.76 | .88 | .32 |
| 2N3858 | .27 | .18 | .15 |
| 2N3858A | .34 | .23 | .19 |
| 2N3859 | .29 | .20 | .17 |
| 2N3859* | 1.42 | .71 | .26 |
| 2N3859A | .36 | .24 | .26 |
| 2N3860 | .32 | .21 | .18 |
| 2N3860* | 1.54 | .77 | .28 |
| 2N3877 | .45 | .30 | .25 |
| 2N3877A | .52 | .35 | .29 |
| 2N3900 | .61 | .41 | .34 |
| 2N3900A | .68 | .45 | .38 |
| 2N3901 | 1.06 | .71 | .59 |
| 2N3975* | 1.32 | .66 | .24 |
| 2N3976* | 1.54 | .77 | .28 |
| 2N4256 | .68 | .45 | .38 |
| 2N4424 | .43 | .29 | .24 |
| 2N4425 | .47 | .32 | .26 |
| 2N4983 | 1.17 | .78 | .60 |
| 2N4984 | 1.50 | 1.00 | .80 |
| 2N4985 | 2.61 | 1.75 | 1.35 |
| 2N4986 | 1.43 | .95 | .65 |
| 2N4987 | .84 | .56 | .41 |
| 2N4988 | 1.23 | .82 | .65 |
| 2N4989 | 1.73 | 1,15 | .88 |
| 2N4990 | .89 | .59 | .45 |
| 2N4991 | .75 | .50 | .40 |
| 2N4992 | 1.35 | .90 | .71 |
| 2N4993 | 1.65 | 1.10 | .99 |
| 2N5172 | .20 | .14 | .11 |
| 2N5172* | 1.16 | .58 | .21 |
| 2N5174 | .65 | .44 | .36 |
| 2N5175 | .70 | .47 | .39 |
| 2N5176 | .74 | .50 | .41 |
| 2N5204‡ | 9.30 | 6.20 | ...... |
| 2N5205‡ | 14.10 | 9.40 | ...... |
| 2N5206‡ | 18.45 | 12.30 | ...... |
| 2N5207‡ | 24.60 | 16.40 | ...... |
| 2N5232 | .34 | .23 | .19 |
| 2N5232* | 1.54 | .77 | .28 |
| 2N5232A | .38 | .26 | .21 |
| 2N5249 | .50 | .33 | .28 |
| 2N5249A | .54 | .36 | .30 |
| 2N5305 | .45 | .30 | .25 |
| 2N5306 | .43 | .29 | .24 |
| 2N5306* | 3.08 | 1.54 | .56 |
| 2N5306A | .50 | .33 | .28 |
| 2N5307 | .47 | .32 | .26 |
| 2N5308 | .52 | .35 | .29 |
| 2N5308A | .59 | .39 | .33 |
| 2N5309 | .56 | .38 | .31 |
| 2N5310 | .63 | .42 | .35 |
| 2N5311 | .74 | .50 | .41 |
| 2N5354 | .36 | .24 | .20 |
| 2N5355 | .41 | .27 | .23 |
| 2N5356 | .47 | .32 | .26 |
| 2N5365 | .45 | .30 | .25 |
| 2N5366 | .50 | .33 | .28 |
| 2N5367 | .56 | .38 | .31 |
| 2N5418 | .32 | .21 | .18 |
| 2N5419 | .36 | .24 | .20 |
| 2N5420 | .43 | .29 | .24 |
| 2N5777 | .60 | .50 | .35 |
| 2N5778 | .70 | .55 | .40 |
| 2N5779 | 1.00 | .70 | .50 |
| 2N5780 | 1.20 | .80 | .55 |
| 2N5810 | .36 | .24 | .20 |
| 2N5811 | .41 | .27 | .23 |
| 2N5812 | .38 | .26 | .21 |
| 2N5813 | .45 | .30 | .25 |
| 2N5814, 15 | .38 | .26 | .21 |
| 2N5816, 17 | .41 | .27 | .23 |

*Semiconductor chip. †Prices include mounting hardware. For insulating hardware, add 5c per unit, any quantity. ‡For replacement use only. §A versions recommended for new designs. ♯Spread type.

# GENERAL ELECTRIC OEM Semiconductor Pricing

| GE Type | Net Each, Lots of | | |
|---|---|---|---|
| | 1-99 | 100-999 | 1000-9999 |
| 2N5818 | $0.43 | $0.29 | $0.24 |
| 2N5819 | .45 | .30 | .25 |
| 2N5820, 21 | .68 | .45 | .38 |
| 2N5822, 23 | .70 | .46 | .39 |
| 2N5824 | .25 | .17 | .14 |
| 2N5825 | .27 | .18 | .15 |
| 2N5826 | .29 | .20 | .17 |
| 2N5827 | .32 | .21 | .18 |
| 2N5828 | .34 | .23 | .19 |
| 2N5998 | .47 | .32 | .26 |
| 2N5999 | .50 | .33 | .28 |
| 2N6000 | .54 | .36 | .30 |
| 2N6001 | .56 | .38 | .31 |
| 2N6002–5 | .59 | .39 | .33 |
| 2N6006 | .72 | .48 | .40 |
| 2N6007 | .77 | .51 | .43 |
| 2N6008 | .52 | .35 | .29 |
| 2N6009 | .54 | .36 | .30 |
| 2N6010 | .68 | .45 | .38 |
| 2N6011 | .70 | .46 | .39 |
| 2N6012 | .72 | .48 | .40 |
| 2N6013 | .74 | .50 | .41 |
| 2N6014 | .72 | .48 | .40 |
| 2N6015 | .74 | .50 | .41 |
| 2N6016 | .95 | .63 | .53 |
| 2N6017 | .99 | .66 | .55 |

| GE Type | Net Each, Lots of | | |
|---|---|---|---|
| | 1-99 | 100-999 | 1000-4999 |
| 2N6027 | $0.79 | $0.53 | $0.44 |
| 2N6028 | 1.00 | .65 | .55 |

| GE Type | Net Each, Lots of | | |
|---|---|---|---|
| | 1-99 | 100-999 | 1000-9999 |
| 3N81 | $3.40 | $2.25 | $2.00 |
| 3N82 | 4.95 | 3.30 | 2.95 |
| 3N83, 84 | 1.98 | 1.32 | .99 |
| 3N85 | 3.30 | 2.20 | 1.98 |
| 3N86 | 6.00 | 4.00 | 3.60 |

| GE Type | Net Each, Lots | |
|---|---|---|
| | 1-49 | 50-999 |
| 6RS20SP1B1 | $0.76 | $0.57 |
| 6RS20SP2B2 | .88 | .66 |
| 6RS20SP3B3 | 1.00 | .76 |
| 6RS20SP4B4 | 1.13 | .86 |
| 6RS20SP5B5 | 1.27 | .96 |
| 6RS20SP6B6 | 1.39 | 1.05 |
| 6RS20SP7B7 | 1.52 | 1.14 |
| 6RS20SP8B8 | 1.65 | 1.24 |
| 6RS20SP9B9 | 1.78 | 1.34 |
| 6RS20SP10B10 | 1.90 | 1.44 |
| 6RS20SP11B11 | 2.04 | 1.54 |
| 6RS20SP12B12 | 2.17 | 1.64 |
| 6RS20SP13B13 | 2.30 | 1.74 |
| 6RS20SP14B14 | 2.43 | 1.84 |
| 6RS20SP15B15 | 2.55 | 1.93 |
| 6RS20SP16B16 | 2.68 | 2.02 |
| 6RS20SP17B17 | 2.82 | 2.12 |
| 6RS20SP18B18 | 2.95 | 2.22 |
| 6RS20SP19B19 | 3.07 | 2.32 |
| 6RS20SP20B20 | 3.20 | 2.42 |
| 6RS21SA1D1 | 2.06 | 1.46 |
| 6RS21SA2D2 | 2.20 | 1.60 |
| 6RS21SA3D3 | 2.42 | 1.79 |
| 6RS21SA4D4 | 2.62 | 1.87 |
| 6RS21SA5D5 | 2.81 | 2.04 |
| 6RS21SA6D6 | 3.03 | 2.17 |
| 6RS21SA7D7 | 3.19 | 2.31 |
| 6RS21SA8D8 | 3.41 | 2.48 |
| 6RS21SA9D9 | 3.63 | 2.64 |
| 6RS21SA10D10 | 3.82 | 2.81 |
| 6RS21SA11D11 | 4.02 | 2.97 |
| 6RS21SA12D12 | 4.24 | 3.17 |
| 6RS21SA13D13 | 4.40 | 3.36 |
| 6RS21SA14D14 | 4.62 | 3.55 |
| 6RS21SA15D15 | 4.81 | 3.74 |
| 6RS21SA16D16 | 5.01 | 3.96 |
| 6RS21SA17D17 | 5.23 | 4.13 |
| 6RS21SA18D18 | 5.39 | 4.35 |
| 6RS21SA19D19 | 5.61 | 4.57 |
| 6RS21SA20D20 | 5.78 | 4.73 |

| GE Type | Net Each, Lots of | | |
|---|---|---|---|
| | 1-99 | 100-999 | 1000-9999 |
| A14A | $0.34 | $0.26 | $0.19 |
| A14B | .36 | .28 | .20 |
| A14D | .43 | .33 | .23 |
| A14F | .30 | .23 | .16 |
| A14M | .57 | .40 | .32 |
| A14N | .80 | .53 | .42 |
| A14P | .87 | .58 | .46 |
| A15A | .62 | .42 | .32 |
| A15F | .57 | .39 | .30 |

| GE Type | Net Each, Lots | |
|---|---|---|
| | 1-99 | 100-999 |
| A28, A29A‡ | $4.50 | $3.00 |
| A28, A29B‡ | 5.70 | 3.80 |
| A28, A29C‡ | $7.13 | $4.75 |
| A28, A29D‡ | 8.25 | 5.50 |
| A28, A29F‡ | 3.82 | 2.55 |
| A40, A41A‡ | 2.25 | 1.50 |
| A40, A41B‡ | 2.40 | 1.60 |
| A40, A41C‡ | 2.64 | 1.76 |
| A40, A41D‡ | 3.05 | 2.10 |
| A40, A41E‡ | 3.75 | 2.50 |
| A40, A41F‡ | 2.10 | 1.40 |
| A40, A41M‡ | 4.50 | 3.00 |
| A44, A45A | 1.42 | .95 |
| A44, A45B | 1.57 | 1.05 |
| A44, A45C | 1.73 | 1.15 |
| A44, A45D | 1.88 | 1.25 |
| A44, A45E | 2.63 | 1.75 |
| A44, A45F | 1.32 | .88 |
| A44, A45M | 3.30 | 2.20 |

| GE Type | Net Each, Lots 1-9 | 10-99 |
|---|---|---|
| A70–A75A | $13.00 | $ 8.00 |
| A70–A75B | 14.50 | 8.75 |
| A70–A75C | 15.50 | 9.50 |
| A70–A75D | 16.50 | 10.00 |
| A70–A75E | 17.50 | 10.50 |
| A70–A75M | 19.50 | 11.75 |
| A70–A75N | 24.00 | 14.50 |
| A70–A75P | 28.50 | 17.25 |
| A70–A75PA | 30.50 | 18.50 |
| A70–A75PB | 32.50 | 19.50 |
| A70–A75S | 22.00 | 13.25 |
| A70–A75T | 26.00 | 15.75 |
| A90, A91A | 21.00 | 12.75 |
| A90, A91B | 24.50 | 14.75 |
| A90, A91C | 27.50 | 16.50 |
| A90, A91D | 30.50 | 18.50 |
| A90, A91E | 34.00 | 20.50 |
| A90, A91M | 38.00 | 23.00 |
| A90, A91N | 44.50 | 26.75 |
| A90, A91P | 52.50 | 31.50 |
| A90, A91PA | 57.00 | 34.25 |
| A90, A91PB | 61.00 | 36.75 |
| A90, A91S | 41.00 | 24.75 |
| A90, A91T | 48.50 | 29.25 |

| GE Type | Net Each, Lots of | | |
|---|---|---|---|
| | 1-99 | 100-999 | 1000-9999 |
| A114A | $0.70 | $0.45 | $0.32 |
| A114B | .75 | .48 | .35 |
| A114C | .85 | .54 | .39 |
| A114D | .90 | .66 | .41 |
| A114E | 1.15 | .74 | .53 |
| A114F | .65 | .42 | .30 |
| A114M | 1.25 | .80 | .57 |

| GE Type | Net Each, Lots of | |
|---|---|---|
| | 1-9 | 10-99 |
| A291PC | $ 65.50 | $39.50 |
| A291PD | 69.50 | 41.75 |
| A291PE | 73.50 | 44.25 |
| A291PM | 78.00 | 47.00 |
| A291PN | 86.50 | 52.00 |
| A291PS | 82.00 | 49.25 |
| A295, A296A | 40.00 | 24.00 |
| A295, A296B | 45.50 | 27.50 |
| A295, A296C | 50.50 | 30.50 |
| A295, A296D | 57.00 | 34.25 |
| A295, A296E | 63.00 | 38.00 |
| A295, A296M | 69.50 | 41.75 |
| A295, A296N | 82.00 | 49.25 |
| A295, A296P | 94.50 | 56.75 |
| A295, A296PA | 101.00 | 60.75 |
| A295, A296PB | 108.00 | 64.50 |
| A295, A296PC | 114.00 | 68.25 |
| A295, A296PD | 121.00 | 72.75 |
| A295, A296PE | 129.00 | 77.25 |
| A295, A296PM | 137.00 | 82.00 |
| A295, A296PN | 158.00 | 94.50 |
| A295, A296PS | 145.00 | 87.00 |
| A295S, A296S | 76.00 | 45.75 |
| A295T, A296T | 88.50 | 53.25 |
| A390A | 19.00 | 11.50 |
| A390B | 22.50 | 13.50 |
| A390C | 25.00 | 15.00 |
| A390D | 27.50 | 16.50 |
| A390E | 31.00 | 18.75 |
| A390M | 34.50 | 20.75 |
| A390N | 40.00 | 24.00 |
| A390P | 47.50 | 28.50 |
| A390PA | 51.00 | 30.75 |
| A390PB | 55.00 | 33.00 |
| A390S | 37.00 | 22.25 |
| A390T | 44.00 | 26.50 |
| A396A | 23.00 | 14.00 |
| A396B | 26.00 | 15.75 |
| A396C | 29.50 | 17.75 |
| A396D | 33.50 | 20.25 |
| A396E | 37.50 | 22.50 |
| A396M | 41.00 | 24.75 |
| A396N | 48.00 | 29.00 |
| A396P | 57.00 | 34.25 |

| GE Type | Net Each, Lots | |
|---|---|---|
| | 1-9 | 10-99 |
| A396S | $45.00 | $27.00 |
| A396T | 52.50 | 31.50 |
| A540A | 65.50 | 39.50 |
| A540B | 73.50 | 44.25 |
| A540C | 82.00 | 49.25 |
| A540D | 92.50 | 55.50 |
| A540E | 108.00 | 64.50 |
| A540L | 350.00 | 210.00 |
| A540M | 124.00 | 74.50 |
| A540N | 158.00 | 94.50 |
| A540P | 189.00 | 114.00 |
| A540PA | 204.00 | 123.00 |
| A540PB | 222.00 | 134.00 |
| A540PC | 236.00 | 142.00 |
| A540PD | 252.00 | 152.00 |
| A540PE | 270.00 | 162.00 |
| A540PM | 286.00 | 172.00 |
| A540PN | 316.00 | 190.00 |
| A540PS | 302.00 | 182.00 |
| A540PT | 332.00 | 200.00 |
| A540S | 141.00 | 84.75 |
| A540T | 173.00 | 104.00 |
| A570A | 94.50 | 56.75 |
| A570B | 105.00 | 63.00 |
| A570C | 116.00 | 69.50 |
| A570D | 129.00 | 77.25 |
| A570E | 145.00 | 87.00 |
| A570F | 88.50 | 53.25 |
| A570M | 162.00 | 97.25 |

| GE Type | Net Ea., Lots | |
|---|---|---|
| | 1-99 | 100-999 |
| A1423BB1AB1 | $ 2.42 | $1.62 |
| A1423BF1AB1 | 3.68 | 2.42 |
| A1423MB1AB1 | 3.42 | 2.28 |
| A1423MF1AB1 | 5.15 | 3.43 |
| A1425MH10AB1 | 8.57 | 5.71 |
| A1425PBH5AB1 | 5.05 | 3.36 |
| BD1, 2 | 5.00 | 3.30 |
| BD3 | 3.00 | 2.00 |
| BD4 | 5.00 | 3.30 |
| BD5–7 | 10.00 | 6.65 |

| GE Type | Net Each, Lots of | | |
|---|---|---|---|
| | 1-9 | 10-99 | 100 Up |
| BD402–7 | $28.00 | $16.10 | $11.10 |

| GE Type | Net Each, Lots of | | |
|---|---|---|---|
| | 1-99 | 100-999 | 1000-9999 |
| C6A | $ 1.65 | $ 1.10 | ...... |
| C6B | 1.80 | 1.20 | ...... |
| C6F | 1.50 | 1.00 | ...... |
| C6G | 1.73 | 1.15 | ...... |
| C6U | 1.43 | .95 | ...... |
| C12A* | 8.40 | 5.60 | ...... |
| C12B* | 13.95 | 9.30 | ...... |
| C12C* | 20.25 | 13.50 | ...... |
| C12F* | 6.60 | 4.40 | ...... |
| C12G* | 11.10 | 7.40 | ...... |
| C12H* | 16.95 | 11.30 | ...... |
| C12U* | 6.15 | 4.10 | ...... |
| C15A* | 1.95 | 1.30 | ...... |
| C15B* | 2.02 | 1.35 | ...... |
| C15C* | 2.55 | 1.70 | ...... |
| C15D* | 2.85 | 1.90 | ...... |
| C15E* | 4.57 | 3.05 | ...... |
| C15F* | 1.72 | 1.15 | ...... |
| C15G* | 1.87 | 1.25 | ...... |
| C15M* | 9.75 | 6.50 | ...... |
| C15U* | 1.65 | 1.10 | ...... |

| GE Type | Net Each, Lots | |
|---|---|---|
| | 1-99 | 100-999 |
| C20A* | $ 1.92 | $ 1.28 |
| C20B* | 1.98 | 1.32 |
| C20C* | 2.64 | 1.76 |
| C20D* | 3.00 | 2.00 |
| C20F* | 1.77 | 1.18 |
| C20U* | 1.71 | 1.14 |
| C22A | 1.62 | 1.08 |
| C22B | 1.68 | 1.12 |
| C22C | 2.34 | 1.56 |
| C22D | 2.70 | 1.80 |
| C22F | 1.47 | .98 |
| C22U | 1.41 | .94 |
| C30A* | 4.77 | 3.18 |
| C30B* | 5.49 | 3.66 |
| C30C* | 6.39 | 4.26 |
| C30D* | 7.20 | 4.80 |
| C30E* | 7.97 | 5.31 |
| C30F* | 4.10 | 2.75 |
| C30U* | 3.75 | 2.50 |
| C31A* | 5.19 | 3.46 |
| C31B* | 5.99 | 3.99 |
| C31C* | 6.98 | 4.65 |
| C31D* | 7.86 | 5.24 |
| C31E* | 8.72 | 5.81 |
| C31F* | 4.50 | 3.00 |
| C31U* | 4.00 | 2.75 |

| GE Type | Net Each, Lots | |
|---|---|---|
| | 1-99 | 100-999 |
| C32A | $ 4.23 | $ 2.82 |
| C32B | 4.95 | 3.30 |
| C32C | 5.85 | 3.90 |
| C32D | 6.66 | 4.44 |
| C32E | 7.42 | 4.95 |
| C32F | 3.75 | 2.50 |
| C32U | 3.35 | 2.25 |
| C33A | 4.65 | 3.10 |
| C33B | 5.45 | 3.63 |
| C33C | 6.43 | 4.29 |
| C33D | 7.33 | 4.88 |
| C33E | 8.18 | 5.45 |
| C33F | 4.10 | 2.75 |
| C33U | 3.75 | 2.50 |
| C34A1 | 5.50 | 3.67 |
| C34A2 | 6.05 | 4.03 |
| C34B1 | 6.43 | 4.29 |
| C34B2 | 6.98 | 4.65 |
| C34C1 | 7.61 | 5.07 |
| C34C2 | 8.15 | 5.43 |
| C34D1 | 8.65 | 5.77 |
| C34D2 | 9.20 | 6.13 |
| C34E1 | 9.65 | 6.43 |
| C34E2 | 10.19 | 6.79 |
| C34F1 | 4.88 | 3.25 |
| C34F2 | 5.42 | 3.62 |
| C34U1 | 4.40 | 2.93 |
| C34U2 | 4.94 | 3.29 |
| C35A* | 3.90 | 2.60 |
| C35B* | 5.25 | 3.50 |
| C35C* | 6.30 | 4.20 |
| C35D* | 7.35 | 4.90 |
| C35E* | 8.77 | 5.85 |
| C35F* | 3.05 | 2.05 |
| C35G* | 4.57 | 3.05 |
| C35H* | 5.85 | 3.90 |
| C35M* | 9.45 | 6.30 |
| C35N* | 20.25 | 13.50 |
| C35S* | 15.30 | 10.25 |
| C35U* | 2.55 | 1.70 |
| C36M* | 12.22 | 8.15 |
| C36N* | 21.15 | 14.10 |
| C36S* | 15.45 | 10.30 |
| C37A* | 3.22 | 2.15 |
| C37B* | 4.45 | 2.95 |
| C37C* | 5.47 | 3.65 |
| C37D* | 6.45 | 4.30 |
| C37E* | 7.50 | 5.00 |
| C37F* | 2.55 | 1.70 |
| C37M* | 8.47 | 5.65 |
| C37N* | 9.97 | 6.65 |
| C37S* | 9.30 | 6.20 |
| C37U* | 2.17 | 1.45 |
| C38A* | 5.25 | 3.50 |
| C38B* | 7.20 | 4.80 |
| C38C* | 9.30 | 6.20 |
| C38D* | 11.77 | 7.85 |
| C38E* | 15.75 | 10.50 |
| C38F* | 4.12 | 2.75 |
| C38G* | 6.15 | 4.10 |
| C38H* | 8.25 | 5.50 |
| C38U* | 3.75 | 2.50 |

| GE Type | Net Each, Lots of 1-9 | 10-99 |
|---|---|---|
| C45, C46A | $16.50 | $10.00 |
| C45, C46B | 17.50 | 10.50 |
| C45, C46C | 21.00 | 12.75 |
| C45, C46D | 26.00 | 15.75 |
| C45, C46E | 35.00 | 21.00 |
| C45, C46F | On Request | |
| C45, C46G | 17.00 | 10.25 |
| C45, C46H | 19.00 | 11.50 |
| C45, C46M | 45.50 | 27.50 |
| C45, C46N | 65.00 | 39.00 |
| C45, C46S | 54.00 | 32.50 |
| C45, C46T | 77.00 | 46.25 |
| C45, C46U | On Request | |
| C50, C52A | 22.00 | 13.25 |
| C50, C52B | 26.00 | 15.75 |
| C50, C52C | 32.50 | 19.50 |
| C50, C52D | 39.00 | 23.50 |
| C50, C52E | 45.50 | 27.50 |
| C50, C52F | 20.00 | 12.00 |
| C50, C52G | 24.00 | 14.50 |
| C50, C52H | 29.50 | 17.75 |
| C50, C52M | 55.50 | 33.50 |
| C50, C52N | 81.00 | 48.75 |
| C50, C52S | 67.00 | 40.25 |
| C50, C52T | 94.00 | 56.50 |
| C50, C52U | 18.50 | 11.25 |
| C60, C62A | 32.50 | 19.50 |
| C60, C62B | 37.00 | 22.25 |
| C60, C62C | 41.50 | 25.00 |
| C60, C62D | 48.00 | 29.00 |
| C60, C62E | 55.50 | 33.50 |
| C60, C62F | 28.50 | 17.25 |
| C60, C62G | 35.00 | 21.00 |
| C60, C62H | 39.00 | 23.50 |
| C60, C62U | 22.00 | 13.25 |

*Semiconductor chip. †Spread types. ‡Prices include mounting hardware. For insulating hardware, add **5c** per unit, any quantity. §Available in reverse polarity at same price; to order add suffix **R**, i.e., A129E**R**, A129M**R**.

# GENERAL ELECTRIC OEM Semiconductor Pricing

| GE Type | Net Each, Lots of | | |
|---|---|---|---|
| | 1-99 | 100-999 | 1000-9999 |
| C103A | $0.75 | $0.50 | $0.40 |
| C103B | .84 | .56 | .45 |
| C103Y | .69 | .46 | .37 |
| C103YY | .72 | .48 | .38 |
| C106A1‡ | .81 | .54 | .43 |
| C106A2–4‡ | .86 | .59 | .44 |
| C106B1‡ | .90 | .60 | .48 |
| C106B2–4‡ | .95 | .65 | .49 |
| C106C1‡ | 1.12 | .75 | .60 |
| C106C2–4‡ | 1.17 | .80 | .61 |
| C106F1‡ | .78 | .52 | .42 |
| C106F2–4‡ | .83 | .57 | .43 |
| C106Q1‡ | .72 | .48 | .38 |
| C106Q2–4‡ | .77 | .53 | .39 |
| C106Y1‡ | .75 | .50 | .40 |
| C106Y2–4‡ | .80 | .55 | .41 |
| C107A1‡ | .72 | .48 | .38 |
| C107B1‡ | .81 | .54 | .43 |
| C107F1‡ | .69 | .46 | .37 |
| C107Y1‡ | .66 | .44 | .35 |

| GE Type | Net Each, Lots of | |
|---|---|---|
| | 1-99 | 100-999 |
| C122A | $ 1.35 | $ 0.90 |
| C122B | 1.50 | 1.00 |
| C122D | 2.00 | 1.35 |
| C122F | 1.20 | .80 |
| C137E* | 9.75 | 6.50 |
| C137M* | 10.80 | 7.20 |
| C137N* | 16.20 | 10.80 |
| C137P* | 21.15 | 14.10 |
| C137PA* | 23.40 | 15.60 |
| C137PB* | 26.55 | 17.70 |
| C137S* | 13.35 | 8.90 |
| C137T* | 18.45 | 12.30 |

| GE Type | Net Each, Lots of | |
|---|---|---|
| | 1-9 | 10-99 |
| C145E | $ 30.50 | $ 18.50 |
| C145M | 36.00 | 21.75 |
| C145N | 50.50 | 30.50 |
| C145P | 70.50 | 42.50 |
| C145PA | 83.00 | 50.00 |
| C145PB | 94.50 | 56.75 |
| C145S | 42.00 | 25.25 |
| C145T | 60.00 | 36.00 |
| C150, 152E | 44.50 | 26.75 |
| C150, 152M | 52.50 | 31.50 |
| C150, 152N | 79.00 | 47.50 |
| C150, 152P | 112.00 | 67.00 |
| C150, 152PA | 132.00 | 79.00 |
| C150, 152PB | 152.00 | 91.00 |
| C150, 152PC | 171.00 | 103.00 |
| C150, 152S | 65.50 | 39.50 |
| C150, 152T | 91.50 | 55.00 |
| C154, 156A | 36.00 | 21.75 |
| C154, 156B | 41.00 | 24.75 |
| C154, 156C | 46.50 | 28.00 |
| C154, 156D | 55.00 | 33.00 |
| C154, 156E | 65.50 | 39.50 |
| C154, 156M | 76.00 | 45.75 |
| C155, 157A | 31.50 | 19.00 |
| C155, 157B | 36.00 | 21.75 |
| C155, 157C | 40.00 | 24.00 |
| C155, 157D | 46.50 | 28.00 |
| C155, 157E | 54.00 | 32.50 |
| C155, 157M | 61.00 | 36.75 |
| C158, 159A | 36.00 | 21.75 |
| C158, 159B | 41.00 | 24.75 |
| C158, 159C | 46.50 | 28.00 |
| C158, 159D | 55.00 | 33.00 |
| C158, 159E | 65.50 | 39.50 |
| C158, 159M | 76.00 | 45.75 |
| C158, 159N | 105.00 | 63.00 |
| C158, 159P | 145.00 | 87.00 |
| C158; 159PA | 166.00 | 99.75 |
| C158, 159PB | 189.00 | 114.00 |
| C158, 159S | 90.50 | 54.50 |
| C158, 159T | 124.00 | 74.50 |
| C180A | 55.00 | 33.00 |
| C180B | 59.00 | 35.50 |
| C180C | 70.50 | 42.50 |
| C180D | 82.00 | 49.25 |
| C180E | 100.00 | 60.00 |
| C180M | 121.00 | 72.75 |
| C180N | 174.00 | 105.00 |
| C180P | 224.00 | 135.00 |
| C180PA | 250.00 | 150.00 |
| C180PB | 278.00 | 167.00 |
| C180PC | 302.00 | 182.00 |
| C180S | 147.00 | 88.25 |
| C180T | 200.00 | 120.00 |
| C185A | 63.00 | 38.00 |
| C185B | 69.50 | 41.75 |
| C185C | 78.00 | 47.00 |
| C185D | 92.50 | 55.50 |
| C185E | 112.00 | 67.00 |
| C185M | 131.00 | 78.50 |
| C280, 281N | 174.00 | 105.00 |
| C280, 281P | 224.00 | 135.00 |
| C280. 281PA | 250.00 | 150.00 |
| C280, 281PC | $302.00 | $182.00 |
| C280, 281PD | 324.00 | 195.00 |
| C280, 281PE | 350.00 | 210.00 |
| C280, 281PM | 374.00 | 225.00 |
| C280, 281PN | 426.00 | 256.00 |
| C280, 281PS | 400.00 | 240.00 |
| C280, 281S | 147.00 | 88.25 |
| C280, 281T | 200.00 | 120.00 |
| C290, 291A | 58.00 | 35.00 |
| C290, 291B | 66.50 | 40.00 |
| C290, 291C | 79.50 | 47.50 |
| C290, 291D | 103.00 | 62.00 |
| C290, 291E | 126.00 | 75.75 |
| C290, 291M | 153.00 | 91.50 |
| C290, 291N | 224.00 | 135.00 |
| C290, 291P | 282.00 | 170.00 |
| C290, 291PA | 316.00 | 190.00 |
| C290, 291PB | 348.00 | 209.00 |
| C290, 291S | 187.00 | 113.00 |
| C290. 291T | 252.00 | 152.00 |
| C350† | 1.50 | 1.50 |
| C350A | 19.00 | 11.50 |
| C350B | 22.50 | 13.50 |
| C350C | 25.50 | 15.50 |
| C350D | 30.50 | 18.50 |
| C350E | 35.00 | 21.00 |
| C350M | 42.00 | 25.25 |
| C350N | 63.00 | 38.00 |
| C350P | 88.50 | 53.25 |
| C350PA | 105.00 | 63.00 |
| C350PB | 121.00 | 72.75 |
| C350PC | 137.00 | 82.00 |
| C350S | 52.50 | 31.50 |
| C350T | 72.50 | 43.50 |
| C354A | 33.00 | 20.00 |
| C354B | 38.00 | 23.00 |
| C354C | 43.50 | 26.25 |
| C354D | 48.50 | 29.25 |
| C354E | 55.00 | 33.00 |
| C354M | 61.00 | 36.75 |
| C355A | 28.50 | 17.25 |
| C355B | 30.50 | 18.50 |
| C355C | 35.00 | 21.00 |
| C355D | 39.00 | 23.50 |
| C355E | 43.50 | 26.25 |
| C355M | 48.50 | 29.25 |
| C358A | 33.00 | 20.00 |
| C358B | 38.00 | 23.00 |
| C358C | 43.50 | 26.25 |
| C358D | 48.50 | 29.25 |
| C358E | 55.00 | 33.00 |
| C358M | 61.00 | 36.75 |
| C358N | 82.00 | 49.25 |
| C358P | 115.00 | 68.75 |
| C358PA | 133.00 | 79.50 |
| C358PB | 152.00 | 91.00 |
| C358S | 68.50 | 41.25 |
| C358T | 98.00 | 59.00 |
| C380† | 1.50 | 1.50 |
| C380A | 42.00 | 25.25 |
| C380B | 50.50 | 30.50 |
| C380C | 57.00 | 34.25 |
| C380D | 68.50 | 41.25 |
| C380E | 84.00 | 50.50 |
| C380M | 98.00 | 59.00 |
| C380N | 143.00 | 86.00 |
| C380P | 179.00 | 108.00 |
| C380PA | 200.00 | 120.00 |
| C380PB | 222.00 | 134.00 |
| C380PC | 240.00 | 144.00 |
| C380S | 118.00 | 71.00 |
| C380T | 160.00 | 96.00 |
| C385A | 57.00 | 34.25 |
| C385B | 61.00 | 36.75 |
| C385C | 67.50 | 40.50 |
| C385D | 78.00 | 47.00 |
| C385E | 90.50 | 54.50 |
| C385M | 105.00 | 63.00 |
| C398† | 2.75 | 2.75 |
| C398E | 140.00 | 84.00 |
| C398M | 160.00 | 96.00 |
| C398N | 204.00 | 122.00 |
| C398P | 248.00 | 149.00 |
| C398PA | 270.00 | 162.00 |
| C398PB | 290.00 | 174.00 |
| C398S | 184.00 | 110.00 |
| C398T | 226.00 | 136.00 |
| C501N | 174.00 | 104.00 |
| C501P | 216.00 | 130.00 |
| C501PA | 238.00 | 143.00 |
| C501PB | 252.00 | 151.00 |
| C501PC | 272.00 | 163.00 |
| C501PD | 294.00 | 176.00 |
| C501PE | 314.00 | 188.00 |
| C501PM | 336.00 | 202.00 |
| C501PS | 358.00 | 215.00 |
| C501S | 156.00 | 94.00 |
| C501T | 196.00 | 117.00 |
| C506A | 97.00 | 58.25 |
| C506B | 118.00 | 71.00 |
| C506C | 143.00 | 86.00 |
| C506D | 173.00 | 104.00 |
| C506E | 202.00 | 122.00 |
| C506M | 236.00 | 142.00 |
| C507A | $ 90.50 | $ 54.50 |
| C507B | 97.00 | 58.25 |
| C507C | 105.00 | 63.00 |
| C507D | 118.00 | 71.00 |
| C507E | 131.00 | 78.50 |
| C507M | 145.00 | 87.00 |
| C507N | 180.00 | 108.00 |
| C507P | 228.00 | 137.00 |
| C507PA | 250.00 | 150.00 |
| C507PB | 274.00 | 165.00 |
| C507PC | 300.00 | 180.00 |
| C507PD | 322.00 | 194.00 |
| C507S | 161.00 | 96.75 |
| C507T | 204.00 | 123.00 |
| C508A | 98.00 | 59.00 |
| C508B | 108.00 | 64.50 |
| C508C | 118.00 | 71.00 |
| C508D | 131.00 | 78.50 |
| C508E | 152.00 | 91.00 |
| C508M | 177.00 | 106.00 |
| C508N | 232.00 | 140.00 |
| C508P | 284.00 | 171.00 |
| C508PA | 312.00 | 188.00 |
| C508PB | 342.00 | 206.00 |
| C508S | 204.00 | 123.00 |
| C508T | 258.00 | 155.00 |
| C510A | 118.00 | 71.00 |
| C510B | 143.00 | 86.00 |
| C510C | 173.00 | 104.00 |
| C510D | 202.00 | 122.00 |
| C510E | 236.00 | 142.00 |
| C510M | 270.00 | 162.00 |
| C510S | 308.00 | 185.00 |

| GE Type | Net Each, Lots of | |
|---|---|---|
| | 1-99 | 100-999 |
| C511A* | $ 3.60 | $2.40 |
| C511B* | 6.15 | 4.10 |
| C511C* | 9.15 | 6.10 |
| C511D* | 11.85 | 7.90 |
| C511F* | 2.55 | 1.70 |
| C511G* | 4.95 | 3.30 |
| C511H* | 7.65 | 5.10 |
| C511U* | 2.40 | 1.60 |

| GE Type | Net Each, Lots of | |
|---|---|---|
| | 1-9 | 10-99 |
| C520A | $154.00 | $ 92.25 |
| C520B | 166.00 | 99.75 |
| C520C | 181.00 | 109.00 |
| C520D | 198.00 | 119.00 |
| C520F | 147.00 | 88.25 |
| C520G | 160.00 | 96.00 |
| C520H | 173.00 | 104.00 |
| C530A | 131.00 | 78.50 |
| C530B | 143.00 | 86.00 |
| C530C | 154.00 | 92.25 |
| C530D | 166.00 | 99.75 |
| C530E | 181.00 | 109.00 |
| C530F | 126.00 | 75.75 |
| C530M | 198.00 | 119.00 |

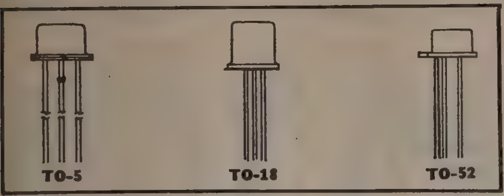
| GE Type | Net Each, Lots | |
|---|---|---|
| | 1-99 | 100-999 |
| C611A* | $2.40 | $1.60 |
| C611B* | 2.60 | 1.73 |
| C611F* | 2.20 | 1.45 |
| C611G* | 2.50 | 1.67 |
| C611U* | 2.10 | 1.40 |

| GE Type | Net Each, Lots of | | |
|---|---|---|---|
| | 1-99 | 100-999 | 1000-9999 |
| D5E37 | $0.75 | $0.50 | $0.40 |
| D5E43 | 1.05 | .70 | .60 |
| D5E44 | .97 | .65 | .55 |
| D5E45 | 1.49 | .99 | .90 |
| D5K1 | 6.95 | 4.64 | 3.95 |
| D5K2 | 2.55 | 1.70 | 1.40 |
| D7A30 | 1.01 | .67 | .57 |
| D7A31 | 1.08 | .72 | .62 |
| D7A32 | 2.25 | 1.50 | 1.35 |
| D12A8 | 4.50 | 3.35 | ...... |
| D12E026 | 1.95 | 1.30 | 1.20 |
| D12E109 | 11.00 | 10.00 | ...... |
| D12E126 | 7.80 | 5.25 | ...... |
| D13V1 | .65 | .44 | .36 |
| D13V2, 3 | .83 | .55 | .46 |
| D13V4 | 1.25 | .84 | .70 |
| D16G6 | .45 | .30 | .25 |
| D16P1 | .38 | .26 | .21 |
| D26B1 | .78 | .52 | .47 |
| D26B2 | .83 | .55 | .50 |
| D26C1 | .76 | .51 | .46 |
| D26C2 | .80 | .53 | .48 |
| D26C3 | .85 | .57 | .51 |
| D26E1 | 1.35 | .90 | .81 |
| D26E2 | .82 | .55 | .49 |
| D26E3 | .86 | .57 | .51 |
| D26E4 | $0.89 | $0.59 | $0.53 |
| D26E5 | .93 | .62 | .56 |
| D26E6 | .75 | .49 | .44 |
| D26G1 | 1.02 | .69 | .62 |
| D29E1 | .52 | .35 | .29 |
| D29E2 | .56 | .38 | .31 |
| D29E4 | .47 | .32 | .26 |
| D29E5 | .52 | .35 | .29 |
| D29E6 | .56 | .38 | .31 |
| D29E7 | .63 | .42 | .35 |
| D29E9 | .88 | .59 | .49 |
| D29E10 | .95 | .63 | .53 |
| D30A1 | 1.16 | .77 | .69 |
| D30A2 | 1.20 | .80 | .72 |
| D30A3 | 1.28 | .86 | .77 |
| D33D21 | .47 | .32 | .26 |
| D33D22 | .52 | .35 | .29 |
| D33D24 | .43 | .29 | .24 |
| D33D25 | .47 | .32 | .26 |
| D33D26 | .52 | .35 | .29 |
| D33D27 | .59 | .39 | .33 |
| D33D29 | .83 | .55 | .46 |
| D33D30 | .88 | .59 | .49 |
| D40C1§ | .64 | .42 | .35 |
| D40C2§ | .89 | .59 | .49 |
| D40C4§ | .71 | .48 | .39 |
| D40C5§ | 1.02 | .68 | .56 |
| D40C7§ | 1.02 | .68 | .56 |
| D40D1§ | .61 | .41 | .34 |
| D40D2§ | .77 | .51 | .42 |
| D40D4§ | .74 | .49 | .41 |
| D40D5§ | .90 | .60 | .49 |
| D40D7§ | .82 | .54 | .45 |
| D40D8§ | 1.02 | .68 | .56 |
| D40N1§ | .77 | .51 | .42 |
| D40N3§ | .84 | .56 | .46 |
| D41D1§ | .66 | .44 | .36 |
| D41D2§ | .87 | .58 | .48 |
| D41D4§ | .79 | .53 | .43 |
| D41D5§ | 1.00 | .66 | .55 |
| D41D7§ | .87 | .58 | .48 |
| D41D8§ | 1.13 | .75 | .62 |
| D42C1§ | .90 | .59 | .49 |
| D42C2§ | .95 | .63 | .52 |
| D42C3§ | 1.00 | .65 | .55 |
| D42C4§ | .97 | .65 | .53 |
| D42C5§ | 1.02 | .68 | .56 |
| D42C6§, 7§ | 1.10 | .73 | .60 |
| D42C8§ | 1.17 | .78 | .64 |
| D43C1§ | 1.02 | .68 | .56 |
| D43C2§ | 1.07 | .71 | .59 |
| D43C3§ | 1.12 | .75 | .62 |
| D43C4§ | 1.10 | .73 | .60 |
| D43C5§ | 1.15 | .76 | .63 |
| D43C6§, 7§ | 1.22 | .82 | .67 |
| D43C8§ | 1.30 | .87 | .71 |
| D44C1§ | .97 | .65 | .53 |
| D44C2§ | 1.02 | .68 | .56 |
| D44C3§ | 1.07 | .72 | .59 |
| D44C4§ | 1.05 | .70 | .57 |
| D44C5§ | 1.10 | .73 | .60 |
| D44C6§, 7§ | 1.17 | .78 | .64 |
| D44C8§ | 1.25 | .84 | .69 |
| D44R1§ | 1.28 | .85 | .70 |
| D44R2§ | 1.38 | .92 | .76 |
| D44R3§ | 1.43 | .95 | .79 |
| D44R4§ | 1.48 | .99 | .82 |
| D45C1§ | 1.10 | .73 | .60 |
| D45C2§ | 1.15 | .77 | .63 |
| D45C3§ | 1.20 | .80 | .66 |
| D45C4§ | 1.18 | .78 | .64 |
| D45C5§ | 1.23 | .82 | .67 |
| D45C6§, 7§ | 1.30 | .87 | .71 |
| D45C8§ | 1.38 | .92 | .76 |
| DA1701 | .30 | .20 | .14 |
| DA1702 | .26 | .17 | .12 |
| DA1703 | .24 | .16 | .11 |
| DA1704 | .23 | .15 | .10 |
| DT230A | .26 | .15 | .10 |
| DT230B | .30 | .20 | .14 |
| DT230F | .24 | .13 | .08 |
| DT230G | .29 | .17 | .11 |
| DT230H | .36 | .24 | .17 |
| DT230H1 | .33 | .22 | .16 |
| DZ800 | .14 | .09 | .06 |
| DZ805 | .15 | .10 | .07 |
| DZ806 | .17 | .11 | .08 |
| F16H1 | .95 | .63 | .53 |
| GER4001 | .38 | .25 | .20 |
| GER4002 | .41 | .29 | .22 |
| GER4003 | .45 | .32 | .24 |
| GER4004 | .53 | .35 | .28 |
| GER4005 | .60 | .41 | .33 |
| GER4006 | .82 | .55 | .44 |
| GER4007 | .90 | .60 | .48 |
| GET706 | .27 | .17 | .15 |
| GET708 | .37 | .22 | .20 |
| GET914 | .45 | .27 | .24 |
| GET929, 30 | .37 | .22 | .20 |
| GET2221 | .46 | .28 | .25 |
| GET2221A | .41 | .25 | .22 |
| GET2222 | .27 | .17 | .15 |

**WRITE FOR PRICE ON UNLISTED ITEMS**

*Prices include mounting hardware. For insulating hardware, add **10c** per unit, any quantity. †Clamping kit §Insulating hardware available at **5c** per kit, any quantity.

# ITT Semiconductors



## SILICON PLANAR TRANSISTORS

### NPN GENERAL PURPOSE AMPLIFIERS

$H_{FE}$ and $V_{CE(sat)}$ at 150 mA except as otherwise noted.

| ITT Type | TO- | $V_{CEO}$ V | $V_{CBO}$ V | Min. $H_{FE}$ | Maximum $V_{CE(sat)}$ V | Maximum $I_{CBO}$ nA | Min. $f_t$ MHz | Net Each, 1-99 | Net Each, 100-999 |
|---|---|---|---|---|---|---|---|---|---|
| 2N760 | 18 | 45 | 45 | 50† | 1.0§ | 200 | 50 | $0.54 | $0.33 |
| 2N760A | 18 | 60 | 60 | 50† | 1.0§ | 100 | 50 | .55 | .34 |
| 2N929♯ | 18 | 45 | 45 | 60‡ | 1.0§ | 10 | 30 | .46 | .28 |
| 2N930♯ | 18 | 45 | 45 | 150‡ | 1.0§ | 10 | 30 | .46 | .28 |
| 2N2217 | 5 | 30 | 60 | 20 | 0.4 | 10 | 250 | .86 | .53 |
| 2N2218 | 5 | 30 | 60 | 40 | 0.4 | 10 | 250 | .55 | .34 |
| 2N2218A | 5 | 40 | 75 | 40 | 0.3 | 10 | 250 | .63 | .39 |
| 2N2219♯ | 5 | 30 | 60 | 100 | 0.4 | 10 | 250 | .54 | .33 |
| 2N2219A♯ | 5 | 40 | 75 | 100 | 0.3 | 10 | 250 | .54 | .33 |
| 2N2221♯ | 18 | 30 | 60 | 40 | 0.4 | 10 | 250 | .57 | .35 |
| 2N2221A♯ | 18 | 40 | 75 | 40 | 0.3 | 10 | 250 | .51 | .31 |
| 2N2222♯ | 18 | 30 | 60 | 100 | 0.4 | 10 | 250 | .34 | .21 |
| 2N2222A♯ | 18 | 40 | 75 | 100 | 0.3 | 10 | 250 | .57 | .35 |
| 2N2297 | 5 | 35 | 80 | 40 | 0.2 | 10 | 120 | 1.07 | .70 |
| 2N2483 | 18 | 60 | 60 | 40* | 0.35† | 10 | 60 | .68 | .41 |
| 2N2484 | 18 | 60 | 60 | 100* | 0.35† | 10 | 60 | .32 | .31 |
| 2N2586 | 18 | 45 | 60 | 120* | 0.5§ | 2 | 45 | 2.26 | 1.40 |
| 2N3107 | 5 | 60 | 100 | 100 | 0.25 | 10 | 70 | 1.15 | .70 |
| 2N3108 | 5 | 60 | 100 | 40 | 0.25 | 10 | 60 | 1.15 | .70 |
| 2N3109 | 5 | 40 | 80 | 100 | 0.25 | 10 | 70 | 1.15 | .70 |
| 2N3110 | 5 | 40 | 80 | 40 | 0.25 | 10 | 60 | 1.15 | .70 |
| 2N3299 | 5 | 30 | 60 | 40 | 0.22 | 10 | 250 | 1.03 | .64 |
| 2N3300 | 5 | 30 | 60 | 100 | 0.22 | 10 | 250 | .85 | .53 |
| 2N3301 | 18 | 30 | 60 | 40 | 0.22 | 10 | 250 | .70 | .40 |
| 2N3302 | 18 | 30 | 60 | 100 | 0.22 | 10 | 250 | .97 | .70 |

*At 10 μA. †At 1 mA. ‡At 0.5 mA. §At 10 mA. ♯JAN and JANTX types available.

### PNP GENERAL PURPOSE AMPLIFIERS

$H_{FE}$ and $V_{CE(sat)}$ at 150 mA except as otherwise noted.

| ITT Type | TO- | $V_{CEO}$ V | Min. $H_{FE}$ | Maximum $V_{CE(sat)}$ V | Maximum $I_{CBO}$ nA | Min. $f_t$ MHz | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|
| 2N2837 | 18 | 35 | 30 | 1.0 | 100 | 120 | $2.87 | $1.74 |
| 2N2838 | 18 | 35 | 75 | 1.0 | 100 | 120 | 2.75 | 1.68 |
| 2N2904* | 5 | 40 | 40 | 0.4 | 20 | 200 | .54 | .33 |
| 2N2905* | 5 | 40 | 100 | 0.4 | 20 | 200 | .54 | .33 |
| 2N2906* | 18 | 40 | 40 | 0.4 | 20 | 200 | .43 | .26 |
| 2N2907* | 18 | 40 | 100 | 0.4 | 20 | 200 | .43 | .26 |
| 2N3671 | 5 | 50 | 75 | 0.4 | 10 | 200 | 2.30 | 1.43 |
| 2N3672 | 18 | 50 | 75 | 0.4 | 10 | 200 | 1.97 | 1.21 |
| 2N3962 | 18 | 60 | 100† | 0.4‡ | 10§ | 40 | .91 | .56 |
| 2N3963 | 18 | 80 | 100† | 0.4‡ | 10§ | 50 | 1.43 | .88 |
| 2N3964 | 18 | 45 | 250† | 0.4‡ | 10§ | 50 | 1.44 | .90 |
| 2N3965 | 18 | 60 | 250† | 0.4‡ | 10§ | 50 | 2.05 | 1.26 |

*JAN type available. †At 10 mA. ‡At 5 mA. §$I_{EBO}$.

### PNP RF AMPLIFIERS AND HIGH SPEED SWITCHES

$H_{FE}$ and $V_{CE(sat)}$ at 30 mA.

| ITT Type | TO- | $V_{CEO}$ V | Min. $H_{FE}$ | Maximum $V_{CE(sat)}$ V | Maximum $I_{CES}$ nA | Min. $f_t$ MHz | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|
| 2N2894 | 18 | 12 | 40 | 0.20 | 80 | 400 | $0.69 | $0.42 |
| 2N3012 | 18 | 12 | 40 | 0.20 | 80 | 400 | 1.26 | .78 |

### NPN CORE AND FILM DRIVERS

$V_{CE(sat)}$ at 500 mA; $t_{on}$ and $t_{off}$ at $I_C = 500$ mA, $I_{B1}$ and $I_{B2} =$ 50 mA.

| ITT Type | TO- | $V_{CEO}$ V | Maximum $V_{CE(sat)}$ V | Maximum $t_{on}$ nsec | Maximum $t_{off}$ nsec | Min. $f_t$ MHz | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|
| 2N3252 | 5 | 30 | 0.50 | 45 | 70 | 200 | $3.00 | $1.85 |
| 2N3253 | 5 | 40 | 0.6 | 45 | 70 | 175 | 3.30 | 2.00 |
| 2N3444 | 5 | 50 | 0.60 | 45 | 70 | 150 | 4.05 | 2.45 |
| 2N3724 | 5 | 30 | 0.42 | 35 | 60 | 300 | .84 | .52 |
| 2N3725 | 5 | 50 | 0.52 | 35 | 60 | 300 | 1.57 | .92 |
| 2N4013 | 18 | 30 | 0.42 | 35 | 60 | 300 | 1.38 | 1.14 |
| 2N4014 | 18 | 50 | 0.52 | 35 | 60 | 300 | 2.00 | 1.23 |

### TUNER DIODES

Data sheets available on request.

| ITT Type | Net Each, Lots of 1-99 | Net Each, Lots of 100-999 | ITT Type | Net Each, Lots of 1-99 | Net Each, Lots of 100-999 |
|---|---|---|---|---|---|
| BA163-1 | $3.60 | $2.40 | ITT142 | $1.15 | $0.78 |
| BA163-M | 4.40 | 2.90 | ITT210 | .75 | .50 |
| ITT109 | 1.44 | .96 | ITT243 | .45 | .30 |
| ITT141 | 1.44 | .96 | ITT244 | .57 | .42 |

### NPN HIGH SPEED SWITCHES (TO-18)

$H_{FE}$ and $V_{CE(sat)}$ at 10 mA except as otherwise noted.

| ITT Type | $V_{CEO}$ V | Min. $H_{FE}$ | Maximum $V_{CE(sat)}$ V | Maximum $t_{on}$ nsec | Maximum $t_{off}$ nsec | Min. $f_t$ MHz | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|
| 2N706* | 20† | 20 | 0.60 | ..... | 60‡ | 200 | $0.34 | $0.21 |
| 2N706A | 20† | 20 | 0.60 | 40 | 75 | 200 | .49 | .30 |
| 2N706B | 20† | 20 | 0.40 | 40 | 75 | 200 | .57 | .35 |
| 2N708• | 20† | 30 | 0.40 | 40 | 75 | 300 | .46 | .28 |
| 2N784 | 15† | 25 | 0.19 | 20 | 40 | 200 | .55 | .34 |
| 2N914 | 20† | 30 | 0.25 | 40 | 40 | 300 | .56 | .34 |
| 2N2368 | 15 | 20 | 0.25 | 12 | 15 | 400 | .49 | .30 |
| 2N2369 | 15 | 40 | 0.25 | 12 | 18 | 500 | .42 | .25 |
| 2N2369A• | 15 | 40 | 0.20 | 12 | 18 | 500 | .43 | .26 |
| 2N2481 | 15 | 40 | 0.25 | 40 | 55 | 300 | .43 | .26 |
| 2N3009♯ | 15 | 30§ | 0.18§ | 15 | 25 | 350 | .91 | .56 |
| 2N3011 | 50 | 30 | 0.35 | ..... | ..... | 400 | .57 | .35 |
| 2N3013*♯ | 15 | 30§ | 0.18§ | 15 | 25 | 350 | 1.03 | .64 |
| 2N3014♯ | 20 | 30§ | 0.18§ | 16 | 25 | 350 | 1.00 | .61 |

*JAN type available. †$V_{CER}$ at $R_{BE} = 10$ ohms. ‡$t_s$. §At 30 mA. ♯TO-52. •JAN and JANTX types available.

### NPN-PNP SMALL SIGNAL METAL CAN

Data sheets available on request.

| ITT Type | NPN Type | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 | ITT Type | NPN Type | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|
| 2N696 | GPA | $ 0.69 | $0.42 | 2N2976 | DM | $ 3.85 | $ 2.75 |
| 2N697 | GPA | .49 | .30 | 2N2977 | DM | 4.55 | 3.20 |
| 2N743 | SW | .55 | .34 | 2N2978 | DM | 5.30 | 3.65 |
| 2N744 | SW | .55 | .34 | 2N2979 | DM | 6.70 | 4.50 |
| 2N753 | SW | .55 | .34 | 2N3019 | GPA | 1.15 | .70 |
| 2N783 | SW | .55 | .34 | 2N3020 | GPA | 1.00 | .61 |
| 2N834 | SW | .54 | .33 | 2N3053 | GPA | .54 | .33 |
| 2N834A | SW | .68 | .41 | 2N3056 | GPA | 4.30 | 2.60 |
| 2N835 | SW | .69 | .42 | 2N3056A | GPA | 4.40 | 2.72 |
| 2N869* | GPA | 1.42 | .88 | 2N3057 | GPA | 4.55 | 2.80 |
| 2N869A* | GPA | .89 | .54 | 2N3057A | GPA | 4.54 | 2.79 |
| 2N915 | R&I | 1.48 | .92 | 2N3115 | GPA | 1.03 | .64 |
| 2N947 | SW | 2.94 | 1.20 | 2N3116 | GPA | 1.04 | .67 |
| 2N1991* | GPA | 1.88 | 1.16 | 2N3117 | GPA | 1.70 | 1.03 |
| 2N2192, A | GPA | 1.35 | .51 | 2N3134 | GPA | 1.15 | .70 |
| 2N2192B | GPA | 2.15 | 1.34 | 2N3209* | SW | 1.29 | .79 |
| 2N2193 | GPA | 1.00 | .61 | 2N3326 | GPA | 2.77 | 1.75 |
| 2N2193A | GPA | 1.15 | .70 | 2N3409 | DM | 13.50 | 9.00 |
| 2N2193B | GPA | 1.42 | .88 | 2N3410 | DM | 14.30 | 8.75 |
| 2N2194 | GPA | 1.00 | .61 | 2N3411 | DM | 17.00 | 10.50 |
| 2N2194A | GPA | 1.42 | .88 | 2N3467* | DR | 3.00 | 1.85 |
| 2N2194B | GPA | 1.70 | 1.03 | 2N3468* | DR | 5.10 | 3.15 |
| 2N2195 | GPA | 1.00 | .61 | 2N3486* | DR | 5.45 | 3.35 |
| 2N2195A | GPA | 1.28 | .79 | 2N3486A* | DR | 5.90 | 3.65 |
| 2N2195B | GPA | 1.56 | .97 | 2N3502* | DR | 1.69 | 1.04 |
| 2N2205 | SW | .71 | .44 | 2N3503* | DR | 2.45 | 1.52 |
| 2N2206 | SW | 3.00 | 1.84 | 2N3504* | DR | 1.69 | 1.04 |
| 2N2242 | SW | 1.60 | 1.00 | 2N3505* | DR | 1.70 | 1.06 |
| 2N2303 | GPA | 2.74 | 1.68 | 2N3510 | SW | 1.42 | .90 |
| 2N2351 | GPA | 3.35 | 2.07 | 2N3513 | ...... | 10.00 | 6.15 |
| 2N2351A | GPA | 2.55 | 2.20 | 2N3516 | ...... | 11.50 | 7.00 |
| 2N2352 | GPA | 2.75 | 1.70 | 2N3526 | GPA | 2.55 | 1.58 |
| 2N2352A | GPA | 3.00 | 2.00 | 2N3546* | SW | 2.65 | 1.64 |
| 2N2353 | GPA | 1.80 | 1.12 | 2N3587 | DM | 11.50 | 7.00 |
| 2N2353A | GPA | 2.00 | 1.20 | 2N3665 | GPA | 1.12 | 1.06 |
| 2N2405 | GPA | 1.40 | .86 | 2N3666 | GPA | 1.90 | 1.15 |
| 2N2410 | DR | 1.82 | 1.12 | 2N3680 | DM | 11.50 | 7.00 |
| 2N2453 | DM | 6.45 | 4.25 | 2N3700 | R&I | 2.05 | 1.26 |
| 2N2453A | DM | 7.15 | 4.40 | 2N3701 | R&I | 1.77 | 1.09 |
| 2N2480 | DM | 5.70 | 3.50 | 2N3726* | GPA | 7.15 | 4.40 |
| 2N2509 | GPA | 1.43 | .88 | 2N3727* | GPA | 8.50 | 5.25 |
| 2N2510 | GPA | 1.43 | .88 | 2N3728 | DM | 5.30 | 3.65 |
| 2N2511 | GPA | 2.26 | 1.40 | 2N3729 | DM | 5.70 | 3.50 |
| 2N2639 | DM | 4.45 | 3.10 | 2N3734 | DR | 2.47 | 1.53 |
| 2N2640 | DM | 3.85 | 2.75 | 2N3736 | DR | 3.40 | 2.10 |
| 2N2641 | DM | 2.45 | 1.88 | 2N3907 | DM | 6.15 | 4.15 |
| 2N2642 | DM | 5.30 | 3.65 | 2N3908 | DM | 7.65 | 4.90 |
| 2N2643 | DM | 4.45 | 3.10 | 2N3945 | GPA | 1.25 | .88 |
| 2N2644 | DM | 4.25 | 3.40 | 2N4015* | DM | 7.65 | 4.90 |
| 2N2651 | SW | 2.70 | 1.67 | 2N4016* | DM | 8.50 | 5.25 |
| 2N2710 | SW | 1.62 | 1.00 | 2N4017* | DM | 7.15 | 4.40 |
| 2N2801 | DR | 2.75 | 1.68 | 2N4018* | DM | 6.20 | 4.00 |
| 2N2894A* | SW | 3.60 | 2.40 | 2N4019* | DM | 6.45 | 3.95 |
| 2N2903 | DM | 6.95 | 3.45 | 2N4020*, 1* | DM | 7.15 | 4.40 |
| 2N2903A | DM | 10.30 | 6.70 | 2N4022* | DM | 10.00 | 6.15 |
| 2N2904A*‡ | DR | .54 | .33 | 2N4023*, 4* | DM | 8.50 | 5.25 |
| 2N2905A*† | DR | .50 | .33 | 2N4025* | DM | 10.00 | 6.15 |
| 2N2906A*‡ | DR | .43 | .26 | 2N4026* | GPA | 2.75 | 1.73 |
| 2N2907A*† | DR | .43 | .26 | 2N4027* | GPA | 3.00 | 1.85 |
| 2N2910 | ...... | 11.40 | 7.00 | 2N4028* | GPA | 3.40 | 2.10 |
| 2N2913 | DM | 2.95 | 2.38 | 2N4029* | GPA | 8.85 | 5.38 |
| 2N2914 | DM | 3.05 | 2.60 | 2N4030* | GPA | 1.00 | .61 |
| 2N2915 | DM | 5.30 | 3.15 | 2N4031* | GPA | 1.04 | .87 |
| 2N2915A | DM | 7.90 | 5.15 | 2N4032* | GPA | 1.15 | .70 |
| 2N2916 | DM | 5.85 | 3.85 | 2N4033* | GPA | 1.42 | .88 |
| 2N2916A | DM | 8.15 | 5.00 | 2N4046 | DR | 1.28 | .79 |
| 2N2917 | DM | 3.85 | 2.75 | 2N4047 | DR | 1.42 | .88 |
| 2N2918 | DM | 4.55 | 3.20 | 2N4137 | SW | 1.00 | .61 |
| 2N2919 | DM | 5.30 | 3.65 | 2N4854 | DM | 11.50 | 7.00 |
| 2N2919A | DM | 9.50 | 6.25 | 2N4855 | DM | 8.50 | 5.25 |
| 2N2920 | DM | 6.20 | 4.00 | 2N5022* | DR | 3.84 | 2.37 |
| 2N2920A | DM | 10.50 | 6.65 | 2N5023* | DR | 3.42 | 2.10 |
| 2N2936 | ...... | 14.30 | 8.75 | 2N5056* | SW | 4.00 | 2.46 |
| 2N2937 | ...... | 8.50 | 5.25 | 2N5057* | SW | 4.55 | 2.82 |
| 2N2972 | DM | 3.45 | 2.38 | 2N5793 | DM | 6.30 | 4.25 |
| 2N2973 | DM | 3.45 | 2.60 | 2N5794 | DM | 7.15 | 4.40 |
| 2N2974 | DM | 5.30 | 3.65 | 2N5795* | DM | 6.30 | 4.25 |
| 2N2975 | DM | 6.15 | 4.15 | 2N5796* | DM | 7.15 | 4.40 |

*PNP type. †JAN and JANTX types available. ‡JAN type available.

# ITT Semiconductors

## SILICON PLANAR DIODES (DO-35)

Characteristics at 25° C.

| ITT Type | $V_{RM}$ V | $I_F$ at $V_F$ mA | $I_F$ at $V_F$ V | $I_R$ at $V_R$ µA | $I_R$ at $V_R$ V | $t_{rr}$ nsec | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|
| 1N914* | 75 | 10 | 1 | 0.025 | 20 | 4 | $0.45 | $0.30 |
| 1N914A | 75 | 20 | 1 | 0.025 | 20 | 4 | .50 | .33 |
| 1N914B | 75 | 100 | 1 | 0.025 | 20 | 4 | 1.00 | .50 |
| 1N916 | 75 | 10 | 1 | 0.025 | 20 | 4 | .67 | .44 |
| 1N916A | 75 | 20 | 1 | 0.025 | 20 | 4 | .75 | .50 |
| 1N4148*† | 75 | 10 | 1 | 0.025 | 20 | ..... | .25 | .15 |
| 1N4150*† | 50 | 1 | 0.62 | 0.1 | 50 | 4 | .70 | .50 |
| 1N4151† | 75 | 50 | 1 | 0.05 | 50 | 2 | .35 | .25 |
| 1N4152† | 40 | 0.1 | 0.55 | 0.05 | 30 | 2 | .30 | .25 |
| 1N4154† | 35 | 30 | 1 | 0.1 | 25 | 2 | .30 | .25 |
| 1N4444† | 70 | 0.1 | 0.55 | 0.05 | 50 | 2 | .89 | .59 |
| 1N4446† | 75 | 20 | 1 | 0.025 | 20 | 4 | .30 | .25 |
| 1N4447† | 75 | 20 | 1 | 0.025 | 20 | 4 | .30 | .25 |
| 1N4448† | 75 | 5 | 0.72 | 0.025 | 20 | 4 | .30 | .25 |
| 1N4449† | 75 | 5 | 0.73 | 0.025 | 20 | 4 | .30 | .25 |
| 1N4450† | 40 | 0.1 | 0.54 | 0.05 | 30 | 4 | .70 | .50 |
| 1N4451† | 40 | 0.1 | 0.50 | 0.05 | 30 | ..... | .30 | .25 |
| 1N4454†‡ | 75 | 10 | 1 | ...... | ..... | 2 | .25 | .20 |

*JAN and JANTX types available. †Double plug diode pkg. ‡JANTX type available.

## 4-LAYER SWITCHING DIODES (DO-7)

**Current Carrying Capacity:** 150 mA DC steady, 4E types; 150 mA continuous at 50° C, 1N series. **Power:** 150 mW, derating 1.5 mW per °C above 50° C. **Temperature Range:** −40° C to +70° C except MIL-Line and 1N series, −60° C to +125° C.

| $V_S$ Volts* | $I_h$ mA | Commercial Series ITT Type | Commercial Series 1-99 | Commercial Series 100-999 | MIL-Line Series ITT Type | MIL-Line Series 1-99 | MIL-Line Series 100-999 |
|---|---|---|---|---|---|---|---|
| 20 ±4 | 1–15 | 4E20-8 | $3.75 | $3.00 | 4E20M-8 | $ 7.50 | $6.00 |
| (14–25) | 14–45 | 4E20-28 | 3.50 | 2.75 | 4E20M-28 | 7.50 | 6.00 |
| 30 ±4 | 1–15 | 4E30-8 | 3.75 | 3.00 | 4E30M-8 | 10.00 | 7.50 |
| (23–36) | 14–45 | 4E30-28 | 3.50 | 2.75 | 4E30M-28 | 10.00 | 7.50 |
| 40 ±4 | 1–15 | 4E40-8 | 3.75 | 3.00 | 4E40M-8 | 7.50 | 6.00 |
| (32–46) | 14–45 | 4E40-28 | 3.50 | 2.75 | 4E40M-28 | 7.50 | 6.00 |
| 50 ±4 | 1–15 | 4E50-8 | 3.75 | 3.00 | 4E50M-8 | 10.00 | 7.50 |
| (41–57) | 14–45 | 4E50-28 | 3.50 | 2.75 | 4E50M-28 | 10.00 | 7.50 |
| 100 ±10 | 1–15 | 4E100-8 | 8.75 | 7.00 | 4E100M-8 | 30.00 | 23.25 |
| (80–115) | 14–45 | 4E100-28 | 8.75 | 7.00 | 4E100M-28 | 30.00 | 23.25 |

| $V_S$ Volts* | $I_h$ mA | 1N Ser. ½-15mA, $I_h$ ITT Type | 1N Ser. ½-15mA, $I_h$ 1-99 | 1N Ser. ½-15mA, $I_h$ 100-999 | 1N Ser. 14-50 mA, $I_h$ ITT Type | 1N Ser. 14-50 mA, $I_h$ 1-99 | 1N Ser. 14-50 mA, $I_h$ 100-999 |
|---|---|---|---|---|---|---|---|
| 20 ±4 | (14–25)† | 1N3831 | $5.95 | $4.75 | 1N3839 | $ 5.95 | $4.75 |
| 25 ±4 | (19–30)† | 1N3832 | 5.95 | 4.75 | 1N3840 | 5.95 | 4.75 |
| 30 ±4 | (23–36)† | 1N3833 | 5.95 | 4.75 | 1N3841 | 5.95 | 4.75 |
| 35 ±4 | (28–41)† | 1N3834 | 5.95 | 4.75 | 1N3842 | 5.95 | 4.75 |
| 40 ±4 | (32–46)† | 1N3835 | 5.95 | 4.75 | 1N3843 | 5.95 | 4.75 |
| 45 ±4 | (37–51)† | 1N3836 | 5.95 | 4.75 | 1N3844 | 5.95 | 4.75 |
| 50 ±4 | (41–57)† | 1N3837 | 5.95 | 4.75 | 1N3845 | 5.95 | 4.75 |
| 100 ±10 | (80–115)† | 1N3838 | 13.75 | 11.25 | 1N3846 | 12.00 | 9.60 |

*At 25° C and (at −60° C to +125° C, MIL-Line). †Vs (switching volts) at −40° C to +85° C.

## SILICON RECTIFIERS

### 1 AMP GLASS RECTIFIERS (DO-35)

One-piece hermetically sealed glass. Characteristics at 60 Hz, inductive load, single phase half wave. $I_O = 1.0$ A at 50° $C_A$. $I_{F(surge)} = 50$ A at 1 Hz (16 A at 10 Hz, 6 A at 100 Hz). $T_A$ and $T_{STG}$ −65° C to +175° C. Lead mounted ⅜″ from rectifier body.

| ITT Type | $V_{RM}$ V | $V_{r(rms)}$ V | $I_F$ at 25° C V | $I_{RM}$ at 100° $C_A$ µA | $T_{rr}$ µsec | Net Each, Lots of 1-99 | Net Each, Lots of 100-999 |
|---|---|---|---|---|---|---|---|
| 1N4383* | 200 | 140 | 1.0 | 275 | 10 | $0.31 | $0.23 |
| 1N4384* | 400 | 280 | 1.0 | 250 | 10 | .35 | .28 |
| 1N4385* | 600 | 420 | 1.0 | 225 | 10 | .44 | .39 |
| 1N4585* | 800 | 560 | 1.0 | 200 | 10 | .50 | .44 |
| 1N4586* | 1000 | 700 | 1.0 | 200 | 10 | .76 | .65 |

### SUBMINIATURE GLASS RECTIFIERS (DO-7)

Characteristics at 25° C. $V_F = 1.0$ V at $I_F = 400$ mA. $I_{RM} = 0.2$ V (1N645A, 0.05 V) at $V_{RM}$.

| ITT Type | $V_{RM}$ V | Net Each, Lots 1-99 | Net Each, Lots 100-999 | ITT Type | $V_{RM}$ V | Net Each, Lots 1-99 | Net Each, Lots 100-999 |
|---|---|---|---|---|---|---|---|
| 1N645* | 225 | $1.20 | $0.80 | 1N646 | 300 | $1.60 | $1.10 |
| 1N645A | 225 | 1.65 | 1.10 | 1N647* | 400 | 1.70 | 1.10 |

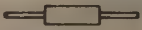
*JAN and JANTX types available.

### EPOXY RECTIFIERS

Operating Temperature Range: −65° C to +175° C. $I_O = 1000$ mA avg. at 75° C; 750 mA avg. at 100° C. $I_R = 50$ µA at $V_{RM}$ and 100° C. At Io and 100° C: $I_R = 10$ µA and $V_F = 1.6$ V.

| ITT Type | $V_{RM}$ 100° C V | Net Each, Lots of 1-99 | Net Each, Lots of 100-999 | ITT Type | $V_{RM}$ 100° C V | Net Each, Lots of 1-99 | Net Each, Lots of 100-999 |
|---|---|---|---|---|---|---|---|
| 1N4001 | 50 | $0.34 | $0.22 | 1N4005 | 600 | $0.68 | $0.40 |
| 1N4002 | 100 | .36 | .24 | 1N4006 | 800 | .95 | .45 |
| 1N4003 | 200 | .43 | .29 | 1N4007 | 1000 | 1.40 | .80 |
| 1N4004 | 400 | .52 | .35 | | | | |

DO-7


DO-35

## SILICON EPOXY RECTIFIERS

Operating Temperature Range: −65° C to +100° C.

| ITT Type | At 100° C $I_R$ at $V_{RM}$ µA | At 100° C $I_R$ at $V_{RM}$ V | At 25° C $I_R$ at $I_O$ Avg. µA | At 25° C $I_R$ at $I_O$ Avg. mA | $I_O$ Avg. 100° C mA | $V_F$ at $I_O$ 25° C V | Net Each 1-99 | Net Each 100-999 |
|---|---|---|---|---|---|---|---|---|
| 1N2069 | 200 | 200 | 10 | 750 | 500 | 1.2 | $0.30 | $0.19 |
| 1N2069A | 50 | 200 | 5 | 750 | 500 | 1.0 | .38 | .23 |
| 1N2070 | 200 | 400 | 10 | 750 | 500 | 1.2 | .33 | .21 |
| 1N2070A | 50 | 400 | 5 | 750 | 500 | 1.0 | .51 | .29 |
| 1N2071 | 200 | 600 | 10 | 750 | 500 | 1.2 | .54 | .32 |
| 1N2071A | 50 | 600 | 5 | 750 | 500 | 1.0 | .64 | .34 |

## GERMANIUM GOLD BONDED DIODES (DO-7)

### GENERAL PURPOSE TYPES

| ITT Type | Min. $I_F$ V = 1.0 V mA | Max. $I_R$ at 25° C µA | Max. $I_R$ at 25° C V | PIV Volts | Net Each, Lots of 1-99 | Net Each, Lots of 100-999 |
|---|---|---|---|---|---|---|
| 1N34A | 5 | 500 | −50 | 60 | $0.21 | $0.14 |
| 1N38A | 5 | 500 | −100 | 100 | .30 | .19 |
| 1N56A | 15 | 300 | −30 | 40 | .30 | .19 |
| 1N58A | 5 | 600 | −100 | 100 | .54 | .40 |
| 1N68A | 5 | 625 | −100 | 100 | .27 | .20 |
| 1N89 | 5 | 100 | −50 | 80 | .59 | .44 |
| 1N90 | 5 | 500 | −50 | 60 | .30 | .20 |
| 1N95 | 10 | 500 | −50 | 60 | .43 | .33 |
| 1N116 | 5 | 100 | −50 | 60 | .48 | .35 |
| 1N117 | 10 | 100 | −50 | 60 | .50 | .37 |
| 1N118A | 40 | 100 | −50 | 60 | .22 | .19 |
| 1N139 | 20 | 1500 | −50 | 40 | .26 | .19 |
| 1N140 | 40 | 300 | −50 | 70 | .32 | .28 |
| 1N198 | 5 | 250 | −50 | 80 | .34 | .27 |
| 1N278 | 20 | 125 | −50 | 50 | .33 | .19 |
| 1N287 | 20 | 1500 | −50 | 47 | .29 | .20 |
| 1N290 | 5 | 100 | −100 | 100 | .52 | .43 |
| 1N291 | 40 | 100 | −100 | 100 | .54 | .45 |
| 1N292 | 100 | 200 | −50 | 60 | .58 | .38 |
| 1N294 | 5 | 800 | −50 | 60 | .33 | .23 |
| 1N297 | 3.5 | 100 | −100 | 80 | .33 | .25 |
| 1N447 | 25 | 60 | −30 | 30 | .39 | .28 |
| 1N448 | 25 | 100 | −100 | 100 | .42 | .31 |
| 1N490 | 5 | 250 | −50 | 60 | .83 | .78 |

### HIGH RESISTANCE TYPES

| | | | | | | |
|---|---|---|---|---|---|---|
| 1N54A | 5 | 7 | −10 | 50 | $0.30 | $0.19 |
| 1N55A | 5 | 500 | −150 | 150 | .39 | .30 |
| 1N55B | 5 | 500 | −150 | 150 | 1.00 | .80 |
| 1N75 | 5 | 50 | −50 | 100 | .89 | .59 |
| 1N99 | 10 | 5 | −5 | 80 | .38 | .15 |
| 1N107 | 150 | 200 | −10 | 10 | .94 | .71 |
| 1N108 | 50 | 200 | −10 | 50 | .72 | .69 |
| 1N111 | 5 | 25 | −10 | 60 | .94 | .74 |
| 1N141 | 20 | 50 | −50 | 70 | .68 | .51 |
| 1N142 | 5 | 100 | −100 | 100 | .61 | .46 |
| 1N143 | 40 | 100 | −100 | 100 | .29 | .18 |
| 1N289 | 20 | 50 | −50 | 70 | .46 | .36 |

### HIGH CONDUCTANCE TYPES

| | | | | | | |
|---|---|---|---|---|---|---|
| 1N96A | 40 | 500 | −50 | 60 | $0.56 | $0.37 |
| 1N98A | 40 | 100 | −50 | 80 | .30 | .23 |
| 1N100 | 20 | 50 | −50 | 80 | .22 | .18 |
| 1N100A | 40 | 50 | −50 | 80 | .31 | .26 |
| 1N144 | 100 | 200 | −20 | 30 | .64 | .50 |
| 1N270* | 200 | 100 | −50 | 60 | .30 | .22 |
| 1N273 | 100 | 20 | −20 | 30 | .65 | .49 |
| 1N277* | 100 | 75 | −10* | 100 | .33 | .25 |
| 1N279 | 100 | 200 | −20 | 30 | .28 | .21 |
| 1N281 | 100 | 30 | −10 | 60 | .30 | .23 |
| 1N283 | 200 | 20 | −10 | 20 | .50 | .39 |
| 1N288 | 40 | 350 | −50 | 70 | .40 | .31 |
| 1N308 | 300 | 500 | −8 | 8 | .59 | .47 |
| 1N449 | 50 | 30 | −30 | 30 | .47 | .36 |
| 1N450 | 50 | 30 | −30 | 100 | .55 | .44 |
| 1N451 | 50 | 150 | −150 | 150 | 1.80 | 1.45 |
| 1N452 | 100 | 30 | −30 | 30 | .59 | .47 |
| 1N454 | 200 | 50 | −50 | 50 | .72 | .58 |
| 1N455 | 300 | 30 | −30 | 30 | .84 | .67 |
| 1N497 | 100 | 20 | −20 | 20 | .38 | .29 |
| 1N498 | 100 | 25 | −40 | 40 | .48 | .36 |
| 1N499 | 100 | 30 | −50 | 50 | .48 | .36 |
| 1N500 | 100 | 40 | −60 | 60 | .52 | .40 |
| 1N501 | 100 | 40 | −80 | 80 | .68 | .51 |
| 1N502 | 100 | 50 | −100 | 100 | .82 | .66 |
| 1N634 | 50 | 35 | −30 | 100 | .51 | .40 |
| 1N635 | 50 | 175 | −150 | 150 | 1.94 | 1.64 |

*JAN type available. *At 75° C.

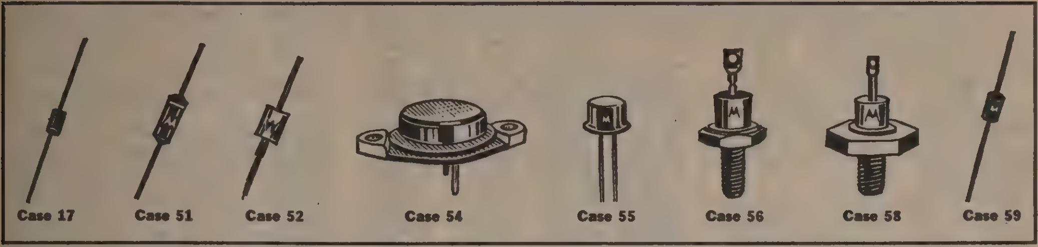
### COMPUTER TYPES

| | | | | | | |
|---|---|---|---|---|---|---|
| 1N67A | 5 | 5 | −5 | 80 | $0.27 | $0.20 |
| 1N191 | 5 | 400K | § | 90 | .29 | .18 |
| 1N192 | 5 | 200K | § | 70 | .29 | .18 |
| 1N276* | 40 | 20 | −10 | 50 | .30 | .23 |
| 1N298 | 30† | 250 | −40‡ | 70 | .30 | .22 |
| 1N309 | 100 | 100 | −20 | 30 | .43 | .28 |
| 1N312 | 30 | 50 | −50 | 50 | .75 | .57 |
| 1N313 | 20 | 10 | −20 | 100 | 1.00 | .75 |

*JAN type available. †At 2 volts, 50° C. ‡At 50° C. §Between −10 and −50 volts.

### OTHER GERMANIUM DIODES AVAILABLE

# MOTOROLA Semiconductors SILICON ZENER DIODES



Extensive line of zener diodes covers a complete range of power categories (150 mW to 50 W) and voltages (2.4 V to 200 V). Diodes are 100% tested for conformity to 4 different specified characteristics. Impedance is derived from the 60 Hz AC voltage which results when an AC current having an rms value equal to 10% of the DC zener current is superimposed upon the DC current. Standard voltage tolerances of ±5%, ±10% and ±20%; non-standard devices available to meet virtually any zener diode requirement. All MIL types approved to supply TX devices.

## 250-mW LOW NOISE (CASE 51)

**Test Current** ($I_{ZT}$): 0.250 µA. **Tol.:** ±5%. $N_D$=40 µvolts per sq. root cycle at $I_{ZT}$.

| Motorola Type | Nom. $V_Z$ at $I_{ZT}$ V | Max. $Z_{ZT}$ at $I_{ZT}$ Ω | Motorola Type | Nom. $V_Z$ at $I_{ZT}$ V | Max. $Z_{ZT}$ at $I_{ZT}$ Ω |
|---|---|---|---|---|---|
| 1N4099 | 6.8 | 200 | 1N4118 | 27 | 150 |
| 1N4100 | 7.5 | 200 | 1N4119 | 28 | 200 |
| 1N4101 | 8.2 | 200 | 1N4120 | 30 | 200 |
| 1N4102 | 8.7 | 200 | 1N4121 | 33 | 200 |
| 1N4103 | 9.1 | 200 | 1N4122 | 36 | 200 |
| 1N4104 | 10 | 200 | 1N4123 | 39 | 200 |
| 1N4105 | 11 | 200 | 1N4124 | 43 | 250 |
| 1N4106 | 12 | 200 | 1N4125 | 47 | 250 |
| 1N4107 | 13 | 200 | 1N4126 | 51 | 300 |
| 1N4108 | 14 | 200 | 1N4127 | 56 | 300 |
| 1N4109 | 15 | 100 | 1N4128 | 60 | 400 |
| 1N4110 | 16 | 100 | 1N4129 | 62 | 500 |
| 1N4111 | 17 | 100 | 1N4130 | 68 | 700 |
| 1N4112 | 18 | 100 | 1N4131 | 75 | 700 |
| 1N4113 | 19 | 150 | 1N4132 | 82 | 800 |
| 1N4114 | 20 | 150 | 1N4133 | 87 | 1000 |
| 1N4115 | 22 | 150 | 1N4134 | 91 | 1200 |
| 1N4116 | 24 | 150 | 1N4135 | 100 | 1500 |
| 1N4117 | 25 | 150 | | | |

| Motorola Type | Net Each, Lots of | |
|---|---|---|
| | 1-99 | 100 Up |
| 1N4099-1N4135 | $3.85 | $2.90 |

## 400-mW DIFFUSED (CASE 51)

1N962B–1N992B (±5% tolerance) available as Meg-A-Life II units and per MIL spec MIL-S-19500/117.

| Motorola Type | Nom. $V_Z$ at $I_{ZT}$ Volts | $I_{ZT}$ mA | Max. $Z_{ZT}$ at $I_{ZT}$ Ω | Net Each, Lots of 1-99 | Net Each, Lots of 100 Up |
|---|---|---|---|---|---|
| 1N957 | 6.8 | 18.5 | 4.5 | | |
| 1N958 | 7.5 | 16.5 | 5.5 | ±20% Tol. $2.15 | ±20% Tol. $1.60 |
| 1N959 | 8.2 | 15 | 6.5 | | |
| 1N960 | 9.1 | 14 | 7.5 | | |
| 1N961 | 10.0 | 12.5 | 8.5 | | |
| 1N962 | 11 | 11.5 | 9.5 | | |
| 1N963 | 12 | 10.5 | 11.5 | ±10%* Tol. $2.35 | ±10%* Tol. $1.75 |
| 1N964 | 13 | 9.5 | 13.0 | | |
| 1N965 | 15 | 8.5 | 16.0 | | |
| 1N966 | 16 | 7.8 | 17.0 | | |
| 1N967 | 18 | 7.0 | 21 | | |
| 1N968 | 20 | 6.2 | 25 | ±5%† Tol. $2.95 | ±5%† Tol. $2.20 |
| 1N969 | 22 | 5.6 | 29 | | |
| 1N970 | 24 | 5.2 | 33 | | |
| 1N971 | 27 | 4.6 | 41 | | |
| 1N972 | 30 | 4.2 | 49 | | |
| 1N973 | 33 | 3.8 | 58 | ±20% Tol. $2.15 | ±20% Tol. $1.60 |
| 1N974 | 36 | 3.4 | 70 | | |
| 1N975 | 39 | 3.2 | 80 | | |
| 1N976 | 43 | 3.0 | 93 | | |
| 1N977 | 47 | 2.7 | 105 | ±10%* Tol. $2.35 | ±10%* Tol. $1.75 |
| 1N978 | 51 | 2.5 | 125 | | |
| 1N979 | 56 | 2.2 | 150 | | |
| 1N980 | 62 | 2.0 | 185 | | |
| 1N981 | 68 | 1.8 | 230 | ±5%† Tol. $2.95 | ±5%† Tol. $2.20 |
| 1N982 | 75 | 1.7 | 270 | | |
| 1N983 | 82 | 1.5 | 330 | | |
| 1N984 | 91 | 1.4 | 400 | | |
| 1N985 | 100 | 1.3 | 500 | ±20% $2.60 | ±20% $1.95 |
| 1N986 | 110 | 1.1 | 750 | | |
| 1N987 | 120 | 1.0 | 900 | | |
| 1N988 | 130 | 0.95 | 1100 | ±10%* $3.00 | ±10%* $2.25 |
| 1N989 | 150 | 0.85 | 1500 | | |
| 1N990 | 160 | 0.80 | 1700 | | |
| 1N991 | 180 | 0.68 | 2200 | ±5%† $3.65 | ±5%† $2.75 |
| 1N992 | 200 | 0.65 | 2500 | | |

To Order Add Suffix: ***A** (1N957**A**); †**B** (1N957**B**).

## 400-mW LOW VOLTAGE (CASE 51)

1N746A–1N759A and 1N4370A–1N4372A (±5% tol.) available as Meg-A-Life II™ units and per MIL spec MIL-S-19500/127.

| Motorola Type | Nom. $V_Z$ at $I_{ZT}$ Volts | $I_{ZT}$ mA | Max. $Z_{ZT}$ at $I_{ZT}$ Ω | Net Each, Lots of 1-99 | Net Each, Lots of 100 Up |
|---|---|---|---|---|---|
| 1N746 | 3.3 | 20 | 28 | | |
| 1N747 | 3.6 | 20 | 24 | | |
| 1N748 | 3.9 | 20 | 23 | | |
| 1N749 | 4.3 | 20 | 22 | | |
| 1N750 | 4.7 | 20 | 19 | ±10% Tol. $2.00 | ±10% Tol. $1.50 |
| 1N751 | 5.1 | 20 | 17 | | |
| 1N752 | 5.6 | 20 | 11 | | |
| 1N753 | 6.2 | 20 | 7 | | |
| 1N754 | 6.8 | 20 | 5 | | |
| 1N755 | 7.5 | 20 | 6 | ±5% * Tol. $2.75 | ±5%* Tol. $2.05 |
| 1N756 | 8.2 | 20 | 8 | | |
| 1N757 | 9.1 | 20 | 10 | | |
| 1N758 | 10.0 | 20 | 17 | | |
| 1N759 | 12.0 | 20 | 30 | | |
| 1N4370 | 2.4 | 20 | 30 | | |
| 1N4371 | 2.7 | 20 | 30 | | |
| 1N4372 | 3.0 | 20 | 29 | | |

## 1-WATT LOW VOLTAGE (CASE 52)

1N3821A–1N3828A (±5% tol.) available as Meg-A-Life units and per MIL spec MIL-S-19500/115D.

| | | | | | |
|---|---|---|---|---|---|
| 1N3821 | 3.3 | 76 | 10 | | |
| 1N3822 | 3.6 | 69 | 10 | ±10% Tol. $2.10 | ±10% Tol. $1.60 |
| 1N3823 | 3.9 | 64 | 9 | | |
| 1N3824 | 4.3 | 58 | 9 | | |
| 1N3825 | 4.7 | 53 | 8 | | |
| 1N3826 | 5.1 | 49 | 7 | | |
| 1N3827 | 5.6 | 45 | 5 | ±5%* Tol. $2.65 | ±5%* Tol. $2.00 |
| 1N3828 | 6.2 | 41 | 2 | | |
| 1N3829 | 6.8 | 37 | 1.5 | | |
| 1N3830 | 7.5 | 34 | 1.5 | | |

## 1-WATT SURMETIC™ (CASE 59)

| | | | | | |
|---|---|---|---|---|---|
| 1N4728 | 3.3 | 76 | 10 | | |
| 1N4729 | 3.6 | 69 | 10 | | |
| 1N4730 | 3.9 | 64 | 9 | | |
| 1N4731 | 4.3 | 58 | 9 | | |
| 1N4732 | 4.7 | 53 | 8 | | |
| 1N4733 | 5.1 | 49 | 7 | | |
| 1N4734 | 5.6 | 45 | 5 | | |
| 1N4735 | 6.2 | 41 | 2 | | |
| 1N4736 | 6.8 | 37 | 3.5 | | |
| 1N4737 | 7.5 | 34 | 4 | | |
| 1N4738 | 8.2 | 31 | 4.5 | | |
| 1N4739 | 9.1 | 28 | 5 | | |
| 1N4740 | 10 | 25 | 7 | | |
| 1N4741 | 11 | 23 | 8 | ±10% Tol. $1.26 | ±10% Tol. $0.95 |
| 1N4742 | 12 | 21 | 9 | | |
| 1N4743 | 13 | 19 | 10 | | |
| 1N4744 | 15 | 17 | 14 | | |
| 1N4745 | 16 | 15.5 | 16 | | |
| 1N4746 | 18 | 14 | 20 | | |
| 1N4747 | 20 | 12.5 | 22 | | |
| 1N4748 | 22 | 11.5 | 23 | ±5%* Tol. $1.93 | ±5%* Tol. $1.45 |
| 1N4749 | 24 | 10.5 | 25 | | |
| 1N4750 | 27 | 9.5 | 35 | | |
| 1N4751 | 30 | 8.5 | 40 | | |
| 1N4752 | 33 | 7.5 | 45 | | |
| 1N4753 | 36 | 7 | 50 | | |
| 1N4754 | 39 | 6.5 | 60 | | |
| 1N4755 | 43 | 6 | 70 | | |
| 1N4756 | 47 | 5.5 | 80 | | |
| 1N4757 | 51 | 5 | 95 | | |
| 1N4758 | 56 | 4.5 | 110 | | |
| 1N4759 | 62 | 4 | 125 | | |
| 1N4760 | 68 | 3.7 | 150 | | |
| 1N4761 | 75 | 3.3 | 175 | | |
| 1N4762 | 82 | 3.0 | 200 | | |
| 1N4763 | 91 | 2.8 | 250 | | |
| 1N4764 | 100 | 2.5 | 350 | | |

*To order add suffix **A** (1N746**A**, 1N3821**A**, 1N4728**A**).

## 500-mW SURMETIC (CASE 51)

Tolerance ±10%, for ±5% tolerance change suffix A to **B** (1N5221**B**).

| Motorola Type | Nom. $V_Z$ at $I_{ZT}$ Volts | $I_{ZT}$ mA | Max. $Z_{ZT}$ at $I_{ZT}$ Ohms |
|---|---|---|---|
| 1N5221A | 2.4 | 20 | 30 |
| 1N5222A | 2.5 | 20 | 30 |
| 1N5223A | 2.7 | 20 | 30 |
| 1N5224A | 2.8 | 20 | 30 |
| 1N5225A | 3.0 | 20 | 29 |
| 1N5226A | 3.3 | 20 | 28 |
| 1N5227A | 3.6 | 20 | 24 |
| 1N5228A | 3.9 | 20 | 23 |
| 1N5229A | 4.3 | 20 | 22 |
| 1N5230A | 4.7 | 20 | 19 |
| 1N5231A | 5.1 | 20 | 17 |
| 1N5232A | 5.6 | 20 | 11 |
| 1N5233A | 6.0 | 20 | 7.0 |
| 1N5234A | 6.2 | 20 | 7.0 |
| 1N5235A | 6.8 | 20 | 5.0 |
| 1N5236A | 7.5 | 20 | 6.0 |
| 1N5237A | 8.2 | 20 | 8.0 |
| 1N5238A | 8.7 | 20 | 8.0 |
| 1N5239A | 9.1 | 20 | 10 |
| 1N5240A | 10 | 20 | 17 |
| 1N5241A | 11 | 20 | 22 |
| 1N5242A | 12 | 20 | 30 |
| 1N5243A | 13 | 9.5 | 13 |
| 1N5244A | 14 | 9.0 | 15 |
| 1N5245A | 15 | 8.5 | 16 |
| 1N5246A | 16 | 7.8 | 17 |
| 1N5247A | 17 | 7.4 | 19 |
| 1N5248A | 18 | 7.0 | 21 |
| 1N5249A | 19 | 6.6 | 23 |
| 1N5250A | 20 | 6.2 | 25 |
| 1N5251A | 22 | 5.6 | 29 |
| 1N5252A | 24 | 5.2 | 33 |
| 1N5253A | 25 | 5.0 | 35 |
| 1N5254A | 27 | 4.6 | 41 |
| 1N5255A | 28 | 4.5 | 44 |
| 1N5256A | 30 | 4.2 | 49 |
| 1N5257A | 33 | 3.8 | 58 |
| 1N5258A | 36 | 3.4 | 70 |
| 1N5259A | 39 | 3.2 | 80 |
| 1N5260A | 43 | 3.0 | 93 |
| 1N5261A | 47 | 2.7 | 105 |
| 1N5262A | 51 | 2.5 | 125 |
| 1N5263A | 56 | 2.2 | 150 |
| 1N5264A | 60 | 2.1 | 170 |
| 1N5265A | 62 | 2.0 | 185 |
| 1N5266A | 68 | 1.8 | 230 |
| 1N5267A | 75 | 1.7 | 270 |
| 1N5268A | 82 | 1.5 | 330 |
| 1N5269A | 87 | 1.4 | 370 |
| 1N5270A | 91 | 1.4 | 400 |
| 1N5271A | 100 | 1.3 | 500 |
| 1N5272A | 110 | 1.1 | 750 |
| 1N5273A | 120 | 1.0 | 900 |
| 1N5274A | 130 | 0.95 | 1100 |
| 1N5275A | 140 | 0.90 | 1300 |
| 1N5276A | 150 | 0.85 | 1500 |
| 1N5277A | 160 | 0.80 | 1700 |
| 1N5278A | 170 | 0.74 | 1900 |
| 1N5279A | 180 | 0.68 | 2200 |
| 1N5280A | 190 | 0.66 | 2400 |
| 1N5281A | 200 | 0.65 | 2500 |

### ±10% TOLERANCE

| Motorola Type | Net Each, Lots of | | |
|---|---|---|---|
| | 1-24 | 25-99 | 100-249 |
| 1N5221A–1N5257A | $0.90 | $0.80 | $0.60 |
| 1N5258A–1N5270A | 1.12 | 1.00 | .75 |
| 1N5271A–1N5281A | 1.50 | 1.33 | 1.00 |

### ±5% TOLERANCE

| Motorola Type | Net Each, Lots of | | |
|---|---|---|---|
| | 1-24 | 25-99 | 100-249 |
| 1N5221B–1N5257B | $1.05 | $0.93 | $0.70 |
| 1N5258B–1N5270B | 1.27 | 1.13 | .85 |
| 1N5271B–1N5281B | 1.65 | 1.46 | 1.10 |

**LARGER QUANTITY PRICES AVAILABLE ON REQUEST.**

# MOTOROLA Semiconductors SILICON ZENER DIODES

## 1-WATT DIFFUSED (CASE 52)

1N3016B–1N3051B (±5% tolerance) available as Meg-A-Life II™ units and per MIL spec MIL-S-19500/115.

| Motorola Type | Nom. Vz at IZT Volts | Test IZT mA | Max. ZZT at IZT Ω | Net Each, Lots of 1-99 | Net Each, Lots of 100-999 |
|---|---|---|---|---|---|
| 1N3016 | 6.8 | 37 | 3.5 | | |
| 1N3017 | 7.5 | 34 | 4.0 | | |
| 1N3018 | 8.2 | 31 | 4.5 | | |
| 1N3019 | 9.1 | 28 | 5.0 | | |
| 1N3020 | 10 | 25 | 7 | | |
| 1N3021 | 11 | 23 | 8 | ±20%<br>Tol.<br>$2.85 | ±20%<br>Tol.<br>$2.15 |
| 1N3022 | 12 | 21 | 9 | | |
| 1N3023 | 13 | 19 | 10 | | |
| 1N3024 | 15 | 17 | 14 | | |
| 1N3025 | 16 | 15.5 | 16 | | |
| 1N3026 | 18 | 14 | 20 | | |
| 1N3027 | 20 | 12.5 | 22 | | |
| 1N3028 | 22 | 11.5 | 23 | | |
| 1N3029 | 24 | 10.5 | 25 | ±10%*<br>Tol.<br>$3.20 | ±10%*<br>Tol.<br>$2.40 |
| 1N3030 | 27 | 9.5 | 35 | | |
| 1N3031 | 30 | 8.5 | 40 | | |
| 1N3032 | 33 | 7.5 | 45 | | |
| 1N3033 | 36 | 7.0 | 50 | | |
| 1N3034 | 39 | 6.5 | 60 | | |
| 1N3035 | 43 | 6.0 | 70 | | |
| 1N3036 | 47 | 5.5 | 80 | | |
| 1N3037 | 51 | 5.0 | 95 | ±5%†<br>Tol.<br>$3.70 | ±5%†<br>Tol.<br>$2.80 |
| 1N3038 | 56 | 4.5 | 110 | | |
| 1N3039 | 62 | 4.0 | 125 | | |
| 1N3040 | 68 | 3.7 | 150 | | |
| 1N3041 | 75 | 3.3 | 175 | | |
| 1N3042 | 82 | 3.0 | 200 | | |
| 1N3043 | 91 | 2.8 | 250 | | |
| 1N3044 | 100 | 2.5 | 350 | | |
| 1N3045 | 110 | 2.3 | 450 | ±20%<br>$2.95 | ±20%<br>$2.20 |
| 1N3046 | 120 | 2.0 | 550 | | |
| 1N3047 | 130 | 1.9 | 700 | ±10%*<br>$3.25 | ±10%*<br>$2.45 |
| 1N3048 | 150 | 1.7 | 1000 | | |
| 1N3049 | 160 | 1.6 | 1100 | | |
| 1N3050 | 180 | 1.4 | 1200 | ±5%†<br>$4.65 | ±5%†<br>$3.50 |
| 1N3051 | 200 | 1.2 | 1500 | | |

To Order Add Suffix: *A (1N3016A); †B (1N3016B).

## 1½-WATT DIFFUSED (CASE 55)

| Motorola Type | Nom. Vz at IZT Volts | IZT mA | Max. ZZT at IZT Ω | Net Each, Lots of 1-99 | Net Each, Lots of 100-999 |
|---|---|---|---|---|---|
| 1N3785 | 6.8 | 55 | 2.7 | | |
| 1N3786 | 7.5 | 50 | 3.0 | | |
| 1N3787 | 8.2 | 46 | 3.5 | | |
| 1N3788 | 9.1 | 41 | 4.0 | | |
| 1N3789 | 10 | 37 | 5 | | |
| 1N3790 | 11 | 34 | 6 | ±20%<br>Tol.<br>$3.75 | ±20%<br>Tol.<br>$2.80 |
| 1N3791 | 12 | 31 | 7 | | |
| 1N3792 | 13 | 29 | 8 | | |
| 1N3793 | 15 | 25 | 10 | | |
| 1N3794 | 16 | 23 | 11 | | |
| 1N3795 | 18 | 21 | 13 | | |
| 1N3796 | 20 | 19 | 15 | | |
| 1N3797 | 22 | 17 | 16 | | |
| 1N3798 | 24 | 16 | 17 | ±10%*<br>Tol.<br>$5.30 | ±10%*<br>Tol.<br>$4.00 |
| 1N3799 | 27 | 14 | 20 | | |
| 1N3800 | 30 | 12 | 25 | | |
| 1N3801 | 33 | 11 | 30 | | |
| 1N3802 | 36 | 10 | 35 | | |
| 1N3803 | 39 | 10 | 40 | | |
| 1N3804 | 43 | 9.0 | 45 | | |
| 1N3805 | 47 | 8.0 | 55 | | |
| 1N3806 | 51 | 7.4 | 65 | ±5%†<br>Tol.<br>$6.95 | ±5%†<br>Tol.<br>$5.25 |
| 1N3807 | 56 | 6.7 | 75 | | |
| 1N3808 | 62 | 6.0 | 85 | | |
| 1N3809 | 68 | 5.5 | 95 | | |
| 1N3810 | 75 | 5.0 | 110 | | |
| 1N3811 | 82 | 4.5 | 130 | | |
| 1N3812 | 91 | 4.1 | 150 | | |
| 1N3813 | 100 | 3.7 | 200 | | |
| 1N3814 | 110 | 3.4 | 300 | $4.75‡<br>6.45§<br>8.35♯ | $3.55‡<br>4.85§<br>6.30♯ |
| 1N3815 | 120 | 3.1 | 350 | | |
| 1N3816 | 130 | 2.9 | 400 | | |
| 1N3817 | 150 | 2.5 | 700 | $4.75‡<br>7.05§<br>8.80♯ | $3.55‡<br>5.30§<br>6.60♯ |
| 1N3818 | 160 | 2.3 | 750 | | |
| 1N3819 | 180 | 2.1 | 800 | | |
| 1N3820 | 200 | 1.9 | 1000 | | |

To Order Add Suffix; *A (1N3785A); †B (1N3785B). ‡For ±20% tolerance. §For ±10% tolerance, add suffix A. ♯For ±5% tolerance, add suffix B.

## 5-WATT SURMETIC™ (CASE 17)

Tolerance ±10%, for ±5%, use suffix B (1N5333B).

| | | | | | |
|---|---|---|---|---|---|
| 1N5333A | 3.3 | 380 | 3.0 | ±10%<br>Tol.<br>$2.20 | ±10%<br>Tol.<br>$1.65 |
| 1N5334A | 3.6 | 350 | 2.5 | | |
| 1N5335A | 3.9 | 320 | 2.0 | | |
| 1N5336A | 4.3 | 290 | 2.0 | ±5%<br>Tol.<br>$2.45 | ±5%<br>Tol.<br>$1.85 |
| 1N5337A | 4.7 | 260 | 2.0 | | |
| 1N5338A | 5.1 | 240 | 1.5 | | |

## 5-WATT SURMETIC (CASE 17) CONT'D

| Motorola Type | Nom. Vz at IZT Volts | IZT mA | Max. ZZT at IZT Ω | Net Each, Lots of 1-99 | Net Each, Lots of 100-999 |
|---|---|---|---|---|---|
| 1N5339A | 5.6 | 220 | 1.0 | | |
| 1N5341A | 6.2 | 200 | 1.0 | | |
| 1N5342A | 6.8 | 175 | 1.0 | | |
| 1N5343A | 7.5 | 175 | 1.5 | | |
| 1N5344A | 8.2 | 150 | 1.5 | | |
| 1N5346A | 9.1 | 150 | 2.0 | | |
| 1N5347A | 10 | 125 | 2.0 | | |
| 1N5348A | 11 | 125 | 2.5 | | |
| 1N5349A | 12 | 100 | 2.5 | | |
| 1N5350A | 13 | 100 | 2.5 | | |
| 1N5352A | 15 | 75 | 2.5 | | |
| 1N5353A | 16 | 75 | 2.5 | ±10%<br>Tol.<br>$2.20 | ±10%<br>Tol.<br>$1.65 |
| 1N5355A | 18 | 65 | 2.5 | | |
| 1N5357A | 20 | 65 | 3.0 | | |
| 1N5358A | 22 | 50 | 3.5 | | |
| 1N5359A | 24 | 50 | 3.5 | | |
| 1N5361A | 27 | 50 | 5.0 | | |
| 1N5363A | 30 | 40 | 8.0 | ±5%<br>Tol.<br>$2.45 | ±5%<br>Tol.<br>$1.85 |
| 1N5364A | 33 | 40 | 10 | | |
| 1N5365A | 36 | 30 | 11 | | |
| 1N5366A | 39 | 30 | 14 | | |
| 1N5367A | 43 | 30 | 20 | | |
| 1N5368A | 47 | 25 | 25 | | |
| 1N5369A | 51 | 25 | 27 | | |
| 1N5370A | 56 | 20 | 35 | | |
| 1N5372A | 62 | 20 | 42 | | |
| 1N5373A | 68 | 20 | 44 | | |
| 1N5374A | 75 | 20 | 45 | | |
| 1N5375A | 82 | 15 | 65 | | |
| 1N5377A | 91 | 15 | 75 | | |
| 1N5378A | 100 | 12 | 90 | | |
| 1N5379A | 110 | 12 | 125 | ±10%<br>Tol.<br>$2.60 | ±10%<br>Tol.<br>$1.95 |
| 1N5380A | 120 | 10 | 170 | | |
| 1N5381A | 130 | 10 | 190 | | |
| 1N5383A | 150 | 8 | 330 | | |
| 1N5384A | 160 | 8 | 350 | ±5%<br>Tol.<br>$2.85 | ±5%<br>Tol.<br>$2.15 |
| 1N5386A | 180 | 5 | 430 | | |
| 1N5388A | 200 | 5 | 480 | | |

## 10-WATT DIFFUSED (CASE 56)

1N2970B–1N3015B (±5% tolerance) available as Meg-A-Life II units and per MIL spec MIL-S-19500/124. For reverse polarity units, at prices shown, add suffix R (1N2970R).

| Motorola Type | Nom. Vz at IZT Volts | IZT mA | Max. ZZT at IZT Ω | Net Each, Lots of 1-99 | Net Each, Lots of 100 Up |
|---|---|---|---|---|---|
| 1N2970 | 6.8 | 370 | 1.2 | | |
| 1N2971 | 7.5 | 335 | 1.3 | | |
| 1N2972 | 8.2 | 305 | 1.5 | | |
| 1N2973 | 9.1 | 275 | 2.0 | | |
| 1N2974 | 10 | 250 | 3 | | |
| 1N2975 | 11 | 230 | 3 | | |
| 1N2976 | 12 | 210 | 3 | | |
| 1N2977 | 13 | 190 | 3 | | |
| 1N2978• | 14 | 180 | 3 | | |
| 1N2979 | 15 | 170 | 3 | | |
| 1N2980 | 16 | 155 | 4 | | |
| 1N2981• | 17 | 145 | 4 | | |
| 1N2982 | 18 | 140 | 4 | | |
| 1N2983• | 19 | 130 | 4 | | |
| 1N2984 | 20 | 125 | 4 | | |
| 1N2985 | 22 | 115 | 5 | ±20%<br>Tol.<br>$5.45 | ±20%<br>Tol.<br>$4.10 |
| 1N2986 | 24 | 105 | 5 | | |
| 1N2987• | 25 | 100 | 6 | | |
| 1N2988 | 27 | 95 | 7 | | |
| 1N2989 | 30 | 85 | 8 | ±10%*<br>Tol.<br>$5.85 | ±10%*<br>Tol.<br>$4.40 |
| 1N2990 | 33 | 75 | 9 | | |
| 1N2991 | 36 | 70 | 10 | | |
| 1N2992 | 39 | 65 | 11 | | |
| 1N2993 | 43 | 60 | 12 | ±5%†<br>Tol.<br>$7.30 | ±5%†<br>Tol.<br>$5.50 |
| 1N2994• | 45 | 55 | 13 | | |
| 1N2995 | 47 | 55 | 14 | | |
| 1N2996• | 50 | 50 | 15 | | |
| 1N2997 | 51 | 50 | 15 | | |
| 1N2998• | 52 | 50 | 15 | | |
| 1N2999 | 56 | 45 | 16 | | |
| 1N3000 | 62 | 40 | 17 | | |
| 1N3001 | 68 | 37 | 18 | | |
| 1N3002 | 75 | 33 | 22 | | |
| 1N3003 | 82 | 30 | 25 | | |
| 1N3004 | 91 | 28 | 35 | | |
| 1N3005 | 100 | 25 | 40 | | |
| 1N3006• | 105 | 25 | 45 | | |
| 1N3007 | 110 | 23 | 55 | | |
| 1N3008 | 120 | 20 | 75 | | |
| 1N3009 | 130 | 19 | 100 | | |
| 1N3010• | 140 | 18 | 125 | | |
| 1N3011 | 150 | 17 | 175 | | |
| 1N3012 | 160 | 16 | 200 | $ 6.00‡<br>9.00§<br>13.75♯ | $ 4.50‡<br>6.75§<br>10.35♯ |
| 1N3013• | 175 | 14 | 250 | | |
| 1N3014 | 180 | 14 | 260 | | |
| 1N3015 | 200 | 12 | 300 | | |

To Order Add Suffix: *A (1N2970A); †B (1N2970B). ‡For ±20% tolerance. §For ±10% tolerance, add suffix A. ♯For ±5% tol., add suffix B. •MIL units not available.

## 10-WATT LOW VOLTAGE (CASE 56)

1N3993A–1N4000A (±5% tol.) available as Meg-A-Life II units and per MIL spec MIL-S-19500/272. For reverse polarity units, at prices shown, add suffix R (1N3993R). Vz value is nominal.

| Motorola Type | Vz at IZT Volts | IZT mA | Max. ZZT at IZT Ω | Net Each, Lots of 1-99 | Net Each, Lots of 100-999 |
|---|---|---|---|---|---|
| 1N3993 | 3.9 | 640 | 2 | ±10%<br>Tol.<br>$5.65 | ±10%<br>Tol.<br>$4.25 |
| 1N3994 | 4.3 | 580 | 1.5 | | |
| 1N3995 | 4.7 | 530 | 1.2 | | |
| 1N3996 | 5.1 | 490 | 1.1 | | |
| 1N3997 | 5.6 | 445 | 1.0 | ±5%*<br>Tol.<br>$7.70 | ±5%*<br>Tol.<br>$5.80 |
| 1N3998 | 6.2 | 405 | 1.1 | | |
| 1N3999 | 6.8 | 370 | 1.2 | | |
| 1N4000 | 7.5 | 335 | 1.3 | | |

*To order add suffix A (1N3993A).

## 50-WATT DIFFUSED (CASES 54, 58)

**Case 54 (1N2804–1N2846)**: Suffix B (±5% tolerance) available as Meg-A-Life II units and per MIL-S-19500/114. **Case 58 (1N3305–1N3350), (1N4549–1N4554)**: Suffix B (±5% tolerance) available per MIL-S-19500/358B. For reverse polarity units, at prices shown, add suffix R (i.e., 1N2804R, 1N3305R, 1N4549R, 1N4557R).

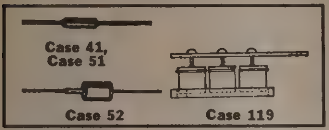
| Motorola Type | | Nom. Vz at IZT Volts | IZT mA | Max. ZZT at IZT Ohms |
|---|---|---|---|---|
| (Case 54) | (Case 58) | | | |
| 1N2804 | 1N3305 | 6.8 | 1850 | 0.2 |
| 1N2805 | 1N3306 | 7.5 | 1700 | 0.3 |
| 1N2806 | 1N3307 | 8.2 | 1500 | 0.4 |
| 1N2807 | 1N3308† | 9.1 | 1370 | 0.5 |
| 1N2808 | 1N3309 | 10 | 1200 | 0.6 |
| 1N2809 | 1N3310 | 11 | 1100 | 0.8 |
| 1N2810 | 1N3311 | 12 | 1000 | 1.0 |
| 1N2811 | 1N3312 | 13 | 960 | 1.1 |
| 1N2812* | 1N3313* | 14 | 890 | 1.2 |
| 1N2813 | 1N3314 | 15 | 830 | 1.4 |
| 1N2814 | 1N3315 | 16 | 780 | 1.6 |
| 1N2815* | 1N3316* | 17 | 740 | 1.8 |
| 1N2816 | 1N3317 | 18 | 700 | 2.0 |
| 1N2817* | 1N3318* | 19 | 660 | 2.2 |
| 1N2818 | 1N3319 | 20 | 630 | 2.4 |
| 1N2819 | 1N3320 | 22 | 570 | 2.5 |
| 1N2820 | 1N3321 | 24 | 520 | 2.6 |
| 1N2821* | 1N3322* | 25 | 500 | 2.7 |
| 1N2822 | 1N3323 | 27 | 460 | 2.8 |
| 1N2823 | 1N3324 | 30 | 420 | 3.0 |
| 1N2824 | 1N3325 | 33 | 380 | 3.2 |
| 1N2825 | 1N3326 | 36 | 350 | 3.5 |
| 1N2826 | 1N3327 | 39 | 320 | 4.0 |
| 1N2827 | 1N3328 | 43 | 290 | 4.5 |
| 1N2828* | 1N3329* | 45 | 280 | 4.5 |
| 1N2829 | 1N3330 | 47 | 270 | 5.0 |
| 1N2830* | 1N3331* | 50 | 250 | 5.0 |
| 1N2831 | 1N3332 | 51 | 245 | 5.2 |
| .......... | 1N3333* | 52 | 240 | 5.5 |
| 1N2832 | 1N3334 | 56 | 220 | 6 |
| 1N2833 | 1N3335 | 62 | 200 | 7 |
| 1N2834 | 1N3336 | 68 | 180 | 8 |
| 1N2835 | 1N3337 | 75 | 170 | 9 |
| 1N2836 | 1N3338 | 82 | 150 | 11 |
| 1N2837 | 1N3339 | 91 | 140 | 15 |
| 1N2838 | 1N3340 | 100 | 120 | 20 |
| 1N2839* | 1N3341* | 105 | 120 | 25 |
| 1N2840 | 1N3342 | 110 | 110 | 30 |
| 1N2841 | 1N3343 | 120 | 100 | 40 |
| 1N2842 | 1N3344 | 130 | 95 | 50 |
| .......... | 1N3345* | 140 | 90 | 60 |
| 1N2843 | 1N3346 | 150 | 85 | 75 |
| 1N2844 | 1N3347 | 160 | 80 | 80 |
| .......... | 1N3348* | 175 | 70 | 85 |
| 1N2845 | 1N3349 | 180 | 68 | 90 |
| 1N2846 | 1N3350 | 200 | 65 | 100 |
| 1N4557 | 1N4549 | 3.9 | 3200 | 0.16 |
| 1N4558 | 1N4550 | 4.3 | 2900 | 0.16 |
| 1N4559 | 1N4551 | 4.7 | 2650 | 0.12 |
| 1N4560 | 1N4552 | 5.1 | 2450 | 0.12 |
| 1N4561 | 1N4553 | 5.6 | 2250 | 0.12 |
| 1N4562 | 1N4554 | 6.2 | 2000 | 0.14 |
| 1N4563 | 1N4555 | 6.8 | 1850 | 0.16 |
| 1N4564 | 1N4556 | 7.5 | 1650 | 0.24 |

*MIL type not avail. †Not avail. ±20%.

| Motorola Type | Tol. | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|
| 1N2804–1N2838 | ±20% | $5.65 | $ 4.25 |
| 1N2804A–1N2838A | ±10% | 7.65 | 5.75 |
| 1N2804B–1N2838B | ± 5% | 10.65 | 8.00 |
| 1N2839–1N2846 | ±20% | 6.80 | 5.10 |
| 1N2839A–1N2846A | ±10% | 11.30 | 8.50 |
| 1N2839B–1N2846B | ± 5% | 17.95 | 13.50 |
| 1N3305–1N3340 | ±20% | 5.65 | 4.25 |
| 1N3305A–1N3340A | ±10% | 7.65 | 5.75 |
| 1N3305B–1N3340B | ± 5% | 10.65 | 8.00 |
| 1N3341–1N3350 | ±20% | 6.80 | 5.10 |
| 1N3341A–1N3350A | ±10% | 11.30 | 8.50 |
| 1N3341B–1N3350B | ± 5% | 17.95 | 13.50 |
| 1N4549–1N4564 | ±20% | 6.05 | 4.55 |
| 1N4549A–1N4564A | ±10% | 8.00 | 6.00 |
| 1N4549B–1N4564B | ± 5% | 11.50 | 8.65 |

**LARGER QUANTITY PRICES AVAILABLE ON REQUEST. SEE PREVIOUS PAGE FOR CASE ILLUSTRATIONS.**

# MOTOROLA Semiconductors SILICON REFERENCE DIODES



Extremely stable voltage reference sources. Diffused junction units combine smallest size with tight stability. For high reliability requirements, Meg-A-Life II$^{\text{TM}}$ units are available in same types as noted for MIL-S-19500/ spec types.

## 400-MW SUBMINIATURE

### 6.2 VOLT (CASE 51)

**Temperature Range:** −55° C to +100° C. **Voltage Range:** 5.9–6.5 volts at 7.5 mA. **Dynamic Impedance:** 15 ohms max.; 10 ohms suffix **A**.

| Motorola Type | V-Temp. Coef. %/° C | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| 1N821* | .01 | $ 2.75 | $ 2.35 | $ 1.90 |
| 1N821A | .01 | 3.05 | 2.60 | 2.10 |
| 1N823* | .005 | 3.60 | 3.10 | 2.50 |
| 1N823A | .005 | 3.90 | 3.35 | 2.70 |
| 1N825* | .002 | 5.80 | 5.00 | 4.00 |
| 1N825A | .002 | 6.50 | 5.60 | 4.50 |
| 1N827* | .001 | 10.85 | 9.35 | 7.50 |
| 1N827A | .001 | 13.05 | 11.25 | 9.00 |
| 1N829* | .0005 | 16.30 | 14.05 | 11.25 |
| 1N829A | .0005 | 19.55 | 16.85 | 13.50 |

*Available per MIL-S-19500/159.

### 8.4 VOLT (CASE 51)

**Temperature Range:** −55° C to +100° C; −55° C to +150° C (suffix **A**). **Voltage Range:** 7.98–8.8 volts at 10 mA. **Dynamic Impedance:** 15 ohms maximum.

| | | | | |
|---|---|---|---|---|
| 1N3154* | .01 | $ 2.60 | $2.25 | $1.80 |
| 1N3154A | .01 | 3.60 | 3.10 | 2.50 |
| 1N3155* | .005 | 3.55 | 3.05 | 2.45 |
| 1N3155A | .005 | 4.35 | 3.75 | 3.00 |
| 1N3156* | .002 | 6.15 | 5.30 | 4.25 |
| 1N3156A | .002 | 7.10 | 6.10 | 4.90 |
| 1N3157* | .001 | 7.60 | 6.55 | 5.25 |
| 1N3157A | .001 | 11.10 | 9.55 | 7.65 |

*Available per MIL-S-19500/158.

## 500-MW SUBMINIATURE

### 9.0 VOLT (CASE 51)

**Temperature Range:** 0° C to +75° C; −55° C to +100° C (suffix **A**); −55° C to +150° C (suffix **B**). **Voltage Range:** 8.55–9.45 volts at 7.5 mA, 25° C ambient. **Dynamic Impedance:** 20 ohms max.

| Motorola Type | V-Temp. Coef. %/° C | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 |
| 1N935 | .01 | $ 2.30 | $ 2.00 | $ 1.60 |
| 1N935A | .01 | 2.60 | 2.25 | 1.80 |
| 1N935B* | .01 | 3.55 | 3.05 | 2.45 |
| 1N936 | .005 | 2.75 | 2.35 | 1.90 |
| 1N936A | .005 | 3.55 | 3.05 | 2.45 |
| 1N936B | .005 | 4.20 | 3.60 | 2.90 |
| 1N937 | .002 | 5.35 | 4.60 | 3.70 |
| 1N937A | .002 | 6.15 | 5.30 | 4.25 |
| 1N937B* | .002 | 7.10 | 6.10 | 4.90 |
| 1N938 | .001 | 6.95 | 6.00 | 4.80 |
| 1N938A | .001 | 7.55 | 6.50 | 5.20 |
| 1N938B* | .001 | 10.00 | 8.60 | 6.90 |
| 1N939 | .0005 | 18.00 | 15.50 | 12.40 |
| 1N939A | .0005 | 25.35 | 21.85 | 17.50 |
| 1N939B* | .0005 | 27.35 | 23.55 | 18.85 |
| 1N940 | .0002 | 34.80 | 30.00 | 24.00 |
| 1N940A | .0002 | 40.60 | 35.00 | 28.00 |

*Available per MIL-S-19500/156.

### 11.7 VOLT (CASE 51)

**Temperature Range:** 0° C to +75° C; −55° C to +100° C (suffix **A**); −55° C to +150° C (suffix **B**). **Voltage Range:** 11.12–12.29 volts at 7.5 mA. **Dynamic Impedance:** 30 ohms max.

| | | | | |
|---|---|---|---|---|
| 1N941 | .01 | $ 3.20 | $ 2.75 | $ 2.20 |
| 1N941A | .01 | 3.40 | 2.90 | 2.34 |
| 1N941B* | .01 | 3.60 | 3.10 | 2.50 |
| 1N942 | .005 | 3.50 | 3.00 | 2.40 |
| 1N942A | .005 | 4.35 | 3.75 | 3.00 |
| 1N942B | .005 | 4.95 | 4.25 | 3.40 |
| 1N943 | .002 | 6.90 | 5.95 | 4.75 |
| 1N943A | .002 | 6.95 | 6.00 | 4.80 |
| 1N943B* | .002 | 7.15 | 6.20 | 4.95 |
| 1N944 | .001 | 10.15 | 8.75 | 7.00 |
| 1N944A | .001 | 13.05 | 11.25 | 9.00 |
| 1N944B* | .001 | 17.30 | 14.95 | 11.95 |
| 1N945 | .0005 | 26.70 | 23.00 | 18.40 |
| 1N945A | .0005 | 36.40 | 31.35 | 25.10 |
| 1N945B* | .0005 | 40.90 | 35.25 | 28.20 |

*Available per MIL-S-19500/157.

**LARGER QUANTITY PRICES AVAILABLE ON REQUEST.**

## 400-MW LOW LEVEL SUBMINIATURE

**Temperature Range:** 0° C to +75° C; −55° C to +100° C (suffix **A**).

### 6.4 VOLT (CASE 51)

**Test Current:** 0.5 mA. **Dynamic Impedance:** 200 ohms maximum.

| Motorola Type | V-Temp. Coef. %/° C | Net Each, Lots of | |
|---|---|---|---|
| | | 1-99 | 100-999 |
| 1N4565 | .01 | $ 8.65 | $ 6.50 |
| 1N4565A | .01 | 9.70 | 7.30 |
| 1N4566 | .005 | 11.70 | 8.80 |
| 1N4566A | .005 | 13.05 | 9.80 |
| 1N4567 | .002 | 23.80 | 17.90 |
| 1N4567A | .002 | 26.45 | 19.90 |
| 1N4568 | .001 | 41.10 | 30.90 |
| 1N4568A | .001 | 45.75 | 34.40 |
| 1N4569 | .0005 | 89.50 | 67.30 |
| 1N4569A | .0005 | 99.50 | 74.80 |

**Test Current:** 1.0 mA. **Dynamic Impedance:** 100 ohms maximum.

| | | | |
|---|---|---|---|
| 1N4570 | .01 | $ 5.85 | $ 4.40 |
| 1N4570A | .01 | 6.50 | 4.90 |
| 1N4571 | .005 | 7.30 | 5.50 |
| 1N4571A | .005 | 8.10 | 6.10 |
| 1N4572 | .002 | 13.25 | 9.95 |
| 1N4572A | .002 | 14.75 | 11.10 |
| 1N4573 | .001 | 24.25 | 18.25 |
| 1N4573A | .001 | 27.00 | 20.30 |
| 1N4574 | .0005 | 56.50 | 42.50 |
| 1N4574A | .0005 | 63.15 | 47.50 |

**Test Current:** 2.0 mA. **Dynamic Impedance:** 50 ohms maximum.

| | | | |
|---|---|---|---|
| 1N4575 | .01 | $ 3.00 | $ 2.25 |
| 1N4575A | .01 | 3.30 | 2.50 |
| 1N4576 | .005 | 3.65 | 2.75 |
| 1N4576A | .005 | 4.05 | 3.05 |
| 1N4577 | .002 | 6.60 | 4.95 |
| 1N4577A | .002 | 7.30 | 5.50 |
| 1N4578 | .001 | 12.15 | 9.15 |
| 1N4578A | .001 | 13.50 | 10.15 |
| 1N4579 | .0005 | 28.25 | 21.25 |
| 1N4579A | .0005 | 31.40 | 23.60 |

**Test Current:** 4.0 mA. **Dynamic Impedance:** 25 ohms maximum.

| | | | |
|---|---|---|---|
| 1N4580 | .01 | $ 3.00 | $ 2.25 |
| 1N4580A | .01 | 3.30 | 2.50 |
| 1N4581 | .005 | 3.65 | 2.75 |
| 1N4581A | .005 | 4.05 | 3.05 |
| 1N4582 | .002 | 6.60 | 4.95 |
| 1N4582A | .002 | 7.30 | 5.50 |
| 1N4583 | .001 | 12.15 | 9.15 |
| 1N4583A | .001 | 13.50 | 10.15 |
| 1N4584 | .0005 | 28.25 | 21.25 |
| 1N4584A | .0005 | 31.40 | 23.60 |

### 8.5 VOLT (CASE 51)

**Test Current:** 0.5 mA. **Dynamic Impedance:** 200 ohms maximum.

| Motorola Type | V-Temp. Coef. %/° C | Net Each, Lots of | |
|---|---|---|---|
| | | 1-99 | 100-999 |
| 1N4775 | .01 | $ 8.65 | $ 6.50 |
| 1N4775A | .01 | 9.70 | 7.30 |
| 1N4776 | .005 | 11.70 | 8.80 |
| 1N4776A | .005 | 13.05 | 9.80 |
| 1N4777 | .002 | 23.80 | 17.90 |
| 1N4777A | .002 | 26.45 | 19.90 |
| 1N4778 | .001 | 41.10 | 30.90 |
| 1N4778A | .001 | 45.75 | 34.40 |
| 1N4779 | .0005 | 89.50 | 67.30 |
| 1N4779A | .0005 | 99.50 | 74.80 |

**Test Current:** 1.0 mA. **Dynamic Impedance:** 100 ohms maximum.

| | | | |
|---|---|---|---|
| 1N4780 | .01 | $ 5.85 | $ 4.40 |
| 1N4780A | .01 | 6.50 | 4.90 |
| 1N4781 | .005 | 7.30 | 5.50 |
| 1N4781A | .005 | 8.10 | 6.10 |
| 1N4782 | .002 | 13.25 | 9.95 |
| 1N4782A | .002 | 14.75 | 11.10 |
| 1N4783 | .001 | 24.25 | 18.25 |
| 1N4783A | .001 | 27.00 | 20.30 |
| 1N4784 | .0005 | 56.50 | 42.50 |
| 1N4784A | .0005 | 63.15 | 47.50 |

### 9.1 VOLT (CASE 51)

**Test Current:** 0.5 mA. **Dynamic Impedance:** 350 ohms maximum.

| | | | |
|---|---|---|---|
| 1N4765 | .01 | $ 8.65 | $ 6.50 |
| 1N4765A | .01 | 9.70 | 7.30 |
| 1N4766 | .005 | 11.70 | 8.80 |
| 1N4766A | .005 | 13.05 | 9.80 |
| 1N4767 | .002 | 23.80 | 17.90 |
| 1N4767A | .002 | 26.45 | 19.90 |
| 1N4768 | .001 | 41.10 | 30.90 |
| 1N4768A | .001 | 45.75 | 34.40 |
| 1N4769 | .0005 | 89.50 | 67.30 |
| 1N4769A | .0005 | 99.50 | 74.80 |

**Test Current:** 1.0 mA. **Dynamic Impedance:** 200 ohms maximum.

| | | | |
|---|---|---|---|
| 1N4770 | .01 | $ 5.85 | $ 4.40 |
| 1N4770A | .01 | 6.50 | 4.90 |
| 1N4771 | .005 | 7.30 | 5.50 |
| 1N4771A | .005 | 8.10 | 6.10 |
| 1N4772 | .002 | 13.25 | 9.95 |
| 1N4772A | .002 | 14.75 | 11.10 |
| 1N4773 | .001 | 24.25 | 18.25 |
| 1N4773A | .001 | 27.00 | 20.30 |
| 1N4774 | .0005 | 56.50 | 42.50 |
| 1N4774A | .0005 | 63.15 | 47.50 |

## 750-MW MINIATURE

### 9.3 VOLT (CASE 52)

**Temperature Range:** 0° C to +75° C; −55° C to +100° C (suffix **A**); −55° C to +150° C (suffix **B**). **Voltage Range:** 8.9–9.7 volts at 10 mA. **Dynamic Impedance:** 15 ohms maximum.

| Motorola Type | V-Temp. Coef. %/° C | Net Each, Lots of | |
|---|---|---|---|
| | | 1-99 | 100-999 |
| 1N2620 | .01 | $ 4.10 | $ 3.05 |
| 1N2620A | .01 | 4.35 | 3.25 |
| 1N2620B | .01 | 4.90 | 3.65 |
| 1N2621 | .005 | 4.60 | 3.45 |
| 1N2621A | .005 | 5.55 | 4.15 |
| 1N2621B | .005 | 6.75 | 5.05 |
| 1N2622 | .002 | 7.60 | 5.70 |
| 1N2622A | .002 | 8.15 | 6.10 |
| 1N2622B | .002 | 9.35 | 7.00 |
| 1N2623 | .001 | 8.80 | 6.60 |
| 1N2623A | .001 | 10.05 | 7.55 |
| 1N2623B | .001 | 13.50 | 10.15 |
| 1N2624 | .0005 | 22.00 | 16.05 |
| 1N2624A | .0005 | 28.80 | 21.65 |
| 1N2624B | .0005 | 38.50 | 28.95 |

### 11.7 VOLT (CASE 52)

**Temperature Range:** 0° C to +75° C; −55° C to +100° C (suffix **A**); −55° C to +150° C (suffix **B**). **Voltage Range:** 11.12–12.28 volts at 7.5 mA. **Dynamic Impedance:** 25 ohms maximum.

| | | | |
|---|---|---|---|
| 1N3580 | .01 | $ 4.90 | $ 3.65 |
| 1N3580A | .01 | 5.20 | 3.90 |
| 1N3580B | .01 | 6.00 | 4.50 |
| 1N3581 | .005 | 5.55 | 4.15 |
| 1N3581A | .005 | 6.45 | 4.85 |
| 1N3581B | .005 | 7.75 | 5.80 |
| 1N3582 | .002 | 8.95 | 6.70 |
| 1N3582A | .002 | 9.80 | 7.35 |
| 1N3582B | .002 | 10.90 | 8.20 |
| 1N3583 | .001 | 10.90 | 8.20 |
| 1N3583A | .001 | 11.80 | 8.85 |
| 1N3583B | .001 | 15.65 | 11.75 |

### 9.4 VOLT (CASE 52)

**Temperature Range:** 1N2163–1N2169A, 0° C to +70° C; 1N2164–1N2170A, −55° C to +125° C; 1N2165–1N2171A, −55° C to +185° C. **Voltage:** $V_Z = 9.4$ volts ±0.4 V; ±0.2 V (suffix **A**). **Dynamic Impedance:** 15 ohms maximum.

| Motorola Type | V-Temp. Coef. %/° C | Net Each, Lots of | |
|---|---|---|---|
| | | 1-99 | 100-999 |
| 1N2163 | .005 | $ 3.30 | $ 2.50 |
| 1N2163A | .005 | 3.45 | 2.60 |
| 1N2166 | .001 | 6.80 | 5.10 |
| 1N2166A | .001 | 8.10 | 6.10 |
| 1N2169 | .0005 | 16.95 | 12.75 |
| 1N2169A | .0005 | 25.00 | 18.80 |
| 1N2164 | .005 | 4.50 | 3.40 |
| 1N2164A | .005 | 5.50 | 4.15 |
| 1N2167 | .001 | 8.65 | 6.50 |
| 1N2167A | .001 | 11.05 | 8.30 |
| 1N2170 | .0005 | 23.95 | 18.00 |
| 1N2170A | .0005 | 36.95 | 27.80 |
| 1N2165 | .005 | 5.65 | 4.25 |
| 1N2165A | .005 | 7.30 | 5.50 |
| 1N2168 | .001 | 11.90 | 8.95 |
| 1N2168A | .001 | 15.95 | 12.00 |
| 1N2171 | .0005 | 34.85 | 26.20 |
| 1N2171A | .0005 | 44.50 | 33.50 |

## SURMETIC$^{\text{TM}}$ FORWARD REFERENCE DIODES (CASE 51)

$P_D = 500$ mW max. $I_R = 10\ \mu A$ max. at $V_R = 5.0$ volts.

| Motorola Type | $V_F$ at $I_F$ | | Net Each, Lots | |
|---|---|---|---|---|
| | Min.–Max. Volts | mA | 1-99 | 100-999 |
| MZ2360 | 0.64–0.70 | 10 | 28c | 19c |
| MZ2361 | 1.30–1.40 | 10 | 57c | 38c |

**MOTOROLA**
**Semiconductors**

# SILICON REFERENCE DIODES

## ZENER REFERENCE DIODES (CASE 41, 51)

**Temperature Range:** +25° C to +100° C except 1N4896A thru 1N4932A −55° C to +100° C. Series 1N4000 molded assemblies (Case 41); 1N4896 thru 1N4932A low noise reference diodes (Case 51).

| Motorola Type | $V_Z$ V | $\Delta V_Z$ V | $I_{ZT}$ mA | TC %/°C | Net Each, Lots of | |
|---|---|---|---|---|---|---|
| | | | | | 1-99 | 100-999 |
| 1N4896 | 12.8 | 0.096 | 0.5 | 0.01 | $18.20 | $13.70 |
| 1N4896A | 12.8 | 0.198 | 0.5 | 0.01 | 20.10 | 15.10 |
| 1N4897 | 12.8 | 0.048 | 0.5 | 0.005 | 20.90 | 15.70 |
| 1N4897A | 12.8 | 0.099 | 0.5 | 0.005 | 23.40 | 17.60 |
| 1N4898 | 12.8 | 0.019 | 0.5 | 0.002 | 42.80 | 32.20 |
| 1N4898A | 12.8 | 0.040 | 0.5 | 0.002 | 47.60 | 35.80 |
| 1N4899 | 12.8 | 0.010 | 0.5 | 0.001 | 74.10 | 55.70 |
| 1N4899A | 12.8 | 0.020 | 0.5 | 0.001 | 82.45 | 62.00 |
| 1N4900 | 12.8 | 0.096 | 1.0 | 0.01 | 10.50 | 7.90 |
| 1N4900A | 12.8 | 0.198 | 1.0 | 0.01 | 11.70 | 8.80 |
| 1N4901 | 12.8 | 0.048 | 1.0 | 0.005 | 13.15 | 9.90 |
| 1N4901A | 12.8 | 0.099 | 1.0 | 0.005 | 14.65 | 11.00 |
| 1N4902 | 12.8 | 0.019 | 1.0 | 0.002 | 23.80 | 17.90 |
| 1N4902A | 12.8 | 0.040 | 1.0 | 0.002 | 26.60 | 20.00 |
| 1N4903 | 12.8 | 0.010 | 1.0 | 0.001 | 43.75 | 32.90 |
| 1N4903A | 12.8 | 0.020 | 1.0 | 0.001 | 48.65 | 36.60 |
| 1N4916 | 19.2 | 0.144 | 0.5 | 0.01 | 20.75 | 15.60 |
| 1N4916A | 19.2 | 0.298 | 0.5 | 0.01 | 23.25 | 17.50 |
| 1N4917 | 19.2 | 0.072 | 0.5 | 0.005 | 28.05 | 21.10 |
| 1N4917A | 19.2 | 0.149 | 0.5 | 0.005 | 31.25 | 23.50 |
| 1N4918 | 19.2 | 0.029 | 0.5 | 0.002 | 57.20 | 43.00 |
| 1N4918A | 19.2 | 0.60 | 0.5 | 0.002 | 63.45 | 47.70 |
| 1N4919 | 19.2 | 0.144 | 1.0 | 0.01 | 14.05 | 10.55 |
| 1N4919A | 19.2 | 0.298 | 1.0 | 0.01 | 15.60 | 11.75 |
| 1N4920 | 19.2 | 0.072 | 1.0 | 0.005 | 17.55 | 13.20 |
| 1N4920A | 19.2 | 0.149 | 1.0 | 0.005 | 19.40 | 14.60 |
| 1N4921 | 19.2 | 0.029 | 1.0 | 0.002 | 31.80 | 23.90 |
| 1N4921A | 19.2 | 0.060 | 1.0 | 0.002 | 35.35 | 26.60 |
| 1N4057 | 12.4 | 0.047 | 10 | 0.005 | 5.90 | 4.45 |
| 1N4057A | 12.4 | 0.019 | 10 | 0.002 | 7.10 | 5.35 |
| 1N4058 | 14.6 | 0.055 | 10 | 0.005 | 6.40 | 4.80 |
| 1N4058A | 14.6 | 0.022 | 10 | 0.002 | 10.75 | 8.10 |
| 1N4059 | 16.8 | 0.063 | 10 | 0.005 | 7.20 | 5.40 |
| 1N4059A | 16.8 | 0.025 | 10 | 0.002 | 8.55 | 6.45 |
| 1N4060 | 18.5 | 0.069 | 10 | 0.005 | 7.70 | 5.80 |
| 1N4060A | 18.5 | 0.028 | 10 | 0.002 | 9.25 | 6.95 |
| 1N4061 | 21.0 | 0.079 | 10 | 0.005 | 8.95 | 6.75 |
| 1N4061A | 21.0 | 0.032 | 10 | 0.002 | 10.75 | 8.10 |
| 1N4062 | 23.0 | 0.086 | 10 | 0.005 | 9.70 | 7.30 |
| 1N4062A | 23.0 | 0.035 | 10 | 0.002 | 11.70 | 8.80 |
| 1N4063 | 27.0 | 0.101 | 10 | 0.005 | 10.75 | 8.10 |
| 1N4063A | 27.0 | 0.041 | 10 | 0.002 | 12.90 | 9.70 |
| 1N4064 | 30.0 | 0.113 | 10 | 0.005 | 12.05 | 9.05 |
| 1N4064A | 30.0 | 0.045 | 10 | 0.002 | 14.45 | 10.85 |
| 1N4065 | 33.0 | 0.124 | 10 | 0.005 | 12.75 | 9.60 |
| 1N4065A | 33.0 | 0.050 | 10 | 0.002 | 15.35 | 11.55 |
| 1N4066 | 37.0 | 0.139 | 7.5 | 0.005 | 13.55 | 10.20 |
| 1N4066A | 37.0 | 0.056 | 7.5 | 0.002 | 16.30 | 12.25 |
| 1N4067 | 43.0 | 0.161 | 7.5 | 0.005 | 14.80 | 11.15 |
| 1N4067A | 43.0 | 0.065 | 7.5 | 0.002 | 17.80 | 13.40 |
| 1N4068 | 47.0 | 0.176 | 7.5 | 0.005 | 15.90 | 11.95 |
| 1N4068A | 47.0 | 0.071 | 7.5 | 0.002 | 19.00 | 14.30 |
| 1N4069 | 51.0 | 0.191 | 7.5 | 0.005 | 17.95 | 13.50 |
| 1N4069A | 51.0 | 0.077 | 7.5 | 0.002 | 21.55 | 16.20 |
| 1N4070 | 56.0 | 0.210 | 7.5 | 0.005 | 19.70 | 14.80 |
| 1N4070A | 56.0 | 0.084 | 7.5 | 0.002 | 23.60 | 17.75 |
| 1N4071 | 62.0 | 0.232 | 7.5 | 0.005 | 22.35 | 16.80 |
| 1N4071A | 62.0 | 0.093 | 7.5 | 0.002 | 26.80 | 20.15 |
| 1N4072 | 68.0 | 0.255 | 5.0 | 0.005 | 23.15 | 17.40 |
| 1N4072A | 68.0 | 0.102 | 5.0 | 0.002 | 27.65 | 20.80 |
| 1N4073 | 75.0 | 0.281 | 5.0 | 0.005 | 25.25 | 19.00 |
| 1N4073A | 75.0 | 0.113 | 5.0 | 0.002 | 30.30 | 22.80 |
| 1N4074 | 82.0 | 0.307 | 5.0 | 0.005 | 27.25 | 20.50 |
| 1N4074A | 82.0 | 0.123 | 5.0 | 0.002 | 32.70 | 24.60 |
| 1N4075 | 87.0 | 0.326 | 5.0 | 0.005 | 28.85 | 21.70 |
| 1N4075A | 87.0 | 0.131 | 5.0 | 0.002 | 34.60 | 26.00 |
| 1N4076 | 91.0 | 0.341 | 5.0 | 0.005 | 30.30 | 22.80 |
| 1N4076A | 91.0 | 0.137 | 5.0 | 0.002 | 36.35 | 27.35 |
| 1N4077 | 100 | 0.375 | 5.0 | 0.005 | 33.25 | 25.00 |
| 1N4077A | 100 | 0.150 | 5.0 | 0.002 | 39.90 | 30.00 |
| 1N4078 | 105 | 0.394 | 2.5 | 0.005 | 34.90 | 26.25 |
| 1N4078A | 105 | 0.158 | 2.5 | 0.002 | 41.90 | 31.50 |
| 1N4079 | 110 | 0.413 | 2.5 | 0.005 | 36.85 | 27.70 |
| 1N4079A | 110 | 0.165 | 2.5 | 0.002 | 44.15 | 33.20 |
| 1N4080 | 120 | 0.450 | 2.5 | 0.005 | 39.90 | 30.00 |
| 1N4080A | 120 | 0.180 | 2.5 | 0.002 | 47.90 | 36.00 |
| 1N4081 | 130 | 0.488 | 2.5 | 0.005 | 42.40 | 31.90 |
| 1N4081A | 130 | 0.195 | 2.5 | 0.002 | 50.85 | 38.25 |
| 1N4082 | 140 | 0.525 | 2.5 | 0.005 | 45.75 | 34.40 |
| 1N4082A | 140 | 0.210 | 2.5 | 0.002 | 54.85 | 41.25 |
| 1N4083 | 150 | 0.563 | 2.5 | 0.005 | 49.85 | 37.50 |
| 1N4083A | 150 | 0.225 | 2.5 | 0.002 | 59.85 | 45.00 |
| 1N4084 | 175 | 0.656 | 2.5 | 0.005 | 57.05 | 42.90 |
| 1N4084A | 175 | 0.263 | 2.5 | 0.002 | 68.40 | 51.45 |
| 1N4085 | 200 | 0.750 | 2.5 | 0.005 | 63.95 | 48.10 |
| 1N4085A | 200 | 0.300 | 2.5 | 0.002 | 76.75 | 57.70 |
| 1N4904 | 12.8 | 0.096 | 2.0 | 0.01 | 5.40 | 4.05 |
| 1N4904A | 12.8 | 0.198 | 2.0 | 0.01 | 6.00 | 4.50 |
| 1N4905 | 12.8 | 0.048 | 2.0 | 0.005 | 6.60 | 4.95 |
| 1N4905A | 12.8 | 0.099 | 2.0 | 0.005 | 7.20 | 5.41 |
| 1N4906 | 12.8 | 0.019 | 2.0 | 0.002 | 11.85 | 8.92 |
| 1N4906A | 12.8 | 0.040 | 2.0 | 0.002 | 13.15 | 9.90 |
| 1N4907 | 12.8 | 0.010 | 2.0 | 0.001 | 21.85 | 16.45 |
| 1N4907A | 12.8 | 0.020 | 2.0 | 0.001 | 24.35 | 18.30 |
| 1N4908 | 12.8 | 0.096 | 4.0 | 0.01 | 5.40 | 4.05 |
| 1N4908A | 12.8 | 0.198 | 4.0 | 0.01 | 6.00 | 4.50 |
| 1N4909 | 12.8 | 0.048 | 4.0 | 0.005 | 6.60 | 4.95 |
| 1N4909A | 12.8 | 0.099 | 4.0 | 0.005 | 7.20 | 5.40 |
| 1N4910 | 12.8 | 0.019 | 4.0 | 0.002 | 11.85 | 8.90 |
| 1N4910A | 12.8 | 0.040 | 4.0 | 0.002 | 13.15 | 9.90 |
| 1N4911 | 12.8 | 0.010 | 4.0 | 0.001 | $19.75 | $14.85 |
| 1N4911A | 12.8 | 0.020 | 4.0 | 0.001 | 22.00 | 16.55 |
| 1N4912 | 12.8 | 0.096 | 7.5 | 0.01 | 6.00 | 4.50 |
| 1N4912A | 12.8 | 0.198 | 7.5 | 0.01 | 10.15 | 7.65 |
| 1N4913 | 12.8 | 0.048 | 7.5 | 0.005 | 7.20 | 5.40 |
| 1N4913A | 12.8 | 0.099 | 7.5 | 0.005 | 13.15 | 9.90 |
| 1N4914 | 12.8 | 0.019 | 7.5 | 0.002 | 13.15 | 9.90 |
| 1N4914A | 12.8 | 0.040 | 7.5 | 0.002 | 20.20 | 15.20 |
| 1N4915 | 12.8 | 0.101 | 7.5 | 0.001 | 21.95 | 16.50 |
| 1N4915A | 12.8 | 0.020 | 7.5 | 0.001 | 29.40 | 22.10 |
| 1N4922 | 19.2 | 0.144 | 2.0 | 0.01 | 7.20 | 5.40 |
| 1N4922A | 19.2 | 0.298 | 2.0 | 0.01 | 8.00 | 6.00 |
| 1N4923 | 19.2 | 0.072 | 2.0 | 0.005 | 8.75 | 6.60 |
| 1N4923A | 19.2 | 0.149 | 2.0 | 0.005 | 9.55 | 7.20 |
| 1N4924 | 19.2 | 0.029 | 2.0 | 0.002 | 15.80 | 11.90 |
| 1N4924A | 19.2 | 0.060 | 2.0 | 0.002 | 17.55 | 13.20 |
| 1N4925 | 19.2 | 0.144 | 4.0 | 0.01 | 7.20 | 5.40 |
| 1N4925A | 19.2 | 0.298 | 4.0 | 0.01 | 8.00 | 6.00 |
| 1N4926 | 19.2 | 0.072 | 4.0 | 0.005 | 8.75 | 6.60 |
| 1N4926A | 19.2 | 0.149 | 4.0 | 0.005 | 9.55 | 7.20 |
| 1N4927 | 19.2 | 0.029 | 4.0 | 0.002 | 15.80 | 11.90 |
| 1N4927A | 19.2 | 0.060 | 4.0 | 0.002 | 17.55 | 13.20 |
| 1N4928 | 19.2 | 0.014 | 4.0 | 0.001 | 26.35 | 19.80 |
| 1N4928A | 19.2 | 0.030 | 4.0 | 0.001 | 29.40 | 22.10 |
| 1N4929 | 19.2 | 0.144 | 7.5 | 0.01 | 8.10 | 6.10 |
| 1N4929A | 19.2 | 0.298 | 7.5 | 0.01 | 13.75 | 10.35 |
| 1N4930 | 19.2 | 0.072 | 7.5 | 0.005 | 9.70 | 7.30 |
| 1N4930A | 19.2 | 0.149 | 7.5 | 0.005 | 17.80 | 13.40 |
| 1N4931 | 19.2 | 0.029 | 7.5 | 0.002 | 17.80 | 13.40 |
| 1N4931A | 19.2 | 0.060 | 7.5 | 0.002 | 26.85 | 20.20 |
| 1N4932 | 19.2 | 0.014 | 7.5 | 0.001 | 29.40 | 22.10 |
| 1N4932A | 19.2 | 0.030 | 7.5 | 0.001 | 39.10 | 29.40 |

## CURRENT REGULATOR DIODES (CASE 51)

Regulator current tolerance ±10%. $P_{OV}=100$ volts max. $I_P$ and $Z_T$ ratings at $V_T=25$ V. $V_L$ at $I_L=0.8\ I_P$.

| Motorola Type | Nom. $I_P$ mA | Min. $Z_T$ Megohms | Min. $Z_K$ at $V_K=6.0$ V Megohms | Max. $V_L$ V | Net Ea., Lots of | | |
|---|---|---|---|---|---|---|---|
| | | | | | 1-24 | 25-99 | 100-999 |
| 1N5283 | 0.22 | 25.0 | 2.75 | 1.00 | $3.30 | $2.80 | $2.20 |
| 1N5284 | 0.24 | 19.0 | 2.35 | 1.00 | 3.30 | 2.80 | 2.20 |
| 1N5285 | 0.27 | 14.0 | 1.95 | 1.00 | 3.30 | 2.80 | 2.20 |
| 1N5286 | 0.30 | 9.0 | 1.60 | 1.00 | 3.30 | 2.80 | 2.20 |
| 1N5287 | 0.33 | 6.6 | 1.35 | 1.00 | 2.30 | 2.05 | 1.55 |
| 1N5288 | 0.39 | 4.10 | 1.00 | 1.05 | 2.30 | 2.05 | 1.55 |
| 1N5289 | 0.43 | 3.30 | 0.870 | 1.05 | 2.30 | 2.05 | 1.55 |
| 1N5290 | 0.47 | 2.70 | 0.750 | 1.05 | 2.30 | 2.05 | 1.55 |
| 1N5291 | 0.56 | 1.90 | 0.560 | 1.10 | 2.30 | 2.05 | 1.55 |
| 1N5292 | 0.62 | 1.55 | 0.470 | 1.13 | 2.30 | 2.05 | 1.55 |
| 1N5293 | 0.68 | 1.35 | 0.400 | 1.15 | 2.30 | 2.05 | 1.55 |
| 1N5294 | 0.75 | 1.15 | 0.335 | 1.20 | 2.30 | 2.05 | 1.55 |
| 1N5295 | 0.82 | 1.00 | 0.290 | 1.25 | 2.30 | 2.05 | 1.55 |
| 1N5296 | 0.91 | 0.880 | 0.240 | 1.29 | 2.30 | 2.05 | 1.55 |
| 1N5297 | 1.00 | 0.800 | 0.205 | 1.35 | 2.30 | 2.05 | 1.55 |
| 1N5298 | 1.10 | 0.700 | 0.180 | 1.40 | 2.30 | 2.05 | 1.55 |
| 1N5299 | 1.20 | 0.640 | 0.155 | 1.45 | 2.30 | 2.05 | 1.55 |
| 1N5300 | 1.30 | 0.580 | 0.135 | 1.50 | 2.30 | 2.05 | 1.55 |
| 1N5301 | 1.40 | 0.540 | 0.115 | 1.55 | 2.30 | 2.05 | 1.55 |
| 1N5302 | 1.50 | 0.510 | 0.105 | 1.60 | 2.30 | 2.05 | 1.55 |
| 1N5303 | 1.60 | 0.475 | 0.092 | 1.65 | 2.30 | 2.05 | 1.55 |
| 1N5304 | 1.80 | 0.420 | 0.074 | 1.75 | 2.30 | 2.05 | 1.55 |
| 1N5305 | 2.00 | 0.395 | 0.061 | 1.85 | 2.30 | 2.05 | 1.55 |
| 1N5306 | 2.20 | 0.370 | 0.052 | 1.95 | 2.30 | 2.05 | 1.55 |
| 1N5307 | 2.40 | 0.345 | 0.044 | 2.00 | 2.30 | 2.05 | 1.55 |
| 1N5308 | 2.70 | 0.320 | 0.035 | 2.15 | 2.30 | 2.05 | 1.55 |
| 1N5309 | 3.00 | 0.300 | 0.029 | 2.25 | 2.30 | 2.05 | 1.55 |
| 1N5310 | 3.30 | 0.280 | 0.024 | 2.35 | 2.30 | 2.05 | 1.55 |
| 1N5311 | 3.60 | 0.265 | 0.020 | 2.50 | 3.30 | 2.80 | 2.20 |
| 1N5312 | 3.90 | 0.255 | 0.017 | 2.60 | 3.30 | 2.80 | 2.20 |
| 1N5313 | 4.30 | 0.245 | 0.014 | 2.75 | 3.30 | 2.80 | 2.20 |
| 1N5314 | 4.70 | 0.235 | 0.012 | 2.90 | 3.30 | 2.80 | 2.20 |
| MCL1300* | 0.5 | 4.000 | 0.500 | 1.0 | 1.80 | 1.60 | 1.20 |
| MCL1301* | 1.0 | 0.800 | 0.200 | 1.5 | 1.80 | 1.60 | 1.20 |
| MCL1302* | 2.0 | 0.400 | 0.100 | 2.0 | 1.80 | 1.60 | 1.20 |
| MCL1303* | 3.0 | 0.300 | 0.050 | 2.0 | 1.80 | 1.60 | 1.20 |
| MCL1304* | 4.0 | 0.250 | 0.025 | 2.5 | 1.80 | 1.60 | 1.20 |

*$P_{OV}=75$ volts.

## TRANSIENT SUPPRESSORS (CASE 119)

$P_D=350$ W max. at $T_C=25°$ C, $T_J=175°$ C. $I_{R(max.)}$ at $V_R=50\ \mu A$. $V_F=1.5$ V max. at 10 A.

| Motorola Type | Nom. $V_{OP(PK)}$ VDC | Max. $C_F$ V | $V_{Z(max.)}$ at $I_Z$* | | Typ. C µF | Net Ea., Lots of | |
|---|---|---|---|---|---|---|---|
| | | | VDC | ADC | | 1-99 | 100-999 |
| MPZ5-16A | 14 | 1.25 | 24 | 200 | 0.025 | $24.75 | $18.60 |
| MPZ5-16B | 14 | 1.25 | 20 | 200 | 0.025 | 44.30 | 33.30 |
| MPZ5-32A | 28 | 1.25 | 50 | 100 | 0.011 | 17.70 | 13.30 |
| MPZ5-32B | 28 | 1.25 | 45 | 100 | 0.011 | 26.45 | 19.90 |
| MPZ5-32C | 28 | 1.25 | 40 | 100 | 0.011 | 44.30 | 33.30 |
| MPZ5-180A | 165 | 1.14 | 250 | 20 | 0.0012 | 26.45 | 19.90 |
| MPZ5-180B | 165 | 1.14 | 225 | 20 | 0.0012 | 44.30 | 33.30 |
| MPZ5-180C | 165 | 1.14 | 205 | 20 | 0.0012 | 61.85 | 46.50 |

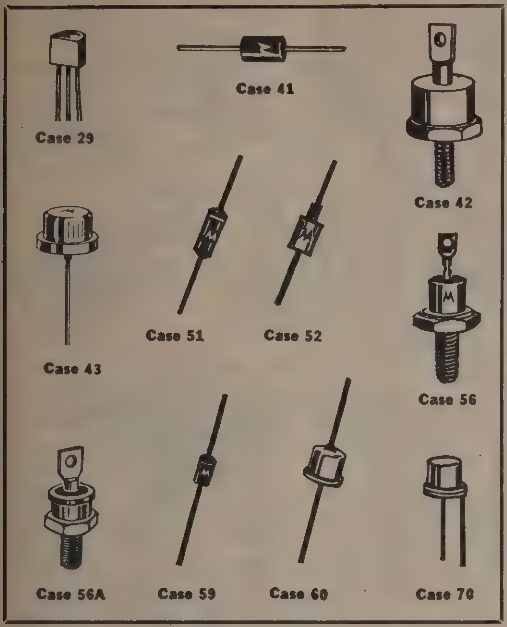
*Pulse width = 1.0 msec.

**LARGER QUANTITY PRICES AVAILABLE ON REQUEST.**

**SEE PREVIOUS PAGE FOR CASE ILLUSTRATIONS.**

# MOTOROLA Semiconductors

# SILICON REFERENCE DIODES AND RECTIFIERS



## SURMETIC™ LOW-CURRENT RECTIFIERS (CASE 59)

$I_{FM(surge)}$ at 25° C except as noted.

| Motorola Type | $V_{RM}$ (rep) Volts | Forward Current: $I_O$ at Temp Amps | Forward Current: $I_O$ at Temp °C | Forward Current: $I_{FM(surge)}$ Amps | $I_R$ (AV) Amps | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|
| 1N4001 | 50 | 1.0 | 75 | 30 | 0.03 | $0.38 | $0.25 |
| 1N4002 | 100 | 1.0 | 75 | 30 | 0.03 | .41 | .27 |
| 1N4003 | 200 | 1.0 | 75 | 30 | 0.03 | .45 | .30 |
| 1N4004 | 400 | 1.0 | 75 | 30 | 0.03 | .53 | .35 |
| 1N4005 | 600 | 1.0 | 75 | 30 | 0.03 | .60 | .40 |
| 1N4006 | 800 | 1.0 | 75 | 30 | 0.03 | .75 | .50 |
| 1N4007 | 1000 | 1.0 | 75 | 30 | 0.03 | .83 | .55 |
| MR990A | 1000 | 0.250 | 25 | 15† | 0.1 | .75 | .50 |
| MR991A | 1500 | 0.250 | 25 | 15† | 0.1 | .82 | .55 |
| MR992A | 2000 | 0.250 | 25 | 15† | 0.1 | .90 | .60 |
| MR993A | 2500 | 0.250 | 25 | 15† | 0.1 | .97 | .65 |
| MR994A | 3000 | 0.250 | 25 | 15† | 0.1 | 1.05 | .70 |
| MR995A | 4000 | 0.250 | 25 | 15† | 0.1 | 1.20 | .80 |
| MR996A | 5000 | 0.250 | 25 | 15† | 0.1 | 1.35 | .90 |
| MR2266 | 800 | 1.0 | 75 | 30† | 0.01‡ | 1.08 | .72 |
| MR2272 | 400 | 1.0 | 75 | 30† | 0.01‡ | .57 | .38 |
| MR2273 | 200 | 1.0 | 75 | 30† | 0.01‡ | .48 | .32 |

*JAN type to MIL-S-19500/228. †At 75° C. ‡$I_R$.

## LOW-CURRENT RECTIFIERS

At 75° C: $I_O = 3.0$ amps; $I_{FM(surge)} = 300$ amps; $I_{R(AV)} = 1.5$ amps. Add suffix **R** for reverse polarity; same price.

| Motorola Type | Case | $V_{RM(rep)}$ Volts | Net Each, Lots of 1-99 | Net Each, Lots of 100 Up |
|---|---|---|---|---|
| 1N4719/MR1030A | 60 | 50 | $0.66 | $0.44 |
| 1N4720/MR1031A | 60 | 100 | .73 | .49 |
| 1N4721/MR1032A | 60 | 200 | .82 | .55 |
| 1N4722/MR1034A | 60 | 400 | 1.12 | .75 |
| 1N4723/MR1036A | 60 | 600 | 1.50 | 1.00 |
| 1N4724/MR1038A | 60 | 800 | 2.25 | 1.50 |
| 1N4725/MR1040A | 60 | 1000 | 3.35 | 2.25 |
| 1N4997/MR1030B | 70 | 50 | .66 | .44 |
| 1N4998/MR1031B | 70 | 100 | .73 | .49 |
| 1N4999/MR1032B | 70 | 200 | .82 | .55 |
| 1N5000/MR1034B | 70 | 400 | 1.12 | .75 |
| 1N5001/MR1036B | 70 | 600 | 1.50 | 1.00 |
| 1N5002/MR1038B | 70 | 800 | 2.25 | 1.50 |
| 1N5003/MR1040B | 70 | 1000 | 3.35 | 2.25 |
| MR1033A | 60 | 300 | .93 | .62 |
| MR1033B | 70 | 300 | .93 | .62 |
| MR1035A | 60 | 500 | 1.32 | .88 |
| MR1035B | 70 | 500 | 1.32 | .88 |

LARGER QUANTITY PRICES

AVAILABLE ON REQUEST.

## LOW-CURRENT RECTIFIERS

At 150° C: $I_O = 12$ amps; $I_{FM(surge)} = 300$ amps; $I_{R(AV)} = 1.5$ amps. Add suffix **R** for reverse polarity; same price.

| Motorola Type | Case | $V_{RM(rep)}$ Volts | Net Each, Lots of 1-99 | Net Each, Lots of 100 Up |
|---|---|---|---|---|
| MR1120 | 56 | 50 | $1.14 | $0.76 |
| MR1121 | 56 | 100 | 1.23 | .82 |
| MR1122 | 56 | 200 | 1.32 | .88 |
| MR1123 | 56 | 300 | 1.48 | .99 |
| MR1124 | 56 | 400 | 1.65 | 1.10 |
| MR1125 | 56 | 500 | 2.02 | 1.35 |
| MR1126 | 56 | 600 | 2.45 | 1.65 |
| MR1128 | 56 | 800 | 5.60 | 3.75 |
| MR1130 | 56 | 1000 | 7.85 | 5.25 |

| Motorola Type | Case | $V_{RM}$ (rep) V | $I_O$ at T Amps | $I_O$ at T °C | $I_{FM(surge)}$ at T Amps | $I_{FM(surge)}$ at T °C | $I_R$ (AV) A | Net Ea., Lots 1-99 | Net Ea., Lots 100 Up |
|---|---|---|---|---|---|---|---|---|---|
| 1N1730 | 41 | 1000 | 0.2 | 25 | 2.5 | 25 | ....... | $ 4.85 | $ 3.25 |
| 1N1731 | 41 | 1500 | 0.2 | 25 | 2.5 | 25 | ....... | 6.00 | 4.00 |
| 1N1732 | 41 | 2000 | 0.2 | 25 | 2.5 | 25 | ....... | 6.75 | 4.50 |
| 1N1733 | 41 | 3000 | 0.15 | 25 | 2.5 | 25 | ....... | 7.80 | 5.20 |
| 1N1734 | 41 | 5000 | 0.10 | 25 | 2.5 | 25 | ....... | 11.60 | 7.75 |
| 1N2382 | 41 | 4000 | 0.15 | 25 | 2.5 | 25 | ....... | 9.75 | 6.50 |
| 1N2383 | 41 | 6000 | 0.10 | 25 | 2.5 | 25 | ....... | 14.25 | 9.50 |
| 1N2384 | 41 | 8000 | 0.15 | 25 | 2.5 | 25 | ....... | 17.25 | 11.50 |
| 1N2385 | 41 | 10000 | 0.07 | 25 | 2.5 | 25 | ....... | 21.00 | 14.00 |
| 1N3282 | 51 | 1000 | 0.1 | 25 | 2.5 | 25 | 0.01 | 2.45 | 1.65 |
| 1N3283 | 51 | 1500 | 0.1 | 25 | 2.5 | 25 | 0.01 | 3.05 | 2.05 |
| 1N3284 | 51 | 2000 | 0.1 | 25 | 2.5 | 25 | 0.01 | 7.95 | 5.30 |
| 1N3285 | 51 | 2500 | 0.1 | 25 | 2.5 | 25 | 0.01 | 10.05 | 6.70 |
| 1N3286 | 51 | 3000 | 0.1 | 25 | 2.5 | 25 | 0.001 | 17.25 | 11.50 |

## MEDIUM-CURRENT RECTIFIERS—15 AND 25 AMPS

$I_R$ value at 150° C except MR2261–MR2265 at 100° C. Add suffix **R** for reverse polarity; same price.

| Motorola Type | Case | $V_{RM}$ (rep) V | $I_O$ at T A | $I_O$ at T °C | $I_{FM(surge)}$ at T A | $I_{FM(surge)}$ at T °C | $I_R$ (AV) mA | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|---|
| 1N3208 | 42 | 50 | 15 | 150 | 250 | 25 | 10 | $1.29 | $0.86 |
| 1N3209 | 42 | 100 | 15 | 150 | 250 | 25 | 10 | 1.42 | .95 |
| 1N3210 | 42 | 200 | 15 | 150 | 250 | 25 | 10 | 1.87 | 1.25 |
| 1N3211 | 42 | 300 | 15 | 150 | 250 | 25 | 10 | 2.30 | 1.55 |
| 1N3212 | 42 | 400 | 15 | 150 | 250 | 25 | 10 | 2.55 | 1.70 |
| 1N3213 | 42 | 500 | 20 | 150 | 350 | 150 | 10 | 3.45 | 2.30 |
| 1N3214 | 42 | 600 | 20 | 150 | 350 | 150 | 10 | 3.90 | 2.60 |
| 1N3491 | 43 | 50 | 25 | 130 | 300 | 175 | 10 | .67 | .45 |
| 1N3492 | 43 | 100 | 25 | 130 | 300 | 175 | 10 | .76 | .51 |
| 1N3493 | 43 | 200 | 25 | 130 | 300 | 175 | 8.0 | 1.11 | .74 |
| 1N3494 | 43 | 300 | 25 | 130 | 300 | 175 | 6.0 | 1.27 | .85 |
| 1N3495 | 43 | 400 | 25 | 130 | 300 | 175 | 4.0 | 1.48 | .99 |
| 1N3659 | 43 | 50 | 25 | 150 | 400 | 150 | 5.0 | .90 | .60 |
| 1N3660 | 43 | 100 | 25 | 150 | 400 | 150 | 4.5 | .99 | .66 |
| 1N3661 | 43 | 200 | 25 | 150 | 400 | 150 | 4.0 | 1.33 | .89 |
| 1N3662 | 43 | 300 | 25 | 150 | 400 | 150 | 3.5 | 1.48 | .99 |
| 1N3663 | 43 | 400 | 25 | 150 | 400 | 150 | 3.0 | 1.70 | 1.14 |

$I_{FM(surge)} = 300$ amps at 175° C.

| Motorola Type | Case | $V_{RM}$ (rep) V | $I_O$ at T A | $I_O$ at T °C | $I_R$ (AV) mA | Net Each, Lots of 1-99 | Net Each, Lots of 100-999 | Net Each, Lots of 1000 Up |
|---|---|---|---|---|---|---|---|---|
| MR327 | 43 | 500 | 25 | 130 | 3.0 | $2.40 | $1.60 | $1.45 |
| MR328 | 43 | 600 | 25 | 130 | 2.5 | 3.35 | 2.25 | 2.00 |
| MR330 | 43 | 800 | 25 | 130 | 2.0 | 6.75 | 4.50 | 4.05 |
| MR331 | 43 | 1000 | 25 | 130 | 1.5 | 9.75 | 6.50 | 5.85 |

## SILICON MOLDED ASSEMBLY REFERENCE DIODES (CASE 41)

$V_Z$ at $I_{ZT} = 7.5$ mA. $\Delta V_Z$ at −55° C, +25° C, +100° C. $P_D$ at $T_A = 25°$ C.

| Motorola Type | $V_Z$ Volts | $Z_{ZT}$ Ohms | TC for Refer. %/° C | $\Delta V_Z$ at $I_{ZT}$ Volts | $P_D$ mW | Net Ea., Lots of 1-99 | Net Ea., Lots of 100 Up |
|---|---|---|---|---|---|---|---|
| 1N429*† | 6.2 | 20 | 0.01 | 0.050 | 200 | $ 5.45 | $ 4.10 |
| 1N1530‡ | 8.4 | 15 | 0.002 | 0.014§ | 250 | 16.55 | 12.45 |
| 1N1530A*‡ | 8.4 | 15 | 0.001 | 0.007§ | 250 | 24.85 | 18.70 |
| 1N1735 | 6.2 | 20 | 0.01 | 0.050 | 200 | 5.40 | 4.05 |
| 1N1736 | 12.4 | 40 | 0.01 | 0.100 | 400 | 8.75 | 6.60 |
| 1N1736A | 12.4 | 40 | 0.005 | 0.050 | 400 | 10.70 | 8.05 |
| 1N1737 | 18.6 | 60 | 0.01 | 0.150 | 600 | 10.50 | 7.90 |
| 1N1737A | 18.6 | 60 | 0.05 | 0.075 | 600 | 12.30 | 9.25 |
| 1N1738 | 24.8 | 80 | 0.01 | 0.200 | 800 | 14.15 | 10.65 |
| 1N1738A | 24.8 | 80 | 0.005 | 0.100 | 800 | 16.20 | 12.20 |
| 1N1739 | 31.0 | 100 | 0.01 | 0.250 | 1000 | 17.50 | 13.15 |
| 1N1739A | 31.0 | 100 | 0.005 | 0.125 | 1000 | 20.60 | 15.50 |
| 1N1740 | 37.2 | 120 | 0.01 | 0.300 | 1200 | 20.30 | 15.25 |
| 1N1740A | 37.2 | 120 | 0.005 | 0.150 | 1200 | 24.60 | 18.50 |
| 1N1741 | 43.4 | 140 | 0.01 | 0.350 | 1400 | 24.35 | 18.30 |
| 1N1741A | 43.4 | 140 | 0.005 | 0.175 | 1400 | 28.60 | 21.50 |
| 1N1742 | 49.6 | 180 | 0.01 | 0.400 | 1600 | 27.65 | 20.80 |
| 1N1742A* | 49.6 | 180 | 0.005 | 0.200 | 1600 | 32.20 | 24.20 |

*JAN type also available. †Case 53. ‡Case 57. §$I_{ZT} = 10$ mA.

# MOTOROLA Semiconductors Silicon Rectifiers

## HIGH-CURRENT RECTIFIERS

Ratings at 150° C. **Mounting Type Suffix: FB** flat-mount with flexible braided lead; **FL** flat-mount (A) MR1200–MR1209 or flat-mount (B) all others, with solid lug terminal; **SB** stud-mount with flexible braided lead; **SL** stud mount with solid lug terminal. For reverse polarity add final suffix **R** (MR1210**SBR**); same price.

### 50 AMPERES TYPE

$I_O = 50$ A; $I_{FM(surge)} = 800$ A; $I_{R(AV)} = 10$ mA. Available flat-mount (A) only.

| Motorola Type | $V_{RM}$ (rep) Volts | Net Each, Lots of 1-24 | 25-99 | 100-199 |
|---|---|---|---|---|
| **MR1200 FL** | 50 | $ 4.00 | $3.60 | ...... |
| **MR1201 FL** | 100 | 4.10 | 3.70 | ...... |
| **MR1202 FL** | 150 | 5.60 | 5.05 | ...... |
| **MR1203 FL** | 200 | 5.60 | 5.05 | $4.20 |
| **MR1204 FL** | 250 | 6.40 | 5.75 | 4.80 |
| **MR1205 FL** | 300 | 6.40 | 5.75 | 4.80 |
| **MR1206 FL** | 350 | 7.30 | 6.60 | 5.50 |
| **MR1207 FL** | 400 | 7.30 | 6.60 | 5.50 |
| **MR1208 FL** | 500 | 8.65 | 7.80 | 6.50 |
| **MR1209 FL** | 600 | 10.30 | 9.30 | 7.75 |

### 100 AMPERES TYPE

$I_O = 100$ amps; $I_{FM(surge)} = 2000$ amps; $I_{R(AV)} = 15$ mA. Mounting type **SL** also available at lower price.

| Motorola Type | $V_{RM}$ (rep) Volts | Net Each, Lots of 1-24 | 25-99 | 100-199 |
|---|---|---|---|---|
| **MR1210 SB** | 50 | $ 5.20 | $ 4.70 | $ 3.90 |
| **MR1211 SB** | 100 | 5.65 | 5.10 | 4.25 |
| **MR1212 SB** | 150 | 7.00 | 6.30 | 5.25 |
| **MR1213 SB** | 200 | 7.00 | 6.30 | 5.25 |
| **MR1214 SB** | 250 | 8.15 | 7.40 | 6.15 |
| **MR1215 SB** | 300 | 8.15 | 7.40 | 6.15 |
| **MR1216 SB** | 350 | 10.35 | 9.35 | 7.80 |
| **MR1217 SB** | 400 | 10.35 | 9.35 | 7.80 |
| **MR1218 SB** | 500 | 11.30 | 10.20 | 8.50 |
| **MR1219 SB** | 600 | 13.55 | 12.25 | 10.20 |

### 200 AMPERES TYPE

$I_O = 200$ A; $I_{FM(surge)} = 3600$ A; $I_{R(AV)} = 20$ mA. Mounting types **FB**, **FL** (**B**) and **SB** available; prices same as type **SL**.

| Motorola Type | $V_{RM}$ (rep) Volts | Net Each, Lots of 1-24 | 25-99 | 100-199 |
|---|---|---|---|---|
| **MR1220 SL** | 50 | $11.95 | $10.80 | $ 9.00 |
| **MR1221 SL** | 100 | 11.95 | 10.80 | 9.00 |
| **MR1222 SL** | 150 | 12.65 | 11.40 | 9.50 |
| **MR1223 SL** | 200 | 12.65 | 11.40 | 9.50 |
| **MR1224 SL** | 250 | 15.30 | 13.80 | 11.50 |
| **MR1225 SL** | 300 | 15.30 | 13.80 | 11.50 |
| **MR1226 SL** | 350 | 17.95 | 16.20 | 13.50 |
| **MR1227 SL** | 400 | 17.95 | 16.20 | 13.50 |
| **MR1228 SL** | 500 | 19.95 | 18.00 | 15.00 |
| **MR1229 SL** | 600 | 23.95 | 21.60 | 18.00 |

### 300 AMPERES TYPE

$I_O = 300$ A; $I_{FM(surge)} = 5000$ A; $I_{R(AV)} = 35$ mA. Mounting type **SB** and **SL** available; prices same as **FB.** Mounting type **FL** flat-mount (B) also available at lower price.

| Motorola Type | $V_{RM}$ (rep) Volts | Net Each, Lots of 1-24 | 25-99 | 100-199 |
|---|---|---|---|---|
| **MR1230 FB** | 50 | $15.30 | $13.80 | $11.50 |
| **MR1231 FB** | 100 | 16.30 | 14.70 | 12.25 |
| **MR1232 FB** | 150 | 17.30 | 15.60 | 13.00 |
| **MR1233 FB** | 200 | 17.30 | 15.60 | 13.00 |
| **MR1234 FB** | 250 | 19.60 | 17.70 | 14.75 |
| **MR1235 FB** | 300 | 19.60 | 17.70 | 14.75 |
| **MR1236 FB** | 350 | 24.25 | 21.90 | 18.25 |
| **MR1237 FB** | 400 | 24.25 | 21.90 | 18.25 |
| **MR1238 FB** | 500 | 27.95 | 25.20 | 21.00 |
| **MR1239 FB** | 600 | 34.60 | 31.20 | 26.00 |

### 450 AMPERES TYPE

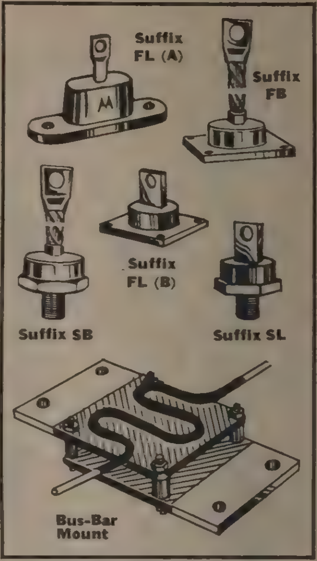
$I_O = 450$ A; $I_{FM(surge)} = 8000$ A; $I_{R(AV)} = 50$ mA. Mounting type **FB** and **SL** available; prices same as **SB.** Mounting type **FL** flat-mount (B) also available at lower price.

| Motorola Type | $V_{RM}$ (rep) Volts | Net Each, Lots of 1-24 | 25-99 | 100-199 |
|---|---|---|---|---|
| **MR1240 SB** | 50 | $23.95 | $21.60 | $18.00 |
| **MR1241 SB** | 100 | 23.95 | 21.60 | 18.00 |
| **MR1242 SB** | 150 | 25.25 | 22.80 | 19.00 |
| **MR1243 SB** | 200 | 25.25 | 22.80 | 19.00 |
| **MR1244 SB** | 250 | 27.95 | 25.20 | 21.00 |
| **MR1245 SB** | 300 | 27.95 | 25.20 | 21.00 |
| **MR1246 SB** | 350 | 31.40 | 28.30 | 23.60 |
| **MR1247 SB** | 400 | 31.40 | 28.30 | 23.60 |
| **MR1248 SB** | 500 | 45.20 | 40.80 | 34.00 |
| **MR1249 SB** | 600 | 66.50 | 60.00 | 50.00 |

### 700 AMPERES TYPE

$I_O = 700$ A; $I_{FM(surge)} = 12{,}000$ A; $I_{R(AV)} = 100$ mA. Available flat-mount (B) only.

| Motorola Type | $V_{RM}$ (rep) Volts | Net Each, Lots of 1-24 | 25-99 | 100-199 |
|---|---|---|---|---|
| **MR1260 FL** | 50 | $46.55 | $42.00 | $35.00 |
| **MR1261 FL** | 100 | 46.55 | 42.00 | 35.00 |
| **MR1262 FL** | 150 | 55.20 | 49.80 | 41.50 |
| **MR1263 FL** | 200 | 55.20 | 49.80 | 41.50 |
| **MR1264 FL** | 250 | 61.20 | 55.20 | 46.00 |
| **MR1265 FL** | 300 | 61.20 | 55.20 | 46.00 |
| **MR1266 FL** | 350 | 67.85 | 61.20 | 51.00 |
| **MR1267 FL** | 400 | 67.85 | 61.20 | 51.00 |
| **MR1268 FL** | 500 | 82.45 | 74.40 | 62.00 |
| **MR1269 FL** | 600 | 99.75 | 90.00 | 75.00 |



### 1000 AMP WATER COOLED

Bus-bar mount; water cooled. $I_O = 1000$ A; $I_{FM(surge)} = 18{,}000$ A; $I_{R(AV)} = 200$ mA.

| Motorola Type | $V_{RM}$ (rep) Volts | Net Each, Lots of 1-24 | 25-99 |
|---|---|---|---|
| **MR1290** | 50 | $ 60.00 | $ 54.00 |
| **MR1291** | 100 | 66.50 | 60.00 |
| **MR1292** | 150 | 76.50 | 69.00 |
| **MR1293** | 200 | 76.50 | 69.00 |
| **MR1294** | 250 | 87.50 | 79.00 |
| **MR1295** | 300 | 87.50 | 79.00 |
| **MR1296** | 350 | 98.50 | 88.75 |
| **MR1297** | 400 | 98.50 | 88.75 |
| **MR1298** | 500 | 152.95 | 138.00 |
| **MR1299** | 600 | 199.50 | 180.00 |

## FAST SWITCHING POWER RECTIFIERS

Ratings at 75° C except $I_R$ at 100° C. $t_{rr} = 0.2$ μsec maximum except as otherwise noted. Reverse polarity available as noted.

| Motorola Type | Case | $V_{RM}$ (rep) V | $I_O$ A | $I_{FM}$ (surge) A | $I_R$ mA | Net Ea., Lots of 1-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| **1N4933, R** | 59 | 50 | 1.0 | 30 | 0.1 | $ 1.12 | $0.75 |
| **1N4934, R** | 59 | 100 | 1.0 | 30 | 0.1 | 1.42 | .95 |
| **1N4935, R** | 59 | 200 | 1.0 | 30 | 0.1 | 1.65 | 1.10 |
| **1N4936, R** | 59 | 400 | 1.0 | 30 | 0.1 | 2.45 | 1.65 |
| **1N4937, R** | 59 | 600 | 1.0 | 30 | 0.1 | 3.90 | 2.60 |
| **MR810*** | 59 | 50 | 0.75 | 30 | 0.2 | .67 | .45 |
| **MR811*** | 59 | 100 | 0.75 | 30 | 0.2 | .75 | .50 |
| **MR812*** | 59 | 200 | 0.75 | 30 | 0.2 | .97 | .65 |
| **MR814*** | 59 | 400 | 0.75 | 30 | 0.2 | 1.27 | .85 |
| **MR816*** | 59 | 600 | 0.75 | 30 | 0.2 | 2.40 | 1.60 |
| **MR830** | 60 | 50 | 3.0 | 100 | 2.5 | 2.40 | 1.60 |
| **MR831** | 60 | 100 | 3.0 | 100 | 2.5 | 2.75 | 1.85 |
| **MR832** | 60 | 200 | 3.0 | 100 | 2.5 | 3.35 | 2.25 |
| **MR834** | 60 | 400 | 3.0 | 100 | 2.5 | 5.60 | 3.75 |
| **MR836** | 60 | 600 | 3.0 | 100 | 2.5 | 9.35 | 6.25 |
| **MR840*** | 60 | 50 | 3.0 | 100 | 3.5 | 1.27 | .85 |
| **MR841*** | 60 | 100 | 3.0 | 100 | 3.5 | 1.42 | .95 |
| **MR842*** | 60 | 200 | 3.0 | 100 | 3.5 | 1.80 | 1.20 |
| **MR844*** | 60 | 400 | 3.0 | 100 | 3.5 | 2.55 | 1.70 |
| **MR846*** | 60 | 600 | 3.0 | 100 | 3.5 | 5.60 | 3.75 |
| **MR1337-1** | 52 | 50 | 0.75 | 30 | 0.75† | 3.35 | 2.25 |
| **MR1337-2** | 52 | 100 | 0.75 | 30 | 0.75† | 4.95 | 3.30 |
| **MR1337-3** | 52 | 200 | 0.75 | 30 | 0.75† | 6.75 | 4.50 |
| **MR1337-4** | 52 | 300 | 0.75 | 30 | 0.75† | 9.00 | 6.00 |
| **MR1337-5** | 52 | 400 | 0.75 | 30 | 0.75† | 12.00 | 8.00 |

Ratings at 100° C. $t_{rr} = 0.2$ μsec max. Add suffix **R** for reverse polarity; same price.

| Motorola Type | Case | $V_{RM}$ (rep) V | $I_O$ A | $I_{FM}$ (surge) A | $I_R$ mA | Net Ea., Lots of 1-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| **1N3879** | 56A | 50 | 6.0 | 75 | 1.0 | $ 3.60 | $2.40 |
| **1N3880** | 56A | 100 | 6.0 | 75 | 1.0 | 3.90 | 2.60 |
| **1N3881** | 56A | 200 | 6.0 | 75 | 1.0 | 5.70 | 3.80 |
| **1N3882** | 56A | 300 | 6.0 | 75 | 1.0 | 8.10 | 5.40 |
| **1N3883** | 56A | 400 | 6.0 | 75 | 1.0 | 10.20 | 6.80 |
| **1N3889** | 56A | 50 | 12 | 150 | 3.0 | 4.20 | 2.80 |
| **1N3890** | 56A | 100 | 12 | 150 | 3.0 | 4.50 | 3.00 |
| **1N3891** | 56A | 200 | 12 | 150 | 3.0 | 6.30 | 4.20 |
| **1N3892** | 56A | 300 | 12 | 150 | 3.0 | 9.00 | 6.00 |
| **1N3893** | 56A | 400 | 12 | 150 | 3.0 | 11.70 | 7.80 |
| **1N3899** | 42 | 50 | 20 | 225 | 6.0 | 5.85 | 3.90 |
| **1N3900** | 42 | 100 | 20 | 225 | 6.0 | 6.60 | 4.40 |
| **1N3901** | 42 | 200 | 20 | 225 | 6.0 | 8.85 | 5.90 |

*$t_{rr} = 1.0$ μsec maximum. †$I_{R(AV)}$ at 75° C.

Ratings at 100° C. $t_{rr} = 0.2$ μsec max. except as noted. Add suffix **R** for reverse polarity; same price.

| Motorola Type | Case | $V_{RM}$ (rep) V | $I_O$ A | $I_{FM}$ (surge) A | $I_R$ mA | Net Ea., Lots of 1-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| **1N3902** | 42 | 300 | 20 | 225 | 6.0 | $11.25 | $ 7.50 |
| **1N3903** | 42 | 400 | 20 | 225 | 6.0 | 14.70 | 9.80 |
| **1N3909** | 42 | 50 | 30 | 330 | 10 | 6.75 | 4.50 |
| **1N3910** | 42 | 100 | 30 | 330 | 10 | 7.50 | 5.00 |
| **1N3911** | 42 | 200 | 30 | 330 | 10 | 10.50 | 7.00 |
| **1N3912** | 42 | 300 | 30 | 330 | 10 | 13.80 | 9.20 |
| **1N3913** | 42 | 400 | 30 | 330 | 10 | 18.00 | 12.00 |
| **MR880*** | 56A | 50 | 12 | 200 | 4.0 | 2.10 | 1.40 |
| **MR881*** | 56A | 100 | 12 | 200 | 4.0 | 2.45 | 1.65 |
| **MR882*** | 56A | 200 | 12 | 200 | 4.0 | 3.30 | 2.20 |
| **MR884*** | 56A | 400 | 12 | 200 | 4.0 | 5.25 | 3.50 |
| **MR886*** | 56A | 600 | 12 | 200 | 4.0 | 6.75 | 4.50 |
| **MR890*** | 56A | 50 | 30 | 350 | 15 | 3.75 | 2.50 |
| **MR891*** | 56A | 100 | 30 | 350 | 15 | 4.20 | 2.80 |
| **MR892*** | 56A | 200 | 30 | 350 | 15 | 5.15 | 3.45 |
| **MR894*** | 56A | 400 | 30 | 350 | 15 | 10.35 | 6.90 |
| **MR896*** | 56A | 600 | 30 | 350 | 15 | 14.90 | 9.95 |
| **MR1366** | 56A | 600 | 6.0 | 75 | 1.0 | 12.00 | 8.00 |
| **MR1376** | 56A | 600 | 12 | 150 | 3.0 | 15.00 | 10.00 |
| **MR1386** | 42 | 600 | 20 | 225 | 6.0 | 18.75 | 12.50 |
| **MR1396** | 42 | 600 | 30 | 330 | 10 | 24.00 | 16.00 |

*$t_{rr} = 1.0$ μsec maximum.

## MULTIPLE SWITCHING ECONOMY DIODES (CASE 29)

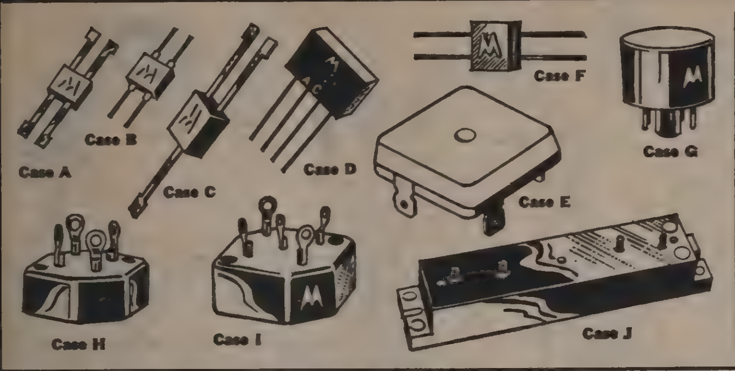
$T_J = 135°$ C, $I_F = 200$ mA. $V_{(BR)}$ at $I_{BR} = 100$ μA; C at $V_R$ = zero; $t_{rr}$ at $I_R = 10$ mA. Common cathode except MSD6150, common anode.

| Motorola Type | Min. $V_{(BR)}$ Volts | Maximum C pF | Maximum $t_{rr}$ nsec | Net Each, Lots of 1-99 | 100-999 |
|---|---|---|---|---|---|
| **MSD6100** | 100 | 1.5 | 4.0 | $0.36 | $0.24 |
| **MSD6101** | 50 | 2.0 | 10 | .40 | .27 |
| **MSD6102** | 70 | 3.0 | 100 | .30 | .20 |
| **MSD6150** | 70 | 3.5 | 100 | .37 | .25 |

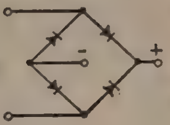
**LARGER QUANTITY PRICES AVAILABLE ON REQUEST.**

**SEE PREVIOUS PAGE FOR ADDITIONAL CASE ILLUSTRATIONS.**

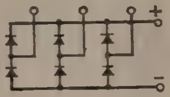
# MOTOROLA Semiconductors RECTIFIER ASSEMBLIES



SINGLE PHASE FULL WAVE BRIDGE



THREE PHASE FULL WAVE BRIDGE



## MIDA* RECTIFIER ASSEMBLIES

Single-phase rectifier circuits in small, integral packages. Suffix A (MDA920A-1, MDA930A-1) indicates round leads.

### 1 AMP FULL WAVE BRIDGE

| Motorola Type | | $V_{RM}$ (rep) Volts | Net Each, Lots of | | |
|---|---|---|---|---|---|
| Case A | Case B | | 1-24 | 25-99 | 100-999 |
| MDA920-1 | MDA920A-1 | 25 | $1.42 | $1.26 | $0.95 |
| MDA920-2 | MDA920A-2 | 50 | 1.69 | 1.50 | 1.13 |
| MDA920-3 | MDA920A-3 | 100 | 1.95 | 1.73 | 1.30 |
| MDA920-4 | MDA920A-4 | 200 | 2.30 | 2.05 | 1.55 |
| MDA920-5 | MDA920A-5 | 300 | 2.40 | 2.10 | 1.60 |
| MDA920-6 | MDA920A-6 | 400 | 2.45 | 2.20 | 1.65 |
| MDA920-7 | MDA920A-7 | 600 | 3.20 | 2.85 | 2.15 |

### 0.5 AMP VOLTAGE DOUBLER (CASE C)

| Motorola Type | | $V_{RM}$ (rep) Volts | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-24 | 25-99 | 100-999 |
| MDA930-1 | MDA930A-1 | 25 | $0.82 | $0.73 | $0.55 |
| MDA930-2 | MDA930A-2 | 50 | .90 | .80 | .60 |
| MDA930-3 | MDA930A-3 | 100 | .97 | .86 | .65 |
| MDA930-4 | MDA930A-4 | 200 | 1.14 | 1.01 | .76 |
| MDA930-5 | MDA930A-5 | 300 | 1.21 | 1.08 | .81 |
| MDA930-6 | MDA930A-6 | 400 | 1.27 | 1.13 | .85 |
| MDA930-7 | MDA930A-7 | 600 | 1.65 | 1.46 | 1.10 |

### 1 AMP CENTER TAP COMMON CATHODE (CASE C)

| | | | | | |
|---|---|---|---|---|---|
| MDA940-1 | MDA940A-1 | 25 | $0.82 | $0.73 | $0.55 |
| MDA940-2 | MDA940A-2 | 50 | .90 | .80 | .60 |
| MDA940-3 | MDA940A-3 | 100 | .97 | .86 | .65 |
| MDA940-4 | MDA940A-4 | 200 | 1.14 | 1.01 | .76 |
| MDA940-5 | MDA940A-5 | 300 | 1.21 | 1.08 | .81 |
| MDA940-6 | MDA940A-6 | 400 | 1.27 | 1.13 | .85 |
| MDA940-7 | MDA940A-7 | 600 | 1.65 | 1.46 | 1.10 |

### 1 AMP CENTER TAP COMMON ANODE

| Motorola Type | | $V_{RM}$ (rep) Volts | Net Each, Lots of | | |
|---|---|---|---|---|---|
| Case A | Case B | | 1-24 | 25-99 | 100-999 |
| MDA950-1 | MDA950A-1 | 25 | $0.82 | $0.73 | $0.55 |
| MDA950-2 | MDA950A-2 | 50 | .90 | .80 | .60 |
| MDA950-3 | MDA950A-3 | 100 | .97 | .86 | .65 |
| MDA950-4 | MDA950A-4 | 200 | 1.14 | 1.01 | .76 |
| MDA950-5 | MDA950A-5 | 300 | 1.21 | 1.08 | .81 |
| MDA950-6 | MDA950A-6 | 400 | 1.27 | 1.13 | .85 |
| MDA950-7 | MDA950A-7 | 600 | 1.65 | 1.46 | 1.10 |

### 1.8 AMP FULL WAVE BRIDGE (CASE F)

| Motorola Type MDA | $V_{RM}$ V | Net Ea., Lots of | | | Motorola Type MDA | $V_{RM}$ V | Net Ea., Lots of | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-999 | | | 1-24 | 25-99 | 100-999 |
| 922-1 | 25 | $1.87 | $1.66 | $1.25 | 922-6 | 400 | $3.20 | $2.85 | $2.15 |
| 922-2 | 50 | 2.00 | 1.79 | 1.35 | 922-7 | 600 | 3.75 | 3.30 | 2.50 |
| 922-3 | 100 | 2.30 | 2.05 | 1.55 | 922-8 | 800 | 4.50 | 4.00 | 3.00 |
| 922-4 | 200 | 2.75 | 2.45 | 1.85 | 922-9 | 1000 | 5.60 | 5.00 | 3.75 |
| 922-5 | 300 | 2.90 | 2.60 | 1.95 | | | | | |

### 2.5 AMP FULL WAVE BRIDGE (CASE D)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 960-1 | 50 | $2.90 | $2.55 | $1.95 | 960-3 | 200 | $3.75 | $3.30 | $2.50 |
| 960-2 | 100 | 3.35 | 2.95 | 2.25 | | | | | |

### 4.0 AMP FULL WAVE BRIDGE (CASE D)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 970-1 | 50 | $3.20 | $2.90 | $2.15 | 970-3 | 200 | $4.10 | $3.70 | $2.75 |
| 970-2 | 100 | 3.65 | 3.30 | 2.45 | | | | | |

### FULL WAVE BRIDGE (FIG. E)

MDA980 series rated 12 amps: MDA990 series rated 25 amps.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 980-1 | 50 | $3.20 | $2.90 | $2.40 | 990-1 | 50 | $4.00 | $3.60 | $3.00 |
| 980-2 | 100 | 3.45 | 3.10 | 2.60 | 990-2 | 100 | 4.25 | 3.85 | 3.20 |
| 980-3 | 200 | 4.05 | 3.65 | 3.05 | 990-3 | 200 | 4.80 | 4.30 | 3.60 |
| 980-4 | 300 | 4.50 | 4.10 | 3.40 | 990-4 | 300 | 5.30 | 4.80 | 4.00 |
| 980-5 | 400 | 5.05 | 4.55 | 3.80 | 990-5 | 400 | 5.80 | 5.20 | 4.35 |
| 980-6 | 600 | 6.90 | 6.25 | 5.20 | 990-6 | 600 | 7.85 | 7.10 | 5.90 |

*Motorola trademark for Miniature Integral Diode Assemblies.

## MOLDED RECTIFIER BRIDGE ASSEMBLIES

Individual hermetically sealed rectifiers interconnected and encapsulated in molded assemblies for use as single-phase and three-phase full wave bridge configurations.

### 1.5 AMP SINGLE-PHASE FULL WAVE

| Motorola Type | Case | Amps | $V_{RM}$ (rep) Volts | Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 1-24 | 25-99 | 100-999 |
| MDA942-1 | F | 1.5 | 50 | $2.50 | $2.20 | $1.85 |
| MDA942-2 | F | 1.5 | 100 | 2.80 | 2.50 | 2.10 |
| MDA942-3 | F | 1.5 | 200 | 3.25 | 2.95 | 2.45 |
| MDA942-4 | F | 1.5 | 300 | 3.70 | 3.35 | 2.80 |
| MDA942-5 | F | 1.5 | 400 | 4.20 | 3.80 | 3.15 |
| MDA942-6 | F | 1.5 | 600 | 4.65 | 4.20 | 3.50 |
| MDA942A-1 | D | 1.5 | 50 | 2.60 | 2.35 | 1.95 |
| MDA942A-2 | D | 1.5 | 100 | 2.90 | 2.65 | 2.20 |
| MDA942A-3 | D | 1.5 | 200 | 3.40 | 3.05 | 2.55 |
| MDA942A-4 | D | 1.5 | 300 | 3.85 | 3.50 | 2.90 |
| MDA942A-5 | D | 1.5 | 400 | 4.30 | 3.90 | 3.25 |
| MDA942A-6 | D | 1.5 | 600 | 4.80 | 4.30 | 3.60 |

### 4 AMP SINGLE-PHASE FULL WAVE

| | | | | | | |
|---|---|---|---|---|---|---|
| MDA1591-1 | G | 4.0 | 50 | $3.35 | $3.00 | $2.50 |
| MDA1591-2 | G | 4.0 | 100 | 3.50 | 3.30 | 2.75 |
| MDA1591-3 | G | 4.0 | 200 | 4.55 | 4.00 | 3.30 |
| MDA1591-4 | G | 4.0 | 300 | 4.90 | 4.45 | 3.70 |
| MDA1591-5 | G | 4.0 | 400 | 5.65 | 5.10 | 4.25 |
| MDA1591-6 | G | 4.0 | 600 | 7.05 | 6.40 | 5.30 |

### 6 AMP SINGLE-PHASE FULL WAVE

For PC insertion (w/o solder lugs) specify MDA952A; prices on request.

| Motorola Type | Case | Amps | $V_{RM}$ (rep) Volts | Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 1-24 | 25-99 | 100-999 |
| MDA952-1 | H | 6.0 | 50 | $3.25 | $2.95 | $2.45 |
| MDA952-2 | H | 6.0 | 100 | 3.50 | 3.20 | 2.65 |
| MDA952-3 | H | 6.0 | 200 | 4.45 | 4.00 | 3.35 |
| MDA952-4 | H | 6.0 | 300 | 4.90 | 4.45 | 3.70 |
| MDA952-5 | H | 6.0 | 400 | 6.00 | 5.40 | 4.50 |
| MDA952-6 | H | 6.0 | 600 | 7.30 | 6.60 | 5.50 |

### 10-AMP SINGLE-PHASE FULL WAVE

For PC insertion (w/o solder lugs) specify MDA962A; prices on request.

| | | | | | | |
|---|---|---|---|---|---|---|
| MDA962-1 | H | 10 | 50 | $3.65 | $3.30 | $2.75 |
| MDA962-2 | H | 10 | 100 | 3.90 | 3.55 | 2.95 |
| MDA962-3 | H | 10 | 200 | 4.85 | 4.40 | 3.65 |
| MDA962-4 | H | 10 | 300 | 5.30 | 4.80 | 4.00 |
| MDA962-5 | H | 10 | 400 | 6.40 | 5.75 | 4.80 |
| MDA962-6 | H | 10 | 600 | 7.85 | 7.10 | 5.90 |

### 16-AMP SINGLE-PHASE FULL WAVE

| | | | | | | |
|---|---|---|---|---|---|---|
| MDA972-1 | J | 16 | 50 | $12.05 | $10.90 | $ 9.05 |
| MDA972-2 | J | 16 | 100 | 12.80 | 11.55 | 9.60 |
| MDA972-3 | J | 16 | 200 | 14.30 | 12.90 | 10.75 |
| MDA972-4 | J | 16 | 300 | 15.70 | 14.20 | 11.80 |
| MDA972-5 | J | 16 | 400 | 17.20 | 15.50 | 12.95 |

### 8-AMP THREE-PHASE FULL WAVE

For PC insertion (w/o solder lugs) specify MDA1505A; prices on request.

| Motorola Type | Case | Amps | $V_{RM}$ (rep) Volts | Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 1-24 | 25-99 | 100-999 |
| MDA1505-1 | I | 8.0 | 50 | $ 5.65 | $5.10 | $4.25 |
| MDA1505-2 | I | 8.0 | 100 | 6.05 | 5.45 | 4.55 |
| MDA1505-3 | I | 8.0 | 200 | 7.32 | 6.60 | 5.50 |
| MDA1505-4 | I | 8.0 | 300 | 7.91 | 7.15 | 5.95 |
| MDA1505-5 | I | 8.0 | 400 | 9.30 | 8.40 | 7.00 |
| MDA1505-6 | I | 8.0 | 600 | 10.45 | 9.42 | 7.85 |

# SILICON CONTROLLED RECTIFIERS (THYRISTORS)

## LOW-CURRENT SILICON CONTROLLED RECTIFIERS

**Case 29:** $I_F = 800$ mA, $I_{GT} = 0.2$ mA. Sensitive gate devices.

| Motorola Type | $V_{FOM}$, $V_{ROM}$* V | Max. $V_F$ V | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|
| 2N5060 | 30 | 1.7 | $0.63 | $0.42 |
| 2N5061 | 60 | 1.7 | .66 | .44 |
| 2N5062 | 100 | 1.7 | .78 | .52 |
| 2N5063 | 150 | 1.7 | .87 | .58 |
| 2N5064 | 200 | 1.7 | .94 | .63 |
| **Case 29:** $I_F = 800$ mA, $I_{GT} = 0.2$ mA. Sensitive gate devices. Plastic SCR. | | | | |
| MCR101 | 15 | 1.7 | $0.42 | $0.28 |
| MCR102 | 30 | 1.7 | .49 | .32 |
| MCR103 | 60 | 1.7 | .60 | .40 |
| MCR104 | 100 | 1.7 | .70 | .46 |
| MCR115 | 150 | 1.7 | .82 | .55 |
| MCR120 | 200 | 1.7 | .90 | .60 |
| **Case 31:** $I_F = 1.6$ A, $I_{GT} = 0.1$ mA. | | | | |
| 2N4212 | 25 | 1.5 | $2.15 | $1.45 |
| 2N4213 | 50 | 1.5 | 2.60 | 1.75 |
| 2N4214 | 100 | 1.5 | 3.30 | 2.20 |
| 2N4215 | 150 | 1.5 | 4.50 | 3.00 |
| 2N4216 | 200 | 1.5 | 4.95 | 3.30 |
| **Case 31:** $I_F = 1.6$ A, $I_{GT} = 1.0$ mA. | | | | |
| MCR1906-1 | 25 | 1.75 | $1.35 | $0.90 |
| MCR1906-2 | 50 | 1.75 | 1.43 | .95 |
| MCR1906-3 | 100 | 1.75 | 1.65 | 1.10 |
| MCR1906-4 | 200 | 1.75 | 1.80 | 1.20 |
| **Case 77:** $I_F = 4.0$ A, $I_{GT} = 0.5$ mA. Sensitive gate devices. Plastic case. | | | | |
| MCR106-1 | 30 | 1.6 | $0.74 | $0.49 |
| MCR106-2 | 60 | 1.6 | .89 | .59 |
| MCR106-3 | 100 | 1.6 | 1.04 | .69 |
| MCR106-4 | 200 | 1.6 | 1.19 | .79 |
| **Case 90:** $I_F = 4.0$ A. MCR406 series are sensitive gate devices; MCR407 series relaxed specification version. | | | | |
| MCR406-1 | 30 | 1.6 | $0.90 | $0.60 |
| MCR406-2 | 60 | 1.6 | 1.05 | .70 |
| MCR406-3 | 100 | 1.6 | 1.12 | .75 |
| MCR406-4 | 200 | 1.6 | 1.27 | .85 |
| MCR407-1 | 30 | 1.6 | .82 | .55 |
| MCR407-2 | 60 | 1.6 | .97 | .65 |
| MCR407-3 | 100 | 1.6 | 1.05 | .70 |
| MCR407-4 | 200 | 1.6 | 1.20 | .80 |
| **Case 90:** $I_F = 8.0$ A, $I_{GT} = 30$ mA. | | | | |
| 2N4441 | 50 | 1.5 | $1.20 | $0.80 |
| 2N4442 | 200 | 1.5 | 1.50 | 1.00 |
| 2N4443 | 400 | 1.5 | 2.00 | 1.35 |
| 2N4444 | 600 | 1.5 | 3.25 | 2.15 |

*Also $V_{FXM}$ and $V_{RXM}$ values.

## RADAR MODULATOR SCRs

**Case 63:** $V_{ROM(rep)} = 50$ V. $I_{FM(rep)} = 100$A at PW = 3.0 μsec, DC = 0.6%. $I_{FM(pulse)} = 100$ A at PW = 10 μsec. $I_{HO} = 3.0$ mA min.; $I_{GT} = 50$ mA max. $I_F = 2.0$ A. $t_{off(pulse)} = 15$ μsec typ. at $T_C = 85°$ C.

| Motorola Type | $V_{FOM}$ V | Net Ea., Lots of 1-24 | 25-99 | 100 Up |
|---|---|---|---|---|
| 2N4199* | 300 | $21.25 | $19.10 | $15.00 |
| 2N4200* | 400 | 28.75 | 25.80 | 20.00 |
| 2N4201* | 500 | 32.50 | 29.10 | 22.50 |
| 2N4202* | 600 | 44.25 | 38.40 | 29.50 |
| 2N4203* | 700 | 51.75 | 45.05 | 34.50 |
| 2N4204* | 800 | 63.75 | 55.70 | 42.50 |

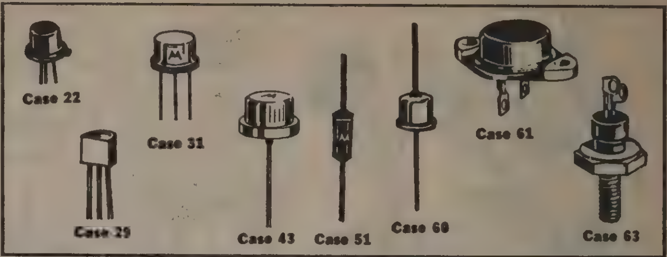
*JAN type available.

**Case 63:** $V_{ROM(rep)} = 50$ V. $I_{FM(rep)} = 300$ amps at PW = 3.0 μsec, DC = 0.6%. $I_{HO} = 1.0$ mA min.; $I_{GT} = 40$ mA max. $t_{off(pulse)} = 7.0$ μsec typ. at $T_C = 85°$ C.

| Motorola Type | $V_{FOM}$ V | $I_F$ A | Net Ea., Lots of 1-24 | 25-99 | 100 Up |
|---|---|---|---|---|---|
| MCR1336-5 | 300 | 1.0 | $20.60 | $18.30 | $13.75 |
| MCR1336-6 | 400 | 1.0 | 28.85 | 25.60 | 19.25 |
| MCR1336-7 | 500 | 1.0 | 33.75 | 29.90 | 22.50 |
| MCR1336-8 | 600 | 1.0 | 44.55 | 39.50 | 29.70 |
| MCR1336-9 | 700 | 1.0 | 52.85 | 46.90 | 35.25 |
| MCR1336-10 | 800 | 1.0 | 66.75 | 59.20 | 44.50 |
| **Case 64:** $V_{ROM(rep)}$ same values as $V_{FOM}$. $I_{FM(pulse)} = 1000$ A at PW = 10 μsec $I_{HO} = 5.0$ mA min.; $I_{GT} = 50$ mA max. $t_{off(pulse)} = 20$ μsec typical at $T_C = 85°$ C. | | | | | |
| MCR1718-5 | 300 | 25 | $25.50 | $22.60 | $17.00 |
| MCR1718-6 | 400 | 25 | 30.00 | 26.60 | 20.00 |
| MCR1718-7 | 500 | 25 | 37.50 | 33.25 | 25.00 |
| MCR1718-8 | 600 | 25 | 45.00 | 39.90 | 30.00 |

## 250 mA COMPLEMENTARY SCR

| Motorola Type | Description | Net Each, Lots 1-99 | 100-999 |
|---|---|---|---|
| MCR1330 | 30 volts | 72c | 48c |
| MCR1350 | 50 volts | 87c | 58c |



$I_{FM(surge)} = 100$ A at $T_J = 100°$ C. $V_F = 1.3$ V at $I_{F(peak)} = 5.0$ A and $T_C = 25°$ C. $I_F = 8$ A.

| Motorola Type | Case | Max. $V_{FOM}$, $V_{ROM}$ V | Net Each, Lots of 1-99 | 100 Up | Motorola Type | Case | Max. $V_{FOM}$, $V_{ROM}$ V | Net Each, Lots of 1-99 | 100 Up |
|---|---|---|---|---|---|---|---|---|---|
| MCR2604-1 | 87 | 25 | $1.55 | $1.15 | 2N4167 | 86 | 25 | $1.60 | $1.20 |
| MCR2604-2 | 87 | 50 | 1.70 | 1.20 | 2N4168 | 86 | 50 | 1.75 | 1.25 |
| MCR2604-3 | 87 | 100 | 1.85 | 1.35 | 2N4169 | 86 | 100 | 1.90 | 1.40 |
| MCR2604-4 | 87 | 200 | 2.05 | 1.45 | 2N4170 | 86 | 200 | 2.10 | 1.50 |
| MCR2604-5 | 87 | 300 | 2.50 | 1.70 | 2N4171 | 86 | 300 | 2.55 | 1.75 |
| MCR2604-6 | 87 | 400 | 2.90 | 1.95 | 2N4172 | 86 | 400 | 2.95 | 2.00 |
| MCR2604-7 | 87 | 500 | 5.10 | 3.45 | 2N4173 | 86 | 500 | 5.15 | 3.50 |
| MCR2604-8 | 87 | 600 | 6.85 | 4.60 | 2N4174 | 86 | 600 | 6.90 | 4.65 |
| MCR2605-1 | 88 | 25 | 1.55 | 1.15 | 2N4175 | 86L | 25 | 1.60 | 1.20 |
| MCR2605-2 | 88 | 50 | 1.70 | 1.20 | 2N4176 | 86L | 50 | 1.75 | 1.25 |
| MCR2605-3 | 88 | 100 | 1.85 | 1.35 | 2N4177 | 86L | 100 | 1.90 | 1.40 |
| MCR2605-4 | 88 | 200 | 2.05 | 1.45 | 2N4178 | 86L | 200 | 2.10 | 1.50 |
| MCR2605-5 | 88 | 300 | 2.50 | 1.70 | 2N4179 | 86L | 300 | 2.55 | 1.75 |
| MCR2605-6 | 88 | 400 | 2.90 | 1.95 | 2N4180 | 86L | 400 | 2.95 | 2.00 |
| MCR2605-7 | 88 | 500 | 5.10 | 3.45 | 2N4181 | 86L | 500 | 5.15 | 3.50 |
| MCR2605-8 | 88 | 600 | 6.85 | 4.60 | 2N4182 | 86L | 600 | 6.90 | 4.65 |
| 2N4151 | 85 | 25 | 1.45 | 1.05 | 2N4183 | 87L | 25 | 1.59 | 1.19 |
| 2N4152 | 85 | 50 | 1.60 | 1.10 | 2N4184 | 87L | 50 | 1.74 | 1.24 |
| 2N4153 | 85 | 100 | 1.75 | 1.25 | 2N4185 | 87L | 100 | 1.89 | 1.39 |
| 2N4154 | 85 | 200 | 1.95 | 1.35 | 2N4186 | 87L | 200 | 2.09 | 1.49 |
| 2N4155 | 85 | 300 | 2.40 | 1.60 | 2N4187 | 87L | 300 | 2.54 | 1.74 |
| 2N4156 | 85 | 400 | 2.80 | 1.85 | 2N4188 | 87L | 400 | 2.94 | 1.99 |
| 2N4157 | 85 | 500 | 5.00 | 3.35 | 2N4189 | 87L | 500 | 5.14 | 3.49 |
| 2N4158 | 85 | 600 | 6.75 | 4.50 | 2N4190 | 87L | 600 | 6.89 | 4.64 |
| 2N4159 | 85L | 25 | 1.45 | 1.05 | 2N4191 | 88L | 25 | 1.59 | 1.19 |
| 2N4160 | 85L | 50 | 1.60 | 1.10 | 2N4192 | 88L | 50 | 1.74 | 1.24 |
| 2N4161 | 85L | 100 | 1.75 | 1.25 | 2N4193 | 88L | 100 | 1.89 | 1.39 |
| 2N4162 | 85L | 200 | 1.95 | 1.35 | 2N4194 | 88L | 200 | 2.09 | 1.49 |
| 2N4163 | 85L | 300 | 2.40 | 1.60 | 2N4195 | 88L | 300 | 2.54 | 1.74 |
| 2N4164 | 85L | 400 | 2.80 | 1.85 | 2N4196 | 88L | 400 | 2.94 | 1.99 |
| 2N4165 | 85L | 500 | 5.00 | 3.35 | 2N4197 | 88L | 500 | 5.14 | 3.49 |
| 2N4166 | 85L | 600 | 6.75 | 4.50 | 2N4198 | 88L | 600 | 6.89 | 4.64 |
| $I_{FM(surge)} = 80$ A at $T_J = 100°$ C. $V_F = 1.6$ V at $I_{F(peak)} = 5.0$ A and $T_C = 25°$ C. $I_F = 8$ A. | | | | | | | | | |
| MCR2315-1 | 86 | 25 | $1.19 | $0.79 | MCR2614L-1 | 87L | 25 | $1.03 | $0.69 |
| MCR2315-2 | 86 | 50 | 1.34 | .89 | MCR2614L-2 | 87L | 50 | 1.18 | .79 |
| MCR2315-3 | 86 | 100 | 1.48 | .99 | MCR2614L-3 | 87L | 100 | 1.33 | .89 |
| MCR2315-4 | 86 | 200 | 1.64 | 1.09 | MCR2614L-4 | 87L | 200 | 1.50 | .99 |
| MCR2315-5 | 86 | 300 | 2.01 | 1.34 | MCR2614L-5 | 87L | 300 | 1.86 | 1.24 |
| MCR2315-6 | 86 | 400 | 2.31 | 1.54 | MCR2614L-6 | 87L | 400 | 2.16 | 1.44 |
| MCR2315-7 | 86 | 500 | 3.51 | 2.34 | MCR2614L-7 | 87L | 500 | 3.36 | 2.24 |
| MCR2315-8 | 86 | 600 | 4.55 | 3.03 | MCR2614L-8 | 87L | 600 | 4.39 | 2.93 |

## MEDIUM-CURRENT SILICON CONTROLLED RECTIFIERS

**Case 174:** $I_F = 20$ A, $I_{GT} = 40$ mA. Add suffix **R** for reverse polarity; prices on request.

| Motorola Type | $V_{FOM}$, $V_{ROM}$* V | Max. $V_F$ V | Net Ea., Lots 1-99 | 100-999 |
|---|---|---|---|---|
| 2N5164 | 50 | 1.5 | $3.30 | $2.20 |
| 2N5165 | 200 | 1.5 | 4.65 | 3.10 |
| 2N5166 | 400 | 1.5 | 6.45 | 4.30 |
| 2N5167 | 600 | 1.5 | 9.75 | 6.50 |
| MCR3818-1 | 25 | 1.5 | 3.00 | 2.00 |
| MCR3818-3 | 100 | 1.5 | 3.75 | 2.50 |
| MCR3818-5 | 300 | 1.5 | 5.55 | 3.70 |
| MCR3818-7 | 500 | 1.5 | 8.85 | 5.90 |
| **Case 175:** $I_F = 20$A, $I_{GT} = 40$ mA. Add suffix **R** for reverse polarity; prices on request. | | | | |
| 2N5168 | 50 | 1.5 | $ 3.70 | $2.45 |
| 2N5169 | 200 | 1.5 | 5.00 | 3.35 |
| 2N5170 | 400 | 1.5 | 6.80 | 4.55 |
| 2N5171 | 600 | 1.5 | 10.10 | 6.75 |
| MCR3918-1 | 25 | 1.5 | 3.40 | 2.25 |
| MCR3918-3 | 100 | 1.5 | 4.10 | 2.75 |
| MCR3918-5 | 300 | 1.5 | 5.90 | 3.95 |
| MCR3918-7 | 500 | 1.5 | 9.20 | 6.15 |
| **Case 61:** $I_F = 20$ A, $I_{GT} = 80$ mA. Also available in Case 54; prices on request. | | | | |
| MCR649-1 | 25 | 1.5 | $ 3.10 | $2.05 |
| MCR649-2 | 50 | 1.5 | 3.45 | 2.30 |
| MCR649-3 | 100 | 1.5 | 3.90 | 2.60 |
| MCR649-4 | 200 | 1.5 | 5.25 | 3.50 |
| MCR649-5 | 300 | 1.5 | 9.90 | 6.60 |
| MCR649-6 | 400 | 1.5 | 11.50 | 7.70 |
| MCR649-7 | 500 | 1.5 | 13.70 | 9.15 |

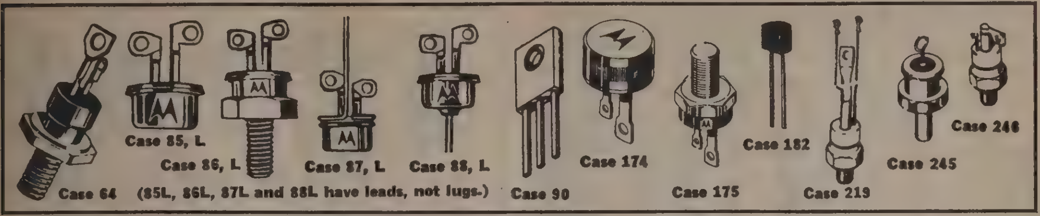
**Case 64:** $I_F = 25$ A, $I_{GT} = 25$ mA.

| Motorola Type | $V_{FOM}$, $V_{ROM}$* V | Max. $V_F$ V | Net Ea., Lots 1-99 | 100 Up |
|---|---|---|---|---|
| 2N681 | 25 | 1.5 | $ 3.30 | $ 2.20 |
| 2N682 | 50 | 1.5 | 4.10 | 2.75 |
| 2N683 | 100 | 1.5 | 5.60 | 3.75 |
| 2N684 | 150 | 1.5 | 6.30 | 4.20 |
| 2N685 | 200 | 1.5 | 6.60 | 4.40 |
| 2N686 | 250 | 1.5 | 6.95 | 4.65 |
| 2N687 | 300 | 1.5 | 14.60 | 9.75 |
| 2N688 | 400 | 1.5 | 17.10 | 11.40 |
| 2N689 | 500 | 1.5 | 20.60 | 13.75 |
| **Case 64:** $I_F = 25$ A, $I_{GT} = 30$ mA. $t_{on} = 0.5$ μsec typ., $t_{off} = 12$ μsec maximum. | | | | |
| MCR1907-1 | 25 | 1.7 | $ 9.00 | $ 6.00 |
| MCR1907-2 | 50 | 1.7 | 9.75 | 6.50 |
| MCR1907-3 | 100 | 1.7 | 11.25 | 7.50 |
| MCR1907-4 | 200 | 1.7 | 16.20 | 10.80 |
| MCR1907-5 | 300 | 1.7 | 24.45 | 16.30 |
| MCR1907-6 | 400 | 1.7 | 29.25 | 19.50 |
| **Case 61:** $I_F = 25$ A, $I_{GT} = 40$ mA. Also available in Case 54; prices on request. | | | | |
| 2N2573 | 25 | 1.4 | $ 3.40 | $ 2.25 |
| 2N2574 | 50 | 1.4 | 3.90 | 2.60 |
| 2N2575 | 100 | 1.4 | 5.00 | 3.35 |
| 2N2576 | 200 | 1.4 | 5.70 | 3.80 |
| 2N2577 | 300 | 1.4 | 11.20 | 7.50 |
| 2N2578 | 400 | 1.4 | 13.00 | 8.65 |
| 2N2579 | 500 | 1.4 | 15.40 | 10.30 |

**LARGER QUANTITY PRICES AVAILABLE ON REQUEST.**
**SEE FOLLOWING PAGE FOR ADDITIONAL CASE ILLUSTRATIONS.**

# MOTOROLA Semiconductors

# THYRISTORS DIODES AND TRIGGERS



## BIDIRECTIONAL THYRISTORS (TRIACS)

Series MAC1, MAC2, MAC3, MAC10, MAC35 and MAC36 have 4 mode triggering; all others have 2 mode triggering.

| Motorola Type | Case | $V_{BOM}$ V | $I_T$ A rms | $I_{GT}$ mA | Net Each, Lots of 1-99 | Net Each, Lots of 100-999 |
|---|---|---|---|---|---|---|
| MAC1-1 | 85 | 25 | 10 | 40 | $ 1.76 | $ 1.17 |
| MAC1-2 | 85 | 50 | 10 | 40 | 1.98 | 1.32 |
| MAC1-3 | 85 | 100 | 10 | 40 | 2.24 | 1.49 |
| MAC1-4 | 85 | 200 | 10 | 40 | 3.30 | 2.20 |
| MAC1-5 | 85 | 300 | 10 | 40 | 4.50 | 3.00 |
| MAC1-6 | 85 | 400 | 10 | 40 | 5.25 | 3.50 |
| MAC1-7 | 85 | 500 | 10 | 40 | 7.35 | 4.90 |
| MAC1-8 | 85 | 600 | 10 | 40 | 10.20 | 6.80 |
| MAC2-1 | 86 | 25 | 10 | 40 | 1.98 | 1.32 |
| MAC2-2 | 86 | 50 | 10 | 40 | 2.20 | 1.47 |
| MAC2-3 | 86 | 100 | 10 | 40 | 2.46 | 1.64 |
| MAC2-4 | 86 | 200 | 10 | 40 | 3.52 | 2.35 |
| MAC2-5 | 86 | 300 | 10 | 40 | 4.72 | 3.15 |
| MAC2-6 | 86 | 400 | 10 | 40 | 5.47 | 3.65 |
| MAC2-7 | 86 | 500 | 10 | 40 | 7.56 | 5.05 |
| MAC2-8 | 86 | 600 | 10 | 40 | 10.42 | 6.95 |
| MAC3-1 | 87L | 25 | 10 | 40 | 1.90 | 1.27 |
| MAC3-2 | 87L | 50 | 10 | 40 | 2.13 | 1.42 |
| MAC3-3 | 87L | 100 | 10 | 40 | 2.38 | 1.59 |
| MAC3-4 | 87L | 200 | 10 | 40 | 3.45 | 2.30 |
| MAC3-5 | 87L | 300 | 10 | 40 | 4.65 | 3.10 |
| MAC3-6 | 87L | 400 | 10 | 40 | 5.40 | 3.60 |
| MAC3-7 | 87L | 500 | 10 | 40 | 7.50 | .......... |
| MAC3-8 | 87L | 600 | 10 | 40 | 10.35 | 6.90 |
| MAC4-1 | 85 | 25 | 10 | 50 | 1.59 | 1.06 |
| MAC4-2 | 85 | 50 | 10 | 50 | 1.79 | 1.19 |
| MAC4-3 | 85 | 100 | 10 | 50 | 2.01 | 1.34 |
| MAC4-4 | 85 | 200 | 10 | 50 | 2.97 | 1.98 |
| MAC4-5 | 85 | 300 | 10 | 50 | 4.05 | 2.70 |
| MAC4-6 | 85 | 400 | 10 | 50 | 4.72 | 3.15 |
| MAC4-7 | 85 | 500 | 10 | 50 | 6.60 | 4.40 |
| MAC5-1 | 86 | 25 | 10 | 50 | 1.79 | 1.19 |
| MAC5-2 | 86 | 50 | 10 | 50 | 1.98 | 1.32 |
| MAC5-3 | 86 | 100 | 10 | 50 | 2.22 | 1.48 |
| MAC5-4 | 86 | 200 | 10 | 50 | 3.18 | 2.12 |
| MAC5-5 | 86 | 300 | 10 | 50 | 4.24 | 2.83 |
| MAC5-6 | 86 | 400 | 10 | 50 | 4.92 | 3.28 |
| MAC5-7 | 86 | 500 | 10 | 50 | 6.81 | 4.54 |
| MAC6-1 | 87L | 25 | 10 | 50 | 1.71 | 1.14 |
| MAC6-2 | 87L | 50 | 10 | 50 | 1.92 | 1.28 |
| MAC6-3 | 87L | 100 | 10 | 50 | 2.14 | 1.43 |
| MAC6-4 | 87L | 200 | 10 | 50 | 3.10 | 2.07 |
| MAC6-5 | 87L | 300 | 10 | 50 | 4.18 | 2.79 |
| MAC6-6 | 87L | 400 | 10 | 50 | 4.85 | 3.24 |
| MAC6-7 | 87L | 500 | 10 | 50 | 6.74 | 4.50 |
| MAC10-1 | 90* | 25 | 10 | 75 | 1.17 | .78 |
| MAC10-2 | 90* | 50 | 10 | 75 | 1.32 | .88 |
| MAC10-3 | 90* | 100 | 10 | 75 | 1.48 | .99 |
| MAC10-4 | 90* | 200 | 10 | 75 | 1.79 | 1.19 |
| MAC10-5 | 90* | 300 | 10 | 75 | 1.88 | 1.32 |
| MAC10-6 | 90* | 400 | 10 | 75 | 2.00 | 1.47 |
| MAC10-7 | 90* | 500 | 10 | 75 | 3.00 | 2.12 |
| MAC10-8 | 90* | 600 | 10 | 75 | 3.90 | 2.60 |
| MAC11-1 | 90* | 25 | 10 | 50 | 1.05 | .70 |
| MAC11-2 | 90* | 50 | 10 | 50 | 1.19 | .79 |
| MAC11-3 | 90* | 100 | 10 | 50 | 1.34 | .89 |
| MAC11-4 | 90* | 200 | 10 | 50 | 1.61 | 1.07 |
| MAC11-5 | 90* | 300 | 10 | 50 | 1.70 | 1.19 |
| MAC11-6 | 90* | 400 | 10 | 50 | 1.82 | 1.32 |
| MAC11-7 | 90* | 500 | 10 | 50 | 2.75 | 1.90 |
| MAC11-8 | 90* | 600 | 10 | 50 | 3.50 | 2.35 |
| MAC35-1 | 174 | 25 | 25 | 100 | 2.55 | 1.70 |
| MAC35-2 | 174 | 50 | 25 | 100 | 3.15 | 2.10 |
| MAC35-3 | 174 | 100 | 25 | 100 | 4.40 | 2.95 |
| MAC35-4 | 174 | 200 | 25 | 100 | 6.10 | 4.05 |
| MAC35-5 | 174 | 300 | 25 | 100 | 8.50 | 5.65 |
| MAC35-6 | 174 | 400 | 25 | 100 | 10.80 | 7.20 |
| MAC35-7 | 174 | 500 | 25 | 100 | 16.05 | 10.70 |
| MAC36-1 | 175 | 25 | 25 | 100 | 2.85 | 1.90 |
| MAC36-2 | 175 | 50 | 25 | 100 | 3.45 | 2.30 |
| MAC36-3 | 175 | 100 | 25 | 100 | 4.70 | 3.15 |
| MAC36-4 | 175 | 200 | 25 | 100 | 6.35 | 4.25 |
| MAC36-5 | 175 | 300 | 25 | 100 | 8.75 | 5.85 |
| MAC36-6 | 175 | 400 | 25 | 100 | 11.10 | 7.40 |
| MAC36-7 | 175 | 500 | 25 | 100 | 16.35 | 10.90 |
| MAC37-1 | 174 | 25 | 25 | 75 | 2.30 | 1.53 |
| MAC37-2 | 174 | 50 | 25 | 75 | 2.84 | 1.89 |
| MAC37-3 | 174 | 100 | 25 | 75 | 3.96 | 2.66 |
| MAC37-4 | 174 | 200 | 25 | 75 | 5.50 | 3.65 |
| MAC37-5 | 174 | 300 | 25 | 75 | 7.64 | 5.08 |
| MAC37-6 | 174 | 400 | 25 | 75 | 9.72 | 6.50 |
| MAC37-7 | 174 | 500 | 25 | 75 | 14.44 | 9.63 |
| MAC38-1 | 175 | 25 | 25 | 75 | 2.56 | 1.71 |
| MAC38-2 | 175 | 50 | 25 | 75 | $ 3.11 | $2.07 |
| MAC38-3 | 175 | 100 | 25 | 75 | 4.23 | 2.84 |
| MAC38-4 | 175 | 200 | 25 | 75 | 5.72 | 3.83 |
| MAC38-5 | 175 | 300 | 25 | 75 | 7.88 | 5.27 |
| MAC38-6 | 175 | 400 | 25 | 75 | 10.00 | 6.66 |
| MAC38-7 | 175 | 500 | 25 | 75 | 14.71 | 9.81 |
| MAC77-1 | 77* | 25 | 4 | 30 | .84 | .56 |
| MAC77-2 | 77* | 50 | 4 | 30 | .95 | .63 |
| MAC77-3 | 77* | 100 | 4 | 30 | 1.07 | .71 |
| MAC77-4 | 77* | 200 | 4 | 30 | 1.17 | .78 |
| MAC77-5 | 77* | 300 | 4 | 30 | 1.23 | .82 |
| MAC77-6 | 77* | 400 | 4 | 30 | 1.28 | .85 |
| MAC77-7 | 77* | 500 | 4 | 30 | 2.23 | 1.50 |
| MAC77-8 | 77* | 600 | 4 | 30 | 3.15 | 2.10 |

*Plastic case; all others metal case.

## POWER THYRISTORS (SCR)

High current thyristors having a current rating of 110 amps rms (70 amps average).

| Motorola Type | Case | $V_{RRM}/V_{DRM}$ Volts | $I_{GT}$ mA | Net Each, Lots of 1-5 | Net Each, Lots of 6-9 | Net Each, Lots of 10-24 |
|---|---|---|---|---|---|---|
| 2N4361 | 219 | 100 | 200 | $ 25.50 | $ 20.25 | $ 15.25 |
| 2N4362 | 219 | 200 | 200 | 28.75 | 22.75 | 17.25 |
| 2N4363 | 219 | 400 | 200 | 40.00 | 31.75 | 24.00 |
| 2N4364 | 219 | 600 | 200 | 54.00 | 42.75 | 32.00 |
| 2N4365 | 219 | 800 | 200 | 80.00 | 63.75 | 47.50 |
| 2N4366 | 219 | 1000 | 200 | 112.00 | 88.75 | 67.50 |
| 2N4367 | 219 | 1200 | 200 | 152.00 | 120.75 | 90.50 |
| 2N4368 | 219 | 1400 | 200 | 251.00 | 200.75 | 150.50 |
| 2N4371 | 246 | 100 | 200 | 24.50 | 19.50 | 14.75 |
| 2N4372 | 246 | 200 | 200 | 27.75 | 22.00 | 16.75 |
| 2N4373 | 246 | 400 | 200 | 39.00 | 31.00 | 23.50 |
| 2N4374 | 246 | 600 | 200 | 53.00 | 42.00 | 31.50 |
| 2N4375 | 246 | 800 | 200 | 79.00 | 63.00 | 47.00 |
| 2N4376 | 246 | 1000 | 200 | 111.00 | 88.00 | 67.50 |
| 2N4377 | 246 | 1200 | 200 | 151.00 | 120.00 | 90.00 |
| 2N4378 | 246 | 1400 | 200 | 250.00 | 200.00 | 150.00 |

## BILATERAL TRIGGER DIODES (CASE 182)

Peak pulse current = 2.0 amps max. at 30 μsec, 120 Hz. Specifications given are both directions.

| Motorola Type | Nom. $V_{(BR)}$ Volts | Max. $I_{(BR)}$ μA | Min. V Volts | Net Each, Lots of 1-99 | Net Each, Lots of 100-999 |
|---|---|---|---|---|---|
| MPT20 | 20 | 100 | 5.0 | $0.53 | $0.35 |
| MPT28 | 28 | 50 | 7.0 | .53 | .35 |
| MPT32 | 32 | 50 | 7.0 | .53 | .35 |

## 4-LAYER DIODES (CASE 51)

Specifications at $T_A = 25°$ C. Peak pulse current = 10 amps at PW = 50 μsec maximum.

| Motorola Type | $V_{(BR)F}$ V | $I_{(BR)F}$ at $V_{(BR)F}$ μA | $I_H$ mA | Net Each, Lots of 1-24 | Net Each, Lots of 25-99 | Net Each, Lots of 100-999 |
|---|---|---|---|---|---|---|
| 1N5158 | 8–10 | 50 | 1–20 | $3.75 | $3.25 | $2.50 |
| 1N5159 | 9–11 | 50 | 1–20 | 3.38 | 2.90 | 2.25 |
| 1N5160 | 10–12 | 50 | 1–20 | 3.75 | 3.25 | 2.50 |

## HOT CARRIER POWER RECTIFIERS

Utilize the Schottky Barrier principle barrier in a large area metal-to-silicon power diode. Very low $V_F$ and high frequency capability. $V_{RRM} = 20$ volts.

| Motorola Type | Case | $I_O$ Amps $T_C = 50°C$ | $I_{FM(surge)}$ Amps | $I_R$ mA | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|
| MBD5300 | 60 | 5.0 | 500 | 30 | $ 5.40 | $3.60 |
| MBD5400 | 245 | 25 | 600 | 30 | 9.00 | 6.00 |
| MBD5500 | 43 | 50 | 800 | 120 | 12.75 | 8.50 |
| MBD5500A | 43 | 50 | 800 | 75 | 12.75 | 8.50 |

## SILICON BIDIRECTIONAL SWITCH

Bilateral switches for Triac control.

| Motorola Type | Case | $V_{(BR)F}$ V | $I_{(BR)F}$ at $V_{(BR)F}$ μA | $I_H$ mA | Net Each, Lots of 1-99 | Net Each, Lots of 100-999 | Net Each, Lots of 1000 Up |
|---|---|---|---|---|---|---|---|
| MBS4991 | 29 | 6–10 | 500 | 1.5 | $0.68 | $0.45 | ...... |
| MBS4992 | 29 | 7.5–9 | 120 | 0.5 | 1.35 | .90 | ...... |
| 2N4993 | 22 | 6–10 | 500 | 1.5 | 1.60 | 1.40 | $1.10 |

## SILICON UNIDIRECTIONAL SWITCH

Unilateral switches for SCR triggering.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MUS4987 | 29 | 6–10 | 500 | 1.5 | $0.65 | $0.43 | ...... |
| MUS4988 | 29 | 7.5–9 | 150 | 0.5 | 1.23 | .82 | ...... |

**LARGER QUANTITY PRICES AVAILABLE ON REQUEST. SEE PREVIOUS PAGE FOR ADDITIONAL CASE ILLUSTRATIONS.**

# MOTOROLA Semiconductors ECONOMY SILICON TRANSISTORS

## NPN-PNP ECONOMY TRANSISTORS (CASE 29)

Plastic silicon annular transistors suitable for low-cost industrial circuits and state-of-the-art consumer product applications. $P_{D(A)} = 310$ mW; $T_J = 135°$ C. NPN except as otherwise noted.

### GENERAL PURPOSE SWITCHING AND AMPLIFIER

| Motorola Type | Maximum $V_{CB}$ V | | $h_{FE}$ at $I_C$ | | Min. $f_T$ MHz | Max. $t_s$ nsec | Net Ea. | |
|---|---|---|---|---|---|---|---|---|
| | $V_{CB}$ V | $V_{CEO}$ V | Min.-Max. | mA | | | 1-99 | 100-999* |
| 2N3903 | 60 | 40 | 50–150 | 10 | 250 | 175 | $0.55 | $0.39 |
| 2N3904 | 60 | 40 | 100–300 | 10 | 300 | 200 | .55 | .39 |
| 2N3905* | 40 | 40 | 50–150 | 10 | 200 | 200 | .55 | .39 |
| 2N3906* | 40 | 40 | 100–300 | 10 | 250 | 225 | .55 | .39 |
| 2N4123 | 40 | 30 | 50–150 | 2.0 | 250 | 125† | .39 | .27 |
| 2N4124 | 30 | 25 | 120–360 | 2.0 | 300 | 125† | .40 | .28 |
| 2N4125* | 30 | 30 | 50–150 | 2.0 | 200 | 140† | .40 | .28 |
| 2N4126* | 25 | 25 | 120–360 | 2.0 | 250 | 140† | .41 | .29 |
| 2N4400 | 60 | 40 | 100–300 | 150 | 200 | 225 | .60 | .40 |
| 2N4401 | 60 | 40 | 50–150 | 150 | 250 | 225 | .75 | .50 |
| 2N4402* | 40 | 40 | 50–150 | 150 | 150 | 225 | .60 | .40 |
| 2N4403* | 40 | 40 | 100–300 | 150 | 200 | 225 | .75 | .50 |
| 2N5209 | 50 | 50 | 150 min. | 1.0 | 30 | ..... | .66 | .44 |
| 2N5210 | 50 | 50 | 250 min. | 1.0 | 30 | ..... | .72 | .48 |
| 2N5845 | 50 | 40 | 25 min. | 500 | 200 | ..... | .75 | .50 |
| MPS404* | 25 | 24 | 30–400 | 12 | ..... | 155† | .37 | .25 |
| MPS404A* | 40 | 35 | 30–400 | 12 | ..... | 155† | .45 | .30 |
| MPS3638* | 25 | 25 | 20 min. | 10 | 100 | 140 | .45 | .30 |
| MPS3638A* | 25 | 25 | 100 min. | 10 | 150 | 140 | .59 | .39 |
| MPS3702* | 40 | 25 | 60–300 | 50 | 100 | ..... | .37 | .31 |
| MPS3703* | 50 | 30 | 30–150 | 50 | 100 | ..... | .34 | .28 |
| MPS3704 | 50 | 30 | 100–300 | 50 | 100 | ..... | .34 | .29 |
| MPS3705 | 50 | 30 | 50–150 | 50 | 100 | ..... | .29 | .25 |
| MPS3706 | 40 | 20 | 30–600 | 50 | 100 | ..... | .27 | .24 |
| MPS6530 | 60 | 40 | 40–120 | 100 | 390† | ..... | .64 | .43 |
| MPS6531 | 60 | 40 | 90–270 | 100 | 390† | ..... | .75 | .50 |
| MPS6532 | 50 | 30 | 30 min. | 100 | 390† | ..... | .54 | .36 |
| MPS6533*‡ | 40 | 40 | 40–120 | 100 | 260† | ..... | .71 | .47 |
| MPS6534*‡ | 40 | 40 | 90–270 | 100 | 260† | ..... | .81 | .54 |
| MPS6535*‡ | 30 | 30 | 30 min. | 100 | 260† | ..... | .60 | .40 |
| MPS6565 | 60 | 45 | 40–160 | 10 | 200 | ..... | .52 | .35 |
| MPS6566 | 60 | 45 | 100–400 | 10 | 200 | ..... | .57 | .38 |
| MPSA16 | 12 | 10 | 200 min. | 5.0 | 100 | ..... | .36 | .24 |
| MPSA17 | 15 | 10 | 200 min. | 5.0 | 100 | ..... | .36 | .24 |
| MPSA42 | 300 | 300 | 25 min. | 1.0 | 50 | ..... | .87 | .58 |
| MPSA43 | 200 | 200 | 25 min. | 1.0 | 50 | ..... | .76 | .52 |
| MPSA92* | 300 | 300 | 25 min. | 1.0 | 50 | ..... | .94 | .63 |
| MPSA93* | 200 | 200 | 25 min. | 1.0 | 50 | ..... | .87 | .58 |
| MPSH07§ | 30 | 30 | 20 min. | 3.0 | 400 | ..... | .68 | .46 |
| MPSH08§ | 30 | 30 | 20 min. | 3.0 | 500 | ..... | .73 | .51 |
| MPSH24§ | 40 | 30 | 30 min. | 8.0 | 400 | ..... | .62 | .41 |
| MPSH34§ | 45 | 45 | 15 min. | 20 | 500 | ..... | .65 | .44 |

*PNP. †Typical. ‡Also audio driver and output application. §$P_D = 500$ mW.

### HIGH-SPEED SATURATED SWITCHING

| Motorola Type | Max. $V_{CEO}$ V | $h_{FE}$ at $I_C = 10$ mA Min.-Max. | Max. $V_{CE(sat)}$ at $I_C$* | | $t_s$ nsec | Net Ea., Lots | |
|---|---|---|---|---|---|---|---|
| | | | V | mA | | 1-99 | 100-999* |
| 2N4264 | 15 | 40–160 | 0.22 | 10 | 20 | $0.48 | $0.32 |
| 2N4265 | 15 | 100–400 | 0.22 | 10 | 20 | .54 | .36 |
| MPS706 | 15 | 20 min. | 0.60 | 10 | 60 | .45 | .30 |
| MPS834 | 15 | 25 min. | 0.25 | 10 | 25 | .52 | .35 |
| MPS2369 | 15 | 40–120 | 0.25 | 10 | 13 | .53 | .35 |
| MPS2713 | 18 | 30–90† | 0.3 | 50 | .... | .41 | .27 |
| MPS2714 | 18 | 75–225† | 0.3 | 50 | .... | .43 | .29 |
| MPS3639‡ | 6.0 | 30–120 | 0.16 | 10 | 20 | .34 | .23 |
| MPS3640‡ | 12 | 30–120 | 0.2 | 10 | 20 | .44 | .29 |
| MPS3646 | 15 | 30–120§ | 0.2 | 30 | 20 | .52 | .34 |

*$I_C/I_B = 10$. †$I_C = 2.0$ mA. ‡PNP. §$I_C = 30$ mA.

### IF AMPLIFIERS

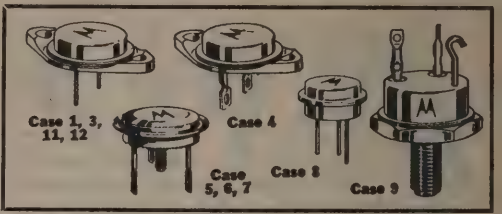
| Motorola Type | Maximum | | $h_{FE}$ at $I_C$ | | Feedback Capacitance | Net Ea., Lots | |
|---|---|---|---|---|---|---|---|
| | $V_{CB}$ V | $V_{EB}$ V | Min.-Max. | mA | | 1-99 | 100-999* |
| MPS6511 | 30 | 3.0 | 25 min. | 10 | $C_{ob}$ = 2.5 | $0.68 | $0.45 |
| MPS6540 | 30 | 4.0 | 25 min. | 2.0 | $C_{cb}$ = 0.65 | .63 | .42 |
| MPS6544 | 60 | 4.0 | 20 min. | 30 | $C_{re}$ = 0.65 | .54 | .36 |
| MPS6545 | 60 | 4.0 | 20 min. | 30 | $C_{re}$ = 0.58 | .84 | .56 |
| MPS6567 | 40 | 5.0 | 25 min. | 10 | $C_{re}$ = 0.7 | 1.00 | .67 |
| MPS6569 | 20 | 3.0 | 20–200 | 4.0 | $C_{cb}$ = 0.5 | 1.11 | .74 |
| MPS6570 | 20 | 3.0 | 20–200 | 4.0 | $C_{cb}$ = 0.5 | .96 | .64 |

### LOW CURRENT SMALL-SIGNAL AMPLIFIERS

| Motorola Type | Max. $V_{CB}$ V | $h_{FE}$ at $I_C$ | | Min. $f_T$ MHz | Net Ea., Lots of | |
|---|---|---|---|---|---|---|
| | | Min.-Max. | mA | | 1-99 | 100-999* |
| 2N5086* | 50 | 250–800 | 0.1 | 40 | $0.75 | $0.50 |
| 2N5087* | 50 | 250–800 | 0.1 | 40 | .81 | .54 |
| 2N5088 | 35 | 300–900 | 0.1 | 50 | .75 | .50 |
| 2N5089 | 30 | 400–1200 | 0.1 | 50 | .98 | .65 |
| MPS918† | 30 | 20 min. | 3.0 | 600 | .83 | .55 |
| MPS3707 | 30 | 100–400 | 0.1 | ....... | .34 | .29 |
| MPS3708 | 30 | 45–600 | 1.0 | ....... | .27 | .24 |
| MPS3709 | 30 | 45–165 | 1.0 | ....... | .29 | .25 |
| MPS3710 | 30 | 90–330 | 1.0 | ....... | .29 | .25 |
| MPS3711 | 30 | 180–660 | 1.0 | ....... | .29 | .25 |
| MPS6520 | 40 | 200–400 | 2.0 | 480‡ | .82 | .55 |
| MPS6521 | 40 | 300–600 | 2.0 | 480‡ | .90 | .60 |
| MPS6522* | 25 | 200–400 | 2.0 | 390 | .90 | .60 |
| MPS6523* | 25 | 300–600 | 2.0 | 390‡ | .97 | .65 |

*PNP. †Also RF amp-osc-mixer applications. ‡Typical.

★LARGER QUANTITY PRICES AVAILABLE ON REQUEST



### MEDIUM CURRENT SMALL-SIGNAL AMPLIFIERS

$h_{FE}$ at $I_C = 2.0$ mA.

| Motorola Type | Max. | | Net Each, Lots of | | Motorola Type | Max. | | Net Each, Lots of | |
|---|---|---|---|---|---|---|---|---|---|
| | $V_{CB}$ V | $h_{FE}$ | 1-99 | 100-999* | | $V_{CB}$ V | $h_{FE}$ | 1-99 | 100-999* |
| MPS2711 | 18 | 90 | 34c | 23c | MPS3396 | 25 | 500 | 45c | 30c |
| MPS2712 | 18 | 225 | 32c | 21c | MPS3397 | 25 | 500 | 43c | 29c |
| MPS2715 | 18 | 90 | 78c | 52c | MPS3398 | 25 | 800 | 41c | 27c |
| MPS2716 | 18 | 225 | 90c | 60c | MPS3721 | 18 | 660 | 34c | 23c |
| MPS2923† | 25 | 180 | 32c | 21c | MPS6512 | 40 | 100 | 54c | 36c |
| MPS2924† | 25 | 300 | 34c | 23c | MPS6513 | 40 | 180 | 57c | 38c |
| MPS2925† | 25 | 470 | 41c | 27c | MPS6514 | 40 | 300 | 60c | 40c |
| MPS2926 | 18 | 470 | 29c | 19c | MPS6515 | 40 | 500 | 64c | 43c |
| MPS3392 | 25 | 300 | 32c | 21c | MPS6516§ | 40 | 100 | 60c | 40c |
| MPS3393 | 25 | 180 | 32c | 21c | MPS6517§ | 40 | 180 | 63c | 42c |
| MPS3394 | 25 | 110 | 27c | 18c | MPS6518§ | 40 | 300 | 67c | 45c |
| MPS3395 | 25 | 500 | 45c | 30c | MPS6519§ | 25 | 500 | 75c | 50c |

†$P_{D(A)} = 200$ mW, $T_J = 125°$ C. §PNP.

### RF AMPLIFIERS

| Motorola Type | Maximum | | $h_{FE}$ at $I_C$ | | Min. $f_T$ MHz | Net Ea., Lots of | |
|---|---|---|---|---|---|---|---|
| | $V_{CEO}$ V | $V_{EB}$ V | Min.-Max. | mA | | 1-99 | 100-999* |
| 2N5208* | 30 | 3.0 | 20–120 | 2.0 | 300 | $0.54 | $0.36 |
| 2N5222 | 20 | 2.0 | 20–1500 | 4.0 | 450 | .24 | .16 |
| MPS3563† | 30 | 2.0 | 20–200 | 8.0 | 600 | .38 | .25 |
| MPS3693 | 45 | 4.0 | 40–160 | 10 | 200 | .44 | .29 |
| MPS3694 | 45 | 4.0 | 100–400 | 10 | 200 | .44 | .29 |
| MPS6539 | 20 | 3.0 | 20 min. | 4.0 | 500 | .60 | .40 |
| MPS6568 | 20 | 3.0 | 20 min. | 4.0 | 375 | 1.50 | 1.00 |
| MPSH04‡ | 80 | 4.0 | 30–120 | 1.5 | 80 | .38 | .24 |
| MPSH54*‡ | 80 | 4.0 | 30–120 | 1.5 | 80 | .40 | .27 |

### DARLINGTON AMPLIFIERS

| Motorola Type | $BV_{CEO}$ V | $h_{FE}$ at $I_C$ | | Min. $f_T$ at $I_C$ | | Net Ea., Lots of | |
|---|---|---|---|---|---|---|---|
| | | Min. | mA | MHz | mA | 1-99 | 100-999* |
| MPSA12 | 20 | 20,000 | 10 | ....... | ...... | $0.67 | $0.45 |
| MPSA13 | 30 | 5,000 | 10 | 125 | 10 | .47 | .32 |
| MPSA14 | 30 | 10,000 | 10 | 125 | 10 | .54 | .36 |
| MPSA65* | 30 | 50,000 | 10 | 100 | 10 | .57 | .38 |
| MPSA66* | 30 | 75,000 | 10 | 100 | 10 | .63 | .42 |
| MPSU95* | 40§ | 25,000 | 200 | 1000 | 200 | 1.26 | .84 |

### HIGH VOLTAGE

| Motorola Type | $BV_{CEO}$ V | $h_{FE}$ at $I_C$ | | Max. $V_{CE(sat)}$ V | Min. $f_T$ at $I_C$ | | Net Each | |
|---|---|---|---|---|---|---|---|---|
| | | Min. | mA | | MHz | mA | 1-99 | 100-999 |
| 2N4409 | 50 | 60 | 1.0 | 0.2 | 60 | 10 | $0.67 | $0.45 |
| 2N4410 | 80 | 60 | 1.0 | 0.2 | 60 | 10 | .96 | .64 |
| 2N5400* | 120 | 40 | 10 | 0.2 | 150 | 10 | .75 | .50 |
| 2N5401* | 150 | 60 | 10 | 0.2 | 100 | 10 | .91 | .61 |
| 2N5550 | 140 | 60 | 10 | 0.15 | 100 | 10 | .69 | .46 |
| 2N5551 | 160 | 80 | 10 | 0.15 | 100 | 10 | .84 | .56 |
| MPSL01 | 120 | 50 | 10 | 0.2 | 60 | 10 | .59 | .39 |
| MPSL51* | 100 | 40 | 50 | 0.25 | 60 | 10 | .61 | .42 |

### MEDIUM POWER UNIWATT (CASE 152)

$P_D = 5.0$ watts at $T_C = 25°$ C except MPSU01, -51, 8 watts; MPSU02, -52, 6 watts; MPSU45. 10 watts.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| MPSU01 | 30 | 70 | 150 | 1.0 | 50 | 50 | $0.85 | $0.57 |
| MPSU02 | 40 | 50 | 150 | 0.4 | 150 | 20 | .89 | .59 |
| MPSU03 | 120 | 40 | 10 | 0.5 | 100 | 50 | 1.35 | .90 |
| MPSU04 | 180 | 40 | 10 | 0.5 | 100 | 50 | 1.50 | 1.00 |
| MPSU05 | 60 | 100 | 250 | 0.6 | 50 | 250 | .90 | .60 |
| MPSU06 | 80 | 100 | 250 | 0.6 | 50 | 250 | 1.05 | .70 |
| MPSU45 | 40 | 25000 | 200 | 1.5 | 1000 | 200 | 1.14 | .76 |
| MPSU51* | 30 | 70 | 150 | 1.0 | 50 | 50 | .90 | .60 |
| MPSU52* | 40 | 50 | 150 | 0.4 | 150 | 20 | .98 | .65 |
| MPSU55* | 60 | 100 | 250 | 0.6 | 50 | 250 | .99 | .66 |
| MPSU56* | 80 | 100 | 250 | 0.6 | 50 | 250 | 1.14 | .76 |

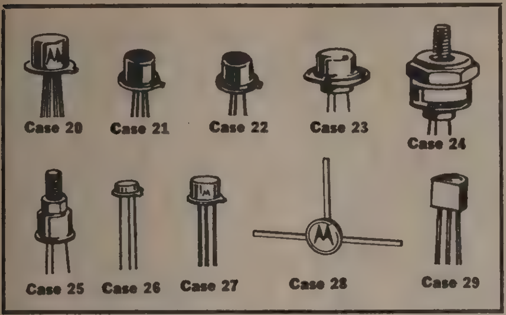
*PNP. †$P_D = 200$ mW, $T_J = 125°$ C. ‡$P_D = 300$ mW. §$V_{CES}$.

### OSCILLATORS AND MIXER TYPES

| Motorola Type | Maximum | | Min. $f_T$ MHz | $P_{out}$ at f | | Net Ea., Lots of | |
|---|---|---|---|---|---|---|---|
| | $V_{CB}$ V | $C_{ob}$ pF | | mW | MHz | 1-99 | 100-999* |
| MPS6507* | 30 | 2.5 | 700 | ..... | ....... | $0.53 | $0.35 |
| MPS6542 | 30 | 1.5 | 700 | ..... | ....... | 1.20 | .80 |
| MPS6543 | 35 | 1.0 | 750 | ..... | ....... | 1.32 | .88 |
| MPS6546 | 35 | 0.35† | 600 | 10 | 118 | 1.24 | .83 |
| MPS6547 | 35 | 0.45† | 600 | 10 | 118 | 1.35 | .90 |
| MPS6548 | 30 | 0.7† | 650 | ..... | ....... | .90 | .60 |
| MPSH05§ | 80 | 1.6‡ | 80 | ..... | ....... | .32 | .21 |
| MPSH55§♯ | 80 | 1.6‡ | 80 | ..... | ....... | .38 | .25 |

*Also medium current small-signal application. †$C_{re}$ value. ‡$C_{ob}$ value. §$P_D = 300$ mW. ♯PNP.

# SWITCHING AND GENERAL PURPOSE TRANSISTORS



## NPN-PNP ECONOMY TRANSISTORS (CASE 29)

$P_D = 310$ mW; $T_J = 135°$ C. NPN except as otherwise noted.

### AUDIO DRIVER AND OUTPUT

| Motorola Type | Maximum $V_{CEO}$ V | Maximum $V_{EB}$ V | $h_{FE}$ at $I_C$ Min.-Max. | $h_{FE}$ at $I_C$ mA | Max. $V_{CE(sat)}$ V | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-999 | Net Ea., Lots of 1000-4999 |
|---|---|---|---|---|---|---|---|---|
| 2N5220 | 15 | 3.0 | 30–600 | 50 | 0.5 | $0.27 | $0.18 | $0.16 |
| 2N5221* | 15 | 3.0 | 30–600 | 50 | 0.5 | .30 | .20 | .18 |
| MPS6560 | 20 | 5.0 | 50 min. | 500 | 0.5 | .48 | .32 | .27 |
| MPS6561 | 20 | 5.0 | 50 min. | 350 | 0.5 | .45 | .30 | .26 |
| MPS6562* | 20 | 5.0 | 50 min. | 500 | 0.5 | .54 | .36 | .31 |
| MPS6563* | 20 | 5.0 | 50 min. | 350 | 0.5 | .51 | .34 | .29 |

*PNP.

### AUDIO PREAMPLIFIER AND PREDRIVER

| Motorola Type | Maximum $V_{CEO}$ V | Maximum $V_{EB}$ V | $h_{FE}$ at $I_C$ Min.-Max. | $h_{FE}$ at $I_C$ mA | Min. $f_T$ MHz | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-999 | Net Ea., Lots of 1000-4999 |
|---|---|---|---|---|---|---|---|---|
| MPS6571 | 20 | 3.0 | 250–1000 | 0.1 | 50 | $0.60 | $0.40 | $0.30 |

### VHF/UHF TRANSISTORS

| Motorola Type | Use | Cap., pF | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-999 | Net Ea., Lots of 1000-4999 |
|---|---|---|---|---|---|
| MPSH19 | For VHF mixer applications | $C_{cb} = .65$ | $0.45 | $0.31 | $0.27 |
| MPSH83 | For UHF RF amplifier appl. | $C_{ce} = .3$ | 1.15 | .75 | .68 |

## GERMANIUM PNP POWER TRANSISTORS

### DIFFUSED BASE (CASE 11)

Diffused base transistors in TO-3 (Case 11) feature graded-base profile for low emitter-base resistance and high-temperature stability; high breakdown voltage capability; higher frequency response and faster switching speeds. Most types also available in TO-41 (Case 4) on request. MP600–MP603, MP2000A–MP2400A, 2N2288–2N2293 and 2N5435–2N5440 alloy diffused epitaxial process.

| Motorola Type | $h_{FE}$ at $I_C$ Min. | $h_{FE}$ at $I_C$ A | $V_{CEO}$ V | $V_{CB}$ V | $P_D$ W | $f_T$ MHz | Net Each, Lots 1-99 | Net Each, Lots 100-999 |
|---|---|---|---|---|---|---|---|---|
| 2N2288 | 20 | 5.0 | 30 | 40 | 106 | 0.7 | $ 2.65 | $ 1.78 |
| 2N2289 | 20 | 5.0 | 50 | 80 | 106 | 0.7 | 4.00 | 2.65 |
| 2N2290 | 20 | 5.0 | 70 | 120 | 106 | 0.7 | 4.95 | 3.30 |
| 2N2291 | 50 | 5.0 | 40 | 40 | 106 | 0.7 | 2.75 | 1.85 |
| 2N2292 | 50 | 5.0 | 50 | 80 | 106 | 0.7 | 6.00 | 4.00 |
| 2N2293 | 50 | 5.0 | 70 | 120 | 106 | 0.7 | 9.85 | 6.57 |
| 2N2526 | 20 | 3.0 | 80 | 80 | 85 | 0.7 | 4.20 | 2.80 |
| 2N2527 | 20 | 3.0 | 120 | 120 | 85 | 0.7 | 4.65 | 3.10 |
| 2N2528* | 20 | 3.0 | 160 | 160 | 85 | 0.7 | 11.80 | 7.90 |
| 2N2832 | 25 | 10 | 50 | 80 | 85 | 20 | 3.35 | 2.25 |
| 2N2833 | 25 | 10 | 75 | 120 | 85 | 20 | 4.85 | 3.25 |
| 2N2834* | 25 | 10 | 100 | 140 | 85 | 20 | 7.10 | 4.75 |
| 2N5155 | 25 | 8 | 80 | 90 | 106 | 0.4 | 7.85 | 5.25 |
| 2N5324 | 20 | 5 | 150 | 250 | 56 | 5.5 | 4.50 | 3.50 |
| 2N5325 | 20 | 5 | 200 | 325 | 56 | 5.5 | 6.00 | 5.00 |
| 2N5435 | 10 | 60 | 60 | 80 | 120 | 1.0 | 10.85 | 7.25 |
| 2N5436 | 10 | 60 | 90 | 110 | 120 | 1.0 | 15.35 | 10.25 |
| 2N5437 | 10 | 60 | 120 | 140 | 120 | 1.0 | 18.00 | 12.00 |
| 2N5438 | 15 | 60 | 60 | 80 | 120 | 1.0 | 14.60 | 9.75 |
| 2N5439 | 15 | 60 | 90 | 110 | 120 | 1.0 | 18.35 | 12.25 |
| 2N5440 | 15 | 60 | 120 | 140 | 120 | 1.0 | 22.50 | 15.00 |
| MP600 | 50 | 5 | 50 | 75 | 106 | 0.7 | 1.85 | 1.25 |
| MP601 | 50 | 5 | 60 | 75 | 106 | 0.7 | 2.25 | 1.50 |
| MP602 | 50 | 5 | 70 | 90 | 106 | 0.7 | 3.00 | 2.00 |
| MP603 | 50 | 5 | 80 | 90 | 107 | 0.7 | 3.65 | 2.45 |
| MP900† | 20 | 150 | 60 | 80 | 250 | ...... | 110.00 | 100.00 |
| MP901† | 20 | 150 | 90 | 110 | 250 | ...... | 121.00 | 110.00 |
| MP902† | 20 | 150 | 120 | 114 | 250 | ...... | 132.00 | 120.00 |
| MP1612 | 25 | 10 | 50 | 100 | 85 | 20 | 3.55 | 2.65 |
| MP1612A | 25 | 10 | 75 | 140 | 85 | 20 | 3.90 | 2.90 |
| MP1612B | 25 | 10 | 100 | 160 | 85 | 20 | 4.20 | 3.10 |
| MP2000A | 25 | 5 | 30 | 60 | 106 | 0.4 | 1.75 | 1.15 |
| MP2100A | 25 | 5 | 60 | 80 | 106 | 0.4 | 2.15 | 1.45 |
| MP2200A | 25 | 5 | 80 | 100 | 106 | 0.4 | 2.75 | 1.85 |
| MP2300A | 25 | 5 | 100 | 120 | 106 | 0.4 | 4.40 | 2.95 |
| MP2400A | 25 | 5 | 120 | 140 | 106 | 0.4 | 7.85 | 5.25 |
| MP3730 | 15 | 2.25 | 200‡ | .... | 56 | 5.5 | 2.50 | 1.85 |
| MP3731 | 15 | 6.0 | 320‡ | .... | 56 | 5.5 | 3.38 | 2.50 |

*JAN type available. †Power Pac assembly high voltage switch (Case 118). ‡$V_{CES}$.

## GERMANIUM PNP RF POWER TRANSISTORS

### MESA SMALL-SIGNAL

| Motorola Type | Case | Max. $P_D$ mW | Max. $V_{CB}$ V | $h_{FE}$ Min.-Max. | Min. $f_t$ MHz | NF at f Typ. dB | NF at f MHz | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|---|
| 2N700* | 21 | 75 | 25 | 4.0 min.‡ | 500 | 6.0 | 70 | $ 6.00 | $ 4.00 |
| 2N700A† | 21 | 75 | 25 | 4.0–50‡ | 1000 | 6.0 | 70 | 10.50 | 7.00 |
| 2N741 | 22 | 150 | 15 | 10 min. | 360 | 7.0 | 30 | 2.18 | 1.45 |
| 2N741A | 22 | 150 | 20 | 10 min. | 300 | 7.0 | 30 | 3.30 | 2.20 |
| 2N1141 | 31 | 300 | 35 | 10 min. | 800 | 4.0 | 100 | 4.50 | 3.00 |
| 2N1142† | 31 | 300 | 30 | 10 min. | 800 | 4.5 | 100 | 3.90 | 2.60 |
| 2N1143 | 31 | 300 | 25 | 10 min. | 800 | 5.0 | 100 | 3.15 | 2.10 |
| 2N1195† | 31 | 225 | 30 | 25 typ. | 800 | 4.5 | 100 | 3.95 | 2.63 |
| 2N2273† | 22 | 150 | 25 | 20–150 | 250 | 12§ | 10 | 2.45 | 1.65 |
| 2N2415 | 20 | 75 | 15 | 10–200 | 500 | 2.4 | 200 | 5.63 | 3.75 |
| 2N2416 | 20 | 75 | 15 | 8.0–200 | 400 | 3.4 | 200 | 3.35 | 2.25 |
| 2N2929 | 31 | 300 | 25 | 10–200 | 1100♯ | 5.5 | 200 | 6.75 | 4.50 |
| 2N3127† | 20 | 100 | 25 | 20–100 | 400 | 5.0§ | 200 | 5.10 | 3.40 |
| 2N3279 | 20 | 100 | 30 | 10–70 | 500 | 2.9 | 200 | 4.50 | 3.00 |
| 2N3280 | 20 | 100 | 30 | 10–70 | 500 | 2.9 | 200 | 4.10 | 2.75 |
| 2N3281 | 20 | 100 | 30 | 10–100 | 400 | 4.0 | 200 | 2.60 | 1.75 |
| 2N3282 | 20 | 100 | 30 | 10–100 | 400 | 4.0 | 200 | 2.15 | 1.45 |
| 2N3283 | 20 | 100 | 25 | 10 min. | 400♯ | 4.0 | 200 | 1.50 | 1.00 |
| 2N3284 | 20 | 100 | 25 | 10 min. | 400♯ | 5.0 | 200 | 1.42 | .95 |
| 2N3285 | 20 | 100 | 20 | 5.0 min. | 400♯ | ..... | 257 | 1.12 | .75 |
| 2N3286 | 20 | 100 | 20 | 5.0 min. | 400♯ | 5.0 | 200 | .97 | .65 |
| 2N3323 | 22 | 150 | 35 | 30–200 | 200 | ..... | 100 | .90 | .60 |
| 2N3324 | 22 | 150 | 35 | 30–200 | 200 | ..... | 10 | .82 | .55 |
| 2N3325 | 22 | 150 | 35 | 30–200 | 200 | ..... | ..... | .75 | .50 |
| 2N3783 | 20 | 150 | 30 | 20–200 | 800 | 2.2§ | 200 | 30.00 | 20.00 |
| 2N3784 | 20 | 150 | 30 | 20–200 | 700 | 2.5§ | 200 | 15.00 | 10.00 |
| 2N3785 | 20 | 150 | 15 | 15–200 | 700 | 2.9§ | 200 | 6.75 | 4.50 |
| MM380 | 22 | 250 | 25 | 15 min. | 400 | ..... | ..... | 1.26 | .84 |
| MM1139* | 20 | 125 | 30 | 15 min. | 400 | ..... | 200 | 1.35 | .90 |
| MM5000 | 20 | 150 | 30 | 30 min. | 800 | 1.6§ | 200 | 4.40 | 2.95 |
| MM5001 | 20 | 150 | 30 | 30 min. | 800 | 2.0§ | 200 | 3.15 | 2.10 |
| MM5002 | 20 | 150 | 30 | 30 min. | 800 | 2.2§ | 200 | 2.25 | 1.50 |

*Non-epitaxial. †JAN type available. ‡$h_{fe}$. §Maximum. ♯Typical.

## GERMANIUM MESA PNP SWITCHING

### HIGH-SPEED LOW-CURRENT (CASE 22)

$P_D = 150$ mW at $T_A = 25°$ C. $h_{FE}$ at $I_C = 10$ mA.

| Motorola Type | Max. $V_{CEO}$ V | Min. $h_{FE}$ | Max. $V_{CE(sat)}$ at $I_C$ V | Max. $V_{CE(sat)}$ at $I_C$ mA | Min. $f_t$ MHz | Max. $t_{off}$ nsec | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|
| 2N705† | 15 | ..... | 0.45 | 50 | ..... | 100* | $1.03 | $0.69 |
| 2N710 | 15 | ..... | 0.50 | 10 | ..... | 100* | 1.33 | .89 |
| 2N711 | ...... | 20 | 0.50 | 0.5 | ..... | 200* | .88 | .59 |
| 2N711A | 7.0 | 25 | 0.30 | 0.5 | ..... | 120* | .88 | .59 |
| 2N711B | 7.0 | 30 | 0.25 | 0.4 | ..... | 100* | .94 | .63 |
| 2N827 | ...... | 100 | 0.25 | 3.3 | 250 | 30* | 2.50 | 1.65 |
| 2N828 | 10 | 25 | 0.20 | 1.0 | 300 | 50* | 3.30 | 2.20 |
| 2N828A | ...... | 25 | 0.20 | 10 | 300 | 100 | 3.75 | 2.50 |
| 2N829 | ...... | 50 | 0.20 | 10 | 300 | 100 | 4.45 | 2.95 |
| 2N838 | ...... | 30 | 0.18 | 10 | 300 | 20* | 5.40 | 3.60 |
| 2N960 | 15 | 20 | 0.20 | 10 | 300 | 85 | .96 | .64 |
| 2N961 | 12 | 20 | 0.20 | 10 | 300 | 85 | .91 | .61 |
| 2N962† | 12 | 20 | 0.20 | 10 | 300 | 100 | .85 | .57 |
| 2N963 | ...... | 20 | 0.20 | 10 | 300 | 120 | .82 | .55 |
| 2N964† | 15 | 40 | 0.18 | 10 | 300 | 85 | .99 | .66 |
| 2N964A | 15 | 40 | 0.18 | 10 | 300 | 85 | 5.25 | 3.50 |
| 2N965 | 12 | 40 | 0.18 | 10 | 300 | 85 | .94 | .63 |
| 2N966 | 12 | 40 | 0.18 | 10 | 300 | 100 | .88 | .59 |
| 2N967 | ...... | 40 | 0.20 | 10 | 300 | 120 | .87 | .58 |
| 2N968 | ...... | 17 | 0.25 | 10 | 250 | 150 | .90 | .60 |
| 2N969 | ...... | 17 | 0.25 | 10 | 250 | 150 | .84 | .56 |
| 2N970 | ...... | 17 | 0.25 | 10 | 250 | 275 | .81 | .54 |
| 2N971 | ...... | 17 | 0.25 | 10 | 250 | 275 | .79 | .53 |
| 2N972 | ...... | 40 | 0.25 | 10 | 250 | 175 | .93 | .62 |
| 2N973 | ...... | 40 | 0.25 | 10 | 250 | 175 | .89 | .59 |
| 2N974 | ...... | 40 | 0.25 | 10 | 250 | 275 | .83 | .55 |
| 2N975 | ...... | 40 | 0.25 | 10 | 250 | 275 | .81 | .54 |
| 2N985 | 7.0 | 40 | 0.15 | 10 | 300 | ...... | 2.84 | 1.89 |
| 2N2258 | 7.0 | 17 | ...... | ...... | 250 | 7.0 | 1.12 | .75 |
| 2N2259 | 7.0 | 40 | ...... | ...... | 250 | 7.0 | 1.27 | .85 |
| 2N2955 | 25 | 20 | ...... | ...... | 200 | 40* | 2.48 | 1.65 |
| 2N2956 | 20 | 30 | ...... | ...... | 200 | 55* | 2.63 | 1.75 |
| 2N2957 | 18 | 60 | ...... | ...... | 300 | 60* | 3.37 | 2.25 |

*$t_s$ value. †JAN type available.

### HIGH-SPEED MEDIUM-CURRENT

$P_D = 300$ mW at $T_A = 25°$ C. $V_{CE(sat)}$ at $I_C = 200$ mA.

| Motorola Type | Case | Max. $V_{CEO}$ V | $h_{FE}$ at $I_C$ Min. | $h_{FE}$ at $I_C$ mA | Max. $V_{CE(sat)}$ V | Min. $f_t$ MHz | Max. $t_s$ nsec | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|---|
| 2N1204 | 31 | 15 | 15 | 400 | 0.50 | 110 | ..... | $1.65 | $1.10 |
| 2N1204A | 31 | 15 | 25 | 200 | 0.40 | 110 | ..... | 1.65 | 1.10 |
| 2N1494* | 25 | .... | 15 | 400 | 0.40 | 110 | ..... | 2.17 | 1.45 |
| 2N1494A* | 25 | 15 | 25 | 200 | 0.40 | 110 | ..... | 2.17 | 1.45 |
| 2N1495 | 31 | 25 | 25 | 200 | 0.30 | 150 | ..... | 3.30 | 2.20 |
| 2N1496* | 25 | 25 | 25 | 200 | 0.30 | 150 | ..... | 3.80 | 2.55 |
| 2N2096* | 25 | .... | 15 | 400 | 0.60 | ..... | 70 | 1.65 | 1.10 |
| 2N2097* | 25 | .... | 30 | 200 | 0.50 | ..... | 50 | 3.30 | 2.20 |
| 2N2099 | 31 | 12 | 15 | 400 | 0.60 | ..... | 70 | 2.17 | 1.45 |
| 2N2100 | 31 | 20 | 20 | 400 | 0.50 | ..... | 50 | 3.80 | 2.55 |
| 2N2381 | 31 | 15 | 40 | 200 | 0.40 | 300 | 30 | 4.65 | 3.10 |
| 2N2382 | 31 | 20 | 25 | 200 | 0.40 | 300 | 30 | 5.15 | 3.45 |
| 2N2635 | 22 | 15 | 30 | 100 | 0.75† | 150 | 185 | .94 | .63 |
| 2N3883 | 31 | 15 | 30 | 200 | 0.50 | 100 | 70 | 1.35 | .90 |

*$P_D = 500$ mA. †$I_C = 100$ mA.

SEE ANOTHER PAGE FOR ADDITIONAL CASE ILLUSTRATIONS

# MOTOROLA Semiconductors Transistors

## GERMANIUM PNP POWER TRANSISTORS

Listed in order of $I_C$ for optimized $h_{FE}$, then in numerical sequence. $T_J$ to 110° C.

| Motorola Type | Case | $h_{FE}$ at $I_C$ | | $BV_{CES}$ Volts | $P_D$ W | Net Ea., Lots | |
|---|---|---|---|---|---|---|---|
| | | Min.-Max. | A | | | 1-99 | 100-999 |
| 2N176 | 11 | 25 min. | 0.5 | 30 | 90 | $1.00 | $0.65 |
| 2N178 | 11 | 15–45 | 0.5 | 30* | 40 | 1.10 | .80 |
| 2N297A† | 11 | 40–100 | 0.5 | 50 | 85 | 1.60 | 1.17 |
| 2N554 | 11 | 50 typ. | 0.5 | 16* | 40 | .80 | .50 |
| 2N555 | 11 | 50 typ. | 0.5 | 30* | 40 | .85 | .55 |
| 2N665† | 11 | 40–80 | 0.5 | 40‡ | 35 | 4.05 | 2.70 |
| 2N669 | 11 | 75–250 | 0.5 | 30 | 90 | 1.30 | .95 |
| 2N2137§ | 11 | 30–60 | 0.5 | 30 | 70 | 2.00 | 1.40 |
| 2N2138§ | 11 | 30–60 | 0.5 | 45 | 70 | 2.10 | 1.40 |
| 2N2139§ | 11 | 30–60 | 0.5 | 60 | 70 | 2.25 | 1.50 |
| 2N2140§ | 11 | 30–60 | 0.5 | 75 | 70 | 3.90 | 2.60 |
| 2N2141§ | 11 | 30–60 | 0.5 | 90 | 70 | 7.85 | 5.25 |
| 2N2142§ | 11 | 50–100 | 0.5 | 30 | 70 | 2.50 | 1.75 |
| 2N2143§ | 11 | 50–100 | 0.5 | 45 | 70 | 2.75 | 1.90 |
| 2N2144§ | 11 | 50–100 | 0.5 | 60 | 70 | 4.00 | 2.75 |
| 2N2145§ | 11 | 50–100 | 0.5 | 75 | 70 | 4.75 | 3.20 |
| 2N2146§ | 11 | 50–100 | 0.5 | 90 | 70 | 8.60 | 5.75 |
| 2N5887 | 80 | 15–350 | 0.5 | 20 | 57 | .73 | .49 |
| 2N5888 | 80 | 15–350 | 0.5 | 30 | 57 | .88 | .59 |
| 2N5889 | 80 | 30–70 | 0.5 | 30 | 57 | 1.09 | .73 |
| 2N5890 | 80 | 30–70 | 0.5 | 45 | 57 | 1.24 | .83 |
| 2N5891 | 80 | 30–70 | 0.5 | 60 | 57 | 1.39 | .93 |
| 2N5892 | 80 | 30–70 | 0.5 | 75 | 57 | 1.65 | 1.10 |
| 2N5893 | 80 | 60–120 | 0.5 | 30 | 57 | 1.18 | .79 |
| 2N5894 | 80 | 60–120 | 0.5 | 45 | 57 | 1.33 | .89 |
| 2N5895 | 80 | 60–120 | 0.5 | 60 | 57 | 1.48 | .99 |
| 2N5896 | 80 | 60–120 | 0.5 | 75 | 57 | 1.80 | 1.20 |
| 2N5897 | 80 | 100–200 | 0.5 | 30 | 57 | 1.27 | .85 |
| 2N5898 | 80 | 100–200 | 0.5 | 45 | 57 | 1.42 | .95 |
| 2N5899 | 80 | 100–200 | 0.5 | 60 | 57 | 1.72 | 1.15 |
| 2N5900 | 80 | 100–200 | 0.5 | 75 | 57 | 1.87 | 1.25 |
| 2N5901 | 80 | 175–350 | 0.5 | 30 | 57 | 1.72 | 1.15 |
| 2N350A | 11 | 20–60 | 0.7 | 40 | 90 | 1.65 | 1.10 |
| 2N351A | 11 | 25–90 | 0.7 | 40 | 90 | 1.70 | 1.15 |
| 2N376A | 11 | 35–120 | 0.7 | 40 | 90 | 1.85 | 1.25 |
| 2N375 | 11 | 35–90 | 1.0 | 60 | 106 | 3.85 | 2.55 |
| 2N618 | 11 | 60–140 | 1.0 | 60 | 106 | 2.65 | 2.00 |
| 2N1359 | 11 | 35–90 | 1.0 | 40 | 106 | 2.05 | 1.35 |
| 2N1360 | 11 | 60–140 | 1.0 | 40 | 106 | 2.00 | 1.40 |
| 2N1362 | 11 | 35–90 | 1.0 | 75 | 106 | 3.25 | 2.40 |
| 2N1363 | 11 | 60–140 | 1.0 | 75 | 106 | 3.50 | 2.60 |
| 2N1364 | 11 | 35–90 | 1.0 | 100 | 106 | 6.00 | 4.00 |
| 2N1365 | 11 | 60–140 | 1.0 | 100 | 106 | 6.50 | 4.25 |
| 2N1011† | 11 | 30–75 | 3.0 | 80 | 90 | 1.95 | 1.45 |
| 2N1529§ | 11 | 20–40 | 3.0 | 30 | 106 | 1.80 | 1.20 |
| 2N1530§ | 11 | 20–40 | 3.0 | 45 | 106 | 2.00 | 1.30 |
| 2N1531§ | 11 | 20–40 | 3.0 | 60 | 106 | 2.70 | 1.90 |
| 2N1532§ | 11 | 20–40 | 3.0 | 75 | 106 | 3.50 | 2.60 |
| 2N1533 | 11 | 20–40 | 3.0 | 90 | 106 | 5.00 | 3.75 |
| 2N1534§ | 11 | 35–70 | 3.0 | 30 | 106 | 1.40 | 1.05 |
| 2N1535§ | 11 | 35–70 | 3.0 | 45 | 106 | 1.50 | 1.14 |
| 2N1536§ | 11 | 35–70 | 3.0 | 60 | 106 | 1.70 | 1.25 |
| 2N1537§ | 11 | 35–70 | 3.0 | 75 | 106 | 3.90 | 2.90 |
| 2N1538 | 11 | 35–70 | 3.0 | 90 | 106 | 5.10 | 3.40 |
| 2N1539§ | 11 | 50–100 | 3.0 | 30 | 106 | 1.42 | 1.05 |
| 2N1540§ | 11 | 50–100 | 3.0 | 45 | 106 | 1.58 | 1.18 |
| 2N1541§ | 11 | 50–100 | 3.0 | 60 | 106 | 1.85 | 1.38 |
| 2N1542§ | 11 | 50–100 | 3.0 | 75 | 106 | 2.35 | 1.75 |
| 2N1543 | 11 | 75–150 | 3.0 | 90 | 106 | 3.60 | 2.65 |
| 2N1544§ | 11 | 75–150 | 3.0 | 30 | 106 | 1.65 | 1.24 |
| 2N1545§ | 11 | 75–150 | 3.0 | 45 | 106 | 1.85 | 1.35 |
| 2N1546§ | 11 | 75–150 | 3.0 | 60 | 106 | 2.30 | 1.70 |
| 2N1547§ | 11 | 75–150 | 3.0 | 75 | 106 | 2.75 | 2.05 |
| 2N1548 | 11 | 75–150 | 3.0 | 90 | 106 | 6.00 | 4.00 |
| MP2060 | 11 | 30–200 | 3.0 | 30 | 85 | 1.05 | .75 |
| MP2061 | 11 | 30–200 | 3.0 | 45 | 85 | 1.15 | .85 |
| MP2062 | 11 | 30–200 | 3.0 | 60 | 85 | 1.35 | 1.00 |
| MP2063 | 11 | 30–200 | 3.0 | 75 | 85 | 1.65 | 1.25 |
| 2N3311 | 5 | 60–120 | 3.0 | 30 | 170 | 2.00 | 1.35 |
| 2N3312 | 5 | 60–120 | 3.0 | 45 | 170 | 2.50 | 1.50 |
| 2N3313 | 5 | 60–120 | 3.0 | 60 | 170 | 3.50 | 2.35 |
| 2N3314 | 5 | 100–200 | 3.0 | 30 | 170 | 3.15 | 1.50 |
| 2N3315 | 5 | 100–200 | 3.0 | 45 | 170 | 3.25 | 2.15 |
| 2N3316 | 5 | 100–200 | 3.0 | 60 | 170 | 4.25 | 2.84 |
| 2N3611 | 11 | 35–70 | 3.0 | 30 | 77 | 1.15 | .78 |
| 2N3612 | 11 | 35–70 | 3.0 | 45 | 77 | 1.30 | .88 |
| 2N3613 | 11 | 60–120 | 3.0 | 30 | 77 | 1.25 | .85 |
| 2N3614 | 11 | 60–120 | 3.0 | 45 | 77 | 1.40 | .94 |
| 2N3615 | 11 | 30–60 | 3.0 | 60 | 77 | 1.65 | 1.10 |
| 2N3616 | 11 | 30–60 | 3.0 | 75 | 77 | 2.10 | 1.39 |
| 2N3617 | 11 | 45–90 | 3.0 | 60 | 77 | 1.88 | 1.25 |
| 2N3618 | 11 | 45–90 | 3.0 | 75 | 77 | 2.37 | 1.58 |
| 2N6064 | 8 | 20–50 | 3.0 | 80 | 56 | 4.20 | 2.80 |
| 2N6065 | 8 | 20–50 | 3.0 | 120 | 56 | 4.65 | 3.10 |
| 2N6066 | 8 | 20–50 | 3.0 | 160 | 56 | 7.25 | 4.85 |
| 2N174 | 5 | 25–50 | 5.0 | ....... | 150 | 3.60 | 2.67 |
| 2N174A† | 6 | 25–50 | 5.0 | ....... | 150 | 3.80 | 2.79 |
| 2N277 | 5 | 35–70 | 5.0 | 25‡ | 170 | 2.35 | 1.75 |
| 2N278 | 5 | 35–70 | 5.0 | 30‡ | 170 | 2.80 | 2.07 |
| 2N441 | 5 | 20–40 | 5.0 | 40 | 150 | 1.65 | 1.25 |
| 2N442 | 5 | 20–40 | 5.0 | 45 | 150 | 1.95 | 1.45 |
| 2N443 | 5 | 20–40 | 5.0 | 50 | 150 | 2.35 | 1.75 |
| 2N1021 | 11 | 30–90 | 5.0 | 50‡ | 85 | 3.10 | 2.05 |
| 2N1022 | 11 | 30–90 | 5.0 | 50‡ | 85 | 3.60 | 2.40 |
| 2N1073 | 4 | 20–60 | 5.0 | 40* | 85 | 2.40 | 1.78 |
| 2N1099 | 5 | 35–70 | 5.0 | 55‡ | 170 | 3.90 | 2.87 |
| 2N1100 | 5 | 25–50 | 5.0 | ....... | 150 | $ 4.50 | $3.34 |
| 2N1358† | 5 | 25–50 | 5.0 | 40‡ | 150 | 4.15 | 3.06 |
| 2N1358A | 5 | 25 min. | 5.0 | 40‡ | 150 | 6.00 | 4.45 |
| 2N1412† | 5 | 25–50 | 5.0 | 80 | 150 | 4.50 | 3.34 |
| 2N1970 | 5 | 17–40 | 5.0 | 50‡ | 170 | 2.35 | 1.85 |
| 2N1980 | 5 | 50–100 | 5.0 | 30‡ | 170 | 4.50 | 3.00 |
| 2N1981 | 5 | 50–100 | 5.0 | 40‡ | 170 | 5.50 | 3.70 |
| 2N1982 | 5 | 50–100 | 5.0 | 50‡ | 170 | 5.50 | 3.65 |
| 2N2075# | 5 | 20–40 | 5.0 | 80 | 170 | 5.75 | 3.84 |
| 2N2076# | 5 | 20–40 | 5.0 | 70 | 170 | 3.60 | 2.67 |
| 2N2077# | 5 | 20–40 | 5.0 | 50 | 170 | 2.85 | 2.12 |
| 2N2078# | 5 | 20–40 | 5.0 | 40 | 170 | 2.08 | 1.90 |
| 2N2079†# | 5 | 35–70 | 5.0 | 80 | 170 | 8.00 | 5.34 |
| 2N2080# | 5 | 35–70 | 5.0 | 70 | 170 | 5.65 | 3.78 |
| 2N2081# | 5 | 35–70 | 5.0 | 50 | 170 | 3.50 | 2.32 |
| 2N2082# | 5 | 35–70 | 5.0 | 40 | 170 | 2.40 | 1.78 |
| 2N2152§ | 5 | 50–100 | 5.0 | 45 | 170 | 4.25 | 2.90 |
| 2N2153§ | 5 | 50–100 | 5.0 | 60 | 170 | 5.55 | 4.45 |
| 2N2154§ | 5 | 50–100 | 5.0 | 75 | 170 | 10.10 | 7.75 |
| 2N2156§ | 5 | 80–160 | 5.0 | 45 | 170 | 4.10 | 3.30 |
| 2N2157§ | 5 | 80–160 | 5.0 | 60 | 170 | 6.35 | 5.10 |
| 2N2158§ | 5 | 80–160 | 5.0 | 75 | 170 | 10.85 | 8.25 |
| 2N2490 | 5 | 20–40 | 5.0 | 60 | 170 | 2.50 | 1.75 |
| 2N2491 | 5 | 35–70 | 5.0 | 50 | 170 | 2.63 | 1.95 |
| 2N2492 | 5 | 25–50 | 5.0 | 70 | 170 | 3.75 | 3.00 |
| 2N2493 | 5 | 25–50 | 5.0 | 85 | 170 | 6.00 | 4.45 |
| 2N1120† | 4 | 20–50 | 10 | 70 | 90 | 7.50 | 4.90 |
| 2N1549* | 3 | 10–30 | 10 | 30 | 106 | 3.00 | 2.00 |
| 2N1550* | 3 | 10–30 | 10 | 45 | 106 | 3.50 | 2.40 |
| 2N1551* | 3 | 10–30 | 10 | 60 | 106 | 5.50 | 3.75 |
| 2N1552* | 3 | 10–30 | 10 | 75 | 106 | 6.00 | 4.00 |
| 2N1553* | 3 | 30–60 | 10 | 30 | 106 | 1.85 | 1.35 |
| 2N1554* | 3 | 30–60 | 10 | 45 | 106 | 2.50 | 1.80 |
| 2N1555* | 3 | 30–60 | 10 | 60 | 106 | 3.00 | 2.25 |
| 2N1556* | 3 | 30–60 | 10 | 75 | 106 | 4.50 | 3.10 |
| 2N1557* | 3 | 50–100 | 10 | 30 | 106 | 2.15 | 1.58 |
| 2N1558* | 3 | 50–100 | 10 | 45 | 106 | 2.80 | 2.06 |
| 2N1559* | 3 | 50–100 | 10 | 60 | 106 | 3.25 | 2.40 |
| 2N1560* | 3 | 50–100 | 10 | 75 | 106 | 4.45 | 3.30 |
| 2N2912 | 8 | 150 min. | 10 | 50‡ | 75 | 8.10 | 5.40 |
| MP500§ | 7 | 30–60 | 15 | 45 | 170 | 5.70 | 3.80 |
| MP501§ | 7 | 30–60 | 15 | 60 | 170 | 9.00 | 6.00 |
| MP502§ | 7 | 30–60 | 15 | 75 | 170 | 12.00 | 8.00 |
| MP503 | 7 | 30–60 | 15 | 90 | 170 | 20.25 | 13.50 |
| MP504§ | 7 | 50–100 | 15 | 45 | 170 | 6.60 | 4.40 |
| MP505§ | 7 | 50–100 | 15 | 60 | 170 | 10.20 | 6.80 |
| MP506§ | 7 | 50–100 | 15 | 75 | 170 | 13.85 | 9.25 |
| MP507 | 7 | 50–100 | 15 | 90 | 170 | 22.50 | 15.00 |
| 2N1518 | 5 | 15–60 | 15 | 40 | 50 | 4.05 | 3.00 |
| 2N1519 | 5 | 15–60 | 15 | 60 | 50 | 4.72 | 3.50 |
| 2N1520 | 5 | 17–68 | 15 | 40 | 50 | 5.40 | 4.00 |
| 2N1521 | 5 | 17–68 | 15 | 60 | 50 | 5.67 | 4.20 |
| 2N1522 | 5 | 25–100 | 15 | 40 | 50 | 3.40 | 2.50 |
| 2N1523 | 5 | 25–100 | 15 | 60 | 50 | 5.83 | 4.32 |
| 2N2728 | 7 | 40–130 | 20 | 5.0‡ | 170 | 16.25 | 12.50 |
| 2N1162§ | 3 | 15 min. | 25 | 35 | 106 | 4.45 | 3.30 |
| 2N1163§ | 4 | 15 min. | 25 | 35 | 106 | 4.45 | 2.95 |
| 2N1164§ | 3 | 15 min. | 25 | 60 | 106 | 6.35 | 4.70 |
| 2N1165†§ | 4 | 15 min. | 25 | 60 | 106 | 6.35 | 4.70 |
| 2N1166§ | 3 | 15 min. | 25 | 75 | 106 | 7.35 | 4.90 |
| 2N1167§ | 4 | 15 min. | 25 | 75 | 106 | 7.55 | 5.60 |

*$BV_{CER}$. †JAN type available. ‡$BV_{CEO}$. §Meg-A-Life II™ (suffix **A**) type available.

*Meg-A-Life II (suffix **A**) and JAN types available. †JAN type available. ‡$BV_{CEO}$. §Meg-A-Life II (suffix **A**) type available. #A version available.

## ALLOY HIGH-CURRENT—HIGH GAIN

Listed in order of $I_C$ for optimized $h_{FE}$, then in numerical sequence. $T_J$ to 110° C.

| Motorola Type | Case | $h_{FE}$ at $I_C$ | | $BV_{CEO}$ Volts | $P_D$ W | Net Ea., Lots of | |
|---|---|---|---|---|---|---|---|
| | | Min. | A | | | 1-99 | 100-999 |
| 2N4048 | 7 | 15 | 60 | 30 | 170 | $ 5.60 | $ 4.50 |
| 2N4049 | 7 | 15 | 60 | 45 | 170 | 7.50 | 6.00 |
| 2N4050 | 7 | 15 | 60 | 60 | 170 | 9.30 | 7.20 |
| 2N4051 | 7 | 15 | 60 | 30 | 170 | 6.45 | 5.15 |
| 2N4052 | 7 | 15 | 60 | 45 | 170 | 8.25 | 6.50 |
| 2N4053 | 7 | 15 | 60 | 60 | 170 | 10.10 | 7.75 |
| 2N4276 | 3 | 15 | 60 | 20 | 170 | 3.50 | 2.80 |
| 2N4277 | 3 | 15 | 60 | 20 | 170 | 4.20 | 3.35 |
| 2N4278 | 3 | 15 | 60 | 30 | 170 | 4.65 | 3.50 |
| 2N4279 | 3 | 15 | 60 | 30 | 170 | 5.30 | 4.25 |
| 2N4280 | 3 | 15 | 60 | 45 | 170 | 5.70 | 4.55 |
| 2N4281 | 3 | 15 | 60 | 45 | 170 | 6.80 | 5.45 |
| 2N4282 | 3 | 15 | 60 | 60 | 170 | 7.05 | 5.65 |
| 2N4283 | 3 | 15 | 60 | 60 | 170 | 8.45 | 6.65 |
| MP800* | 118 | 15 | 150 | 60 | 250 | 51.00 | 46.00 |
| MP801* | 118 | 15 | 150 | 45 | 250 | 42.00 | 37.75 |

*Power Pac assembly.

**LARGER QUANTITY PRICES ON REQUEST**

**SEE ANOTHER PAGE FOR CASE ILLUSTRATIONS**

## SILICON POWER TRANSISTORS

### COMPLEMENTARY TRANSISTORS

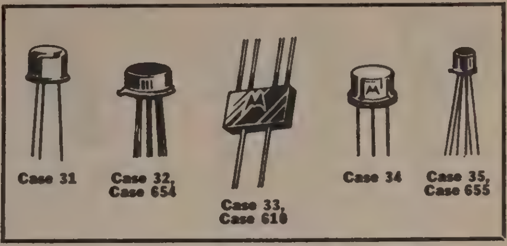
This list represents the large number of "off-the-shelf" complementary silicon power transistors available. For convenience in choosing complements, a selection can be made on the basis of maximum collector current, case, and voltage. Ic ratings are maximum.

| Ic A | Case | BV CEC V | Motorola Type NPN | Motorola Type PNP |
|---|---|---|---|---|
| 3.0 | 31 | 40 | 2N4237 | 2N4234 |
| | | 60 | 2N4238 | 2N4235 |
| | | 80 | 2N4239 | 2N4236 |
| | 77 | 40 | 2N4921 | 2N4918 |
| | | 60 | 2N4922 | 2N4919 |
| | | 80 | 2N4923 | 2N4920 |
| | | 30 | MJE520 | MJE370 |
| | | 30 | MJE3520 | MJE3370 |
| | | 40 | MJE521 | MJE371 |
| | | 40 | MJE3521 | MJE3371 |
| | 199 | 40 | MJE2520 | MJE2370 |
| | | 60 | MJE2521 | MJE2371 |
| | | 40 | MJE2522 | MJE2490 |
| | | 60 | MJE2523 | MJE2491 |
| 4.0 | 80 | 60 | 2N3766 | 2N3740 |
| | | 80 | 2N3767 | 2N3741 |
| | | 40 | 2N4910 | 2N4898 |
| | | 60 | 2N4911 | 2N4899 |
| | | 80 | 2N4912 | 2N4900 |
| | 77 | 40 | 2N5190 | 2N5193 |
| | | 60 | 2N5191 | 2N5194 |
| | | 80 | 2N5192 | 2N5195 |
| | | 60 | MJE700 | MJE800 |
| | | 60 | MJE701 | MJE801 |
| | | 80 | MJE702 | MJE802 |
| | | 80 | MJE703 | MJE803 |
| | 11 | 40 | MJ480 | MJ490 |
| | | 60 | MJ481 | MJ491 |
| | | 60 | MJ4000 | MJ4010 |
| | | 80 | MJ4001 | MJ4011 |
| 5.0 | 90 | 40 | MJE201 | MJE101 |
| | | 50 | MJE205 | MJE105 |
| | | 60 | MJE202 | MJE102 |
| | | 60 | MJE203 | MJE103 |
| | | 80 | MJE204 | MJE104 |
| | | 60 | MJE1100 | MJE1090 |
| | | 60 | MJE1101 | MJE1091 |
| | | 80 | MJE1102 | MJE1092 |
| | | 80 | MJE1103 | MJE1093 |
| | 11 | 40 | 2N5067 | 2N4901 |
| 5.0 | 11 | 60 | 2N5068 | 2N4902 |
| | | 80 | 2N5069 | 2N4903 |
| | | 40 | 2N4913 | 2N4904 |
| | | 60 | 2N4914 | 2N4905 |
| | | 80 | 2N4915 | 2N4906 |
| | | 60 | 2N5869 | 2N5867 |
| | | 80 | 2N5870 | 2N5868 |
| | 199 | 40 | MJE2020 | MJE2010 |
| | | 60 | MJE2021 | MJE2011 |
| 7.0 | 11 | 60 | 2N5873 | 2N5871 |
| | | 80 | 2N5874 | 2N5872 |
| 8.0 | 11 | 60 | MJ1000 | MJ900 |
| | | 80 | MJ1001 | MJ901 |
| 10 | 90 | 60 | MJE2801 | MJE2901 |
| | | 60 | MJE3055 | MJE2955 |
| | 11 | 60 | 2N3713 | 2N3789 |
| | | 80 | 2N3714 | 2N3790 |
| | | 60 | 2N3715 | 2N3791 |
| | | 80 | 2N3716 | 2N3792 |
| | | 60 | 2N3055 | 2N4908 |
| | | 60 | MJ2840 | MJ2940 |
| | | 80 | MJ2841 | MJ2941 |
| | | 60 | 2N5877 | 2N5875 |
| | | 80 | 2N5878 | 2N5876 |
| | | 60 | MJ3000 | MJ2500 |
| | | 80 | MJ3001 | MJ2501 |
| 15 | 90 | 40 | MJE1660 | MJE1290 |
| | | 60 | MJE1661 | MJE1291 |
| | 11 | 40 | MJ2801 | MJ2901 |
| | | 60 | 2N5881 | 2N5879 |
| | | 80 | 2N5882 | 2N5880 |
| 16 | 11 | 60 | MJ4033 | MJ4030 |
| | | 80 | MJ4034 | MJ4031 |
| | | 100 | MJ4035 | MJ4032 |
| 20 | 12 | 80 | 2N5303 | ......... |
| 25 | 11 | 60 | 2N5885 | 2N5883 |
| | | 80 | 2N5886 | ......... |
| 30 | 12 | 40 | 2N5301 | 2N4398 |
| | | 60 | 2N5302 | 2N4399 |
| | | 90 | MJ802 | MJ4502 |

Types are listed in order of collector current for optimized hFE, then in numerical sequence. TJ to 200° C.

### NPN POWER TRANSISTORS

| Motorola Type | Case | hFE at Ic Min.-Max. | hFE at Ic A | BVCEO Volts | PD W | Min. fT MHz | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|
| 2N3439 | 31 | 40–160 | 0.02 | 350 | 5.0 | 15 | $ 1.93 | $1.43 |
| 2N3440 | 31 | 40–160 | 0.02 | 300 | 5.0 | 15 | 1.45 | 1.07 |
| MJ420 | 31 | 25–250 | 0.03 | 250 | 2.5 | 30 | 1.39 | 1.03 |
| MJ421 | 31 | 25–250 | 0.03 | 325 | 2.5 | 30 | 1.63 | 1.21 |
| MJ400 | 80 | 30–300 | 0.05 | 325 | 6.67 | 15 | 1.65 | 1.10 |
| MJ2251 | 80 | 25–200 | 0.05 | 225 | 10 | 10 | 1.87 | 1.25 |
| MJ2252 | 80 | 25–200 | 0.05 | 300 | 10 | 10 | 2.02 | 1.35 |
| MJ3201 | 80 | 30–200 | 0.05 | 225 | 15 | 15 | 1.72 | 1.15 |
| MJ3202 | 80 | 30–200 | 0.05 | 300 | 15 | 15 | 1.87 | 1.25 |
| 2N3738 | 80 | 40–200 | 0.1 | 225 | 20 | 10 | 1.54 | 1.14 |
| 2N3739 | 80 | 40–200 | 0.1 | 300 | 20 | 10 | 1.82 | 1.35 |
| 2N4237 | 31 | 30–150 | 0.25 | 40 | 5.0 | 3.0 | 1.50 | 1.00 |
| 2N4238 | 31 | 30–150 | 0.25 | 60 | 5.0 | 3.0 | 1.75 | 1.17 |
| 2N4239 | 31 | 30–150 | 0.25 | 80 | 5.0 | 3.0 | 2.05 | 1.37 |
| MJ3029 | 11 | 30 min. | 0.4 | 250 | 125 | ..... | 2.56 | 1.90 |
| MJ413 | 11 | 20–80 | 0.5 | 325 | 125 | 2.5 | 6.50 | 4.82 |
| MJ2249 | 80 | 25–200 | 0.5 | 60 | 20 | 10 | 1.49 | 1.10 |
| MJ2250 | 80 | 25–200 | 0.5 | 80 | 20 | 10 | 1.65 | 1.25 |
| MJ3010 | 11 | 20–180 | 0.5 | 200 | 100 | ..... | 9.75 | 6.50 |
| MJ3011 | 11 | 20–180 | 0.5 | 325 | 100 | ..... | 11.85 | 7.90 |
| 2N3054 | 80 | 25–100 | 0.5 | 60 | 25 | 4.0 | 1.25 | .82 |
| MJ3101 | 80 | 25–200 | 0.5 | 40 | 20 | 10 | 1.30 | .95 |
| 2N3766 | 80 | 40–160 | 0.5 | 60 | 20 | 15 | 1.62 | 1.20 |
| 2N3767 | 80 | 40–160 | 0.5 | 80 | 20 | 15 | 1.83 | 1.35 |
| 2N4910 | 80 | 20–200 | 0.5 | 40 | 25 | 3.0 | 1.30 | .95 |
| 2N4911 | 80 | 20–200 | 0.5 | 60 | 25 | 3.0 | 1.49 | 1.10 |
| 2N4912 | 80 | 20–200 | 0.5 | 80 | 25 | 3.0 | 1.75 | 1.30 |
| 2N5050 | 80 | 25–100 | 0.75 | 120 | 40 | 10 | 2.50 | 1.70 |
| 2N5051 | 80 | 25–100 | 0.75 | 150 | 40 | 10 | 3.75 | 2.50 |
| 2N5052 | 80 | 25–100 | 0.75 | 200 | 40 | 10 | 4.85 | 3.25 |
| MJ410 | 11 | 30–90 | 1.0 | 200 | 100 | 2.5 | 2.85 | 2.12 |
| MJ411 | 11 | 30–90 | 1.0 | 300 | 100 | 2.5 | 3.40 | 2.50 |
| MJ423 | 11 | 30–90 | 1.0 | 325 | 125 | 2.5 | 8.00 | 5.93 |
| MJ424 | 11 | 30–90 | 1.0 | 350 | 100 | 2.5 | 7.80 | 5.78 |
| MJ425 | 11 | 30–90 | 1.0 | 400 | 100 | 2.5 | 12.75 | 9.45 |
| MJ480 | 11 | 30–200 | 1.0 | 40 | 87.5 | 4.0 | 1.30 | .95 |
| MJ481 | 11 | 30–200 | 1.0 | 60 | 87.5 | 4.0 | 1.55 | 1.15 |
| 2N3713 | 11 | 25–90 | 1.0 | 60 | 150 | 2.5 | 2.89 | 2.14 |
| 2N3714 | 11 | 25–90 | 1.0 | 80 | 150 | 2.5 | 3.08 | 2.28 |
| 2N3715 | 11 | 50–100 | 1.0 | 60 | 150 | 2.5 | 3.38 | 2.50 |
| 2N3716 | 11 | 50–100 | 1.0 | 80 | 150 | 2.5 | 3.95 | 2.92 |
| 2N3902 | 11 | 30–90 | 1.0 | 400 | 100 | 2.8 | 6.75 | 5.00 |
| 2N5067 | 11 | 20–80 | 1.0 | 40 | 87.5 | 4.0 | 1.49 | 1.10 |
| 2N5068 | 11 | 20–80 | 1.0 | 60 | 87.5 | 4.0 | 1.69 | 1.25 |



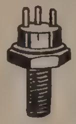
### NPN POWER TRANSISTORS (CONT'D)

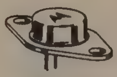
| Motorola Type | Case | hFE at Ic Min.-Max. | hFE at Ic A | BVCEO Volts | PD W | Min. fT MHz | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|
| 2N5157 | 11 | 30–90 | 1.0 | 500 | 100 | 2.8 | $12.75 | $ 9.45 |
| 2N5069 | 11 | 20–80 | 1.0 | 80 | 87.5 | 4.0 | 1.96 | 1.45 |
| 2N5334 | 79 | 30–150 | 1.0 | 60 | 6.0 | 60 | 3.38 | 2.50 |
| 2N5335 | 79 | 30–150 | 1.0 | 80 | 6.0 | 60 | 3.95 | 2.92 |
| MJ4000 | 11 | 1000‡ | 1.5 | 60 | 75 | ..... | 1.75 | 1.35 |
| MJ4001 | 11 | 1000‡ | 1.5 | 80 | 75 | ..... | 2.10 | 1.80 |
| MJ4101 | 80 | 25–100 | 1.5 | 40 | 25 | 4.0 | 1.49 | 1.10 |
| 2N4231 | 80 | 25–100 | 1.5 | 40 | 35 | 4.0 | 1.69 | 1.25 |
| 2N4232 | 80 | 25–100 | 1.5 | 60 | 35 | 4.0 | 1.89 | 1.40 |
| 2N4233 | 80 | 25–100 | 1.5 | 80 | 35 | 4.0 | 2.30 | 1.70 |
| 2N5869 | 11 | 20–100 | 1.5 | 60 | 87.5 | 4.0 | 1.30 | 1.00 |
| 2N5870 | 11 | 20–100 | 1.5 | 80 | 87.5 | 4.0 | 1.63 | 1.25 |
| 2N1724 | 9 | 20–90 | 2.0 | 80 | 115 | 10 | 27.75 | 18.50 |
| 2N1725 | 9 | 50–150 | 2.0 | 80 | 115 | 10 | 30.00 | 20.00 |
| 2N5336 | 79 | 30–120 | 2.0 | 80 | 6.0 | 30 | 5.67 | 4.20 |
| 2N5337 | 79 | 60–240 | 2.0 | 80 | 6.0 | 30 | 7.21 | 5.35 |
| 2N5338 | 79 | 30–120 | 2.0 | 100 | 6.0 | 30 | 8.00 | 5.92 |
| 2N5339 | 79 | 60–240 | 2.0 | 100 | 6.0 | 30 | 9.55 | 7.07 |
| 2N5346 | 160* | 30–120 | 2.0 | 80 | 60 | 30 | 36.00 | 24.00 |
| 2N5347 | 160* | 60–240 | 2.0 | 80 | 60 | 30 | 41.20 | 26.75 |
| 2N5348 | 160* | 30–120 | 2.0 | 100 | 60 | 30 | 45.80 | 30.50 |
| 2N5349 | 160* | 60–240 | 2.0 | 100 | 60 | 30 | 52.50 | 34.95 |
| 2N5427 | 80 | 30–120 | 2.0 | 80 | 40 | 30 | 5.96 | 4.42 |
| 2N5428 | 80 | 60–240 | 2.0 | 80 | 40 | 30 | 7.53 | 5.57 |
| 2N5429 | 80 | 30–120 | 2.0 | 100 | 40 | 30 | 8.30 | 6.15 |
| 2N5430 | 80 | 60–240 | 2.0 | 100 | 40 | 30 | 9.75 | 7.23 |
| 2N5477 | 160† | 30–120 | 2.0 | 80 | 60 | 30 | 33.00 | 22.00 |
| 2N5478 | 160† | 60–240 | 2.0 | 80 | 60 | 30 | 37.10 | 24.75 |
| 2N5479 | 160† | 30–120 | 2.0 | 100 | 60 | 30 | 42.50 | 28.30 |
| 2N5480 | 160† | 60–240 | 2.0 | 100 | 60 | 30 | 49.40 | 32.95 |
| MJ3430 | 11 | 15–45 | 2.5 | 300 | 125 | 2.5 | 7.75 | 5.73 |
| 2N4913 | 11 | 25–100 | 2.5 | 40 | 87.5 | 4.0 | 1.73 | 1.28 |
| 2N4914 | 11 | 25–100 | 2.5 | 60 | 87.5 | 4.0 | 2.12 | 1.57 |
| 2N4915 | 11 | 25–100 | 2.5 | 80 | 87.5 | 4.0 | 2.89 | 2.14 |
| 2N5241 | 11 | 15–35 | 2.5 | 400 | 125 | 2.5 | 21.00 | 15.56 |
| 2N5873 | 11 | 20–100 | 2.5 | 60 | 100 | 4.0 | 1.43 | 1.10 |
| 2N5874 | 11 | 20–100 | 2.5 | 80 | 100 | 4.0 | 1.82 | 1.40 |
| MJ1000 | 11 | 1000‡ | 3.0 | 60 | 90 | ..... | 2.12 | 1.57 |
| MJ1001 | 11 | 1000‡ | 3.0 | 80 | 90 | ..... | 2.89 | 2.14 |
| MJ2840 | 11 | 20–100 | 3.0 | 60 | 150 | 4.0 | 1.69 | 1.25 |
| MJ3030 | 11 | 3.75‡ | 3.0 | 325 | 125 | ..... | 3.91 | 2.90 |
| 2N3232 | 11 | 15–75 | 3.0 | 60 | 115 | 1.0 | 1.62 | 1.20 |
| 2N3445 | 11 | 20–60 | 3.0 | 60 | 115 | 10 | 9.00 | 6.00 |
| 2N3446 | 11 | 20–60 | 3.0 | 80 | 115 | 10 | 13.50 | 9.00 |
| 2N3487 | 9 | 20–60 | 3.0 | 60 | 115 | 10 | 42.00 | 28.00 |
| 2N3488 | 9 | 20–60 | 3.0 | 80 | 115 | 10 | 57.00 | 38.00 |
| 2N3489 | 9 | 15–45 | 3.0 | 100 | 115 | 10 | 69.00 | 46.00 |
| 2N5758 | .... | 25–100 | 3.0 | 100 | 150 | 1.0 | 4.88 | 3.25 |
| 2N5759 | .... | 20–80 | 3.0 | 120 | 150 | 1.0 | 5.70 | 3.80 |
| 2N5760 | .... | 15–60 | 3.0 | 140 | 150 | 1.0 | 6.53 | 4.35 |
| MJ2841 | 11 | 20–100 | 4.0 | 80 | 150 | 4.0 | 2.02 | 1.50 |
| 2N3055§ | 11 | 20–70 | 4.0 | 60 | 115 | 1.0 | 1.42 | 1.05 |
| 2N3235 | 11 | 20–70 | 4.0 | 55 | 115 | 1.0 | 1.75 | 1.30 |
| 2N4877 | 79 | 20–100 | 4.0 | 60 | 10 | 4.0 | 3.75 | 2.50 |
| 2N5877 | 11 | 20–100 | 4.0 | 60 | 150 | 4.0 | 1.76 | 1.32 |
| 2N5878 | 11 | 20–100 | 4.0 | 80 | 150 | 4.0 | 2.08 | 1.60 |
| MJ3000 | 11 | 1000‡ | 5.0 | 60 | 150 | ..... | 3.24 | 2.40 |
| MJ3001 | 11 | 1000‡ | 5.0 | 80 | 150 | ..... | 3.82 | 2.85 |
| 2N3447 | 11 | 40–120 | 5.0 | 60 | 115 | 10 | 14.40 | 9.60 |
| 2N3448 | 11 | 40–120 | 5.0 | 80 | 115 | 10 | 18.00 | 12.00 |
| 2N3490 | 9 | 40–120 | 5.0 | 60 | 115 | 10 | 48.00 | 32.00 |
| 2N3491 | 9 | 40–120 | 5.0 | 80 | 115 | 10 | 63.00 | 42.00 |
| 2N3492 | 9 | 30–90 | 5.0 | 100 | 115 | 10 | 75.00 | 50.00 |
| 2N4348 | 11 | 15–60 | 5.0 | 120 | 120 | 0.2 | 4.13 | 3.00 |
| 2N5881 | 11 | 20–100 | 6.0 | 60 | 160 | 4.0 | 2.80 | 2.15 |
| 2N5882 | 11 | 20–100 | 6.0 | 80 | 160 | 4.0 | 3.12 | 2.40 |
| MJ802 | 12 | 25–100 | 7.5 | 90 | 200 | ..... | 4.86 | 3.60 |
| MJ2801 | 11 | 15–60 | 8.0 | 40 | 120 | 10 | 2.85 | 1.90 |
| MJ2802 | 11 | 15–60 | 8.0 | 60 | 120 | ..... | 3.75 | 2.50 |
| 2N3773 | 11 | 15–60 | 8.0 | 140 | 150 | 0.8 | 7.80 | 5.42 |
| 2N3772 | 11 | 15–60 | 10 | 60 | 150 | 0.8 | 4.95 | 3.42 |
| MJ4033 | 11 | 1000‡ | 10 | 60 | 150 | ..... | 5.40 | 4.15 |
| MJ4034 | 11 | 1000‡ | 10 | 80 | 150 | ..... | 5.90 | 4.55 |
| MJ4035 | 11 | 1000‡ | 10 | 100 | 150 | ..... | 6.65 | 5.10 |
| 2N5303 | 12 | 15–60 | 10 | 80 | 200 | 2.0 | 10.20 | 7.50 |
| 2N5885 | 11 | 20–100 | 10 | 60 | 200 | 4.0 | 3.90 | 3.00 |
| 2N5886 | 11 | 20–100 | 10 | 80 | 200 | 4.0 | 4.42 | 3.40 |
| 2N3771 | 12 | 15–60 | 15 | 40 | 150 | 0.8 | 4.95 | 3.42 |
| 2N5301 | 12 | 15–60 | 15 | 40 | 200 | 2.0 | 5.55 | 4.10 |
| 2N5302 | 12 | 15–60 | 15 | 60 | 200 | 2.0 | 6.90 | 5.10 |

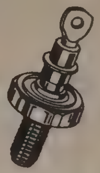
*Isolated collector case. †Collector common to case. ‡Min. §JAN and JANTX types available.

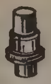
**SEE ANOTHER PAGE FOR ADDITIONAL CASE ILLUSTRATIONS**

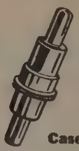
# MOTOROLA Semiconductors Transistors

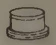

Case 36

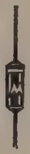

Case 39,
Case 80

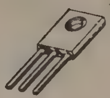

Case 44

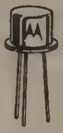

Case 46


Case 47


Case 48


Case 51


Case 77,
Case 90


Case 79

## PNP POWER TRANSISTORS

| Motorola Type | Case | hFE at IC Min.-Max. | | BVCEO Volts | PD W | Min. fT MHz | Net Ea., Lots 1-99 | |
|---|---|---|---|---|---|---|---|---|
| | | Min.-Max. | A | | | | 1-99 | 100-999 |
| MJ2253 | 80 | 20-100 | 0.25 | 60 | 25 | 3.0 | $ 1.93 | $ 1.43 |
| MJ2254 | 80 | 20-100 | 0.25 | 80 | 25 | 3.0 | 2.16 | 1.60 |
| MJ3701 | 80 | 20-100 | 0.25 | 40 | 25 | 3.0 | 1.63 | 1.21 |
| 2N3740 | 80 | 30-100 | 0.25 | 60 | 25 | 4.0 | 1.93 | 1.43 |
| 2N3741 | 80 | 30-100 | 0.25 | 80 | 25 | 4.0 | 2.16 | 1.60 |
| 2N4234 | 31* | 30-150 | 0.25 | 40 | 6.0 | 3.0 | 1.90 | 1.26 |
| 2N4235 | 31* | 30-150 | 0.25 | 60 | 6.0 | 3.0 | 2.50 | 1.66 |
| 2N4236 | 31* | 30-150 | 0.25 | 80 | 6.0 | 3.0 | 2.80 | 1.86 |
| 2N4898 | 80 | 20-100 | 0.5 | 40 | 25 | 3.0 | 1.63 | 1.21 |
| 2N4899 | 80 | 20-100 | 0.5 | 60 | 25 | 3.0 | 2.02 | 1.50 |
| 2N4900 | 80 | 20-100 | 0.5 | 80 | 25 | 3.0 | 2.26 | 1.67 |
| 2N5344 | 80 | 25-100 | 0.5 | 250 | 40 | 60 | 18.00 | 12.00 |
| 2N5345 | 80 | 25-100 | 0.5 | 300 | 40 | 60 | 22.50 | 15.00 |
| MJ490 | 11 | 30-200 | 1.0 | 40 | 87.5 | 4.0 | 2.02 | 1.50 |
| MJ491 | 11 | 30-200 | 1.0 | 60 | 87.5 | 4.0 | 2.40 | 1.78 |
| 2N3021 | 1 | 20-60 | 1.0 | 30 | 25 | 60 | 21.75 | 14.50 |
| 2N3022 | 1 | 20-60 | 1.0 | 45 | 25 | 60 | 30.00 | 20.00 |
| 2N3023 | 1 | 50-180 | 1.0 | 60 | 25 | 60 | 45.00 | 30.00 |
| 2N3024 | 1 | 50-180 | 1.0 | 30 | 25 | 60 | 30.00 | 20.00 |
| 2N3025 | 1 | 50-180 | 1.0 | 45 | 25 | 60 | 43.50 | 29.00 |
| 2N3026 | 1 | 50-180 | 1.0 | 60 | 25 | 60 | 49.50 | 33.00 |
| 2N3719 | 31* | 25-180 | 1.0 | 40 | 6.0 | 60 | 9.75 | 6.50 |
| 2N3720 | 31* | 25-180 | 1.0 | 60 | 6.0 | 60 | 10.85 | 7.25 |
| 2N3789 | 11 | 25-90 | 1.0 | 60 | 150 | 4.0 | 4.32 | 3.20 |
| 2N3790 | 11 | 25-90 | 1.0 | 80 | 150 | 4.0 | 5.20 | 3.85 |
| 2N3791 | 11 | 50-150 | 1.0 | 60 | 150 | 4.0 | 4.64 | 3.43 |
| 2N3792 | 11 | 50-150 | 1.0 | 80 | 150 | 4.0 | 5.78 | 4.28 |
| 2N4901 | 11 | 20-80 | 1.0 | 40 | 87.5 | 4.0 | 1.93 | 1.43 |
| 2N4902 | 11 | 20-80 | 1.0 | 60 | 87.5 | 4.0 | 2.80 | 2.07 |
| 2N4903 | 11 | 20-80 | 1.0 | 80 | 87.5 | 4.0 | 3.38 | 2.50 |
| 2N3867† | 31 | 40-200 | 1.5 | 40 | 6.0 | 60 | 14.85 | 9.90 |
| 2N3868† | 31 | 30-150 | 1.5 | 60 | 6.0 | 60 | 16.57 | 11.05 |
| MJ4010 | 11 | 1000‡ | 1.5 | 60 | 75 | ..... | 2.40 | 1.85 |
| MJ4011 | 11 | 1000‡ | 1.5 | 80 | 75 | ..... | 3.00 | 2.30 |
| 2N5867 | 11 | 20-100 | 1.5 | 60 | 87.5 | 4.0 | 1.37 | 1.05 |
| 2N5868 | 11 | 20-100 | 1.5 | 80 | 87.5 | 4.0 | 1.82 | 1.40 |
| MJ8100 | 79 | 40-200 | 2.0 | 60 | 6.0 | 30 | 15.00 | 9.95 |
| MJ8101 | 79 | 40-200 | 2.0 | 80 | 6.0 | 30 | 18.00 | 11.95 |
| MJ431 | 11 | 15-35 | 2.5 | 325 | 125 | 2.5 | 17.30 | 11.50 |
| 2N4904 | 11 | 25-100 | 2.5 | 40 | 87.5 | 4.0 | 2.31 | 1.71 |
| 2N4905 | 11 | 25-100 | 2.5 | 60 | 87.5 | 4.0 | 3.08 | 2.28 |
| 2N4906 | 11 | 25-100 | 2.5 | 80 | 87.5 | 4.0 | 3.85 | 2.85 |
| 2N5871 | 11 | 20-100 | 2.5 | 60 | 100 | 4.0 | 1.63 | 1.25 |
| 2N5872 | 11 | 20-100 | 2.5 | 80 | 100 | 4.0 | 2.02 | 1.55 |
| MJ900 | 11 | 1000‡ | 3.0 | 60 | 90 | ..... | 3.08 | 2.28 |
| MJ901 | 11 | 1000‡ | 3.0 | 80 | 90 | ..... | 3.66 | 2.71 |
| MJ2940 | 11 | 20-100 | 3.0 | 60 | 150 | 4.0 | 3.48 | 2.58 |
| MJ2267 | 11 | 20-100 | 4.0 | 40 | 150 | 3.0 | 4.95 | 3.30 |
| MJ2268 | 11 | 20-100 | 4.0 | 55 | 150 | 3.0 | 5.45 | 3.65 |
| MJ2941 | 11 | 20-100 | 4.0 | 80 | 150 | 4.0 | 4.20 | 3.10 |
| 2N4907 | 11 | 20-80 | 4.0 | 40 | 150 | ..... | 6.75 | 4.50 |
| 2N4908 | 11 | 20-80 | 4.0 | 60 | 150 | ..... | 8.25 | 5.50 |
| 2N4909 | 11 | 20-80 | 4.0 | 80 | 150 | ..... | 10.49 | 6.95 |
| 2N5875 | 11 | 20-100 | 4.0 | 60 | 150 | 4.0 | 2.54 | 1.95 |
| 2N5876 | 11 | 20-100 | 4.0 | 80 | 150 | 4.0 | 2.99 | 2.30 |
| 2N5879 | 11 | 20-100 | 6.0 | 60 | 160 | 4.0 | 3.78 | 2.90 |
| 2N5880 | 11 | 20-100 | 6.0 | 80 | 160 | 4.0 | 4.35 | 3.35 |
| MJ4502 | 12 | 25-100 | 7.5 | 90 | 200 | ..... | 5.26 | 3.90 |
| MJ2901 | 11 | 15-60 | 8.0 | 40 | 120 | ..... | 3.75 | 2.50 |
| MJ450 | 3 | 20 min. | 10 | 40 | 150 | 2.0 | 6.62 | 4.90 |
| MJ4030 | 11 | 1000‡ | 10 | 60 | 150 | ..... | 5.80 | 4.35 |
| MJ4031 | 11 | 1000‡ | 10 | 80 | 150 | ..... | 6.30 | 4.85 |
| MJ4032 | 11 | 1000‡ | 10 | 100 | 150 | ..... | 6.95 | 5.35 |
| 2N5883 | 11 | 20-100 | 10 | 60 | 200 | 4.0 | 4.23 | 3.25 |
| 2N4398 | 3 | 15-60 | 15 | 40 | 200 | 4.0 | 6.75 | 5.00 |
| 2N4399 | 3 | 15-60 | 15 | 60 | 200 | 4.0 | 8.78 | 6.50 |

*Solid header. †JAN and JANTX types available. ‡Min.

## NPN-PNP ECONOMY SILICON POWER

| Motorola Type | Case | PD W | Max. VCEO V | hFE at IC | | fT MHz | Net Each | |
|---|---|---|---|---|---|---|---|---|
| | | | | Min. | A | | 1-99 | 100-999 |
| MJE101* | 90 | 75 | 40 | 25 | 2.0 | ...... | $2.10 | $1.40 |
| MJE102* | 90 | 75 | 60 | 25 | 2.0 | ...... | 2.70 | 1.80 |
| MJE103* | 90 | 75 | 60 | 30 | 1.0 | ...... | 2.40 | 1.60 |
| MJE104 | 90 | 75 | 80 | 30 | 1.0 | ...... | 2.85 | 1.90 |
| MJE105* | 90 | 65 | 50 | 25 | 2.0 | ...... | 2.33 | 1.55 |
| MJE201 | 90 | 75 | 40 | 25 | 2.0 | ...... | 1.75 | 1.15 |
| MJE202 | 90 | 75 | 60 | 25 | 2.0 | ...... | 2.35 | 1.55 |
| MJE203 | 90 | 75 | 60 | 30 | 1.0 | ...... | 2.05 | 1.35 |
| MJE204 | 90 | 75 | 80 | 30 | 1.0 | ...... | 2.40 | 1.60 |
| MJE205 | 90 | 65 | 50 | 25 | 2.0 | ...... | 1.92 | 1.25 |
| MJE340 | 77 | 20.8 | 300 | 30 | 0.05 | ...... | 1.06 | .71 |
| MJE344 | 77 | 20.8 | 200 | 30 | 0.05 | 15 | 1.07 | .67 |
| MJE370* | 77 | 25 | 30 | 40 | 1.0 | ...... | 1.07 | .82 |
| MJE371* | 77 | 25 | 40 | 40 | 1.0 | ...... | 1.50 | 1.11 |
| MJE520 | 77 | 25 | 30 | 40 | 1.0 | ...... | .94 | .72 |
| MJE521 | 77 | 25 | 40 | 40 | 1.0 | ...... | 1.32 | .98 |
| MJE700* | 77 | 40 | 60 | 750 | 1.5 | 1.0 | 1.92 | 1.42 |
| MJE701* | 77 | 40 | 60 | 750 | 2.0 | 1.0 | 2.16 | 1.60 |
| MJE702* | 77 | 40 | 80 | 750 | 1.5 | 1.0 | 2.39 | 1.77 |
| MJE703* | 77 | 40 | 80 | 750 | 2.0 | 1.0 | 2.72 | 2.02 |
| MJE800 | 77 | 40 | 60 | 750 | 1.5 | 1.0 | 1.62 | 1.20 |
| MJE801 | 77 | 40 | 60 | 750 | 2.0 | 1.0 | 1.80 | 1.33 |
| MJE802 | 77 | 40 | 80 | 750 | 1.5 | 1.0 | 2.02 | 1.50 |
| MJE803 | 77 | 40 | 80 | 750 | 2.0 | 1.0 | 2.26 | 1.68 |
| MJE1090* | 90 | 70 | 60 | 750 | 3.0 | 1.0 | 2.70 | 2.05 |
| MJE1091* | 90 | 70 | 60 | 750 | 4.0 | 1.0 | 2.90 | 2.23 |
| MJE1092* | 90 | 70 | 80 | 750 | 3.0 | 1.0 | 3.10 | 2.40 |
| MJE1093* | 90 | 70 | 80 | 750 | 4.0 | 1.0 | 3.50 | 2.65 |
| MJE1100 | 90 | 70 | 60 | 750 | 3.0 | 1.0 | 1.82 | 1.40 |
| MJE1101 | 90 | 70 | 60 | 750 | 4.0 | 1.0 | 1.99 | 1.53 |
| MJE1102 | 90 | 70 | 80 | 750 | 3.0 | 1.0 | 2.21 | 1.70 |
| MJE1103 | 90 | 70 | 80 | 750 | 4.0 | 1.0 | 2.44 | 1.88 |
| MJE1290* | 90 | 90 | 40 | 20 | 5.0 | 3.0 | 3.25 | 2.50 |
| MJE1291* | 90 | 90 | 60 | 20 | 5.0 | 3.0 | 3.64 | 2.80 |
| MJE1660 | 90 | 90 | 40 | 20 | 5.0 | 3.0 | 2.47 | 1.90 |
| MJE1661 | 90 | 90 | 60 | 20 | 5.0 | 3.0 | 2.80 | 2.15 |
| MJE2010* | 199 | 80 | 40 | 25 | 1.0 | 3.0 | 1.71 | 1.32 |
| MJE2011* | 199 | 80 | 60 | 25 | 1.0 | 3.0 | 1.93 | 1.49 |
| MJE2020 | 199 | 80 | 40 | 25 | 1.0 | 3.0 | 1.28 | .99 |
| MJE2021 | 199 | 80 | 60 | 25 | 1.0 | 3.0 | 1.53 | 1.18 |
| MJE2360 | 199 | 30 | 350 | 25 | 0.05 | 10 | 1.10 | .84 |
| MJE2361 | 199 | 30 | 350 | 50 | 0.05 | 10 | 1.43 | 1.10 |
| MJE2370* | 199 | 40 | 40 | 40 | 0.2 | 3.0 | 1.05 | .80 |
| MJE2371* | 199 | 40 | 60 | 40 | 0.2 | 3.0 | 1.16 | .89 |
| MJE2480 | 199 | 60 | 40 | 20 | 1.5 | 2.0 | 1.10 | .84 |
| MJE2481 | 199 | 60 | 60 | 20 | 1.5 | 2.0 | 1.15 | .88 |
| MJE2482 | 199 | 60 | 40 | 20 | 2.5 | 2.0 | 1.15 | .88 |
| MJE2483 | 199 | 60 | 60 | 20 | 2.5 | 2.0 | 1.20 | .92 |
| MJE2490* | 199 | 60 | 40 | 20 | 1.0 | 3.0 | 1.37 | 1.05 |
| MJE2491* | 199 | 60 | 60 | 20 | 1.0 | 3.0 | 1.55 | 1.19 |
| MJE2520 | 199 | 40 | 40 | 40 | 0.2 | 3.0 | .94 | .72 |
| MJE2521 | 199 | 40 | 60 | 40 | 0.2 | 3.0 | 1.00 | .77 |
| MJE2522 | 199 | 40 | 40 | 20 | 1.0 | 3.0 | 1.00 | .77 |
| MJE2523 | 199 | 40 | 60 | 20 | 1.0 | 3.0 | 1.05 | .80 |
| MJE2801 | 90 | 90 | 60 | 25 | 3.0 | ...... | 1.50 | 1.19 |
| MJE2901 | 90 | 90 | 60 | 25 | 3.0 | ...... | 2.95 | 1.95 |
| MJE2955* | 90 | 90 | 60 | 20 | 4.0 | 2.0 | 2.90 | 1.95 |
| MJE3055* | 90 | 90 | 60 | 20 | 4.0 | 2.2 | 1.50 | 1.19 |
| MJE3370* | 77 | 20 | 30 | 25 | 1.0 | ...... | 1.18 | .87 |
| MJE3371* | 77 | 20 | 40 | 40 | 1.0 | ...... | 1.55 | 1.15 |
| MJE3439 | 77 | 15 | 350 | 40 | 0.02 | 15 | 1.07 | .79 |
| MJE3440 | 77 | 15 | 250 | 40 | 0.02 | 15 | .84 | .62 |
| MJE3520 | 77 | 20 | 30 | 25 | 1.0 | ...... | 1.01 | .75 |
| MJE3521 | 77 | 20 | 40 | 40 | 1.0 | ...... | 1.38 | 1.02 |
| MJE3738 | 199 | 30 | 225 | 40 | 0.1 | 10 | 1.10 | .84 |
| MJE3739 | 199 | 30 | 300 | 40 | 0.1 | 10 | 1.25 | .95 |
| MJE3740* | 199 | 40 | 60 | 30 | 0.25 | 4.0 | 1.82 | 1.39 |
| MJE3741* | 199 | 40 | 80 | 30 | 0.25 | 4.0 | 2.04 | 1.55 |
| 2N4918* | 77 | 30 | 40 | 20 | 0.5 | 3.0 | 1.26 | .93 |
| 2N4919* | 77 | 30 | 60 | 20 | 0.5 | 3.0 | 1.48 | 1.10 |
| 2N4920* | 77 | 30 | 80 | 20 | 0.5 | 3.0 | 1.75 | 1.30 |
| 2N4921 | 77 | 30 | 40 | 20 | 0.5 | 3.0 | 1.07 | .79 |
| 2N4922 | 77 | 30 | 60 | 20 | 0.5 | 3.0 | 1.29 | .95 |
| 2N4923 | 77 | 30 | 80 | 20 | 0.5 | 3.0 | 1.49 | 1.10 |
| 2N5190 | 77 | 40 | 40 | 25 | 1.5 | 2.0 | 1.23 | .91 |
| 2N5191 | 77 | 40 | 60 | 25 | 1.5 | 2.0 | 1.47 | 1.09 |
| 2N5192 | 77 | 40 | 80 | 20 | 1.5 | 2.0 | 1.77 | 1.31 |
| 2N5193* | 77 | 40 | 40 | 25 | 1.5 | 2.0 | 1.38 | 1.02 |
| 2N5194* | 77 | 40 | 60 | 25 | 1.5 | 2.0 | 1.62 | 1.20 |
| 2N5195* | 77 | 40 | 80 | 20 | 1.5 | 2.0 | 1.99 | 1.47 |

*PNP; all other types NPN.

**SEE ANOTHER PAGE FOR ADDITIONAL CASE ILLUSTRATIONS**

MOTOROLA SEMIS ARE STOCKED AT NEWTON, MA; NO. HAVEN, CT; HAUPPAUGE, ROCHESTER AND SYRACUSE, NY; SALT LAKE CITY, UT; GAITHERSBURG, MD; AND RALEIGH, NC

# MOTOROLA Semiconductors

# SILICON ANNULAR TRANSISTORS

## NPN HIGH-SPEED LOW-CURRENT

$P_D$ at 25° C ambient.

| Motorola Type | Case | Max. $V_{CEO}$ V | $h_{FE}$ at $I_C$ |  | Min. $f_T$ MHz | Max. $t_s$ nsec | Net Ea., Lots |  |
|---|---|---|---|---|---|---|---|---|
|  |  |  | Min.-Max. | mA |  |  | 1-99 | 100-999 |
| 2N702 | 22 | 25 | 20–160 | 10 | 70 | ...... | $6.75 | $4.50 |
| 2N703* | 22 | 25 | 40–100 | 10 | 70 | ...... | 6.75 | 4.50 |
| 2N706*♯ | 22 | 20† | 10 min. | 10 | 400 | 60 | .69 | .46 |
| 2N706A♯ | 22 | 20† | 20–60 | 10 | 400 | 25 | 1.18 | .79 |
| 2N706B♯ | 22 | 20† | 20–60 | 10 | 400 | 25 | 1.48 | .99 |
| 2N708♯▪ | 22 | 15 | 30–120 | 10 | 300 | 25 | .80 | .45 |
| 2N743 | 22 | 12 | 40–120 | 10 | 282 | 14 | 6.20 | 4.15 |
| 2N744 | 22 | 12 | 20–60 | 10 | 280 | 18 | 2.90 | 1.95 |
| 2N753 | 22 | 20† | 40–120 | 10 | 400§ | 35 | 1.97 | 1.31 |
| 2N834• | 22 | 30‡ | 25 min. | 10 | 350 | 25 | 2.00 | 1.35 |
| 2N835• | 22 | 20‡ | 20 min. | 10 | 300 | 35 | 1.50 | 1.00 |
| 2N914♯▪ | 22 | 15 | 30–120 | 10 | 300 | 20 | .95 | .63 |
| 2N1708 | 26 | 12 | 20 min. | 10 | 200 | 25 | 3.20 | 2.20 |
| 2N2206 | 22 | 12 | 40–120 | 10 | ..... | ...... | 1.88 | 1.25 |
| 2N2242 | 22 | 15 | 40–120 | 10 | 250 | 25 | 5.80 | 3.90 |
| 2N2256 | 22 | 7.0 | 17 min. | 10 | 250 | ...... | 1.12 | .75 |
| 2N2257 | 22 | 7.0 | 40 min. | 10 | 250 | ...... | 1.27 | .85 |
| 2N2319 | 22 | 25‡ | 15 min. | 0.1 | 300 | ...... | 1.95 | 1.30 |
| 2N2368▴ | 22 | 15 | 20–60 | 10 | 400 | 10 | 1.07 | .82 |
| 2N2369▴ | 22 | 15 | 40–120 | 10 | 500 | 13 | 1.25 | .76 |
| 2N2369A▪ | 22 | 15 | 40 min. | 10 | 500 | 13 | 1.50 | .89 |
| 2N2481▪ | 22 | 15 | 40–120 | 10 | ..... | 20 | 2.63 | 1.75 |
| 2N2501 | 22 | 20 | 50–150 | 10 | 350 | 15 | 4.70 | 3.15 |
| 2N2710 | 22 | 20 | 40 min. | 10 | 500 | 15 | 7.50 | 5.00 |
| 2N3210 | 22 | 15 | 30–120 | 10 | 300 | 20 | .83 | .55 |
| 2N3211 | 22 | 15 | 50–150 | 10 | 350 | 15 | 1.27 | .85 |
| 2N3227▴ | 22 | 20 | 100–300 | 10 | 500 | 13 | 2.40 | 1.60 |
| 2N3508 | 26 | 20 | 40–120 | 10 | 500 | 13 | 5.40 | 3.60 |
| 2N3509 | 26 | 20 | 100–300 | 10 | 500 | 13 | 5.40 | 3.60 |
| 2N3946 | 22 | 40 | 50–150 | 10 | 250 | 300 | 2.40 | 1.60 |
| 2N3947 | 22 | 40 | 100–300 | 10 | 300 | 375 | 2.75 | 1.85 |
| MM1748 | 27 | 6.0 | 20–120 | 10 | 600 | 6.0 | .53 | .35 |

## PNP HIGH-SPEED LOW-CURRENT

|  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|
| 2N3248 | 22 | 12 | 50–150 | 10 | 250 | 60 | $ 3.90 | $ 2.60 |
| 2N3249 | 22 | 12 | 100–300 | 10 | 300 | 60 | 4.65 | 3.10 |
| 2N3250 | 22 | 40 | 50–150 | 10 | 250 | 175 | 3.20 | 1.94 |
| 2N3250A▪ | 22 | 60 | 50–150 | 10 | 250 | 175 | 3.55 | 2.14 |
| 2N3251 | 22 | 40 | 100–300 | 10 | 300 | 200 | 3.55 | 2.14 |
| 2N3251A▪ | 22 | 60 | 100–300 | 10 | 300 | 200 | 3.90 | 2.33 |
| 2N3304 | 22 | 6.0 | 30–120 | 10 | 500 | 30 | 1.38 | .92 |
| 2N3546 | 22 | 12 | 30–120 | 10 | 700 | 20 | 2.50 | 1.65 |
| 2N4260 | 20 | 15 | 30–150 | 10 | 1600 | ...... | 12.35 | 8.25 |
| 2N4261 | 20 | 15 | 30–150 | 10 | 2000 | ...... | 14.60 | 9.75 |
| MM869B | 22 | 30 | 40–120 | 30 | 400 | 80 | 6.00 | 4.00 |
| MM2894A | 22 | 12 | 40–120 | 30 | 800 | 35 | 3.25 | 2.15 |
| MM3905 | 27 | 40 | 50–150 | 10 | 200 | 260 | 1.35 | .90 |
| MM3906 | 27 | 40 | 100–130 | 10 | 250 | 300 | 1.43 | .95 |
| MM4208 | 22 | 12 | 30–120 | 10 | 850 | 20 | 3.75 | 2.50 |
| MM4208A | 22 | 15 | 30–120 | 10 | 850 | 20 | 4.50 | 3.00 |
| MM4209 | 22 | 12 | 50–120 | 10 | 850 | 20 | 6.75 | 4.50 |
| MM4209A | 22 | 15 | 50–120 | 10 | 850 | 20 | 7.50 | 5.00 |

*JAN type available. †$V_{CER}$. ‡$V_{CES}$. §Typical. ♯Also available in TO-46 (Case 26) and TO-52 (Case 27). •Also available in TO-52. ▴Also available in TO-46. ▪JAN and JANTX types available.

## NPN HIGH-SPEED MEDIUM-CURRENT

| Motorola Type | Case | Max. $V_{CEO}$ V | $h_{FE}$ at $I_C = 150$ mA Min.-Max. | Min. $f_T$ MHz | Max. $t_s$ nsec | Net Ea., Lots of |  |
|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  | 1-99 | 100-999 |
| 2N696 | 31 | 40* | 20–60 | 40 | ..... | $ 0.52 | $0.40 |
| 2N697§ | 31 | 40* | 40–120 | 50 | ..... | .52 | .40 |
| 2N699 | 79 | 80* | 40–120 | 50 | ..... | 1.32 | .88 |
| 2N718§ | 22 | 40* | 40–120 | 50 | ..... | .46 | .35 |
| 2N718A† | 22 | 50* | 40–120 | 60 | ..... | .79 | .60 |
| 2N956 | 22 | 50* | 100–300 | 70 | ..... | .85 | .65 |
| 2N1613♯ | 31 | 50* | 40–120 | 60 | ..... | .79 | .60 |
| 2N1711 | 31 | 50* | 100–300 | 70 | ..... | .85 | .65 |
| 2N1959 | 31 | 40 | 40–120 | 100 | 25 | 4.45 | 2.95 |
| 2N2218§♯ | 31 | 30 | 40–120 | 250 | ..... | 1.05 | .62 |
| 2N2218A†§ | 31 | 40 | 40–120 | 250 | 225 | 1.50 | .89 |
| 2N2219†§ | 31 | 30 | 100–300 | 250 | ..... | 1.15 | .69 |
| 2N2219A†§ | 31 | 40 | 100–300 | 300 | 225 | 1.75 | 1.04 |
| 2N2221§♯ | 22 | 30 | 40–120 | 250 | ..... | 1.05 | .62 |
| 2N2221A§♯ | 22 | 40 | 40–120 | 250 | 225 | 1.65 | .97 |
| 2N2222†§ | 22 | 30 | 100–300 | 250 | ..... | .95 | .57 |
| 2N2222A†§ | 22 | 40 | 100–300 | 300 | 225 | 1.20 | .71 |
| 2N2224 | 31 | 40 | 40–120‡ | 250 | ..... | 3.75 | 2.50 |
| 2N2410 | 31 | 40 | 30–120 | 200 | 40 | 4.50 | 3.00 |
| 2N2537 | 31 | 30 | 50–150 | 250 | 20 | 4.95 | 3.30 |
| 2N2538 | 31 | 30 | 100–300 | 250 | 20 | 5.85 | 3.90 |
| 2N2539 | 22 | 30 | 50–150 | 250 | 20 | 4.95 | 3.30 |
| 2N2540 | 22 | 30 | 100–300 | 250 | 20 | 5.85 | 3.90 |
| 2N2895 | 22 | 65 | 40–120 | 120 | ..... | 1.41 | .97 |
| 2N2896 | 22 | 90 | 60–120 | 120 | ..... | 2.06 | 1.43 |
| 2N2897 | 22 | 45 | 50–200 | 100 | ..... | 1.16 | .80 |
| 2N2958 | 31 | 60 | 40–120 | 250 | 300 | 2.25 | 1.50 |
| 2N2959 | 31 | 60 | 100–300 | 250 | 300 | 2.70 | 1.80 |
| 2N3053 | 31 | 40 | 50–250 | 100 | ..... | .83 | .57 |
| 2N3115 | 22 | 60 | 40–120 | 250 | 300 | 1.95 | 1.30 |
| 2N3116 | 22 | 60 | 100–300 | 250 | 300 | 2.40 | 1.60 |
| 2N3510 | 27 | 10 | 25–150 | 350 | 16 | 1.45 | .87 |
| 2N3511 | 27 | 15 | 30–120 | 450 | 12 | 1.95 | 1.16 |
| 2N3647 | 26 | 10 | 25–150 | 350 | 16 | 2.25 | 1.50 |
| 2N3648 | 26 | 15 | 30–120 | 450 | 12 | 2.70 | 1.80 |
| 2N5581 | 26 | 40 | 40–120 | 250 | 250 | 8.70 | 5.80 |
| 2N5582 | 26 | 40 | 100–130 | 300 | 250 | 10.20 | 6.80 |

*$V_{CER}$. †JAN and JANTX type available. ‡$I_C = 100$ mA. §Also available in TO-46 (Case 26). ♯JAN type available.

## PNP HIGH-SPEED MEDIUM-CURRENT

| Motorola Type | Case | Max. $V_{CEO}$ V | $h_{FE}$ at $I_C = 150$ mA Min.-Max. | Min. $f_T$ MHz | Max. $t_s$ nsec | Net Ea., Lots of |  |
|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  | 1-99 | 100-999 |
| 2N722 | 22 | 35 | 30–90 | 60 | ..... | $ 1.46 | $1.27 |
| 2N1131♯ | 31 | 35 | 20–45 | 50 | ..... | 5.60 | 3.75 |
| 2N1131A | 31 | 40 | 20–45 | 50 | 35 | 2.70 | 1.80 |
| 2N1132♯ | 31 | 35 | 30–90 | 60 | ..... | 1.46 | 1.10 |
| 2N1132A | 31 | 40 | 30–90 | 60 | ..... | 12.00 | 8.00 |
| 2N1991 | 31 | 20 | 15–60 | 40 | ..... | 3.95 | 2.96 |
| 2N2303 | 31 | 35 | 75–200 | 60 | ..... | 8.25 | 5.50 |
| 2N2800 | 31 | 35 | 30–90 | 120 | 225 | 6.75 | 4.50 |
| 2N2801 | 31 | 35 | 75–225 | 120 | 225 | 7.10 | 4.75 |
| 2N2837 | 22 | 35 | 30–90 | 120 | 225 | 6.75 | 4.50 |
| 2N2838 | 22 | 35 | 75–225 | 120 | 225 | 7.10 | 4.75 |
| 2N2904§♯ | 31 | 40 | 40–120 | 200 | 80 | 1.95 | 1.16 |
| 2N2904A§♯ | 31 | 60 | 40–120 | 200 | 80 | 2.55 | 1.52 |
| 2N2905†§ | 31 | 40 | 100–300 | 200 | 80 | 2.20 | 1.31 |
| 2N2905A†§ | 31 | 60 | 100–300 | 200 | 80 | 2.65 | 1.59 |
| 2N2906§♯ | 22 | 40 | 40–120 | 200 | 80 | 1.85 | 1.12 |
| 2N2906A§♯ | 22 | 60 | 40–120 | 200 | 80 | 2.40 | 1.45 |
| 2N2907†§ | 22 | 40 | 100–300 | 200 | 80 | 2.00 | 1.19 |
| 2N2907A†§ | 22 | 60 | 100–300 | 200 | 80 | 2.20 | 1.33 |
| 2N3081 | 31 | 50 | 30–90 | 150 | 175 | 9.00 | 6.00 |
| 2N3120 | 79 | 45 | 30–130‡ | 130 | 100 | 1.05 | .70 |
| 2N3121 | 22 | 45 | 30–130‡ | 130 | 100 | 9.90 | 6.60 |
| 2N3133 | 31 | 35 | 40–120 | 200 | ..... | 4.95 | 3.30 |
| 2N3134 | 31 | 35 | 100–300 | 200 | ..... | 1.05 | .70 |
| 2N3135 | 22 | 35 | 40–120 | 200 | ..... | 4.95 | 3.30 |
| 2N3136 | 22 | 35 | 100–300 | 200 | ..... | 5.85 | 3.90 |
| 2N3485 | 26 | 40 | 40–120 | 200 | 80 | 8.70 | 5.80 |
| 2N3485A† | 26 | 60 | 40–120 | 200 | 80 | 12.00 | 8.00 |
| 2N3486 | 26 | 40 | 100–300 | 200 | 80 | 10.20 | 6.80 |
| 2N3486A† | 26 | 60 | 100–300 | 200 | 80 | 13.50 | 9.00 |
| 2N5763 | 22 | 60 | 35 min. | 200 | 200 | 18.00 | 12.00 |
| MM5005 | 79 | 60 | 50–250 | 30 | ..... | 1.12 | .75 |
| MM5006 | 79 | 80 | 50–250 | 30 | ..... | 1.35 | .90 |
| MM5007 | 79 | 100 | 50–250 | 30 | ..... | 1.73 | 1.15 |

*$V_{CER}$. †JAN and JANTX type available. ‡$I_C = 50$ mA. §Also available in TO-46 (Case 26). ♯JAN type available.

## NPN HIGH-CURRENT

| Motorola Type | Case | Maximum |  | $h_{FE}$ at $I_C$ |  | Min. $f_T$ MHz | Net Ea., Lots of |  |
|---|---|---|---|---|---|---|---|---|
|  |  | $V_{CEO}$ V | $P_D$ mW | Min.-Max. | mA |  | 1-99 | 100-999 |
| 2N656 | 31 | 60 | 1000 | 30–90 | 200 | .... | $ 2.03 | $1.35 |
| 2N657 | 31 | 100 | 1000 | 30–90 | 200 | .... | 2.20 | 1.47 |
| 2N1893 | 31 | 80 | 800 | 40–120 | 150 | 50 | 1.57 | 1.05 |
| 2N2297 | 31 | 35 | 800 | 40–120 | 150 | 60 | 1.12 | .75 |
| 2N2405 | 31 | 90 | 800 | 60–200 | 150 | .... | 1.82 | 1.25 |
| 2N3252 | 31 | 30 | 1000 | 30–90 | 500 | 200 | 9.75 | 6.50 |
| 2N3253* | 31 | 40 | 1000 | 25–75 | 500 | 175 | 9.75 | 6.50 |
| 2N3303 | 94 | 12 | 600 | 30–120 | 300 | 450 | 13.50 | 9.00 |
| 2N3444* | 31 | 50 | 1000 | 20–60 | 500 | 175 | 12.00 | 8.00 |
| 2N3506* | 31 | 40 | 1000 | 40–200 | 500 | 60 | 11.55 | 7.70 |
| 2N3507* | 31 | 50 | 1000 | 30–150 | 500 | 60 | 13.20 | 8.80 |
| 2N3734 | 31 | 30 | 1000 | 30–120 | 500 | 250 | 6.00 | 4.00 |
| 2N3735 | 31 | 50 | 1000 | 20–80 | 500 | 250 | 6.00 | 4.00 |
| 2N3736 | 26 | 30 | 500 | 30–120 | 500 | 250 | 6.60 | 4.40 |
| 2N3737 | 31 | 50 | 500 | 20–80 | 500 | 250 | 6.60 | 4.40 |
| 2N5859 | 79 | 40 | ...... | 15–100 | 1000 | 250 | .90 | .65 |
| 2N5860 | 79 | 45 | ...... | 15–80 | 1000 | 250 | 1.20 | .90 |
| 2N5861 | 79 | 50 | ...... | 25–100 | 500 | 200 | 1.35 | 1.00 |
| MM3724 | 31 | 30 | 1000 | 15 min. | 500 | 200 | 5.25 | 3.50 |
| MM3725 | 31 | 50 | 1000 | 15 min. | 500 | 200 | 5.60 | 3.75 |

*JAN type available.

## PNP HIGH-CURRENT

| Motorola Type | Case | Maximum |  | $h_{FE}$ at $I_C$ |  | Min. $f_T$ MHz | Net Ea., Lots |  |
|---|---|---|---|---|---|---|---|---|
|  |  | $V_{CEO}$ V | $P_D$ mW | Min.-Max. | mA |  | 1-99 | 100-999 |
| 2N2696 | 22 | 25 | 360 | 20 min. | 300 | 170 | $ 2.60 | $ 1.75 |
| 2N2927 | 31 | 25 | 800 | 20 min. | 300 | 170 | 1.95 | 1.30 |
| 2N3244 | 31 | 40 | 1000 | 50–150 | 500 | 175 | 15.75 | 10.50 |
| 2N3245 | 31 | 50 | 1000 | 30–90 | 500 | 150 | 15.75 | 10.50 |
| 2N3467* | 31 | 40 | 1000 | 40–120 | 500 | 175 | 9.75 | 6.50 |
| 2N3468* | 31 | 50 | 1000 | 25–75 | 500 | 150 | 11.25 | 7.50 |
| 2N3762 | 31 | 40 | 1000 | 30–120 | 1.0 A | 180 | 7.50 | 5.00 |
| 2N3763 | 31 | 60 | 1000 | 20–80 | 1.0 A | 150 | 7.50 | 5.00 |
| 2N3764 | 26 | 40 | 500 | 30–120 | 1.0 A | 180 | 8.25 | 5.50 |
| 2N3765 | 26 | 60 | 500 | 20–80 | 1.0 A | 150 | 8.25 | 5.50 |
| 2N4890 | 31 | 40 | 1000 | 50–250 | 150 | 100 | 1.12 | .75 |
| 2N5864 | 79 | 70 | ...... | 35 min. | 300 | 50 | 1.20 | .80 |
| 2N5865 | 79 | 50 | ...... | 20 min. | 500 | 100 | 1.95 | 1.30 |
| MM3726 | 31 | 50 | 1000 | 30–120 | 500 | 200 | 6.75 | 4.50 |

*JAN type available.

## NPN HIGH-VOLTAGE

| Motorola Type | Case | Maximum |  | $h_{FE}$ at $I_C$ |  | Min. $f_T$ MHz | Net Ea., Lots |  |
|---|---|---|---|---|---|---|---|---|
|  |  | $V_{CEO}$ V | $P_D$ mW | Min.-Max. | mA |  | 1-99 | 100-999 |
| 2N3498* | 31 | 100 | 1000 | 40–120 | 150 | 150 | $ 6.60 | $4.40 |
| 2N3499* | 31 | 100 | 1000 | 100–300 | 150 | 150 | 7.40 | 4.95 |
| 2N3500* | 31 | 150 | 1000 | 40–120 | 150 | 150 | 11.25 | 7.50 |
| 2N3501* | 31 | 150 | 1000 | 100–300 | 150 | 150 | 12.60 | 8.40 |
| 2N3742 | 31 | 300 | 1000 | 20–200 | 30 | 30 | 12.60 | 8.40 |
| MM3000 | 79 | 100 | 1000 | 20 min. | 10 | 150 | 1.25 | .83 |
| MM3001 | 79 | 150 | 1000 | 20 min. | 10 | 150 | 1.40 | .93 |
| MM3002 | 79 | 200 | 1000 | 20 min. | 10 | 150 | 1.65 | 1.10 |
| MM3003 | 79 | 250 | 1000 | 20 min. | 10 | 150 | 1.90 | 1.25 |
| MM3007 | 79 | 100 | ..... | 30–250 | 150 | 120 | 2.55 | 1.70 |

*JAN and JANTX type available.

**SEE ANOTHER PAGE FOR CASE ILLUSTRATIONS**

**MOTOROLA SEMIS ARE STOCKED AT NEWTON, MA; NO. HAVEN, CT; HAUPPAUGE, ROCHESTER AND SYRACUSE, NY; SALT LAKE CITY, UT; GAITHERSBURG, MD; AND RALEIGH, NC**

# MOTOROLA Semiconductors

# SWITCHING AND GENERAL PURPOSE TRANSISTORS

## SILICON ANNULAR TRANSISTORS (CONTINUED)

### PNP HIGH-VOLTAGE

| Motorola Type | Case | Maximum $V_{CEO}$ V | Maximum $P_D$ mW | $h_{FE}$ at $I_C$ Min.-Max. | $h_{FE}$ at $I_C$ mA | Min. $f_T$ MHz | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|
| 2N3494 | 31 | 80 | 600 | 40 min. | 10 | 200 | $ 9.75 | $6.50 |
| 2N3495 | 31 | 120 | 600 | 40 min. | 10 | 150 | 12.75 | 8.50 |
| 2N3496 | 22 | 80 | 400 | 40 min. | 10 | 200 | 9.75 | 6.50 |
| 2N3497 | 22 | 120 | 400 | 40 min. | 10 | 150 | 12.75 | 8.50 |
| 2N3634* | 31 | 140 | 400 | 50–150 | 50 | 150 | 13.20 | 8.80 |
| 2N3635* | 31 | 140 | 1000 | 50–150 | 50 | 200 | 14.40 | 9.60 |
| 2N3636* | 31 | 175 | 1000 | 100–300 | 50 | 150 | 19.40 | 12.95 |
| 2N3637* | 31 | 175 | 1000 | 100–300 | 50 | 200 | 21.30 | 14.20 |
| 2N3743 | 31 | 300 | 1000 | 25–250 | 30 | 30 | 12.60 | 8.40 |
| 2N4928 | 79 | 100 | 600 | 25–200 | 10 | 100 | 4.05 | 2.70 |
| 2N4929 | 79 | 150 | 1000 | 25–200 | 10 | 100 | 4.95 | 3.30 |
| 2N4930 | 79 | 200 | 1000 | 20–200 | 10 | 20 | 5.90 | 3.95 |
| 2N4931 | 79 | 250 | 1000 | 20–200 | 10 | 20 | 6.75 | 4.50 |
| 2N5357 | 79 | 300 | ..... | 25–100 | 500 | 55 | 13.00† | 11.50‡ |
| MM4000 | 79 | 100 | 600 | 20 min. | 10 | .... | 1.24 | .83 |
| MM4001 | 79 | 150 | 1000 | 20 min. | 10 | .... | 1.39 | .93 |
| MM4002 | 79 | 200 | 1000 | 20 min. | 10 | .... | 1.65 | 1.10 |
| MM4003 | 79 | 250 | 1000 | 20 min. | 10 | .... | 1.85 | 1.25 |
| MM4545 | 39 | 200 | ..... | 20 min. | 500 | 45 | 9.00 | 6.00§ |
| MM4546 | 39 | 300 | ..... | 20 min. | 500 | 45 | 9.10 | 7.00§ |
| MM4547 | 39 | 400 | ..... | 20 min. | 500 | 35 | 13.00† | 11.50‡ |

*JAN and JANTX type available. †Lots of: 1–24; ‡25–99; §100–249.

### NPN CURRENT MODE SWITCHING (CASE 22)

| Motorola Type | Maximum $V_{CEO}$ V | Maximum $P_D$ mW | $h_{FE}$ Min.-Max. | Min. $f_T$ MHz | Typical $t_{on}$ nsec | Typical $t_{off}$ nsec | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|
| 2N2256 | 7 | 300 | 20 min.* | 250 | 3.0 | 4.0 | $ 1.12 | $0.75 |
| 2N2257 | 7 | 300 | 40 min.* | 250 | 3.0 | 4.0 | 1.27 | .85 |
| 2N2258‡♦ | 7 | 150 | 20 min.* | 250 | 4.0 | 3.0 | 1.12 | .75 |
| 2N2259‡♦ | 7 | 150 | 40 min.* | 250 | 4.0 | 3.0 | 1.27 | .85 |
| 2N3959♯ | 12 | 400 | 40–200† | 1300 | 1.6 | 2.0 | 7.75 | 5.95‡ |
| 2N3960♯ | 12 | 400 | 40–200† | 1600 | 1.6 | 2.0 | 8.95 | 6.90‡ |
| 2N4260‡§ | 15 | 200 | 30–150† | 1600 | 1.5 | 2.0 | 12.35 | 8.25 |
| 2N4261‡§ | 15 | 200 | 30–150† | 2000 | 1.5 | 2.0 | 14.60 | 9.75 |
| 2N5583• | 79 | ..... | 25–100▲ | 1600■ | 0.8 | 4.0 | 6.35 | 4.90⁑ |

*At $I_C$ = 25 mA. †At $I_C$ = 10 mA. ‡PNP. §Case 20. ♯JAN type available. •Case 79. ▲At $I_C$ = 100 mA. ■Typical. ♦Germanium. ⁑Lots of: 100–499; ‡100-249.

### NPN SMALL-SIGNAL SWITCHING AND AMPLIFIERS

| Motorola Type | Case | Maximum $V_{CB}$ V | Maximum $P_D$ mW | $h_{FE}$ Min.-Max. | Min. $f_T$ MHz | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|
| 2N720A | 22 | 120 | 500 | 40–120 | 50 | $1.32 | $0.88 |
| 2N721* | 22 | 50 | 400 | 20–45 | 50 | 1.46 | 1.27 |
| 2N276* | 22 | 25 | 300 | 15–45 | 140 | 3.00 | 2.00 |
| 2N727* | 22 | 25 | 300 | 30–120 | 140 | 3.15 | 2.10 |
| 2N735 | 22 | 80 | 500 | 30–100 | ...... | 2.50 | 1.65 |
| 2N736 | 22 | 80 | 500 | 60–200 | ...... | 2.50 | 1.65 |
| 2N739 | 22 | 125 | 500 | 30–100 | ...... | 2.70 | 1.80 |
| 2N740 | 22 | 125 | 500 | 60–200 | ...... | 2.70 | 1.80 |
| 2N840 | 22 | 40 | 500 | 30–100 | 1.5 | 1.95 | 1.30 |
| 2N841 | 22 | 40 | 500 | 60–400 | 2.0 | 2.10 | 1.40 |
| 2N869* | 22 | 25 | 360 | 20–120 | 100 | 5.85 | 3.90 |
| 2N910 | 22 | 100 | 500 | 75 min. | 60 | 2.37 | 1.58 |
| 2N911 | 22 | 100 | 500 | 30 min. | 50 | 5.55 | 3.70 |
| 2N915 | 22 | 70 | 360 | 50–200 | 250 | 4.95 | 3.30 |
| 2N916§ | 22 | 45 | 360 | 50–200 | 300 | 3.65 | 2.45 |
| 2N929§ | 22 | 45 | 500 | 40–120 | 30 | 2.25 | 1.50 |
| 2N929A | 22 | 60 | 500 | 40–120 | 45 | 4.50 | 3.00 |
| 2N930‡ | 22 | 45 | 500 | 100–300 | 30 | 1.50 | .89 |
| 2N930A | 22 | 60 | 500 | 100–300 | 45 | 1.80 | 1.09 |
| 2N978* | 22 | 30 | 330 | 15–60 | 40 | 3.15 | 2.10 |
| 2N995* | 22 | 20 | 360 | 35–140 | 100 | 5.85 | 3.90 |
| 2N996* | 22 | 15 | 360 | 35 min. | 100 | 1.88 | 1.25 |
| 2N1983 | 31♯ | 50 | 600 | 70–210 | 40 | 2.50 | 1.67 |
| 2N1984 | 31♯ | 50 | 600 | 35–100 | 40 | 2.33 | 1.56 |
| 2N1990 | 79 | 100 | 600 | 20 min. | ...... | 2.25 | 1.50 |
| 2N2483 | 22 | 60 | 360 | 40–120 | 12 | .82 | .55 |
| 2N2484 | 22 | 60 | 360 | 100–150 | 15 | .52 | .35 |
| JAN2N2708 | 20 | 35 | 200 | 30–200 | ...... | 5.15 | 3.42 |
| 2N3019 | 31 | 140 | 800 | 100–300 | 100 | 6.00 | 4.00 |
| 2N3020 | 31 | 140 | 800 | 40–120 | 80 | 5.70 | 3.80 |
| 2N3114 | 31 | 150 | 800 | 30–120 | ...... | 6.00 | 4.00 |
| 2N3712 | 31 | 150 | 1000 | 30–150 | 40 | 2.25 | 1.50 |
| 2N3798* | 22 | 60 | 360 | 150–450 | 100 | 3.20 | 2.15 |
| 2N3799* | 22 | 60 | 360 | 300–900 | 100 | 3.50 | 2.35 |
| 2N4404* | 31 | 80• | 1000† | 40–120 | 200 | 8.25 | 5.50 |
| 2N4405* | 31 | 80• | 1000† | 100–300 | 200 | 9.75 | 6.50 |
| 2N4406* | 79 | 80• | 2000† | 25–100 | 150 | 11.25 | 7.50 |
| 2N4407* | 79 | 80• | 2000† | 75–225 | 150 | 12.75 | 8.50 |
| MM1812 | 31 | 175 | 1000 | 35–200 | ...... | 3.75 | 2.50 |
| MM2258 | 31 | 120 | 1000 | 50 min. | 150 | 3.90 | 2.60 |
| MM2259 | 31 | 175 | 1000 | 25 min. | 150 | 4.20 | 2.80 |
| MM2260 | 31 | 175 | 1000 | 50 min. | 150 | 4.50 | 3.00 |
| MM2484 | 22 | 60 | 360 | 100–500 | 60 | .48 | .32 |
| MM3005 | 79 | 60• | 1000† | 50–250 | 50 | 1.60 | 1.05 |
| MM3006 | 79 | 80• | 1000† | 50–250 | 50 | 1.90 | 1.25 |

*PNP. †$I_C$, max. mA. ‡JAN and JANTX type available. §JAN type available. ♯Solid header TO-5. •$BV_{CEO}$.

**SEE ANOTHER PAGE FOR CASE ILLUSTRATIONS**

### NPN HIGH-SPEED SATURATED SWITCHES

Minimum values except as otherwise noted.

| Motorola Type | Case | $BV_{CEO}$ V | $h_{FE}$ at $I_C$ Min. | $h_{FE}$ at $I_C$ mA | $f_T$ MHz | Max. $t_{on}$ nsec | Max. $t_{off}$ nsec | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|---|
| 2N869A* | 22 | 18 | 40 | 10 | 400 | 50 | 80 | $4.50 | $3.00 |
| 2N2848 | 31 | 30 | 30 | 500 | 250 | 40 | 40 | 5.10 | 3.40 |
| 2N3013 | 27 | 15 | 30 | 30 | 350 | 15 | 25 | 2.10 | 1.25 |
| 2N3014 | 27 | 20 | 30 | 30 | 350 | 16 | 25 | 1.75 | 1.04 |
| 2N3072* | 79 | 60 | 30 | 50 | 130 | 40 | 100 | 2.45 | 1.65 |
| 2N3073* | 22 | 60 | 30 | 50 | 130 | 40 | 100 | .90 | .60 |
| 2N3209* | 22 | 20 | 30 | 30 | 400 | 60 | 90 | 6.00 | 4.00 |

*PNP; JAN type also available.

### PNP CHOPPERS (CASE 26)

Minimum values except as otherwise noted.

| Motorola Type | $BV_{ECO}$ V | $h_{FE}$ | $BV_{EBO}$ V | Maximum $V_{EC(off)}$ mVDC | Maximum $r_{ec(on)}$ Ohms | Typ. $f_T$ MHz | Net Each 1-99 | Net Each 100-999 |
|---|---|---|---|---|---|---|---|---|
| 2N2330* | 20 | 50 | 7.0 | 3.0 | ........ | 250 | $3.35 | $2.25 |
| 2N2331† | 20 | 50 | 7.0 | 3.0 | ........ | 250 | 3.35 | 2.25 |
| 2N2944 | 10 | 80 | 15 | 0.3 | 20 | 16 | 2.76 | 1.84 |
| 2N2945 | 20 | 40 | 25 | 0.5 | 35 | 14 | 2.52 | 1.68 |
| 2N2946 | 35 | 30 | 40 | 0.8 | 45 | 14 | 2.88 | 1.92 |
| 2N5229 | 10 | 50 | 15 | 0.5 | 6 | 14 | 2.49 | 1.66 |
| 2N5230 | 20 | 50 | 30 | 0.5 | 8 | 14 | 3.00 | 2.00 |
| 2N5231 | 30 | 50 | 30 | 0.8 | 10 | 14 | 3.75 | 2.50 |

*NPN; Case 31. †NPN; Case 22.

### SILICON NPN RF POWER

Wide variety of devices for communications and general amplifier applications. Listed first in order of test frequency; then in order of increasing output power rating.

| Motorola Type | Case | f at $V_{CC}$ MHz | f at $V_{CC}$ Volts | Minimum $P_{out}$ W | Minimum Gain dB | Minimum $BV_{CBO}$ Volts | Net Ea., Lots 1-99 | Net Ea., Lots 100 Up |
|---|---|---|---|---|---|---|---|---|
| MM8004 | 79 | 27 | 12.5 | 3.5 | 10 | 60 | $ 2.60 | $2.00 |
| 2N3295 | 31 | 30 | 15.0 | 0.3 | ....... | 60 | 6.00 | 4.00 |
| 2N3296 | 24 | 30 | 30 | 3.0 | 16 | 60 | 10.40 | 8.00 |
| 2N2951 | 31 | 50 | 13.6 | 0.6 | ....... | 60 | 4.50 | 3.00 |
| 2N2952 | 22 | 50 | 13.6 | 0.6 | ....... | 60 | 4.95 | 3.30 |
| 2N5846 | 24 | 50 | 12.5 | 3.5 | 10 | 36 | 6.20 | 4.75 |
| 2N2949 | 23 | 50 | 25 | 3.5 | 10 | 60 | 7.80 | 6.00 |
| 2N2950 | 24 | 50 | 25 | 3.5 | 10 | 60 | 9.75 | 7.50 |
| 2N5847 | 145 | 50 | 12.5 | 8 | 10 | 36 | 11.00 | 8.45 |
| 2N3375* | 36 | 100 | 28 | 7.5 | 8.8 | 65 | 8.75 | 6.75 |
| MM1941 | 22 | 175 | 13.6 | 0.1 | ....... | 30 | 1.95 | 1.30 |
| 2N4072 | 22 | 175 | 13.6 | 0.25 | 10 | 40 | 1.95 | 1.50 |
| 2N4073 | 31 | 175 | 13.6 | 0.5 | 10 | 40 | 2.35 | 1.80 |
| 2N3353* | 79 | 175 | 28 | 2.5 | 10 | 65 | 2.30 | 1.75 |
| 2N5589 | 144 | 175 | 13.6 | 3 | 8.2 | 36 | 6.20 | 4.75 |
| 2N6080 | 145 | 175 | 12.5 | 4 | 12 | 36 | 7.80 | 6.00 |
| 2N3924 | 79 | 175 | 13.6 | 4 | 6.0 | 36 | 3.65 | 2.80 |
| 2N3961 | 24 | 175 | 28 | 4 | 9 | 65 | 7.55 | 5.80 |
| 2N3925 | 24 | 175 | 13.6 | 5 | 5.9 | 36 | 5.35 | 4.10 |
| 2N3926 | 36 | 175 | 13.6 | 7 | 5.5 | 36 | 11.70 | 9.00 |
| 2N5641 | 144 | 175 | 28 | 7 | 8.4 | 65 | 5.55 | 4.25 |
| 2N5590 | 145 | 175 | 13.6 | 10 | 5.2 | 36 | 9.40 | 7.25 |
| 2N6081 | 145 | 175 | 12.5 | 15 | 6.3 | 36 | 12.00 | 9.25 |
| 2N3866 | 79 | 400 | 28 | 1 | 10 | 55 | 1.60 | 1.23 |
| 2N3948 | 79 | 400 | 13.6 | 1 | 6 | 36 | 3.25 | 2.50 |
| 2N5160† | 79 | 400 | 28 | 1 | 8 | 60 | 3.80 | 2.90 |
| 2N5090 | 36 | 400 | 28 | 1.2 | 5.5 | 55 | 7.80 | 6.00 |
| 2N5635 | 144 | 400 | 28 | 2.5 | 6.2 | 60 | 5.60 | 4.30 |
| 2N5944 | 244 | 470 | 12.5 | 2 | 9 | 36 | 10.40 | 8.00 |
| 2N5645 | 145 | 470 | 12.5 | 4 | 6 | 36 | 12.35 | 9.50 |
| 2N3544 | 22 | 1000 | 12 | 0.01 | ‡ | ...... | 7.50 | 5.00 |
| 2N5922 | 244 | 1000 | 28 | 1 | 5.0 | 55 | 7.15 | 5.50 |
| | | | | | | | 1-24 | 25-99 |
| 2N3297 | 1 | 30 | 30 | 12 | 10 | 60 | $45.50 | $40.30 |
| 2N2948 | 1 | 30 | 25 | 15 | 7 | 40 | 17.55 | 15.50 |
| 2N5070 | 36 | 30 | 28 | 25 | 13 | 65 | 24.70 | 21.85 |
| 2N5941 | 211 | 30 | 28 | 40 | 13 | 65 | 51.35 | 45.40 |
| 2N5942 | 211 | 30 | 28 | 80 | 13 | 65 | 102.70 | 90.85 |
| 2N2947 | 1 | 50 | 25 | 15 | 7 | 60 | 19.50 | 17.25 |
| 2N5848 | 145 | 50 | 12.5 | 20 | 8 | 48 | 24.55 | 21.75 |
| 2N5849 | 145 | 50 | 12.5 | 40 | 7.5 | 48 | 40.30 | 35.60 |
| 2N3950 | 36 | 50 | 28 | 50 | 8 | 65 | 29.60 | 26.20 |
| 2N5862 | 145 | 150 | 27 | 75 | 7 | 65 | 67.50 | 60.00 |
| 2N5161§ | 36 | 175 | 28 | 7.5 | 8.8 | 60 | 11.70 | 10.35 |
| 2N3927 | 36 | 175 | 13.6 | 12 | 4.8 | 36 | 13.00 | 11.50 |
| 2N3632 | 36 | 175 | 28 | 13.5 | 5.9 | 65 | 12.75 | 11.80 |
| 2N5642 | 145 | 175 | 28 | 20 | 8.2 | 65 | 18.45 | 16.30 |
| 2N6082 | 145 | 175 | 12.5 | 25 | 6.2 | 36 | 24.00 | 21.30 |
| 2N5591 | 145 | 175 | 13.6 | 25 | 4.4 | 36 | 19.10 | 16.90 |
| 2N5162§ | 36 | 175 | 28 | 30 | 6 | 60 | 17.55 | 15.50 |
| 2N6083 | 145 | 175 | 12.5 | 30 | 5.7 | 36 | 27.30 | 24.20 |
| 2N6084 | 145 | 175 | 12.5 | 40 | 4.5 | 36 | 46.80 | 41.40 |
| 2N5643 | 145 | 175 | 28 | 40 | 7.6 | 65 | 35.00 | 31.00 |
| 2N5636 | 144 | 400 | 28 | 7.5 | 5.7 | 60 | 17.50 | 15.50 |
| 2N3733 | 36 | 400 | 28 | 10 | 4 | 65 | 15.00 | 13.25 |
| 2N5016 | 36 | 400 | 28 | 15 | 4.8 | 65 | 15.60 | 13.80 |
| 2N5637 | 145 | 400 | 28 | 20 | 4.6 | 60 | 30.65 | 27.20 |
| 2N5945 | 244 | 470 | 12.5 | 4 | 8 | 36 | 14.30 | 12.65 |
| 2N5946 | 244 | 470 | 12.5 | 10 | 6 | 36 | 21.60 | 19.10 |
| 2N5923 | 244 | 1000 | 28 | 2.5 | 5.0 | 55 | 15.60 | 13.80 |
| 2N5924 | 244 | 1000 | 28 | 5 | 5.0 | 55 | 23.40 | 20.70 |
| 2N5925 | 244 | 1000 | 28 | 10 | 5 | 50 | 37.70 | 33.30 |
| MM1501 | 23 | 1500 | 20 | 0.15 | § | ...... | 23.40 | 20.75 |
| MM1500 | 23 | 1500 | 20 | 0.25 | ♯ | ...... | 36.40 | 32.20 |

*JAN type available. †PNP. ‡16 mW at 1 GHz. §250 mW at 1.5 GHz. ♯150 mW at 1.5 GHz.

# MOTOROLA Semiconductors Transistors

## NPN-PNP SILICON TRANSISTORS

The following listing covers the most popular Motorola multiple devices. Other devices available from stock or are currently under development.

### MATCHED DUAL TRANSISTORS

$BV_{CEO}$ values given are minimum.

| Motorola Type | Case | $BV_{CEO}$ V | Max. $I_C$ mA | $h_{FE}$ at $I_C$ Min. | $h_{FE}$ at $I_C$ mA | Typ. $f_T$ MHz | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|
| 2N2060A | 32 | 60 | 500 | 30 | 0.1 | 200 | $ 5.45 | $ 3.65 |
| 2N2919 | 32 | 60 | 30 | 150 | 1.0 | 200 | 7.85 | 5.25 |
| 2N2920 | 32 | 60 | 30 | 300 | 1.0 | 70 | 5.25 | 3.50 |
| 2N2975 | 35 | 45 | 30 | 150 | 0.01 | 70 | 30.75 | 20.50 |
| 2N2979 | 32 | 60 | 30 | 150 | 0.01 | 70 | 32.25 | 21.50 |
| 2N3043 | 33 | 45 | 30 | 100 | 0.01 | 70 | 39.00 | 26.00 |
| 2N3726* | 654 | 45 | 300 | 120 | 0.1 | 200 | 6.60 | 4.40 |
| 2N3727* | 654 | 45 | 300 | 120 | 0.1 | 200 | 7.85 | 5.25 |
| 2N3810A* | 32 | 60 | 50 | 150 | 0.1 | 120 | 34.20 | 22.80 |
| 2N3811A* | 32 | 60 | 50 | 300 | 0.1 | 120 | 36.15 | 24.10 |
| 2N3816A* | 33 | 60 | 50 | 150 | 0.1 | 120 | 49.20 | 32.80 |
| 2N3817A* | 33 | 60 | 50 | 300 | 0.1 | 120 | 51.75 | 34.50 |
| 2N4015* | 654 | 60 | 300 | 120 | 0.1 | 200 | 18.00 | 12.00 |
| 2N4016* | 654 | 60 | 300 | 120 | 0.1 | 200 | 21.00 | 14.00 |
| 2N5793 | 654 | 40 | 600 | 40 | 150 | 250 | 9.00 | 6.05 |
| 2N5794 | 654 | 40 | 660 | 100 | 150 | 250 | 11.25 | 7.50 |
| 2N5795* | 654 | 60 | 600 | 40 | 150 | 200 | 9.60 | 6.40 |
| 2N5796* | 654 | 60 | 600 | 100 | 150 | 200 | 11.10 | 7.40 |
| MD708A† | 32 | 15 | 200 | 40 | 10 | 450 | 6.75 | 4.50 |
| MD918A† | 32 | 15 | 50 | 50 | 1.0 | 700 | 15.75 | 10.50 |
| MD2369A† | 32 | 15 | 500 | 40 | 3.0 | 600 | 11.25 | 7.50 |
| MD3251A*† | 32 | 40 | 50 | 100 | 0.1 | 275 | 23.25 | 15.50 |
| MD5000A* | 32 | 15 | 50 | 20 | 4.0 | 700 | 18.75 | 12.50 |

*PNP; all others NPN. †For Case 33, add suffix **F**; prices on request.

### QUAD TRANSISTORS (CASE 83)

$BV_{CEO}$ values given are minimum. PNP unless otherwise noted.

| Motorola Type | $BV_{CEO}$ V | $h_{FE}$ at $I_C$ Min. | $h_{FE}$ at $I_C$ mA | Max. $t_{on}$ ns | Max. $t_{off}$ ns | Typ. $f_T$ MHz | Net Ea., Lots 1-99 | Net Ea., Lots 100-499* |
|---|---|---|---|---|---|---|---|---|
| MPQ3303‡ | 12 | 40 | 300 | 15 | 20 | 400 | $ 4.50 | $ 3.75 |
| MPQ3725‡ | 40 | 25 | 500 | 35 | 60 | 250 | 4.50 | 3.75 |
| MQ2218* | 30 | 40 | 150 | 60 | 350 | 220 | 24.00 | 16.00 |
| MQ2219A* | 40 | 100 | 150 | 60 | 350 | 270 | 27.75 | 18.50 |
| MQ2484* | 60 | 250 | 1.0 | ..... | ..... | 70 | 25.95 | 17.30 |
| MQ2904 | 40 | 40 | 150 | 45 | 130 | 225 | 24.75 | 16.50 |
| MQ2905A | 60 | 100 | 150 | 45 | 130 | 225 | 27.75 | 18.50 |
| MQ3251 | 40 | 100 | 10 | ..... | ..... | 350 | 26.25 | 17.50 |
| MQ3467 | 40 | 20 | 500 | 40 | 120 | 200 | 44.25 | 29.50 |
| MQ3725* | 40 | 30 | 500 | 45 | 75 | 300 | 40.10 | 26.75 |
| MQ3762 | 40 | 20 | 1000 | 40 | 120 | 200 | 47.60 | 31.75 |
| MQ3799 | 60 | 300 | 0.1 | ..... | ..... | 130 | 42.75 | 28.50 |
| MQ3799A† | 60 | 300 | 0.1 | ..... | ..... | 130 | 79.50 | 53.00 |
| 2N5146 | 40 | 20 | 1000 | 40 | 120 | 200 | 47.60 | 31.75 |

*NPN. †Matched quad. ‡NPN, Case 605. *Larger quantities available on request.

### SILICON NPN RF SMALL SIGNAL (CASE 20)

$P_D = 200$ mW at 25° C. $T_J = 200°$ C.

| Motorola Type | Max. $V_{CB}$ V | Minimum $f_t$ MHz | Minimum $G_{pe}$ dB | NF at f Max. dB | NF at f MHz | Net Ea., Lots of 1-99 | Net Ea., Lots of 100 Up |
|---|---|---|---|---|---|---|---|
| 2N918* | 30 | 600 | 6.0 | 6.0 | 60 | $ 2.90 | $ 1.73 |
| 2N2857§ | 30 | 1000 | 12.5 | 4.5 | 450 | 2.90 | 2.25 |
| 2N3287 | 40 | 350 | 17 | 6.0 | 200 | 4.90 | 3.75 |
| 2N3288 | 40 | 350 | 17 | 6.0 | 200 | 4.40 | 3.40 |
| 2N3289 | 30 | 300 | 17 | 7.0 | 200 | 3.90 | 3.00 |
| 2N3290 | 30 | 300 | 17 | 7.0 | 200 | 3.45 | 2.65 |
| 2N3291 | 25 | 250 | 16 | 8.0 | 200 | 1.70 | 1.30 |
| 2N3292 | 25 | 250 | 16 | 9.0 | 200 | 1.55 | 1.20 |
| 2N3293 | 20 | 250 | ...... | ...... | ...... | 1.45 | 1.10 |
| 2N3294 | 20 | 250 | 14 | 7.0‡ | 200 | 1.30 | 1.00 |
| 2N3307† | 40 | 300 | 17 | 4.5 | 200 | 10.50 | 7.00 |
| 2N3308† | 30 | 300 | 17 | 6.0 | 200 | 9.00 | 6.00 |
| 2N3839 | 30 | 1000 | 12.5 | 3.4 | 450 | 9.50 | 7.30 |
| 2N4957† | 30 | 1200 | 17 | 3.0 | 450 | 7.80 | 6.00 |
| 2N4958† | 30 | 1000 | 16 | 3.3 | 450 | 6.20 | 4.75 |
| 2N4959† | 30 | 1000 | 15 | 3.8 | 450 | 4.90 | 3.75 |
| 2N5829† | 30 | 1000 | 15 | 3.8 | 450 | 11.70 | 9.00 |
| 2N5943♯ | 40 | 1200 | 11.4 | 8.0 | 200 | 3.25 | 2.50 |
| 2N5947• | 40 | 1100 | 10 | 8.5 | 200 | 12.60▴ | 11.20■ |

*JAN and JANTX type available. †PNP. ‡Typical. §JAN type available. ♯Case 79. •Case 144. ▴Lots of: 1–24; ■25–99.

### SILICON NPN RF HIGH-SPEED CURRENT MODE SWITCHES

Ultra-fast switching devices feature high $f_t$ and low $r_b{}'C_c$ over a wide range of collector current.

| Motorola Type | Case | $I_C$ mA | $V_{CE}$ V | $f_t$ MHz Min. | $r_b{}'C_c$ ps Max. | $C_{cb}$ pF Max. | Net Each, Lots 1-99 | Net Each, Lots 100 Up |
|---|---|---|---|---|---|---|---|---|
| 2N5835 | 20 | 10 | 6.0 | 2500 | 5.0‡ | 0.8 | $13.00* | $11.50† |
| 2N5836 | 26 | 50 | 6.0 | 2000 | 6.0‡ | 3.5 | 13.40* | 11.85† |
| 2N5837 | 26 | 100 | 3.0 | 1700 | 6.0‡ | 5.0 | 14.30* | 12.65† |
| 2N5841 | 20 | 25 | 4.0 | 2200 | 25 | 1.5 | 11.70 | 9.00 |
| 2N5842 | 20 | 25 | 4.0 | 1700 | 40 | 1.5 | 9.75 | 7.50 |
| 2N5851 | 20 | 10 | 4.0 | 800 | 15 | 1.5 | 2.60 | 2.00 |
| 2N5852 | 20 | 10 | 4.0 | 1100 | 15 | 1.5 | 4.20 | 3.25 |

Lots of: *1–24; †25–99. ‡Typical.

### DUAL TRANSISTORS (CASE 654)

Contain two similar general purpose switching and amplifying transistors. $BV_{CEO}$ values given are minimum.

| Motorola Type | $BV_{CEO}$ V | Max. $I_C$ mA | $h_{FE}$ at $I_C$ Min. | $h_{FE}$ at $I_C$ mA | Max. $C_{ob}$ pF | Typ. $f_T$ MHz | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|
| 2N2913 | 45 | 30 | 150 | 1.0 | 6.0 | 70 | $ 2.70 | $ 1.80 |
| 2N2914 | 45 | 30 | 300 | 1.0 | 6.0 | 70 | 3.00 | 2.00 |
| 2N2972* | 45 | 30 | 150 | 1.0 | 6.0 | 70 | 9.90 | 6.60 |
| 2N2973* | 45 | 30 | 300 | 1.0 | 6.0 | 70 | 11.60 | 7.75 |
| MD708‡ | 15 | 200 | 40 | 10 | 5.0 | 450 | 4.35 | 2.90 |
| MD918‡ | 15 | 50 | 50 | 10 | 1.7 | 700 | 8.25 | 5.50 |
| MD2218A‡ | 40 | 600 | 40 | 150 | 8.0 | 240 | 11.40 | 7.60 |
| MD2219A‡ | 40 | 600 | 100 | 150 | 8.0 | 260 | 13.20 | 8.80 |
| MD2369‡ | 15 | 500 | 40 | 10 | 4.0 | 600 | 5.85 | 3.90 |
| MD2904A†‡ | 60 | 600 | 40 | 150 | 8.0 | 250 | 11.40 | 7.60 |
| MD2905A†‡ | 60 | 600 | 100 | 150 | 8.0 | 250 | 13.20 | 8.80 |
| MD3250†‡ | 40 | 50 | 50 | 0.1 | 6.0 | 225 | 9.75 | 6.50 |
| MD3251†‡ | 40 | 40 | 100 | 0.1 | 6.0 | 275 | 11.60 | 7.75 |
| MD3467†‡ | 40 | 1000 | 20 | 500 | 20 | 200 | 11.25 | 7.50 |
| MD3725‡ | 40 | 1000 | 30 | 500 | 10 | 300 | 10.10 | 6.75 |
| MD4957† | 30 | 30 | 20 | 2.0 | 0.8 | 1200 | 26.25 | 17.50 |
| MD5000† | 15 | 50 | 20 | 10 | 1.7 | 650 | 11.25 | 7.50 |
| MD7002 | 40 | 30 | 40 | 0.1 | 6.0 | 220 | 4.50 | 3.00 |
| MD7003† | 40 | 30 | 40 | 0.01 | 6.0 | 230 | 4.50 | 3.00 |
| MD8003 | 60 | 30 | 100 | 1.0 | 3.0 | 70 | 2.50 | 1.65 |

*Case 35. †PNP, all other types NPN. ‡For Case 33, add suffix **F**; prices on request.

### DARLINGTON AMPLIFIERS (CASE 20)

$BV_{CEO}$ values given are minimum.

| Motorola Type | $BV_{CEO}$ V | Max. $I_C$ mA | $h_{FE}$ at $I_C$ Min. | $h_{FE}$ at $I_C$ mA | Max. $C_{ob}$ pF | Typ. $f_T$ MHz | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|
| 2N998 | 60 | 500 | 1600 | 10 | 30 | 200 | $13.50 | $ 9.00 |
| 2N2723 | 60 | 40 | 2000 | 10 | 10 | 150 | 15.00 | 10.00 |
| 2N2724 | 60 | 40 | 7000 | 10 | 10 | 150 | 16.50 | 11.00 |
| 2N2725 | 45 | 30 | 2000 | 0.1 | 10 | 150 | 21.00 | 14.00 |
| 2N2785 | 40 | 200 | 1200 | 10 | 30 | 150 | 11.25 | 7.50 |
| 2N4974* | 30 | 1000 | 15000 | 500 | 8 | 200 | 9.00 | 6.00 |
| 2N4975* | 30 | 1000 | 5000 | 500 | 8 | 200 | 7.50 | 5.00 |

### COMPLEMENTARY PAIR (CASE 32)

Each transistor pair contains 1 NPN and 1 PNP transistor with similar specifications. $BV_{CEO}$ values given are minimum.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2N3838‡ | 40 | 600 | 100 | 150 | 250† | 250 | $27.75 | $18.50 |
| 2N4854 | 40 | 600 | 100 | 150 | 250† | 250 | 13.50 | 9.00 |
| MD986§ | 15 | 200 | 25 | 10 | ....... | 230 | 18.90 | 12.60 |
| MD6002§ | 30 | 300 | 100 | 150 | 250† | 250 | 13.50 | 9.00 |
| MD6100 | 45 | 50 | 150 | 1 | ....... | 60 | 14.85 | 9.90 |

*PNP, Case 34; all other types NPN. †$t_{off}$, nsec. ‡Case 33. §For Case 33 add suffix **F**; price on request.

### UNIJUNCTION TRANSISTORS

Ratings at $T_A = 25°$ C. $V_{B2E} = 30$ V. $R_{BBO}$ values at $V_{BB} = 3$ V. $I_V$ values at $V_{BB} = 20$ V, $R_{B2} = 100$ ohms.

| Motorola Type | Case | $P_D$ rms mW | Pk $I_e$ A | $R_{BBO}$ kohms | * | Minimum $I_V$ mA | Minimum $V_{OB1}$ V | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|---|
| 2N2646 | 22A | 300 | 2.0 | 4.7–9.1 | 0.75 | 4.0 | 3.0 | $1.00 | $0.67 |
| 2N2647 | 22A | 300 | 2.0 | 4.7–9.1 | 0.82 | 8.0 | 6.0 | 1.90 | 1.26 |
| 2N3980 | 22A | 360 | 1.0 | 4.0–8.0 | 0.82 | 1.0 | 6.0 | 3.40 | 2.25 |
| 2N4851 | 22A | 300 | 1.5 | 4.7–9.1 | 0.75 | 2.0 | 3.0 | .97 | .65 |
| 2N4852 | 22A | 300 | 1.5 | 4.7–9.1 | 0.85 | 4.0 | 5.0 | .97 | .65 |
| 2N4853 | 22A | 300 | 1.5 | 4.7–9.1 | 0.85 | 6.0 | 6.0 | 2.25 | 1.50 |
| 2N4870 | 29 | 300 | 1.5 | 4.0–9.1 | 0.75 | 2.0 | 3.0 | .75 | .50 |
| 2N4871 | 29 | 300 | 1.5 | 4.0–9.1 | 0.85 | 4.0 | 5.0 | .68 | .45 |
| 2N4948† | 22A | 360 | 1.0 | 4.0–12 | 0.82 | 2.0 | 3.0 | 1.35 | .90 |
| 2N4949† | 22A | 360 | 1.0 | 4.0–12 | 0.86 | 2.0 | 6.0 | 2.40 | 1.60 |
| 2N5431† | 22A | 300 | ..... | ......... | 0.80 | 2.0 | ..... | 3.50 | 2.35 |
| MU851 | 28 | 200 | 1.5 | 4.7–9.1 | 0.75 | 2.0 | 3.0 | 3.45 | 2.30 |
| MU852 | 28 | 200 | 1.5 | 4.7–9.1 | 0.85 | 4.0 | 5.0 | 4.65 | 3.10 |
| MU853 | 28 | 200 | 1.5 | 4.7–9.1 | 0.85 | 4.0 | 6.0 | 8.15 | 5.45 |
| MU4891 | 29 | 300 | 1.0 | 4.0–9.1 | 0.82 | 2.0 | 3.0 | .90 | .60 |
| MU4892 | 29 | 300 | 1.0 | 4.0–9.1 | 0.69 | 2.0 | 3.0 | 1.15 | .77 |
| MU4893 | 29 | 300 | 1.0 | 4.0–12 | 0.82 | 2.0 | 6.0 | .96 | .64 |
| MU4894 | 29 | 300 | 1.0 | 4.0–12 | 0.86 | 2.0 | 3.0 | 1.05 | .70 |

*Max. intrinsic standoff ratio at $V_{BB} = 10$ volts. †JAN type available.

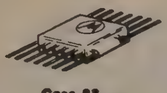
### PROGRAMMABLE UNIJUNCTIONS

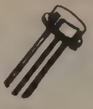
Peak current $I_P$ at $R_G = 1$ megohm. $I_{GAO}$ leakage current at 40 V. $I_V$ valley current at $R_G = 1$ megohm.

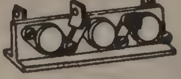
| Motorola Type | Case | $P_D$ rms mW | Pk $I_P$ μA | $I_{GAO}$ nA Max. | $I_V$ μA Max. | $V_O$ Volts Min. | Net Each, Lots 1-99 | Net Each, Lots 100-999 |
|---|---|---|---|---|---|---|---|---|
| 2N6027 | 29 | 300 | 2.0 | 10 | 50 | 6.0 | $0.79 | $0.53 |
| 2N6028 | 29 | 300 | 0.15 | 10 | 25 | 6.0 | 1.00 | .65 |
| 2N6116 | 22 | 250 | 2.0 | 5 | 50 | 6.0 | 1.35 | .90 |
| 2N6117 | 22 | 250 | 0.3 | 5 | 50 | 6.0 | 2.40 | 1.60 |
| 2N6118 | 22 | 250 | 0.15 | 5 | 25 | 6.0 | 2.78 | 1.85 |
| MPU131 | 29 | 375 | 2.0 | 5 | 50 | 6.0 | .79 | .53 |
| MPU132 | 29 | 375 | 0.3 | 5 | 50 | 6.0 | .91 | .60 |
| MPU133 | 29 | 375 | 0.15 | 5 | 25 | 6.0 | 1.00 | .65 |

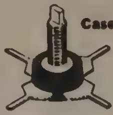
**SEE OTHER PAGES FOR CASE ILLUSTRATIONS**

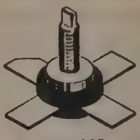
# MOTOROLA Semiconductors FIELD EFFECT TRANSISTORS

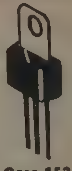

Case 83, Case 607

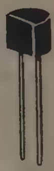

Case 94

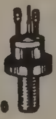

Case 118

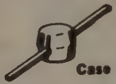

Case 144


Case 145


Case 152


Case 182


Case 160


Case 166

## RF AMPLIFIER AND MIXER FETs

Listed in order of decreasing specified test frequency; increasing power gain and noise figure.

### N-CHANNEL JUNCTION (TYPE A)

| Motorola Type | Case | $f_T$ MHz | Min. $G_{ps}$ dB | Max. NF dB | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|---|
| 2N4416 | 20 | 400 | 10 | 4.0 | $2.45 | $1.65 | ...... |
| MFE2000* | 20 | 400 | 10 | 4.0 | 1.58 | 1.05 | ...... |
| MFE2001† | 20 | 400 | 10 | 4.0 | 1.72 | 1.15 | ...... |
| 2N3823 | 20 | 200 | ...... | 2.5 | 1.88 | 1.25 | ...... |
| 2N4223‡ | 20 | 200 | 10 | 5.0 | 1.50 | 1.00 | ...... |
| 2N4224§ | 20 | 200 | ...... | ...... | 1.65 | 1.10 | ...... |

### N-CHANNEL MOS (TYPE B)

| Motorola Type | Case | $f_T$ MHz | Min. $G_{ps}$ dB | Max. NF dB | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|---|
| MFE3005 | 20 | 400 | 10 | 4.5 | $6.75 | $4.50 | ...... |
| MFE3007♯ | 20 | 200 | 18 | 4.0 | 1.65 | 1.10 | ...... |
| MPF121♯ | 206 | 200 | 17 | 5.0 | .71 | .53 | $0.45 |
| 3N140♯ | 20 | 200 | 16 | 4.5 | 1.65 | 1.10 | ...... |
| MFE3004 | 20 | 200 | 16 | 4.5 | 1.80 | 1.20 | ...... |
| MPF120♯ | 206 | 105 | 17 | 5.0 | .70 | .52 | .44 |
| MFE3006♯ | 20 | 100 | 20 | 4.5 | 1.50 | 1.00 | ...... |

*$I_{DSS}$ = 4.0–10 mADC. †$I_{DSS}$ = 8.0–20 mADC. ‡$I_{GSS}$ = 0.25 nADC max. §$I_{GSS}$ = 0.50 nADC. ♯Dual gate.

## CHOPPER FETs

Listed in order of decreasing gate-source breakdown voltage, increasing $r_{ds(on)}$ and $C_{rss}$.

### N-CHANNEL JUNCTION (TYPE A)

| Motorola Type | Case | Min. V‡ | Maximum Ohms§ | Maximum pF♯ | Min. $I_{DSS}$ mA | Net Ea., Lots 1-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| 2N4391 | 22 | 40 | 30 | 3.5 | 50 | $4.20 | $2.80 |
| 2N4091 | 22 | 40 | 30 | 5.0 | 30 | 3.15 | 2.10 |
| 2N4092 | 22 | 40 | 50 | 5.0 | 15 | 1.85 | 1.23 |
| 2N4392 | 22 | 40 | 60 | 3.5 | 25 | 2.85 | 1.90 |
| 2N4093 | 22 | 40 | 80 | 5.0 | 8.0 | 2.15 | 1.45 |
| 2N4393 | 22 | 40 | 100 | 3.5 | 5.0 | 3.05 | 2.05 |
| MFE2006 | 22 | 30 | 30 | 5.0 | 30 | 2.70 | 1.80 |
| MFE2005 | 22 | 30 | 50 | 5.0 | 15 | 1.85 | 1.25 |
| MFE2004 | 22 | 30 | 80 | 5.0 | 8.0 | 2.25 | 1.50 |
| MFE2012 | 22 | 25 | 10 | 20 | 100 | 6.00 | 4.00 |
| MFE2011 | 22 | 25 | 15 | 20 | 40 | 5.25 | 3.50 |
| MFE2009 | 22 | 25 | 20 | 15 | 50 | 4.80 | 3.20 |
| MFE2010 | 22 | 25 | 25 | 20 | 15 | 4.50 | 3.00 |
| MFE2008 | 22 | 25 | 30 | 15 | 20 | 4.20 | 2.80 |
| MFE2007 | 22 | 25 | 40 | 15 | 8.0 | 3.65 | 2.45 |

‡$V_{(BR)GSS}$. §$r_{ds(on)}$. ♯$C_{rss}$.

### P-CHANNEL MOS (TYPE C)

| Motorola Type | Case | Min. V‡ | Maximum Ohms§ | Maximum pF* | Max. $I_{DSS}$ nA | Net Ea., Lots 1-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| 3N155A | 20 | ±35 | 300 | 1.3 | 0.25 | $ 6.30 | $4.20 |
| 3N156A | 20 | ±35 | 300 | 1.3 | 0.25 | 6.30 | 4.20 |
| 3N155 | 20 | ±35 | 600 | 1.3 | 1.0 | 3.30 | 2.20 |
| 3N156 | 20 | ±35 | 600 | 1.3 | 1.0 | 3.30 | 2.20 |
| MFE3003 | 20 | ±30 | 200 | 1.0 | 10 | 3.00 | 2.00 |
| MFE3002† | 20 | ±30 | 100 | 1.0 | 10 | 3.35 | 2.25 |
| MFE3020 | 642 | −25 | 500 | 1.5 | 10 | 10.20 | 6.78 |
| MFE3021 | 642 | −25 | 250 | 1.5 | 10 | 13.20 | 9.00 |

*$C_{rss}$. †N-channel complement to MFE3003. ‡$V_{(BR)GSS}$. §$r_{ds(on)}$.

## EPOXY PACKAGED GENERAL PURPOSE AMPLIFIER JUNCTION FETs (CASE 29)

| Motorola Type | Channel | Min. V§ | Min.-Max. $I_{DSS}$ mA | Min.-Max. $y_{fs}$ µmhos | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|---|
| 2N5457 | N | 25 | 1.0–5.0 | 1000–5000 | $0.80 | $0.54 | $0.43 |
| 2N5458 | N | 25 | 2.0–9.0 | 1500–5500 | .73 | .49 | .39 |
| 2N5459 | N | 25 | 4.0–16 | 2000–6000 | .80 | .54 | .43 |
| 2N5460 | P | 40 | 1.0–5.0 | 1000–4000 | .90 | .60 | .48 |
| 2N5461 | P | 40 | 2.0–9.0 | 1500–5000 | .67 | .45 | .36 |
| 2N5462 | P | 40 | 4.0–16 | 2000–6000 | .90 | .60 | .48 |
| 2N5463 | P | 60 | 1.0–5.0 | 1000–4000 | 1.35 | .90 | .72 |
| 2N5464 | P | 60 | 2.0–9.0 | 1500–5000 | 1.08 | .72 | .58 |
| 2N5465 | P | 60 | 4.0–16 | 2000–6000 | 1.35 | .90 | .72 |
| 2N5484* | N | 25 | 1.0–5.0 | 3000–6000 | .98 | .65 | .52 |
| 2N5485* | N | 25 | 4.0–10 | 3500–7000 | 1.05 | .70 | .56 |
| 2N5486* | N | 25 | 8.0–20 | 4000–8000 | 1.05 | .70 | .56 |
| 2N5555† | N | 25 | 15 | .......... | 1.20 | .80 | ...... |
| MPF102* | N | 25 | 2.0–20 | 2000–7500 | .60 | .40 | .32 |
| MPF108‡ | N | ...... | ...... | .......... | .97 | .65 | .52 |
| MPF109 | N | 25 | 0.5–24 | 800–6000 | .75 | .50 | .40 |
| MPF161 | P | 40 | 0.5–14 | 800–6000 | .67 | .45 | .36 |

*Also RF amplifier and mixer. **2N5484:** $f_T$ = 100 MHz; $G_{ps}$ = 16 dB min.; NF = 3.0 dB max. **2N5485:** $f_T$ = 400 MHz; $G_{ps}$ = 10 dB min.; NF = 4.0 dB max.; $I_{DSS}$ = 8.0 to 20 mADC. **2N5486:** Same as 2N5485 except $I_{DSS}$ = 4.0 to 10 mADC. **MPF102:** $f_T$ = 100 MHz. †General purpose switch and chopper. $C_{rss}$ = 1.2 pF max.; $t_{on}$ = 10 ns max. ‡RF amplifier and mixer. $f_T$ = 100 MHz; NF = 3.0 dB max. §$V_{(BR)GSS}$.

## GENERAL PURPOSE FETs

Listed in order of increasing gate-source breakdown voltage, decreasing zero-gate voltage drain current, and forward transfer admittance.

### N-CHANNEL JUNCTON (TYPE A)

| Motorola Type | Case | Min. V♯ | Minimum-Maximum $I_{DSS}$ mA | Minimum-Maximum $y_{fs}$ µmhos | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|---|
| 2N4222 | 20 | 30 | 5.0–15 | 2500–6000 | $ 1.42 | $0.92 | ...... |
| 2N4222A* | 20 | 30 | 5.0–15 | 2500–6000 | 1.65 | 1.10 | ...... |
| 2N5558* | 20 | 30 | 4.0–10 | 1500–6500 | 9.50 | 7.50 | ...... |
| 2N4221 | 20 | 30 | 2.0–6.0 | 2000–5000 | 1.40 | .95 | ...... |
| 2N4221A* | 20 | 30 | 2.0–6.0 | 2000–5000 | 1.65 | 1.10 | ...... |
| 2N5557* | 20 | 30 | 2.0–5.0 | 1500–6500 | 10.00 | 8.00 | ...... |
| 2N4220 | 20 | 30 | 0.5–3.0 | 1000–4000 | 1.50 | 1.00 | ...... |
| 2N4220A* | 20 | 30 | 0.5–3.0 | 1000–4000 | 1.72 | 1.15 | ...... |
| 2N5556* | 20 | 30 | 0.5–2.5 | 1500–6500 | 12.00 | 9.50 | ...... |
| 2N5364 | 20 | 40 | 9.0–18 | 2700–6500 | 3.95 | 2.65 | ...... |
| 2N5363 | 20 | 40 | 7.0–14 | 2500–6000 | 3.45 | 2.30 | ...... |
| 2N5362 | 20 | 40 | 4.0–8.0 | 2000–5500 | 3.00 | 2.00 | ...... |
| 2N5361 | 20 | 40 | 2.5–5.0 | 1500–4500 | 2.65 | 1.76 | ...... |
| 2N5360 | 20 | 40 | 1.5–3.0 | 1400–3200 | 3.00 | 2.00 | ...... |
| 2N5359 | 20 | 40 | 0.8–1.6 | 1200–3600 | 3.45 | 2.30 | ...... |
| 2N5718 | 20 | 40 | 0.8–4.0 | 500–2000 | .80 | .53 | $0.42 |
| 2N5358 | 20 | 40 | 0.5–1.0 | 1000–3000 | 3.95 | 2.65 | ...... |
| 2N5717 | 20 | 40 | 0.2–1.0 | 400–1600 | .75 | .50 | .40 |
| 2N5716 | 20 | 40 | 0.05–0.25 | 200–1000 | .80 | .53 | .42 |
| 3N126† | 20 | 50 | 3.0–9.0 | 1200–3600 | 3.00 | 2.00 | ...... |
| 2N3822 | 20 | 50 | 2.0–10 | 3000–6500 | 2.20 | 1.45 | ...... |
| 3N125† | 20 | 50 | 1.5–4.5 | 800–2400 | 3.00 | 2.00 | ...... |
| 2N5594 | 20 | 50 | 1.0–10 | 2000–7000 | 13.50 | 9.00 | ...... |
| MFE2095 | 20 | 50 | 1.0–3.0 | 400–800 | 2.10 | 1.40 | ...... |
| 2N3821 | 20 | 50 | 0.5–2.5 | 1500–4500 | 2.50 | 1.66 | ...... |
| MFE2094 | 20 | 50 | 0.4–1.4 | 350–700 | 2.10 | 1.40 | ...... |
| 3N124† | 20 | 50 | 0.2–2.0 | 500–2000 | 3.00 | 2.00 | ...... |
| MFE2093 | 20 | 50 | 0.1–0.7 | 250–500 | 2.10 | 1.40 | ...... |

### N-CHANNEL MOS (TYPE B)

| Motorola Type | Case | Min. V♯ | Minimum-Maximum $I_{DSS}$ mA | Minimum-Maximum $y_{fs}$ µmhos | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|---|
| 2N3797‡ | 22 | ±30 | 2.0–6.0 | 1500–3000 | $3.45 | $2.30 | ...... |
| MFE3001 | 20 | ±30 | 0.5–6.0 | 700–3500 | 2.25 | 1.50 | ...... |
| 2N3796‡ | 22 | ±30 | 0.5–3.0 | 900–1800 | 3.45 | 2.30 | ...... |

### P-CHANNEL JUNCTION (TYPE A)

| Motorola Type | Case | Min. V♯ | Minimum-Maximum $I_{DSS}$ mA | Minimum-Maximum $y_{fs}$ µmhos | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|---|
| MFE4012 | 20 | 40 | 7.0–14 | 2500–5000 | $3.20 | $2.15 | ...... |
| MFE4011 | 20 | 40 | 4.0–8.0 | 2200–4500 | 2.90 | 1.95 | ...... |
| MFE4010 | 20 | 40 | 2.5–5.0 | 2000–4000 | 2.75 | 1.85 | ...... |
| MFE4009 | 20 | 40 | 1.5–3.0 | 1500–3500 | 2.90 | 1.95 | ...... |
| 2N5476 | 20 | 40 | 0.8–2.0 | 260–650 | 2.00 | 1.35 | ...... |
| MFE4008 | 20 | 40 | 0.8–1.6 | 1000–3000 | 3.20 | 2.15 | ...... |
| MFE4007 | 20 | 40 | 0.5–1.0 | 900–2700 | 4.05 | 2.70 | ...... |
| 2N5475 | 20 | 40 | 0.4–1.0 | 200–500 | 1.80 | 1.20 | ...... |
| 2N5474 | 20 | 40 | 0.2–0.5 | 160–400 | 2.00 | 1.35 | ...... |
| 2N5473 | 20 | 40 | 0.1–0.25 | 120–300 | 2.15 | 1.45 | ...... |
| 2N5472 | 20 | 40 | 0.05–0.12 | 90–225 | 2.33 | 1.55 | ...... |
| 2N5471 | 20 | 40 | 0.02–0.06 | 60–180 | 2.55 | 1.70 | ...... |
| 2N5270 | 20 | 60 | 7.0–14 | 2500–5000 | 3.75 | 2.50 | ...... |
| 2N5269 | 20 | 60 | 4.0–8.0 | 2200–4500 | 3.45 | 2.30 | ...... |
| 2N5268 | 20 | 60 | 2.5–5.0 | 2000–4000 | 3.30 | 2.20 | ...... |
| 2N5267 | 20 | 60 | 1.5–3.0 | 1500–3500 | 3.45 | 2.30 | ...... |
| 2N5266 | 20 | 60 | 0.8–1.6 | 1000–3000 | 3.75 | 2.50 | ...... |
| 2N5265 | 20 | 60 | 0.5–1.0 | 900–2700 | 4.65 | 3.10 | ...... |

### P-CHANNEL MOS (TYPE C)

| Motorola Type | Case | Min. V♯ | Minimum-Maximum $I_{DSS}$ mA | Minimum-Maximum $y_{fs}$ µmhos | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|---|
| 3N157 | 20 | ±35 | 0.25 max.§ | 1000–4000 | $3.30 | $2.20 | ...... |
| 3N158 | 20 | ±35 | 0.25 max.§ | 1000–4000 | 3.30 | 2.20 | ...... |
| 3N157A | 20 | ±50 | 1.0 max.§ | 1000–4000 | 6.30 | 4.20 | ...... |
| 3N158A | 20 | ±50 | 1.0 max.§ | 1000–4000 | 6.30 | 4.20 | ...... |

*Low noise. †Tetrode connected. ‡$I_{GSS}$ = 1.0 pADC. §nADC. ♯$V_{(BR)GSS}$.

## GENERAL PURPOSE SWITCH FETs

Listed in order of decreasing gate-source breakdown voltage, increasing $r_{ds(on)}$ and decreasing gate cutoff voltage.

### P-CHANNEL MOS

| Motorola Type | Case | Min. V† | Maximum Ohms‡ | Maximum V§ | Min. $I_{D(on)}$ mA | Net Ea., Lots 1-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| 3N156A | 20 | ±35 | 300 | 5.0 | 5.0 | $6.30 | $4.20 |
| 3N155A | 20 | ±35 | 300 | 3.2 | 5.0 | 6.30 | 4.20 |
| 3N156 | 20 | ±35 | 600 | 5.0 | 5.0 | 3.30 | 2.20 |
| 3N155 | 20 | ±35 | 600 | 3.2 | 5.0 | 3.30 | 2.20 |
| 2N4351* | 20 | ±30 | 300 | 5.0 | 3.0 | 2.85 | 1.90 |
| 2N4352 | 20 | ±30 | 600 | 5.0 | 3.0 | 2.70 | 1.80 |

*N-channel complement to 2N4352. †$V_{(BR)GSS}$. ‡$r_{ds(on)}$. §$V_{GS(th)}$.

**MOTOROLA**
**Semiconductors**

# MICROWAVE DEVICES, TRANSISTORS AND DIODES

## FREQUENCY MULTIPLIER DIODES

$BV_R$ at $I_R = 10\ \mu A$; $R_S$ at $V_R = 6.0$ V. f = 50 MHz; $C_T$ at $V_R = 6.0$ V, f = 1.0 MHz.

| Motorola Type | Case | Max. $P_D$ W | Min. $BV_R$ V | Typ. $R_S$ Ohms | $C_T$ pF Min.-Max. | Net Ea., Lots of 1-99 | 100-499 |
|---|---|---|---|---|---|---|---|
| 1N4387 | 44 | 20 | 150 | 0.4 | 35 max. | $42.00 | $28.00* |
| 1N4388 | 51 | 10 | 100 | 0.25 | 20 max. | 42.00 | 28.00* |
| 1N5149 | 47 | 10 | 80 | 0.25 | 5.0–20 | 27.00 | 18.00 |
| 1N5150 | 47 | 14 | 80 | 0.25 | 5.0–20 | 42.00 | 28.00 |
| 1N5150A | 47 | 21 | 80 | 0.25 | 10.8–13.2 | 47.00 | 31.00 |
| 1N5151 | 48 | 5.5 | 75 | 0.5 | 5.0–7.5 | 42.00 | 28.00 |
| 1N5152 | 46 | 5.5 | 75 | 0.5 | 5.0–25 | 42.00 | 28.00 |
| 1N5153 | 47 | 5.5 | 75 | 0.5 | 5.0–7.5 | 42.00 | 28.00 |
| 1N5153A | 47 | 8.4 | 75 | 0.5 | 5.4–6.6 | 47.00 | 31.00 |
| 1N5154 | 48 | 3.5 | 35 | 0.9 | 1.0–3.0 | 42.00 | 28.00 |
| 1N5155 | 46 | 3.5 | 35 | 0.9 | 1.0–3.0 | 42.00 | 28.00 |
| 1N5155A | 46 | 6.2 | 35 | 0.9 | 1.71–2.09 | 47.00 | 31.00 |
| 1N5156 | 48 | 3.25 | 20 | 1.0 | 0.5–1.0 | 47.00 | 31.00 |
| 1N5157 | 46 | 3.25 | 20 | 1.0 | 0.5–1.0 | 47.00 | 31.00 |
| MV1809C | 47 | 9.0 | 75 | 0.25 | 9.6–14.4 | 42.00 | 28.00 |

*Lots of 100–999.

## HYPER-ABRUPT JUNCTION TUNING DIODE

$C_T$ diode capacitance at $V_R = 3.0$ V, f = 1.0 MHz. $C_R$ capacitance ratio $C_3/C_{30}$, f = 1.0 MHz. Q at 3.0 V, 100 MHz.

| Motorola Type | Case | $C_T$ Min. | $C_T$ Max. | $C_R$ Min. | $C_R$ Max. | Q Min. | Net Ea., Lots 1-99 | 100-999 |
|---|---|---|---|---|---|---|---|---|
| MV104 | 29 | 37 | 42 | 2.5 | 2.8 | 100 | 89c | 59c |

## EPICAP TUNING DIODES

$P_D = 400$ mW max. at $T_A = 25°$ C, $T_J = 175°$ C. $BV_R$ at $I_R = 10\ \mu A$. $C_T$ at $V_R = 4.0$ V, f = 1.0 MHz. Q at $V_R = 4.0$ V, f = 50 MHz.

### CASE 51

Tolerance (1N5100 Series) ±10%; add suffix **A** for ±5%.

| Min. $BV_R$ V | Motorola Type | Nom. $C_T$ pF | Min. Q | Motorola Type | Nom. $C_T$ pF | Min. Q | Net Ea., Lots of 1-99 | 100 Up |
|---|---|---|---|---|---|---|---|---|
| 60 | 1N5139, A | 6.8 | 350 | 1N5144, A | 22.0 | 200 | Tol. | Tol. |
| 60 | 1N5140, A | 10.0 | 300 | 1N5145, A | 27.0 | 200 | ±10% | ±10% |
| 60 | 1N5141, A | 12.0 | 300 | 1N5146, A | 33.0 | 200 | $4.65 | $3.10 |
| 60 | 1N5142, A | 15.0 | 250 | 1N5147, A | 39.0 | 200 | ±5% | ±5% |
| 60 | 1N5143, A | 18.0 | 250 | 1N5148, A | 47.0 | 200 | $6.45 | $4.30 |
| 30 | MV830 | 15.0 | 30 | MV836 | 47.0 | 15 | 1.35 | .90 |
| 30 | MV831 | 18.0 | 25 | MV837 | 56.0 | 15 | 1.35 | .90 |
| 30 | MV832 | 22.0 | 25 | MV838 | 68.0 | 15 | 1.35 | .90 |
| 30 | MV833 | 27.0 | 25 | MV839 | 82.0 | 10 | 1.35 | .90 |
| 30 | MV834 | 33.0 | 20 | MV840 | 100.0 | 10 | 1.35 | .90 |
| 30 | MV835 | 39.0 | 20 | ........ | ..... | .... | 1.35 | .90 |

**1N5400 Series:** $C_T = \pm 10\%$ pF at $V_R = 4.0$ V, f = 1.0 MHz. Available ±5% $C_T$ (suffix **B**), ±2.0% (suffix **C**). Tuning ratio $C_2/C_{30}$; Q at 4.0 V, 50 MHz. **MV2100 Series:** Plastic package. Tuning ratio and Q same as 1N5400 Series. **MV2300 Series:** Plastic package. Tuning ratio $C_2/C_{20}$; Q at 4.0 V, 20 MHz.

|  | Case 51 |  |  | Case 182 |  |  |
|---|---|---|---|---|---|---|
| Nom. $C_T$ pF | Motorola Type | Tuning Ratio pF | Min. Q | Motorola Type | Tuning Ratio pF | Min. Q |
| 6.8 | 1N5461A | 2.7–3.1 | 600 | MV2101 | 2.5–3.2 | 450 |
| 8.2 | 1N5462A | 2.8–3.1 | 600 | MV2102 | 2.5–3.2 | 450 |
| 10 | 1N5463A | 2.8–3.1 | 550 | MV2103 | 2.5–3.2 | 400 |
| 12 | 1N5464A | 2.8–3.1 | 550 | MV2104 | 2.5–3.2 | 400 |
| 15 | 1N5465A | 2.8–3.1 | 550 | MV2105 | 2.5–3.2 | 400 |
| 18 | 1N5466A | 2.9–3.1 | 500 | MV2106 | 2.5–3.2 | 350 |
| 20 | 1N5467A | 2.9–3.1 | 500 | ........ | ........ | ..... |
| 22 | 1N5468A | 2.9–3.2 | 500 | MV2107 | 2.5–3.2 | 350 |
| 27 | 1N5469A | 2.9–3.2 | 500 | MV2108 | 2.5–3.2 | 300 |
| 33 | 1N5470A | 2.9–3.2 | 500 | MV2109 | 2.5–3.2 | 200 |
| 39 | 1N5471A | 2.9–3.2 | 450 | MV2110 | 2.5–3.2 | 150 |
| 47 | 1N5472A | 2.9–3.2 | 400 | MV2111 | 2.5–3.2 | 150 |
| 56 | 1N5473A | 2.9–3.3 | 300 | MV2112 | 2.6–3.3 | 150 |
| 68 | 1N5474A | 2.9–3.3 | 250 | MV2113 | 2.6–3.3 | 150 |
| 82 | 1N5475A | 2.9–3.3 | 225 | MV2114 | 2.6–3.3 | 100 |
| 100 | 1N5476A | 2.9–3.3 | 200 | MV2115 | 2.6–3.3 | 100 |
| 120 | ........ | ........ | ..... | MV2301 | 2.3 min. | 250 |
| 150 | ........ | ........ | ..... | MV2302 | 2.3 min. | 250 |
| 180 | ........ | ........ | ..... | MV2303 | 2.3 min. | 200 |
| 200 | ........ | ........ | ..... | MV2304 | 2.3 min. | 200 |
| 220 | ........ | ........ | ..... | MV2305 | 2.3 min. | 150 |
| 250 | ........ | ........ | ..... | MV2306 | 2.3 min. | 150 |
| 270 | ........ | ........ | ..... | MV2307 | 2.3 min. | 100 |
| 330 | ........ | ........ | ..... | MV2308 | 2.3 min. | 100 |

| Motorola Type | Net Each 1-99 | 100-999 | Motorola Type | Net Each 1-99 | 100-999 |
|---|---|---|---|---|---|
| 1N5461A–1N5476A | $ 6.75 | $4.50 | MV2101–MV2115 | $0.90 | $0.60 |
| 1N5461B–1N5476B | 8.70 | 5.80 | MV2301–MV2303 | 1.50 | .95 |
| 1N5461C–1N5476C | 12.00 | 8.00 |  |  |  |

## PLASTIC HOT-CARRIER DIODES

Ideal for VHF and UHF mixer and detector applications. $V_{(BR)R}$ volts at $I_R = 10\ \mu A$. $C_T$ diode capacitance max. at $V_R = 0$ V, f = 1.0 MHz MBD101 and MBD102; at $V_R = 20$ V, f = 1.0 MHz, MBD501 and MBD701. $V_F$ volts at $I_F = 10$ mA.

| Motorola Type | Case | $V_{(BR)R}$ Min. | Maximum $C_T$ pF | Maximum $V_F$ | Net Each, Lots of 1-99 | 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|---|
| MBD101 | 182 | 4.0 | 1.0 | 0.6 | $0.89 | $0.59 | $0.41 |
| MBD102 | 226 | 4.0 | 1.0 | 0.6 | .98 | .65 | .45 |
| MBD501 | 182 | 50 | 1.0 | 1.2 | .94 | .65 | .49 |
| MBD701 | 182 | 70 | 1.0 | 1.2 | .99 | .70 | .53 |

## PIN SWITCHING DIODES

$V_{(BR)R}$ at $I_R = 10\ \mu A$. $R_S$ at $I_F = 100$ mA, f = 1.0 GHz, MPN3201. $R_S$ at $I_F = 150$ mA, f = 3.0 GHz, MPN3202, MPN3208, and MPN3209. $R_S$ at $I_F = 10$ mA, MPN3401 and MPN3402. $L_S$ at f = 250 MHz. $C_C$ at f = 1.0 MHz.

| Motorola Type | Case | $V_{(BR)R}$ Volts Min. | $R_S$ Ohms Min. | Typical $L_S$ nH | Typical $C_C$ pF | Net Ea., Lots 1-24 | 25-99* |
|---|---|---|---|---|---|---|---|
| MPN3201 | 46 | 150 | 1.00 | 0.85 | 0.18 | $18.85 | $16.65 |
| MPN3202 | 46 | 200 | 1.00 | 0.85 | 0.18 | 20.85 | 18.50 |
| MPN3208 | 229 | 800 | 0.40 | ...... | ...... | 45.00* | 36.00† |
| MPN3209 | 229 | 900 | 0.40 | ...... | ...... | 50.00* | 40.00† |
| MPN3401 | 226 | 35 | 0.7 | 3.0 | 0.1 | .52‡ | .35§ |
| MPN3402 | 226 | 35 | 0.6 | 3.0 | 0.1 | .52‡ | .35§ |

Lots of *1–9; †10–49; ‡1–99; §100–999. *Larger quantity prices on request.

## NPN-PNP MICRO-T PLASTIC TRANSISTORS (CASE 28)

Micro-T package 0.085″ dia. injection-molded plastic package for applications requiring high component mounting density. Also useful in hybrid circuits—easier to mount without special equipment and operator training. More detailed information available on request.

### GENERAL-PURPOSE AMPLIFIER AND SWITCHING

| Motorola Type | Max. $V_{CEO}$ V | $h_{FE}$ at $I_C$ Min. | $h_{FE}$ at $I_C$ mA | Min. $f_T$ MHz | Typ. $t_s$ at $I_C$ nsec | Typ. $t_s$ at $I_C$ mA | Net Ea., Lots 1-99 | 100-999 |
|---|---|---|---|---|---|---|---|---|
| MMT75* | 20 | 50 | 10 | ..... | 140 | 10 | $ 0.69 | $ 0.46 |
| MMT76 | 20 | 50 | 10 | ..... | 125 | 10 | .59 | .39 |
| MMT2222 | 30 | 100 | 150 | 200 | 125 | 10 | 1.43 | .95 |
| MMCM2222• | 30 | 100 | 150 | 200 | 125 | 10 | 7.50 | 5.80 |
| MMT2907* | 40 | 100 | 150 | 200 | 25† | 150 | 1.73 | 1.15 |
| MMCM2907*• | 40 | 100 | 150 | 200 | 25† | 150 | 7.65 | 5.85 |
| MMT3903 | 40 | 50 | 10 | 250 | 125 | 10 | 1.35 | .90 |
| MMT3904 | 40 | 100 | 10 | 300 | 25† | 150 | 1.50 | 1.00 |
| MMT3905* | 40 | 50 | 10 | 200 | 140 | 10 | 1.35 | .90 |
| MMT3906* | 40 | 100 | 10 | 250 | 140 | 10 | 1.50 | 1.00 |

### HIGH-SPEED SATURATED SWITCHING

|  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|
| MMT72 | 10 | 30 | 10 | 400 | 20# | 10 | $ 0.75 | $ 0.49 |
| MMT73* | 3 | 30 | 10 | 400 | 30# | 10 | .75 | .49 |
| MMT806‡ | 5 | 50 | 0.1 | 1200 | 1.0 | 1.0 | 19.50 | 13.00 |
| MMT808*‡ | 5 | 50 | 0.1 | 1200 | 1.0 | 1.0 | 22.50 | 15.00 |
| MMT2369 | 15 | 40 | 10 | 500 | 12§ | 10 | 1.65 | 1.10 |
| MMCM2369• | 15 | 40 | 10 | 500 | 12§ | 10 | 7.40 | 5.70 |
| MMT3546* | 12 | 30 | 10 | 700 | 20 | 50 | 5.15 | 3.45 |
| MMT3960A‡ | 8 | 30 | 10 | 1600 | 1.1 | 20 | 10.35 | 6.90 |
| MMT3960‡ | 3 | 100 | 10 | 1600 | ....... | ....... | 4.85 | 3.25 |

*PNP; all other types NPN. †$t_{on}$, $t_{off}$ = 250 nsec. ‡Non-saturated type. §$t_{on}$, $t_{off}$ = 18 nsec. #$t_{on}$, $t_{off}$ = 30 nsec. •Ceramic.

### LOW NOISE AMPLIFIER

$f_t$ at $I_C = 500\ \mu A$.

| Motorola Type | Max. $V_{CEO}$ V | $h_{FE}$ at $I_C$ Min. | $h_{FE}$ at $I_C$ mA | Min. $f_T$ MHz | Max. NF at $I_C$ dB | Max. NF at $I_C$ $\mu A$ | Net Ea., Lots 1-99 | 100-999 |
|---|---|---|---|---|---|---|---|---|
| MMT70 | 20 | 150 | 2.0 | ..... | 1.0# | 10 | $0.53 | $0.35 |
| MMT71* | 20 | 150 | 2.0 | ..... | 1.5# | 100 | .65 | .43 |
| MMT930 | 45 | 50 | 1.0 | 60 | ...... | ...... | 1.13 | .75 |
| MMCM930▲ | 45 | 150 | 1.0 | 60 | ...... | ...... | 7.38 | 5.70 |
| MMT2484 | 60 | 250 | 1.0 | 60 | 3.0 | 10 | 1.28 | .85 |
| MMCM2484▲ | 60 | 250 | 1.0 | 60 | 3.0 | ...... | 7.49 | 5.75 |
| MMT3798* | 60 | 150 | 0.1 | 40 | 3.5 | 100 | 3.75 | 2.50 |
| MMT3799* | 60 | 300 | 0.1 | 40 | 2.5 | 100 | 3.40 | 2.95 |

### RF AMPLIFIER AND OSCILLATOR (CASE 28)

Feedback capacitance = 1.7 pF max. (1.0 pF max. MMT2857) at $V_{CB} = 10$ VDC.

|  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|
| MMT74 | 12 | 25 | 3.0 | 700‡ | 4.0# | 1.5 | $ 0.98 | $ 0.65 |
| MMT807 | 5 | 25 | 1.0 | 1200• | 2.0# | 100 | 19.50 | 13.00 |
| MMT809* | 5 | 25 | 1.0 | 1200• | 2.6# | 100 | 22.50 | 15.00 |
| MMT918 | 15 | 20 | 3.0 | 600† | 6.0 | 1.0§ | 1.65 | 1.10 |
| MMCM918▲ | 15 | 20 | 3.0 | 600† | 6.0 | 1.0§ | 7.18 | 5.50 |
| MMT2857 | 15 | 30 | 3.0 | 1000‡ | 3.8# | 1.5§ | 5.45 | 3.65 |

*PNP; all other types NPN. †At $I_C = 10$ mA. ‡At $I_C = 4.0$ mA. §mA. #Typical. •At $I_C = 1.0$ mA. ▲Ceramic.

### N-CHANNEL FET

| Motorola Type | Minimum $V_{(BR)GSS}$ V | Minimum $I_{DSS}$ mA | Typical $C_{iss}$ pF | Typical $Re(y_{is})$ $\mu$mhos | Typical NF at f dB | Typical NF at f MHz | Net Each 1-99 | 100-999 |
|---|---|---|---|---|---|---|---|---|
| MMT3823 | −30 | 5.0 | 4.0 | 500 | 2.0 | 100 | $2.60 | $1.75 |

## MICRO-T SWITCHING DIODES

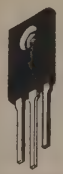
Same construction as above Micro-T transistors. $V_{(BR)} = 70$ volts min. at $I_{(BR)} = 100\ \mu A$. $I_R = 0.1\ \mu A$ max. at $V_R = 50$ volts. $V_F$ = 0.55–0.7 volt at $I_F = 1.0$ mA. C = 2.0 pF max. at $V_R = 0$. $t_{rr} = 5.0$ nsec max.

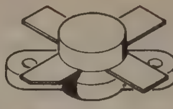
| Motorola Type | Case | Description | Net Ea., Lots of 1-99 | 100 Up |
|---|---|---|---|---|
| MMD70* | 166 | Single diode | $0.35 | $0.23 |
| MMD6050 | 166 | Single diode | .68 | .45 |
| MMD6100 | 28 | Dual common-cathode | .90 | .60 |
| MMD6150 | 28 | Dual common-anode | 2.40 | 1.60 |
| MMD7000 | 28 | Dual series | 2.55 | 1.70 |

*$V_{(BR)} = 50$ volts. $I_R$ at $V_R = 30$ V. $V_F$ = 0.75–1.2 volts at $I_F = 100$ mA. C = 2.5 pF max. at $V_R = 0$. $t_{rr} = 15$ nsec max.

**SEE OTHER PAGES FOR CASE ILLUSTRATIONS**

# MOTOROLA Semiconductors MICROCIRCUIT COMPONENTS


Case 199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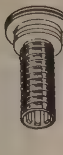
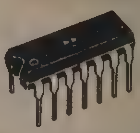
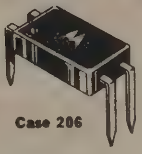
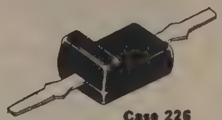

Case 229


Case 605


Case 206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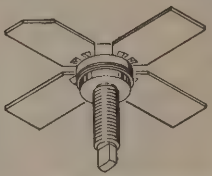
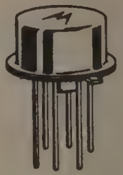

Case 244


Case 642

## UNENCAPSULATED TRANSISTORS

### NPN-PNP SWITCHING TRANSISTORS

$V_{CEO}$ at $I_C = 10$ mA. $T_A = 25°$ C.

| Motorola Type | $V_{CEO}$ V Min. | $h_{FE}$ at $I_C$ Min.-Max. | mA | $t_s$ ns Max. | $f_T$ MHz | Net per 10 10-90 | Net per 10 100 Up* |
|---|---|---|---|---|---|---|---|
| MMCS3507 | 50 | 30–150 | 1500 | 65 | 50 | $6.25 | $5.00 |
| MMCS3735 | 50 | 20–180 | 1000 | 35 | 200 | 4.00 | 3.20 |
| MMCS3725 | 50 | 60–150 | 100 | 75 | 200 | 2.25 | 1.80 |
| MMCS3444 | 50 | 20–60 | 500 | 50 | 150 | 2.75 | 2.20 |
| MMCS3506 | 40 | 40–200 | 1500 | 65 | 50 | 6.00 | 4.80 |
| MMCS3253 | 40 | 25–75 | 500 | 50 | 150 | 2.40 | 1.90 |
| MMCS3734 | 30 | 30–120 | 1000 | 35 | 200 | 4.00 | 3.20 |
| MMCS3724 | 30 | 60–150 | 100 | 75 | 200 | 2.10 | 1.70 |
| MMCS3252 | 30 | 30–90 | 500 | 50 | 180 | 2.40 | 1.90 |
| MMCS3227 | 20 | 100–130 | 10 | 20 | 500 | 1.20 | .95 |
| MMCS2369A | 15 | 40–120 | 10 | 20 | 500 | .95 | .85 |
| MMCS2369 | 15 | 30 min. | 30 | 20 | 500 | .85 | .80 |
| MMCS3959 | 12 | 40–200 | 10 | 1.6 | 1100 | 4.80 | 3.80 |
| MMCS709 | 6 | 20–200 | 10 | 18 | 500 | .90 | .72 |
| MMCS3763* | 60 | 20–80 | 1000 | 95 | 120 | 3.00 | 2.40 |
| MMCS3468* | 50 | 25–75 | 500 | 80 | 140 | 3.50 | 2.80 |
| MMCS3762* | 40 | 30–120 | 1000 | 95 | 150 | 3.00 | 2.40 |
| MMCS3467* | 40 | 40–120 | 500 | 80 | 160 | 3.00 | 2.40 |
| MMCS4260* | 15 | 30–150 | 10 | 1.0 | 1000 | 4.95 | 4.00 |
| MMCS2894* | 12 | 40–150 | 30 | 100 | 320 | .75 | .70 |
| MMCS3546* | 12 | 30–120 | 10 | 35 | 700 | 1.90 | 1.50 |

### NPN-PNP SWITCHING AND AMPLIFIER TRANSISTORS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MMCS3500 | 150 | 40–120 | 150 | 300 | 150 | $4.50 | $3.60 |
| MMCS3501 | 150 | 100–300 | 150 | 300 | 150 | 5.15 | 4.10 |
| MMCS3498 | 100 | 40–120 | 150 | 300 | 150 | 2.60 | 2.10 |
| MMCS3499 | 100 | 100–300 | 150 | 300 | 150 | 2.90 | 2.30 |
| MMCS2193 | 50 | 40–120 | 150 | 180 | 40 | 1.20 | .95 |
| MMCS2192 | 40 | 100–300 | 150 | 180 | 40 | 1.65 | 1.30 |
| MMCS2221A | 40 | 40–120 | 150 | 70 | 250 | 1.10 | .88 |
| MMCS2222A | 40 | 100–300 | 150 | 70 | 250 | 1.25 | 1.00 |
| MMCS3903 | 40 | 50–150 | 10 | 200 | 200 | .60 | .50 |
| MMCS3904 | 40 | 100–300 | 10 | 240 | 250 | .65 | .55 |
| MMCS4400 | 40 | 50–150 | 150 | 260 | 180 | .55 | .48 |
| MMCS4401 | 40 | 100–300 | 150 | 260 | 230 | .60 | .50 |
| MMCS2221 | 30 | 40–120 | 150 | 70 | 100 | .60 | .50 |
| MMCS2222 | 30 | 100–300 | 150 | 70 | 100 | .75 | .65 |
| MMCS3637* | 175 | 100–300 | 50 | 720 | ...... | 14.20 | 12.50 |
| MMCS3634* | 140 | 50–150 | 50 | 720 | ...... | 5.25 | 4.20 |
| MMCS3635* | 140 | 100–300 | 50 | 720 | ...... | 5.80 | 5.20 |
| MMCS2906A* | 60 | 40–120 | 150 | 70 | ...... | 1.35 | 1.20 |
| MMCS2907A* | 60 | 100–300 | 150 | 70 | ...... | 1.50 | 1.25 |
| MMCS3250A* | 60 | 50–150 | 10 | 200 | ...... | 1.35 | 1.20 |
| MMCS3251A* | 60 | 100–300 | 10 | 240 | ...... | 1.55 | 1.30 |
| MMCS2906* | 40 | 40–120 | 150 | 70 | ...... | 1.05 | .90 |
| MMCS2907* | 40 | 100–300 | 150 | 70 | ...... | 1.05 | .90 |
| MMCS3250* | 40 | 50–150 | 10 | 200 | ...... | 1.25 | 1.00 |
| MMCS3251* | 40 | 100–300 | 10 | 240 | ...... | 1.40 | 1.10 |
| MMCS3905* | 40 | 50–150 | 10 | 240 | ...... | .60 | .50 |
| MMCS3906* | 40 | 100–300 | 10 | 250 | ...... | .65 | .55 |
| MMCS4402* | 40 | 50–100 | 150 | 260 | ...... | .55 | .48 |
| MMCS4403* | 40 | 100–300 | 150 | 260 | ...... | .60 | .50 |

*PNP; all others NPN.

### NPN-PNP SILICON AMPLIFIER TRANSISTORS

| Motorola Type | $V_{CEO}$ Volts Min. | $h_{FE}$ at $I_C$ Min-Max. | $h_{FE}$ at $I_C$ µA | NF dB Max. | $f_T$ MHz | Net per 10 10-90 | Net per 10 100 Up* |
|---|---|---|---|---|---|---|---|
| MMCS910 | 60 | 75 min. | 10† | 14 | 50 | $1.75 | $1.40 |
| MMCS2483 | 60 | 75 min. | 100 | 5.0 | 60 | 1.25 | 1.00 |
| MMCS2484 | 60 | 175 min. | 100 | 4.0 | 60 | 1.30 | 1.05 |
| MMCS929 | 45 | 60 min. | 500 | 5.0 | 30 | 1.40 | 1.10 |
| MMCS930 | 45 | 150 min. | 500 | 4.0 | 30 | 1.50 | 1.25 |
| MMCS5088 | 30 | 300–900 | 100 | 4.0 | 40 | .60 | .50 |
| MMCS918 | 15 | 20 min. | 3.0† | 6.5 | 600 | 1.35 | 1.20 |
| MMCS3798* | 60 | 150–450 | 500 | 1.0‡ | 24 | 2.50 | 2.00 |
| MMCS3799* | 60 | 300–900 | 500 | 0.8‡ | 24 | 2.70 | 2.15 |
| MMCS5087* | 30 | 250–800 | 100 | 3.0 | 32 | .55 | .48 |

*PNP; all others NPN. †mA. ‡Typical.

### NPN RF TRANSISTORS

| Motorola Type | $V_{CEO}$ Volts Min. | $h_{FE}$ at $I_C$ Min-Max. | $h_{FE}$ at $I_C$ µA | NF dB Max. | $f_T$ MHz | Net per 10 10-90 | Net per 10 100 Up* |
|---|---|---|---|---|---|---|---|
| MMCS5636 | 35 | 5 min. | 200† | ...... | ...... | $14.50 | $12.50 |
| MMCS0172 | 30 | 30 min. | 50† | 2.7‡ | 1500‡ | 2.90 | 2.30 |
| MMCS2857 | 15 | 30–150 | 3.0† | 4.0‡ | 1500‡ | 2.30 | 1.85 |
| MMCS0159 | 10 | 25–200 | 25† | ...... | 2000‡ | 5.85 | 4.65 |

*PNP; all others NPN. †mA. ‡Typical.

### FIELD EFFECT TRANSISTORS

#### MOS FETS

| Motorola Types | $V_{GS(th)}$ Volts Min. | $V_{GS(th)}$ Volts Max. | $V_{BR(DSS)}$ Volts Min. | $I_{DSS}$ nA Max. | $r_{ds(on)}$ Ohms Max. | Net per 10 10-90 | Net per 10 100 Up* |
|---|---|---|---|---|---|---|---|
| MMCS0122 | 1.0 | 5.0 | 25 | 10 | 300 | $3.75 | $3.00 |
| MMCS0123* | −5.0 | −1.0 | −25 | −10 | 600 | 2.85 | 2.30 |

*P-Channel; other N-Channel.

#### JUNCTION FETS

| Motorola Type | $V_{BR(GSS)}$ Volts Min. | $I_{DSS}$ mA Min.-Max. | $C_{rss}$ pF Max. | $r_{ds(on)}$ Ohms Max. | Net per 10, Lots of 10-90 | Net per 10, Lots of 100Up* |
|---|---|---|---|---|---|---|
| MMCS0134 | 30 | 8 min. | 5.0 | 100 | $2.45 | $1.95 |
| MMCS0130 | −25 | 2–20 | 3.0 | ....... | 1.10 | .88 |
| MMCS0131 | −25 | 1–16 | 3.0 | ....... | .98 | .75 |
| MMCS0125* | 40 | 0.5–14 | 2.0 | ....... | 1.20 | .95 |

*P-Channel; others N-Channel.

### SILICON POWER TRANSISTORS

#### NPN

| Motorola Type | $BV_{CEO}$ Volts Min. | $h_{FE}$ at $I_C$ Min.-Max. | $h_{FE}$ at $I_C$ A | $f_T$ MHz Min. | Net Ea., Lots of 100-999 | Net Ea., Lots of 1000-4999 |
|---|---|---|---|---|---|---|
| MJC044 | 60 | 30–180 | 0.250 | 30 | $ 0.85 | $ 0.76 |
| MJC082 | 60 | 30–180 | 2.0 | 30 | 3.50 | 3.15 |
| MJC070 | 60 | 20–180 | 10 | 30 | 20.80* | 13.80† |
| MJC076 | 50 | 20–180 | 1.0 | 30 | 1.50 | 1.35 |

#### PNP

| | | | | | | |
|---|---|---|---|---|---|---|
| MJC043 | 60 | 30–180 | 0.250 | 30 | $ 1.00 | $ 0.90 |
| MJC067 | 60 | 30–180 | 2.0 | 30 | 6.70 | 6.00 |
| MJC069 | 60 | 20–180 | 10 | 30 | 26.10* | 17.50† |
| MJC007 | 50 | 20–180 | 1.0 | 30 | 3.50 | 3.15 |

Lots of: *36–107; †108–1079; larger quantity prices on request.

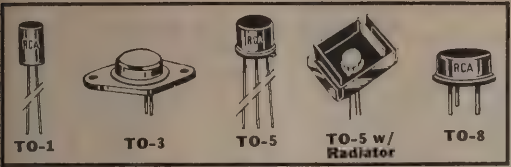
### UNENCAPSULATED HIGH-SPEED SWITCHING DIODES

$V_{(BR)}$ at $I_{(BR)} = 100$ µA. $V_F$ at $I_F = 10$ mA. C at $V_R = 0$ V. Reverse recovery time, 5 nsec.

| Motorola Type | $V_{(BR)}$ Volts Min. | $I_R$ at $V_R$ µA Max. | $I_R$ at $V_R$ Volts | $V_F$ Min.-Max. | C pF Max. | Net per 10 10-90 | Net per 10 100 Up* |
|---|---|---|---|---|---|---|---|
| MMCD914 | 100 | 5.0 | 75 | 1.0 Max. | 4.0 | $0.33 | $0.27 |
| MMCD6100 | 100 | 5.0 | 100 | .65–.85 | 1.5 | .36 | .29 |

★TO ORDER QUANTITIES IN MULTIPLES OF 10 (DEKA PAK), ADD SUFFIX -1 TO PART NO. (e.g., MMCS3507-1). MULTI-PAK, IN MULTIPLES OF 400 ALSO AVAILABLE; PRICES ON REQUEST.

# RCA SILICON AND GERMANIUM TRANSISTORS



## SILICON NPN SIGNAL TRANSISTORS

| RCA Type | Pkg. | Min. $f_T$ MHz | Max. $P_T$ W | $G_{pe}$ at f dB | $G_{pe}$ at f MHz | Maximum NF at f dB | Maximum NF at f MHz |
|---|---|---|---|---|---|---|---|
| 2N918* | TO-18 | 600 | 0.2 | 21 | 200 | ...... | ...... |
| 2N2857 | TO-72 | 1000 | 0.3 | 12.5 | 450 | 4.5 | 450 |
| 2N3478 | TO-104 | 750 | ...... | 470 | 710 | ...... | ...... |
| 2N3600 | TO-72 | 850 | 0.2 | 17 | 200 | 4.5 | 200 |
| 2N3839 | TO-72 | 1000 | 0.3 | 12.5 | 450 | 3.4 | 450 |
| 2N5179 | TO-72 | 1000 | 0.3 | 15 | 200 | 4.5 | 200 |
| 2N5189 | TO-39† | 250 | 5 | ...... | ...... | ...... | ...... |
| 2N5262 | TO-39† | 250 | 5 | ...... | ...... | ...... | ...... |
| 40294 | TO-72 | 1000 | 0.3 | 12.5 | 450 | 4.5 | 450 |

*JAN type available. †Similar to indicated package.

## SILICON MOS FETs (TO-72)

### N-CHANNEL SINGLE GATE

| RCA Type | Maximum $V_{DS}$ V | Maximum $P_T$ W | Typical $G_{PS}$ dB | Typical NF at f dB | Typical NF at f MHz | Typical $C_{rss}$ pF |
|---|---|---|---|---|---|---|
| 3N142 | 20 | 0.1 | 24 | 4 | 100 | 0.12 |
| 3N138 | 35 | 0.15 | * | ...... | ...... | 0.18 |
| 3N139 | 35 | 0.15 | 14 | 4 | 200 | 0.2 |
| 40468A | 20 | 0.375 | 24 | 3.5 | 100 | 0.12 |
| 40559A | 20 | 0.375 | 24 | ...... | 100 | 0.15 |
| 3N128 | 20 | 0.4 | 16 | 3.5 | 200 | 0.13 |
| 3N143 | 20 | 0.4 | 13.5 | ...... | 100 | 0.12 |
| 3N152 | 20 | 0.4 | 17 | 2.5 | 200 | 0.12 |
| 3N153 | 20 | 0.4 | † | ...... | ...... | 0.34 |
| 3N154 | 20 | 0.4 | 20 | 3.5 | 200 | 0.12 |
| 40467A | 20 | 0.4 | 20 | 3.5 | 200 | 0.12 |
| 40601 | 20 | 0.4 | 14 | ...... | ...... | ...... |
| 40602 | 20 | 0.4 | 35 | ...... | ...... | 0.03 |
| 40603 | 20 | 0.4 | 26 | 2.5 | 100 | 0.03 |
| 40604 | 20 | 0.4 | 21 | ...... | ...... | 0.03 |

*$g_{fs}$ = 6000 μmho typ. †$g_{fs}$ = 10,000 μmho typ.

### N-CHANNEL DUAL GATE

| RCA Type | Maximum $V_{DS}$ V | Maximum $P_T$ W | Typical $G_{PS}$ dB | Typical NF at f dB | Typical NF at f MHz | Typical $C_{rss}$ pF |
|---|---|---|---|---|---|---|
| 3N140 | 20 | 0.4 | 18 | 3.5 | 200 | 0.03 |
| 3N141 | 20 | 0.4 | 17 | ...... | 200 | 0.03 |
| 3N159 | 20 | 0.4 | 18 | 2.5 | 200 | 0.03 |
| 40600 | 20 | 0.4 | 20 | 5 | 200 | 0.03 |

### N-CHANNEL DUAL GATE PROTECTED

| RCA Type | Maximum $V_{DS}$ V | Maximum $P_T$ W | Typical $G_{PS}$ dB | Typical NF at f dB | Typical NF at f MHz | Typical $C_{rss}$ pF |
|---|---|---|---|---|---|---|
| 3N187 | 20 | 0.33 | 18 | 3.5 | 200 | 0.02 |
| 3N200 | 20 | 0.33 | 12.5 | 4.5 | 400 | 0.02 |
| 40673 | 20 | 0.33 | 18 | 3.5 | 200 | 0.02 |
| 40819 | 25 | 0.33 | 18 | 3.5 | 200 | 0.02 |
| 40820 | 20 | 0.33 | 17 | 4.5 | 200 | 0.02 |
| 40821 | 20 | 0.33 | 11 | ...... | 200 | 0.02 |
| 40822 | 20 | 0.33 | 24 | 2.0 | 100 | 0.02 |
| 40823 | 20 | 0.33 | 18 | ...... | 100 | 0.025 |
| 40841 | ...... | ...... | 32 | 0.46 | ...... | 0.2 |

## GERMANIUM PNP POWER TRANSISTORS (TO-3)

| RCA Type | Maximum $V_{CEO}$ −V | Maximum $P_T$ W | Maximum $I_C$ −A | $h_{FE}$ at $I_C$ Min.-Max. | $h_{FE}$ at $I_C$ −A |
|---|---|---|---|---|---|
| 2N3732 | 100* | 3 | 3 | 35 min. | 0.7 |
| 2N3731 | 320* | 5 | 10 | 15 min. | 6 |
| 2N4346 | 320* | 5 | 10 | 25 min. | 6 |
| 40439 | 320* | 5 | 10 | 15 min. | 6 |
| 40440 | 200* | 5 | 10 | 15 min. | 6 |
| 2N1183† | 20 | 7.5 | 3 | 20–60 | 0.4 |
| 2N1183A† | 30 | 7.5 | 3 | 20–60 | 0.4 |
| 2N1183B† | 40 | 7.5 | 3 | 20–60 | 0.4 |
| 2N1184† | 20 | 7.5 | 3 | 40–120 | 0.4 |
| 2N1184A† | 30 | 7.5 | 3 | 40–120 | 0.4 |
| 2N1184B† | 40 | 7.5 | 3 | 40–120 | 0.4 |
| 2N3730 | 200* | 10 | 3 | 35 min. | 0.7 |
| 2N2147 | 50 | 12.5 | 5 | 100–300 | 1 |
| 2N2148 | 40 | 12.5 | 5 | 60–100 | 1 |
| 40022 | 32* | 12.5 | 5 | 38 min. | 1 |
| 40050 | 40 | 12.5 | 5 | 50 min. | 1 |
| 40051 | 50 | 12.5 | 5 | 50 min. | 1 |
| 40254 | 32* | 12.5 | 5 | 30 min. | 1 |
| 40462 | 40 | 12.5 | 5 | 50 min. | 1 |
| 40612 | 25* | 12.5 | 5 | 30–150 | 1 |
| 40623 | 45* | 12.5 | 5 | 50–170 | 1 |
| 40626 | 55* | 12.5 | 5 | 50–170 | 1 |
| 40421 | 50 | 12.5 | 5 | 62–175 | 1 |
| 2N301 | 50 | 30 | 10 | 50–165 | 1 |
| 2N301A | 50 | 30 | 10 | 50–165 | 1 |
| 2N1905 | 50 | 30 | 6 | 50–150 | 1 |
| 2N1906 | 60 | 30 | 6 | 75–250 | 1 |
| 2N2869 | 50 | 30 | 10 | 50–165 | 1 |
| 2N2870 | 50 | 30 | 10 | 50–165 | 1 |

*$V_{CER}$. †In TO-8 package; JAN type also available.

## SILICON POWER TRANSISTORS

Listed according to $P_T$ and $f_T$ range.

### NPN—0.3 MHz TO 3 MHz ($f_T$)

| RCA Type | Pkg. | Maximum $V_{CEO}$ V | Maximum $P_T$ W | Maximum $I_C$ A | $h_{FE}$ at $I_C$ Min.-Max. | $h_{FE}$ at $I_C$ A |
|---|---|---|---|---|---|---|
| 2N1479* | TO-5 | 40 | 5 | 1.5 | 20–60 | 0.2 |
| 2N1480* | TO-5 | 55 | 5 | 1.5 | 20–60 | 0.2 |
| 2N1481* | TO-5 | 40 | 5 | 1.5 | 35–100 | 0.2 |
| 2N1482* | TO-5 | 55 | 5 | 1.5 | 35–100 | 0.2 |
| 2N1700 | TO-5 | 40 | 5 | 1 | 20–80 | 0.1 |
| 40367 | TO-5 | 55 | 5 | 1.5 | 35–100 | 0.2 |
| 40372 | TO-66† | 55 | 5.8 | 4 | 25–100 | 0.5 |
| 40373 | TO-66† | 140 | 5.8 | 3 | 20–80 | 0.5 |
| 40347 | TO-5 | 40 | 8.75 | 1.5 | 25–100 | 0.45 |
| 40348 | TO-5 | 65 | 8.75 | 1.5 | 30–125 | 0.3 |
| 40340 | TO-5 | 140 | 8.75 | 1.5 | 30–125 | 0.15 |
| 2N5784 | TO-5 | 65 | 10 | 3.5 | 20–100 | 1 |
| 2N5785 | TO-5 | 50 | 10 | 3.5 | 20–100 | 1.2 |
| 2N5786 | TO-5 | 40 | 10 | 3.5 | 20–100 | 1.6 |
| 2N1483‡ | TO-8 | 40 | 25 | 3 | 20–60 | 0.75 |
| 2N1484‡ | TO-8 | 55 | 25 | 3 | 20–60 | 0.75 |
| 2N1485‡ | TO-8 | 40 | 25 | 3 | 35–100 | 0.75 |
| 2N1486‡ | TO-8 | 55 | 25 | 3 | 35–100 | 0.75 |
| 2N1701 | TO-8 | 40 | 25 | 2.5 | 20–80 | 0.3 |
| 2N3054 | TO-66 | 55 | 25 | 4 | 20–100 | 0.5 |
| 2N3441* | TO-66 | 140 | 25 | 3 | 25–100 | 0.5 |
| 40368 | TO-8 | 55 | 25 | 3 | 35–100 | 0.75 |
| 40250 | TO-66 | 40 | 29 | 4 | 25–100 | 1.5 |
| 40310 | TO-66 | 35 | 29 | 4 | 20–120 | 1 |
| 40312 | TO-66 | 60§ | 29 | 4 | 20–120 | 1 |
| 40316 | TO-66 | 60§ | 29 | 4 | 20–120 | 1 |
| 40324 | TO-66 | 35 | 29 | 4 | 20–120 | 1 |
| 2N5293 | TO-220 | 40 | 36 | 4 | 30–120 | 1 |
| 2N5294 | TO-220 | 70 | 36 | 4 | 30–120 | 0.5 |
| 2N5295 | TO-220 | 70 | 36 | 4 | 30–120 | 0.5 |
| 2N5296 | TO-220 | 40 | 36 | 4 | 30–120 | 1 |
| 2N5297 | TO-220 | 60 | 36 | 4 | 20–80 | 1.5 |
| 2N5298 | TO-220 | 60 | 36 | 4 | 20–80 | 1.5 |
| 40613 | TO-220 | 25 | 36 | 4 | 30–120 | 1 |
| 40618 | TO-220 | 30 | 36 | 4 | 30–120 | 1 |
| 40621 | TO-220 | 32 | 36 | 4 | 25–100 | 1.5 |
| 40622 | TO-220 | 40 | 36 | 4 | 25–100 | 1.5 |
| 40629 | TO-220 | 35§ | 36 | 4 | 20–70 | 1 |
| 40630 | TO-220 | 40§ | 36 | 4 | 20–70 | 1.5 |
| 40631 | TO-220 | 45§ | 36 | 4 | 20–70 | 2 |
| 2N6077 | TO-66 | 300 | 45 | 7 | 12–70 | 1.2 |
| 2N6078 | TO-66 | 275 | 45 | 7 | 12–70 | 1.2 |
| 2N6079 | TO-66 | 375 | 45 | 7 | 12–70 | 1.2 |
| 40851 | TO-66 | 375 | 45 | 7 | 12 min. | 1.2 |
| 2N5490 | TO-220 | 40 | 50 | 7 | 20–100 | 2 |
| 2N5491 | TO-220 | 40 | 50 | 7 | 20–100 | 2 |
| 2N5492 | TO-220 | 55 | 50 | 7 | 20–100 | 2.5 |
| 2N5493 | TO-220 | 55 | 50 | 7 | 20–100 | 2.5 |
| 2N5494 | TO-220 | 40 | 50 | 7 | 20–100 | 3 |
| 2N5495 | TO-220 | 40 | 50 | 7 | 20–100 | 3 |
| 2N5496 | TO-220 | 70 | 50 | 7 | 20–100 | 3.5 |
| 2N5497 | TO-220 | 70 | 50 | 7 | 20–100 | 3.5 |
| 40624 | TO-220 | 45 | 50 | 6 | 20–100 | 2.5 |
| 40627 | TO-220 | 55 | 50 | 6 | 20–100 | 2.5 |
| 40632 | TO-220 | 60§ | 50 | 6 | 20–70 | 3 |
| 40816 | TO-220 | 45§ | 50 | 4 | 35–150 | 2 |
| 2N1487* | TO-3 | 40 | 75 | 6 | 15–45 | 1.5 |
| 2N1488* | TO-3 | 55 | 75 | 6 | 15–45 | 1.5 |
| 2N1489* | TO-3 | 40 | 75 | 6 | 25–75 | 1.5 |
| 2N1490* | TO-3 | 55 | 75 | 6 | 25–75 | 1.5 |
| 2N1702 | TO-3 | 40 | 75 | 5 | 15–60 | 0.8 |
| 2N6098 | TO-220 | 60 | 75 | 10 | 20–80 | 4 |
| 2N6099 | TO-220 | 60 | 75 | 10 | 20–80 | 4 |
| 2N6100 | TO-220 | 70 | 75 | 10 | 20–80 | 5 |
| 2N6101 | TO-220 | 70 | 75 | 10 | 20–80 | 5 |
| 2N6102 | TO-220 | 40 | 75 | 16 | 15–80 | 8 |
| 2N6103 | TO-220 | 40 | 75 | 16 | 15–60 | 8 |
| 40369 | TO-3 | 55 | 75 | 6 | 25–75 | 1.5 |
| 40884 | TO-220 | 65 | 75 | 10 | 20–120 | 4 |
| 2N4347 | TO-3 | 120 | 100 | 5 | 20–70 | 2 |
| 40854 | TO-3 | 300 | 110 | 15 | 10 min. | 10 |
| 2N3055‡ | TO-3 | 60 | 115 | 15 | 20–70 | 4 |
| 40363 | TO-3 | 70§ | 115 | 15 | 20–70 | 4 |
| 40636 | TO-3 | 95§ | 115 | 15 | 20–70 | 4 |
| 2N3442* | TO-3 | 140 | 117 | 10 | 20–70 | 3 |
| 40251 | TO-3 | 40 | 117 | 15 | 15–60 | 8 |
| 40325 | TO-3 | 35 | 117 | 15 | 15–60 | 8 |
| 2N4348 | TO-3 | 120 | 120 | 10 | 15–60 | 5 |
| RCA411 | TO-3 | 200 | 125 | 7 | 30–90 | 1 |
| 2N2015* | TO-36 | 50 | 150 | 10 | 15–60 | 5 |
| 2N2016* | TO-36 | 65 | 150 | 10 | 15–60 | 5 |
| 2N2338 | TO-36 | 40 | 150 | 7.5 | 15–60 | 3 |
| 2N3771‡ | TO-3 | 40 | 150 | 30 | 15–60 | 15 |
| 2N3772‡ | TO-3 | 60 | 150 | 20 | 15–60 | 10 |
| 2N3773 | TO-3 | 140 | 150 | 16 | 15–60 | 8 |
| 40411 | TO-3 | 90§ | 150 | 30 | 35–100 | 4 |
| 40383 | TO-3 | 100 | 250 | 16 | 30–150 | 6 |
| 2N5575 | TO-3# | 50 | 300 | 80 | 10–40 | 80 |
| 2N5576 | TO-3# | 50 | 300 | 80 | 10–40 | 60 |
| 2N5577 | TO-3# | 50 | 300 | 80 | 10–40 | 60 |
| 2N5578 | TO-3# | 70 | 300 | 60 | 10–40 | 40 |
| 2N5579 | TO-3# | 70 | 300 | 60 | 10–40 | 40 |
| 2N5580 | TO-3# | 70 | 300 | 60 | 10–40 | 40 |

*JAN type available. †With factory attached heat radiator. ‡JAN and JANTX types available. §$V_{CER}$. #Similar to indicated pkg.

**SEE LAST PAGES OF LISTING FOR SEMICONDUCTOR PRICING**

## SILICON POWER TRANSISTORS (CONTINUED)

### PNP—3 MHz TO 30 MHz (FT)

| RCA Type | Pkg. | Maximum $V_{CEO}$ V | Maximum $P_T$ W | Maximum $I_C$ A | $h_{FE}$ at $I_C$ Min.-Max. | $h_{FE}$ at $I_C$ A |
|---|---|---|---|---|---|---|
| 2N5415 | TO-5 | −200 | 10 | −1 | 30–150 | −0.05 |
| 2N5416 | TO-5 | −300 | 10 | −1 | 30–120 | −0.05 |
| 2N5781 | TO-5 | −65 | 10 | −3.5 | 20–100 | −1 |
| 2N5782 | TO-5 | −50 | 10 | −3.5 | 20–100 | −1.2 |
| 2N5783 | TO-5 | −40 | 10 | −3.5 | 20–100 | −1.6 |
| 2N6211 | TO-66 | −225 | 20 | −2 | 10–100 | −1 |
| 2N6212 | TO-66 | −300 | 20 | −2 | 10–100 | −1 |
| 2N6213 | TO-66 | −350 | 20 | −2 | 10–100 | −1 |
| 2N6106 | TO-220 | −70 | 40 | −7 | 30–150 | −2 |
| 2N6107 | TO-220 | −70 | 40 | −7 | 30–150 | −2 |
| 2N6108 | TO-220 | −50 | 40 | −7 | 30–150 | −2.5 |
| 2N6109 | TO-220 | −50 | 40 | −7 | 30–150 | −2.5 |
| 2N6110 | TO-220 | −30 | 40 | −7 | 30–150 | −3 |
| 2N6111 | TO-220 | −30 | 40 | −7 | 30–150 | −3 |
| 2N5954 | TO-66 | −75 | 40 | −6 | 20–100 | −2 |
| 2N5955 | TO-66 | −60 | 40 | −6 | 20–100 | −2.5 |
| 2N5956 | TO-66 | −40 | 40 | −6 | 20–100 | −3 |
| 40872 | TO-220 | −100 | 40 | −7 | 50–250 | −1 |
| 40874 | TO-220 | −70 | 40 | −7 | 30–250 | −2 |
| 40876 | TO-220 | −50 | 40 | −7 | 20–120 | −3 |
| 40878 | TO-220 | −65 | 75 | −10 | 20–120 | −4 |
| 40880 | TO-220 | −85 | 75 | −10 | 20–120 | −5 |
| 40882 | TO-220 | −40 | 75 | −10 | 15–60 | −8 |

### NPN—3 MHz TO 30 MHz (FT)

| | | | | | | |
|---|---|---|---|---|---|---|
| 40885 | Plas.* | 300 | 1.4 | 1 | 30–190 | 0.02 |
| 40886 | Plas.* | 350 | 1.4 | 1 | 30–150 | 0.02 |
| 40887 | Plas.* | 400 | 1.4 | 1 | 40–160 | 0.02 |
| 40390 | TO-5† | 250 | 3.5 | 1 | 40–160 | 0.02 |
| 40321 | TO-5 | 300‡ | 5 | 0.5 | 25–200 | 0.02 |
| 40327 | TO-5 | 300‡ | 5 | 0.5 | 40–250 | 0.02 |
| 40374 | TO-66† | 175 | 5.8 | 2 | 40 min. | 0.1 |
| 2N3439§ | TO-5 | 350 | 10 | 1 | 40–160 | 0.02 |
| 2N3440§ | TO-5 | 250 | 10 | 1 | 40–160 | 0.02 |
| 2N4063 | TO-5* | 350 | 10 | 1 | 40–160 | 0.02 |
| 2N4064 | TO-5* | 250 | 10 | 1 | 40–160 | 0.02 |
| 40346 | TO-5 | 175‡ | 10 | 1 | 25 min. | 0.01 |
| 40385 | TO-5 | 350 | 10 | 1 | 40–160 | 0.02 |
| 40412 | TO-5 | 250 | 10 | 1 | 40 min. | 0.03 |
| 2N6175 | Plastic | 300 | 20 | 1 | 30–190 | 0.02 |
| 2N6176 | Plastic | 350 | 20 | 1 | 30–150 | 0.02 |
| 2N6177 | Plastic | 400 | 20 | 1 | 40–160 | 0.02 |
| 2N3583 | TO-66 | 175 | 35 | 2 | 10 min. | 1 |
| 2N3584 | TO-66* | 250 | 35 | 2 | 25–100 | 1 |
| 2N3585 | TO-66* | 300 | 35 | 2 | 25–100 | 1 |
| 2N4240# | TO-66 | 300 | 35 | 2 | 30–150 | 0.75 |
| 40313 | TO-66 | 300 | 35 | 2 | 40–250 | 0.1 |
| 40318 | TO-66 | 300 | 35 | 2 | 40 min. | 0.02 |
| 40322 | TO-66 | 300 | 35 | 2 | 40 min. | 0.02 |
| 40328 | TO-66 | 300 | 35 | 2 | 20 min. | 1 |
| 40850 | TO-66 | 300 | 35 | 2 | 25 min. | 0.75 |
| 40871 | TO-220 | 100 | 40 | 7 | 50–250 | 1 |
| 40873 | TO-220 | 70 | 40 | 7 | 30–150 | 2 |
| 40875 | TO-220 | 50 | 40 | 7 | 20–120 | 3 |
| 2N3263 | Rad. | 90 | 84 | 25 | 25–75 | 15 |
| 2N3264 | Rad. | 60 | 84 | 25 | 20–80 | 15 |
| 40877 | TO-220 | 65 | 75 | 10 | 20–120 | 4 |
| 40879 | TO-220 | 85 | 75 | 10 | 20–120 | 5 |
| 40881 | TO-220 | 40 | 75 | 10 | 15–60 | 8 |
| 2N5239 | TO-3 | 225 | 100 | 5 | 20–80 | 2 |
| 2N5240 | TO-3 | 300 | 100 | 5 | 20–80 | 2 |
| 2N5838 | TO-3 | 250 | 100 | 5 | 10–50 | 3 |
| 2N5839 | TO-3 | 275 | 100 | 5 | 10–50 | 2 |
| 2N5840 | TO-3 | 350 | 100 | 5 | 10–50 | 2 |
| 40852 | TO-3 | 350 | 100 | 7 | 12 min. | 1.2 |
| 2N5804 | TO-3 | 225 | 110 | 8 | 10–100 | 5 |
| 2N5805 | TO-3 | 300 | 110 | 8 | 10–100 | 5 |
| 40853 | TO-3 | 300 | 110 | 10 | 10 min. | 5 |
| 2N3265 | TO-63 | 90 | 125 | 25 | 25–75 | 15 |
| 2N3266 | TO-63 | 60 | 125 | 25 | 20–80 | 15 |
| RCA410 | TO-3 | 200 | 125 | 7 | 30–90 | 1 |
| RCA413 | TO-3 | 325 | 125 | 7 | 20–80 | 0.5 |
| RCA423 | TO-3 | 325 | 125 | 7 | 30–90 | 1 |
| RCA431 | TO-3 | 325 | 125 | 7 | 15–35 | 2.5 |

*With factory attached heat clip. †With factory attached heat radiator. ‡$V_{CER}$. §JAN type available. #JAN and JANTX types available.

### PNP—30 MHz TO 300 MHz (FT)

| RCA Type | Pkg. | Maximum $V_{CEO}$ V | Maximum $P_T$ W | Maximum $I_C$ A | $h_{FE}$ at $I_C$ Min.-Max. | $h_{FE}$ at $I_C$ A |
|---|---|---|---|---|---|---|
| 40406 | TO-5 | −50 | 1 | −0.7 | 30–200 | −0.1 |
| 40410 | TO-5* | −90† | 3 | −0.7 | 50–250 | −0.15 |
| 40391 | TO-5* | −40 | 3.5 | −1 | 50–250 | −0.15 |
| 40319 | TO-5 | −40 | 5 | −0.7 | 35–200 | −0.05 |
| 40362 | TO-5 | −70† | 5 | −0.7 | 35–200 | −0.05 |
| 40537 | TO-5 | −55† | 5 | −0.7 | 15–90 | −0.5 |
| 40634 | TO-5 | −75† | 5 | −0.7 | 50–250 | −0.15 |
| 2N4036 | TO-5 | −65 | 7 | −1 | 40–140 | −0.15 |
| 2N4037 | TO-5 | −40 | 7 | −1 | 50–250 | −0.15 |
| 2N4313 | TO-5 | −65 | 7 | −1 | 50–250 | −0.15 |
| 40394 | TO-5* | −40 | 7 | −1 | 50–250 | −0.15 |
| 40815 | TO-5 | −40 | 7 | −1 | 70–250 | −0.15 |
| 2N5322 | TO-5 | −75 | 10 | −2 | 30–130 | −0.5 |
| 2N5323 | TO-5 | −50 | 10 | −2 | 40–250 | −0.5 |
| 40595 | TO-5 | −95† | 10 | −2 | 70–350 | −0.3 |

*With factory attached heat radiator. †$V_{CER}$.

**SEE LAST PAGES OF LISTING FOR SEMICONDUCTOR PRICING**

### NPN—30 MHz TO 300 MHz (FT)

| RCA Type | Pkg. | Maximum $V_{CEO}$ V | Maximum $P_T$ W | Maximum $I_C$ A | $h_{FE}$ at $I_C$ Min.-Max. | $h_{FE}$ at $I_C$ A |
|---|---|---|---|---|---|---|
| 40407 | TO-5 | 50 | 1 | 0.7 | 40–200 | 0.001 |
| 40408 | TO-5 | 90 | 1 | 0.7 | 40–200 | 0.001 |
| 2N718A | TO-18 | 32 | 1.8 | 1 | 40–120 | 0.15 |
| 2N720A | TO-18 | 80 | 1.8 | 1 | 40–120 | 0.15 |
| 2N2895 | TO-18 | 85 | 1.8 | 1 | 40–120 | 0.15 |
| 2N2896 | TO-18 | 90 | 1.8 | 1 | 60–200 | 0.15 |
| 2N2897 | TO-18 | 45 | 1.8 | 1 | 50–200 | 0.15 |
| 40084 | TO-18 | 40 | 1.8 | 1 | 50–250 | 0.15 |
| 2N697 | TO-5 | 40* | 2 | 0.5 | 40–120 | 0.15 |
| 2N699 | TO-5 | 80* | 2 | 0.5 | 40–120 | 0.15 |
| 2N1613 | TO-5 | 50* | 3 | 1 | 40–120 | 0.15 |
| 2N1711 | TO-5 | 50* | 3 | 1 | 100–300 | 0.15 |
| 2N1893 | TO-5 | 80† | 3 | 0.5 | 40–120 | 0.15 |
| 40409 | TO-5‡ | 90* | 3 | 0.7 | 50–250 | 0.15 |
| 40389 | TO-5‡ | 40 | 3.5 | 0.7 | 50–200 | 0.15 |
| 40625 | TO-5‡ | 45 | 3.5 | 1 | 100–300 | 0.15 |
| 40628 | TO-5‡ | 55 | 3.5 | 1 | 100–300 | 0.15 |
| 2N3119 | TO-5 | 80 | 4 | 0.5 | 50–200 | 0.1 |
| 2N2102 | TO-5 | 65 | 5 | 1 | 40–200 | 0.15 |
| 2N2270 | TO-5 | 45 | 5 | 1 | 50–200 | 0.15 |
| 2N2405 | TO-5 | 90 | 5 | 1 | 60–200 | 0.15 |
| 2N3053 | TO-5 | 40 | 5 | 0.7 | 50–200 | 0.15 |
| 40309 | TO-5 | 18 | 5 | 0.7 | 70–350 | 0.05 |
| 40311 | TO-5 | 30 | 5 | 0.7 | 70–350 | 0.05 |
| 40314 | TO-5 | 40 | 5 | 0.7 | 70–350 | 0.05 |
| 40315 | TO-5 | 35 | 5 | 0.7 | 70–350 | 0.05 |
| 40317 | TO-5 | 40 | 5 | 0.7 | 40–200 | 0.01 |
| 40320 | TO-5 | 40 | 5 | 0.7 | 40–200 | 0.01 |
| 40323 | TO-5 | 18 | 5 | 0.7 | 70–350 | 0.05 |
| 40326 | TO-5 | 40 | 5 | 0.7 | 40–200 | 0.01 |
| 40360 | TO-5 | 70 | 5 | 0.7 | 40–200 | 0.01 |
| 40361 | TO-5 | 70* | 5 | 0.7 | 70–350 | 0.05 |
| 40366 | TO-5 | 65 | 5 | 1 | 40–120 | 0.15 |
| 40539 | TO-5 | 65* | 5 | 0.7 | 15–90 | 0.5 |
| 40635 | TO-5 | 75* | 5 | 0.7 | 50–250 | 0.15 |
| 40611 | TO-5 | 25 | 5 | 0.7 | 70–500 | 0.15 |
| 40616 | TO-5 | 32 | 5 | 0.7 | 25–100 | 1.5 |
| 40375 | TO-66‡ | 50 | 5.8 | 7 | 50–200 | 0.5 |
| 40392 | TO-5§ | 40 | 7 | 0.7 | 50–200 | 0.15 |
| 40544 | TO-5§ | 50* | 7 | 0.7 | 35–200 | 0.05 |
| 2N3262 | TO-5 | 80 | 8.75 | 1.5 | 40 min. | 0.5 |
| 2N5320 | TO-5 | 75 | 10 | 2 | 30–130 | 0.5 |
| 2N5321 | TO-5 | 50 | 10 | 2 | 40–250 | 0.5 |
| 40594 | TO-5 | 95* | 10 | 2 | 70–350 | 0.3 |
| 2N3878 | TO-66 | 50 | 35 | 7 | 50–200 | 0.5 |
| 2N3879 | TO-66 | 75 | 35 | 7 | 20–80 | 4 |
| 2N5202 | TO-66 | 75* | 35 | 4 | 10–100 | 4 |
| 40364 | TO-66 | 60* | 35 | 7 | 35–275 | 0.5 |
| 2N5038 | TO-3 | 90 | 140 | 20 | 50–200 | 2 |
| 2N5039 | TO-3 | 75 | 140 | 20 | 30–150 | 2 |
| 2N5671 | TO-3 | 90 | 140 | 30 | 20–100 | 15 |
| 2N5672 | TO-3 | 120 | 140 | 30 | 20–100 | 15 |
| 2N6032 | TO-3# | 90 | 140 | 50 | 10–50 | 50 |
| 2N6033 | TO-3# | 120 | 140 | 40 | 10–50 | 40 |

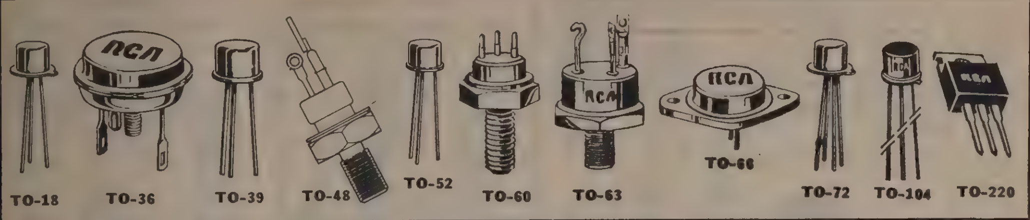
*$V_{CER}$. †$V_{CES}$. ‡With factory attached heat radiator. §With flange. #Similar to package indicated.

### NPN RF

| RCA Type | Pkg. TO- | Col. Sup. V | Freq. MHz | RCA Type | Pkg. TO- | Col. Sup. V | Freq. MHz |
|---|---|---|---|---|---|---|---|
| 2N918* | 72 | 6–15‡ | 200 | 2N5921 | 201 | 28 | 2000 |
| 2N1491 | 5 | 20 | 70 | 2N5992, 3 | 216 | 12.5 | 88 |
| 2N1492 | 5 | 30 | 70 | 2N5994 | 216 | 12.5▲ | 118■ |
| 2N1493* | 5 | 50 | 70 | 2N5995, 6 | 216 | 12.5 | 175 |
| 2N2631 | 39 | 28 | 50 | 2N6093 | 217 | 28 | 30 |
| 2N2857 | 72 | 5–16‡ | 1000§ | 2N6105 | 216 | 28 | 400 |
| 2N2876 | 60 | 28 | 50 | 40080, 1 | 5 | 12 | 27 |
| 2N3118 | 5 | 28 | 50 | 40082 | 39 | 12 | 27 |
| 2N3119 | 5 | 28 | 250§ | 40279 | Ultra-high reliability 2N3375 | | |
| 2N3229 | 60 | 50 | 50 | 40280 | 39 | 13.5 | 175 |
| 2N3375† | 60 | 28 | 400 | 40281, 2 | 60 | 13.5 | 175 |
| 2N3553† | 39 | 28 | 175 | 40290 | 39 | 12.5 | 135 |
| 2N3600 | 72 | 6–15‡ | 200 | 40291, 2 | 60 | 12.5 | 135 |
| 2N3632 | 60 | 28 | 175 | 40294 | 72 | 30 | 450 |
| 2N3733 | 60 | 28 | 400 | 40305 | 39 | 28 | 175 |
| 2N3839 | Low noise 2N2857 | | | 40306 | 60 | 28 | 400 |
| 2N3866 | 39 | 28 | 400 | 40307 | 60 | 28 | 175 |
| 2N4012 | 60 | 28 | 1000# | 40340 | 60 | 13.5 | 50 |
| 2N4427 | 39 | 12 | 175 | 40341 | 60 | 24 | 50 |
| 2N4440 | 60 | 28 | 400 | 40446 | 39 | Flanged 40082 | |
| 2N4932 | 60 | 13.5 | 88 | 40518 | 72 | High reliab. 2N3839 | |
| 2N4933 | 60 | 24 | 88 | 40577 | High reliab. 2N3118 | | |
| 2N5016 | 60 | 28 | 400 | 40578 | High reliab. 2N3866 | | |
| 2N5070 | 60 | 28 | 30 | 40581 | 39 | 12 | 27 |
| 2N5071 | 60 | 24 | 76 | 40582 | 39 | Flanged 40581 | |
| 2N5090 | 60 | 28 | 400 | 40605 | Prem. high reliability 2N3553 | | |
| 2N5102 | 60 | 24 | 136 | 40606 | High reliab. 2N3733 | | |
| 2N5108 | 39 | 28 | 1000 | 40608 | 39 | Linear amp♦ | |
| 2N5109 | 39 | Linear amp• | | 40637 | 52 | 12 | 156I |
| 2N5179 | 72 | 6‡ | 1000 | 40836 | 215 | 21 | 2000 |
| 2N5470 | 215 | 28 | 2000 | 40837 | 215 | 28 | 2000 |
| 2N5913 | 39 | 12 | 470 | 40893 | ** | 12.5 | 470 |
| 2N5914, 5 | 216 | 12 | 470 | | | | |
| 2N5916 | 216 | 28 | 400 | | | | |
| 2N5917 | ** | 28 | 400 | | | | |
| 2N5918, 9 | 216 | 28 | 400 | | | | |
| 2N5920 | 215 | 28 | 2000 | | | | |

*JAN type also available. †JAN and JANTX types also available. ‡$V_{CE}$. §$f_T$. #Tripler. •Class A; $f_T = 1200$ MHz at 50 mA. ▲And 28 V. ■And 175 MHz. ♦Class A; $f_T = 700$ MHz at 50 mA. IDoubler. **HF-31 package.

# RCA Silicon Thyristors



## THYRISTORS—SILICON TRIACS

Low voltage operation 50 and 60 Hz; $V_{DROM}$ = 100 V.

| RCA Type | Pkg. | Max. $I_{T(rms)}$ at $T_C$ | |
|---|---|---|---|
| | | A | °C |
| **40531** | TO-5* | 1.6 | 25 |
| **40767** | TO-5* | 1.6 | 25 |
| **40534** | TO-5* | 1.9 | 25 |
| **40684** | TO-5* | 1.9 | 25 |
| **2N5754** | TO-5 | 2.5 | 70 |
| **40525** | TO-5 | 2.5 | 60 |
| **40528** | TO-5 | 2.5 | 70 |
| **40693** | TO-5* | 2.5 | 70 |
| **40696** | TO-5 | 2.5 | 70 |
| **40766** | TO-5 | 2.5 | 60 |

Line operation 120 V, 50 and 60 Hz; $V_{DROM}$ = 200 V.

| | | | |
|---|---|---|---|
| **40532** | TO-5* | 1.6 | 25 |
| **40761** | TO-5* | 1.6 | 25 |
| **40535** | TO-5* | 1.9 | 25 |
| **40685** | TO-5* | 1.9 | 25 |
| **40509** | TO-5* | 2.2 | 25 |
| **40511†** | TO-5* | 2.2 | 75 |
| **40731** | TO-5* | 2.3 | 75 |
| **2N5755** | TO-5 | 2.5 | 70 |
| **40526** | TO-5 | 2.5 | 60 |
| **40529** | TO-5 | 2.5 | 70 |
| **40691** | TO-5 | 2.5 | 60 |
| **40694** | TO-5* | 2.5 | 70 |
| **40697** | TO-5 | 2.5 | 70 |
| **40502** | TO-66 | 3.3 | 25 |
| **40733** | TO-5‡ | 4.2 | 75 |
| **40429** | TO-66 | 6 | 75 |
| **40431†** | TO-5 | 6 | 75 |
| **40485** | TO-5 | 6 | 75 |
| **40838** | TO-5* | 6 | 60 |
| **40725** | TO-5 | 6 | 75 |
| **40727** | TO-66 | 6 | 75 |
| **40729** | TO-66* | 6 | 75 |
| **40668** | TO-220 | 8 | 80 |
| **40721** | TO-220 | 8 | 80 |
| **2N5567** | PF | 10 | 85 |
| **2N5569** | Stud | 10 | 85 |
| **40717** | PF | 10 | 85 |

Line operation 120 V (Cont'd)

| RCA Type | Pkg. | Max. $I_{T(rms)}$ at $T_C$ | |
|---|---|---|---|
| | | A | °C |
| **40719** | Stud | 10 | 85 |
| **40799** | ISO-S | 10 | 85 |
| **2N5571** | PF | 15 | 80 |
| **2N5573** | Stud | 15 | 80 |
| **40576** | TO-66 | 15 | 70 |
| **40711** | PF | 15 | 80 |
| **40713** | Stud | 15 | 80 |
| **40715** | TO-66 | 15 | 70 |
| **40802** | ISO-S | 15 | 75 |
| **40660** | PF | 30 | 65 |
| **40662** | Stud | 30 | 60 |
| **40705** | PF | 30 | 65 |
| **40707** | Stud | 30 | 60 |
| **40805** | ISO-S | 30 | 55 |
| **2N5441** | PF | 40 | 70 |
| **2N5444** | Stud | 40 | 65 |
| **40688** | ISO-S | 40 | 60 |
| **40699** | PF | 40 | 70 |
| **40703** | Stud | 40 | 65 |

Line operation 240 V, 50 and 60 Hz; $V_{DROM}$ = 400 V.

| | | | |
|---|---|---|---|
| **40533** | TO-5* | 1.6 | 25 |
| **40762** | TO-5* | 1.6 | 25 |
| **40536** | TO-5* | 1.9 | 25 |
| **40686** | TO-5* | 1.9 | 25 |
| **40510** | TO-5* | 2.2 | 25 |
| **40512†** | TO-5* | 2.2 | 25 |
| **40732** | TO-5* | 2.3 | 75 |
| **2N5756** | TO-5 | 2.5 | 70 |
| **40527** | TO-5 | 2.5 | 60 |
| **40530** | TO-5 | 2.5 | 70 |
| **40692** | TO-5 | 2.5 | 60 |
| **40695** | TO-5* | 2.5 | 70 |
| **40698** | TO-5 | 2.5 | 70 |
| **40503** | TO-66 | 3.3 | 25 |
| **40734** | TO-5‡ | 4.2 | 75 |
| **40430** | TO-66 | 6 | 75 |
| **40432†** | TO-5 | 6 | 75 |
| **40486** | TO-5 | 6 | 75 |
| **40639** | TO-5* | 6 | 60 |
| **40664** | TO-5 | 6 | 75 |

Line operation 240 V (Cont'd)

| RCA Type | Pkg. | Max. $I_{T(rms)}$ at $T_C$ | |
|---|---|---|---|
| | | A | °C |
| **40667** | TO-5 | 6 | 75 |
| **40723** | TO-5 | 6 | 75 |
| **40724** | TO-5* | 6 | 75 |
| **40726** | TO-5 | 6 | 75 |
| **40728** | TO-66 | 6 | 75 |
| **40730** | TO-66* | 6 | 75 |
| **40842** | TO-220 | 6 | 80 |
| **40669** | TO-220 | 8 | 80 |
| **40722** | TO-220 | 8 | 80 |
| **2N5568** | PF | 10 | 85 |
| **2N5570** | Stud | 10 | 85 |
| **40718** | PF | 10 | 85 |
| **40720** | Stud | 10 | 85 |
| **40800** | ISO-S | 10 | 85 |
| **2N5572** | PF | 15 | 80 |
| **2N5574** | Stud | 15 | 80 |
| **40576** | TO-66 | 15 | 70 |
| **40712** | PF | 15 | 80 |
| **40714** | Stud | 15 | 80 |
| **40716** | TO-66 | 15 | 70 |
| **40803** | ISO-S | 15 | 75 |
| **40661** | PF | 30 | 65 |
| **40663** | Stud | 30 | 60 |
| **40706** | PF | 30 | 65 |
| **40708** | Stud | 30 | 60 |
| **40806** | ISO-S | 30 | 55 |
| **2N5542** | PF | 40 | 70 |
| **2N5545** | Stud | 40 | 65 |
| **40689** | ISO-S | 40 | 60 |
| **40700** | PF | 40 | 70 |
| **40703** | Stud | 40 | 65 |

High voltage operation 50 and 60 Hz; $V_{DROM}$ = 600 V.

| | | | |
|---|---|---|---|
| **40687** | TO-5* | 1.9 | 25 |
| **2N5757** | TO-5 | 2.5 | 70 |
| **40795** | PF | 10 | 85 |
| **40796** | Stud | 10 | 85 |
| **40801** | ISO-S | 10 | 85 |
| **40797** | PF | 15 | 80 |
| **40798** | Stud | 15 | 80 |
| **40804** | ISO-S | 15 | 75 |

High voltage operation (Cont'd)

| RCA Type | Pkg. | Max. $I_{T(rms)}$ at $T_C$ | |
|---|---|---|---|
| | | A | °C |
| **40671** | PF | 30 | 65 |
| **40672** | Stud | 30 | 60 |
| **40709** | PF | 30 | 65 |
| **40710** | Stud | 30 | 60 |
| **40807** | ISO-S | 30 | 55 |
| **2N5443** | PF | 40 | 70 |
| **2N5446** | Stud | 40 | 65 |
| **40690** | ISO-S | 40 | 60 |
| **40701** | PF | 40 | 70 |
| **40704** | Stud | 40 | 65 |

Service, 400 Hz; $V_{DROM}$ = 200 V.

| | | | |
|---|---|---|---|
| **40769** | TO-5 | 0.5 | 90 |
| **40771** | TO-5 | 0.5 | 90 |
| **40773** | TO-5§ | 2.5 | 90 |
| **40775** | PF | 6 | 90 |
| **40777** | Stud | 6 | 90 |
| **40779** | PF | 10 | 85 |
| **40781** | Stud | 10 | 85 |
| **40783** | PF | 15 | 80 |
| **40785** | Stud | 15 | 80 |
| **40787** | PF | 25 | 85 |
| **40789** | Stud | 25 | 80 |
| **40791** | PF | 40 | 70 |
| **40793** | Stud | 40 | 65 |

Service, 400 Hz; $V_{DROM}$ = 400 V.

| | | | |
|---|---|---|---|
| **40770** | TO-5 | 0.5 | 90 |
| **40772** | TO-5 | 0.5 | 90 |
| **40774** | TO-5§ | 2.5 | 90 |
| **40776** | PF | 6 | 90 |
| **40778** | Stud | 6 | 90 |
| **40780** | PF | 10 | 85 |
| **40782** | Stud | 10 | 85 |
| **40784** | PF | 15 | 80 |
| **40786** | Stud | 15 | 80 |
| **40788** | PF | 25 | 85 |
| **40790** | Stud | 25 | 80 |
| **40792** | PF | 40 | 70 |
| **40794** | Stud | 40 | 65 |

*With factory attached heat radiator. †Integral trigger. ‡With factory attached heat spreader. §Similar to indicated package.

## THYRISTORS—SILICON CONTROLLED RECTIFIERS (SCRs)

Low voltage operation 50 and 60 Hz; $V_{DROM}$ = 25 V to 150 V.

| RCA Type | Pkg. | Max. $I_{T(rms)}$ at $T_C$ | |
|---|---|---|---|
| | | A | °C |
| **40810** | TO-5 | 2.5 | 75 |
| **40867** | TO-220 | 8 | 80 |
| **40737** | PF | 10 | 85 |
| **40741** | Stud | 10 | 85 |
| **40745** | ISO-S | 10 | 85 |
| **2N3668** | TO-3 | 12.5 | 80 |
| **2N1842A** | TO-48 | 16 | 80 |
| **2N1843A** | TO-48 | 16 | 80 |
| **2N1844A** | TO-48 | 16 | 80 |
| **2N1845A** | TO-48 | 16 | 80 |
| **40749** | PF | 20 | 75 |
| **40753** | Stud | 20 | 75 |
| **40757** | ISO-S | 20 | 75 |
| **2N681** | TO-48 | 25 | 65 |
| **2N682** | TO-48 | 25 | 65 |
| **2N683** | TO-48 | 25 | 65 |
| **2N684** | TO-48 | 25 | 65 |
| **2N3650** | TO-48 | 35 | 40 |
| **2N3870** | PF | 35 | 65 |
| **2N3896** | Stud | 35 | 65 |
| **40680** | ISO-S | 35 | 60 |

Operation 120 V line, 50 and 60 Hz; $V_{DROM}$ = 200 V.

| | | | |
|---|---|---|---|
| **40504** | TO-66* | 1.7 | 25 |
| **2N3528** | TO-8 | 2 | 25 |

Operation 120 V line (Cont'd)

| RCA Type | Pkg. | Max. $I_{T(rms)}$ at $T_C$ | |
|---|---|---|---|
| | | A | °C |
| **40507** | TO-5† | 2 | 25 |
| **40811** | TO-5 | 2.5 | 75 |
| **40658** | TO-5* | 3.3 | 25 |
| **2N3228** | TO-66 | 5 | 75 |
| **40553** | TO-66 | 5 | 60 |
| **40378** | TO-5† | 7 | 65 |
| **40654** | TO-5† | 7 | 60 |
| **40656** | TO-5‡ | 7 | 50 |
| **40868** | TO-220 | 8 | 80 |
| **40738** | PF | 10 | 85 |
| **40742** | Stud | 10 | 85 |
| **40746** | ISO-S | 10 | 85 |
| **2N3669** | TO-3 | 12.5 | 80 |
| **2N1846A** | TO-48 | 16 | 80 |
| **40750** | PF | 20 | 75 |
| **40754** | Stud | 20 | 75 |
| **40758** | ISO-S | 20 | 75 |
| **2N685** | TO-48 | 25 | 65 |
| **2N3651** | TO-48 | 35 | 40 |
| **2N3871** | PF | 35 | 65 |
| **2N3897** | Stud | 35 | 65 |
| **40681** | ISO-S | 35 | 60 |

Operation 240 V line, 50 and 60 Hz; $V_{DROM}$ = 400 V.

| | | | |
|---|---|---|---|
| **40505** | TO-66* | 1.7 | 25 |
| **2N3529** | TO-8 | 2 | 25 |

Operation 240 V line (Cont'd)

| RCA Type | Pkg. | Max. $I_{T(rms)}$ at $T_C$ | |
|---|---|---|---|
| | | A | °C |
| **40508** | TO-5† | 2 | 25 |
| **40812** | TO-5 | 2.5 | 75 |
| **40659** | TO-5* | 3.3 | 25 |
| **2N3525** | TO-66 | 5 | 75 |
| **40554** | TO-66 | 5 | 60 |
| **40379** | TO-5† | 7 | 65 |
| **40655** | TO-5† | 7 | 60 |
| **40657** | TO-5† | 7 | 50 |
| **40869** | TO-220 | 8 | 80 |
| **40739** | PF | 10 | 75 |
| **40743** | Stud | 10 | 85 |
| **40747** | ISO-S | 10 | 85 |
| **2N3670** | TO-3 | 12.5 | 80 |
| **2N1849A** | TO-48 | 16 | 80 |
| **40751** | PF | 20 | 75 |
| **40755** | Stud | 20 | 75 |
| **40759** | ISO-S | 20 | 75 |
| **2N688** | TO-48 | 25 | 65 |
| **2N3653** | TO-48 | 35 | 40 |
| **2N3872** | PF | 35 | 65 |
| **2N3898** | Stud | 35 | 65 |
| **40682** | ISO-S | 35 | 60 |

High voltage operation 50 and 60 Hz; $V_{DROM}$ = 250 V to 750 V.

| | | | |
|---|---|---|---|
| **40506** | TO-66* | 1.7 | 25 |
| **2N4102** | TO-8 | 2 | 25 |

High V operation (Cont'd)

| RCA Type | Pkg. | Max. $I_{T(rms)}$ at $T_C$ | |
|---|---|---|---|
| | | A | °C |
| **40813** | TO-5 | 2.5 | 75 |
| **40835** | TO-5* | 3.3 | 25 |
| **2N4101** | TO-66 | 5 | 75 |
| **40555** | TO-66 | 5 | 60 |
| **40640** | TO-66 | 5 | 60 |
| **40641** | TO-66 | 5 | 60 |
| **40768** | TO-66 | 5 | 25 |
| **40833** | TO-5† | 7 | 60 |
| **40834** | TO-5‡ | 7 | 50 |
| **40740** | PF | 10 | 85 |
| **40744** | Stud | 10 | 85 |
| **40748** | ISO-S | 10 | 85 |
| **2N4103** | TO-3 | 12.5 | 80 |
| **2N1847A** | TO-48 | 16 | 80 |
| **2N1848A** | TO-48 | 16 | 80 |
| **2N1850A** | TO-48 | 16 | 80 |
| **40752** | PF | 20 | 75 |
| **40756** | Stud | 20 | 75 |
| **40760** | ISO-S | 20 | 75 |
| **2N686** | TO-48 | 25 | 65 |
| **2N687** | TO-48 | 25 | 65 |
| **2N689** | TO-48 | 25 | 65 |
| **2N690** | TO-48 | 25 | 65 |
| **2N3652** | TO-48 | 35 | 40 |
| **2N3873** | PF | 35 | 65 |
| **2N3899** | Stud | 35 | 65 |
| **40216** | TO-48 | 35 | 60 |
| **40683** | ISO-S | 35 | 60 |
| **40735** | TO-48 | 35 | 40 |

*With factory attached heat radiator. †Similar to indicated package; ‡With factory attached heat spreader.

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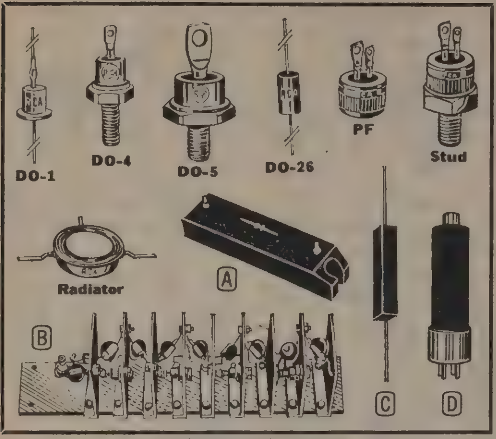
# RCA Silicon Semiconductors



## SILICON RECTIFIERS

### LOW CURRENT

$I_O$ at $T_A$ = 150° C.

| RCA Type | Pkg. | Maximum $V_{RRM}$ V | Maximum $I_O$ A |
|---|---|---|---|
| 1N3754 | TO-1* | 100 | 0.125† |
| 1N3755 | TO-1* | 200 | 0.125† |
| 1N3756 | TO-1* | 400 | 0.125† |
| 1N440B | DO-1 | 100 | 0.25 |
| 1N441B | DO-1 | 200 | 0.25 |
| 1N442B | DO-1 | 300 | 0.25 |
| 1N443B | DO-1 | 400 | 0.25 |
| 1N536 | DO-1 | 50 | 0.25 |
| 1N537 | DO-1 | 100 | 0.25 |
| 1N538 | DO-1 | 200 | 0.25 |
| 1N539 | DO-1 | 300 | 0.25 |
| 1N540 | DO-1 | 400 | 0.25 |
| 1N547 | DO-1 | 600 | 0.25 |
| 1N1095 | DO-1 | 500 | 0.25 |
| 1N4458 | DO-1 | 600 | 0.4 |
| 1N444B | DO-1 | 500 | 0.425 |

$I_O$ at $T_A$ = 75° C.

| RCA Type | Pkg. | Maximum $V_{RRM}$ V | Maximum $I_O$ A |
|---|---|---|---|
| 1N3563 | DO-26 | 1000 | 0.4 |
| 1N3196 | DO-26 | 800 | 0.5 |
| 1N3256 | DO-26 | 800 | 0.5 |
| 1N3193 | DO-26 | 200 | 0.75 |
| 1N3194 | DO-26 | 400 | 0.75 |
| 1N3195 | DO-26 | 600 | 0.75 |
| 1N3253 | DO-26 | 200 | 0.75 |
| 1N3254 | DO-26 | 400 | 0.75 |
| 1N3255 | DO-26 | 600 | 0.75 |
| 1N5214 | DO-26 | 800 | 0.75 |
| 1N5218 | DO-26 | 800 | 0.75 |
| 1N1763A | DO-1 | 400 | 1 |
| 1N1764A | DO-1 | 500 | 1 |
| 1N2858A | DO-1 | 50 | 1 |

$I_O$ at $T_A$ = 75° C (Cont'd)

| RCA Type | Pkg. | Maximum $V_{RRM}$ V | Maximum $I_O$ A |
|---|---|---|---|
| 1N2859A | DO-1 | 100 | 1 |
| 1N2860A | DO-1 | 200 | 1 |
| 1N2861A | DO-1 | 300 | 1 |
| 1N2862A | DO-1 | 400 | 1 |
| 1N2863A | DO-1 | 500 | 1 |
| 1N2864A | DO-1 | 600 | 1 |
| 1N5211 | DO-26 | 200 | 1 |
| 1N5212 | DO-26 | 400 | 1 |
| 1N5213 | DO-26 | 600 | 1 |
| 1N5215 | DO-26 | 200 | 1 |
| 1N5216 | DO-26 | 400 | 1 |
| 1N5217 | DO-26 | 600 | 1 |
| 40642 | DO-26 | 550 | 1‡ |
| 40643 | DO-26 | 450 | 1‡ |
| 40644 | DO-26 | 550 | 1‡ |
| 44001 | Plas. | 50 | 1 |
| 44002 | Plas. | 100 | 1 |
| 44003 | Plas. | 200 | 1 |
| 44004 | Plas. | 400 | 1 |
| 44005 | Plas. | 600 | 1 |
| 44006 | Plas. | 800 | 1 |
| 44007 | Plas. | 1000 | 1 |

$I_O$ at $T_A$ = 70° C.

| RCA Type | Pkg. | Maximum $V_{RRM}$ V | Maximum $I_O$ A |
|---|---|---|---|
| 1N5391 | DO-15 | 50 | 1.5 |
| 1N5392 | DO-15 | 100 | 1.5 |
| 1N5393 | DO-15 | 200 | 1.5 |
| 1N5394 | DO-15 | 300 | 1.5 |
| 1N5395 | DO-15 | 400 | 1.5 |
| 1N5396 | DO-15 | 500 | 1.5 |
| 1N5397 | DO-15 | 600 | 1.5 |
| 1N5398 | DO-15 | 800 | 1.5 |
| 1N5399 | DO-15 | 1000 | 1.5 |
| 40266 | DO-1 | 100 | 2§ |
| 40267 | DO-1 | 200 | 2§ |

*Similar to indicated pkg. †$T_A$ = 65° C; ‡45° C; §105° C.

### HIGH CURRENT

$I_O$ at $T_C$ = 150° C except 1N1612 thru 1N1616, $T_C$ = 135° C. Also available in reverse polarity, add suffix **R** (1N1612**R**, 40108**R**).

| RCA Type | Pkg. | Maximum $V_{RRM}$ V | Maximum $I_O$ A |
|---|---|---|---|
| 1N1612 | DO-4 | 50 | 5 |
| 1N1613 | DO-4 | 100 | 5 |
| 1N1614 | DO-4 | 200 | 5 |
| 1N1615 | DO-4 | 400 | 5 |
| 1N1616 | DO-4 | 600 | 5 |
| 1N1341B | DO-4 | 50 | 6 |
| 1N1342B | DO-4 | 100 | 6 |
| 1N1344B | DO-4 | 200 | 6 |
| 1N1345B | DO-4 | 300 | 6 |
| 1N1346B | DO-4 | 400 | 6 |
| 1N1347B | DO-4 | 500 | 6 |
| 1N1348B | DO-4 | 600 | 6 |
| 40108 | DO-4 | 50 | 10 |
| 40109 | DO-4 | 100 | 10 |
| 40110 | DO-4 | 200 | 10 |
| 40111 | DO-4 | 300 | 10 |
| 40112 | DO-4 | 400 | 10 |
| 40113 | DO-4 | 500 | 10 |
| 40114 | DO-4 | 600 | 10 |
| 40115 | DO-4 | 800 | 10 |
| 1N1199A | DO-4 | 50 | 12 |
| 1N1200A | DO-4 | 100 | 12 |
| 1N1202A | DO-4 | 200 | 12 |
| 1N1203A | DO-4 | 300 | 12 |
| 1N1204A | DO-4 | 400 | 12 |
| 1N1205A | DO-4 | 500 | 12 |
| 1N1206A | DO-4 | 600 | 12 |
| 40208 | DO-5 | 50 | 18 |
| 40209 | DO-5 | 100 | 18 |
| 40210 | DO-5 | 200 | 18 |
| 40211 | DO-5 | 300 | 18 |
| 40212 | DO-5 | 400 | 18 |
| 40213 | DO-5 | 500 | 18 |
| 40214 | DO-5 | 600 | 18 |
| 1N248C | DO-5 | 55 | 20 |
| 1N249C | DO-5 | 110 | 20 |
| 1N250C | DO-5 | 220 | 20 |
| 1N1195A | DO-5 | 300 | 20 |
| 1N1196A | DO-5 | 400 | 20 |
| 1N1197A | DO-5 | 500 | 20 |
| 1N1198A | DO-5 | 600 | 20 |
| 1N1183A | DO-5 | 50 | 40 |
| 1N1184A | DO-5 | 100 | 40 |
| 1N1186A | DO-5 | 200 | 40 |
| 1N1187A | DO-5 | 300 | 40 |
| 1N1188A | DO-5 | 400 | 40 |
| 1N1189A | DO-5 | 500 | 40 |
| 1N1190A | DO-5 | 600 | 40 |

## HIGH VOLTAGE RECTIFIER ASSEMBLIES

| RCA Type | Pkg. | Max. $V_{RRM}$ V | $I_O$ at $T_A$ Max. A | $I_O$ at $T_A$ °C |
|---|---|---|---|---|
| CR110 | A | 10130 | 0.6 | 60 |
| CR109 | A | 9495 | 0.6 | 60 |
| CR108 | A | 8230 | 0.6 | 60 |
| CR107 | A | 7595 | 0.6 | 60 |
| CR106 | A | 6330 | 0.65 | 60 |
| CR105 | A | 5065 | 0.7 | 60 |
| CR104 | A | 4430 | 0.7 | 60 |
| CR103 | A | 3185 | 0.825 | 60 |
| CR102 | A | 2530 | 0.925 | 60 |
| CR101 | A | 1265 | 1 | 60 |
| CR201 | B | 1900 | 0.615 | 25 |
| CR203 | B | 3165 | 0.615 | 25 |
| CR204 | B | 4800 | 0.615 | 25 |
| CR206 | B | 6330 | 0.615 | 25 |
| CR208 | B | 8000 | 0.615 | 25 |
| CR210 | B | 10000 | 0.615 | 25 |
| CR212 | B | 12000 | 0.615 | 25 |
| CR280 | B | 24000 | 0.615 | 25 |
| CR301 | C | 2400 | 5 | 50 |
| CR302 | C | 3600 | 5 | 50 |
| CR303 | C | 4800 | 5 | 50 |
| CR304 | C | 6000 | 5 | 50 |
| CR305 | C | 7200 | 5 | 50 |
| CR306 | C | 8400 | 5 | 50 |
| CR307 | C | 9600 | 5 | 50 |
| CR311 | C | 2400 | 9 | 50 |
| CR312 | C | 3600 | 9 | 50 |
| CR313 | C | 4800 | 9 | 50 |
| CR314 | C | 6000 | 9 | 50 |
| CR315 | C | 7200 | 9 | 50 |
| CR316 | C | 8400 | 9 | 50 |
| CR317 | C | 9600 | 9 | 50 |
| CR321 | C | 2400 | 12 | 50 |
| CR322 | C | 3600 | 12 | 50 |
| CR323 | C | 4800 | 12 | 50 |
| CR324 | C | 6000 | 12 | 50 |
| CR325 | C | 7200 | 12 | 50 |
| CR331 | C | 2400 | 17 | 50 |
| CR332 | C | 3600 | 17 | 50 |
| CR333 | C | 4800 | 17 | 50 |
| CR334 | C | 6000 | 17 | 50 |
| CR335 | C | 7200 | 17 | 50 |
| CR341 | C | 2400 | 23 | 50 |
| CR342 | C | 3600 | 23 | 50 |
| CR343 | C | 4800 | 23 | 50 |
| CR344 | C | 6000 | 23 | 50 |
| CR351 | C | 2400 | 35 | 50 |
| CR352 | C | 3600 | 35 | 50 |
| CR353 | C | 4800 | 35 | 50 |
| CR354 | C | 6000 | 35 | 50 |

## SILICON BRIDGE RECTIFIERS

CR400 Series are single-phase full wave; CR500 Series are three-phase, full wave.

| RCA Type | Pkg. | $I_O$ A | $V_{OUT(AV)}$ V |
|---|---|---|---|
| CR401 | C | 18 | 200 |
| CR402 | C | 18 | 400 |
| CR403 | C | 18 | 800 |
| CR404 | C | 34 | 200 |
| CR405 | C | 34 | 400 |
| CR406 | C | 34 | 800 |
| CR407 | C | 70 | 200 |
| CR408 | C | 70 | 400 |
| CR409 | C | 70 | 800 |
| CR501 | C | 24 | 300 |
| CR502 | C | 24 | 600 |
| CR503 | C | 46 | 300 |
| CR504 | C | 46 | 600 |
| CR505 | C | 92 | 300 |
| CR506 | C | 92 | 600 |

## SILICON CONTROLLED AVALANCHE RECTIFIERS

$I_O$ = 0.5 A max. at $T_A$ = 75° C.

| RCA Type | Pkg. | Max. $V_{RRM}$ V | $V_{(BR)R}$ V |
|---|---|---|---|
| 40808 | DO-26 | 600 | 700–1100 |
| 40809 | DO-26 | 800 | 900–1300 |

## THYRISTORS (DIACS)

Diacs for triggering Triacs.

| RCA Type | Pkg. | $V_{(BO)}$ V | $I_{pulse}$ Max. A |
|---|---|---|---|
| 1N5411 | DO-26 | 29–35 | 2 |
| 40583 | DO-26 | 27–37 | 2 |

## GERMANIUM DIODE

**RCA Type 1N2326**—$V_{RRM}$ = −1 V max.; $I_O$ = 0.8 A max. at $T_A$ = 85° C.

## SILICON PLUG-IN RECTIFIERS

| RCA Type | Pkg. | Feature | Replaces Types |
|---|---|---|---|
| CR273/8008 | D | Hermetically sealed; needs no warm-up time | 8008 |
| CR274/872A | D | | 872, 872A |
| CR275/866A/3B28/3B25 | D | | 866, 866A 3B28, 3B25 |

## SILICON POWER HYBRID CIRCUITS

Chips, also known as pellets or dies, represent the electronic portion of the transistor.

### NPN SILICON POWER CHIPS

| RCA Chip No. | RCA Family Transistor | Min. $V_{CEO}$ V | $h_{FE}$ at $I_C$ Min. | $h_{FE}$ at $I_C$ A |
|---|---|---|---|---|
| CH3439 | 2N3439 | 325 | 30 | 0.02 |
| CH3440 | 2N3440 | 250 | 30 | 0.02 |
| CH3053 | 2N3053 | 30 | 50 | 0.25 |
| CH2270 | 2N2270 | 45 | 50 | 0.25 |
| CH2102 | 2N2102 | 60 | 50 | 0.25 |
| CH2405 | 2N2405 | 90 | 50 | 0.25 |
| CH5321 | 2N5321 | 55 | 30 | 0.25 |
| CH5320 | 2N5320 | 80 | 30 | 0.25 |

### PNP SILICON POWER CHIPS

| RCA Chip No. | RCA Family Transistor | Min. $V_{CEO}$ V | $h_{FE}$ at $I_C$ Min. | $h_{FE}$ at $I_C$ A |
|---|---|---|---|---|
| CH4037 | 2N4037 | −40 | 35 | −0.175 |
| CH4036 | 2N4036 | −65 | 35 | −0.175 |
| CH5323 | 2N5323 | −55 | 30 | −0.25 |
| CH5322 | 2N5322 | −80 | 30 | −0.25 |

## AMPLIFIERS

| RCA Type | Description | Supply Voltage V | Max. $I_{OUT}$ A | $P_{OUT(rms)}$ W |
|---|---|---|---|---|
| HC1000 | Power | 30–75 | 7 | 100 |
| HC2000 | Operational | 30–75 | 7 | 100 |

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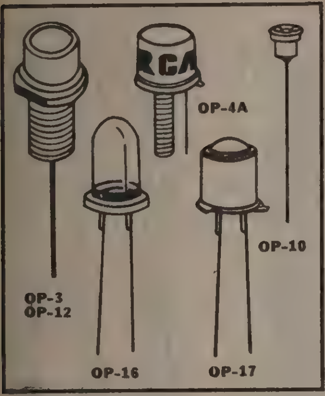
**FOR SEMICONDUCTOR PRICING**

# RCA OPTOELECTRONIC DEVICES AND SEMICONDUCTOR PRICING

## OPTOELECTRONIC DEVICES



Room temperature devices.

### INFRARED EMITTING DIODES—Ga As

$P_{OM}$ at $I_{FM}$ = 1 amp.

| RCA Type | Pkg. | $P_O$ at $I_F$ Typ. mW | $P_O$ at $I_F$ mA | Typ. $P_{OM}$ mW |
|---|---|---|---|---|
| 40736R | OP-10 | 1 | 50 | 24 |
| 40843R | OP-10 | 1.5 | 50 | 30 |
| 40844R | OP-10 | 2.4 | 50 | 40 |
| TA7977 | OP-16 | 1.5 | 100 | 24 |
| TA7978 | OP-17 | 1 | 100 | 20 |

### INJECTION LASER SINGLE DIODES—Ga As

| RCA Type | Pkg. | $P_{OM}$ at $I_{FM}$ W | A |
|---|---|---|---|
| 40856 | OP-3 | 1 min. | 10 |
| 40857 | OP-3 | 2–4.5 | 10 |
| 40858 | OP-3 | 3 min. | 25 |
| 40859 | OP-3 | 5–9 | 25 |
| 40860 | OP-3 | 5–9 | 20 |
| 40861 | OP-3 | 7 min. | 40 |
| 40862 | OP-3 | 10–14 | 40 |
| 40863 | OP-3 | 10–14 | 30 |
| 40864 | OP-3 | 12 min. | 75 |
| 40865 | OP-3 | 15–24 | 75 |
| 40866 | OP-3 | 15–24 | 60 |
| TA8393 | OP-12 | 20 min. | 100 |
| TA7763 | OP-12 | 25–36 | 100 |
| TA7705 | OP-12 | 40 min. | 250 |
| TA7787 | OP-12 | 60–80 | 250 |

### INJECTION LASER ARRAYS—Ga As

| RCA Type | Pkg. | $P_{OM}$ at $I_{FM}$ W | A |
|---|---|---|---|
| TA7686 | OP-4A | 25–80 | 25 |
| TA7687A | OP-4A | 50–80 | 25 |
| TA7688 | OP-4A | 35–120 | 25 |
| TA7688A | OP-4A | 75–120 | 25 |
| TA7690 | OP-4A | 75–240 | 25 |
| TA7690A | OP-4A | 150–240 | 25 |
| TA7692 | OP-4A | 150–480 | 25 |
| TA7692A | OP-4A | 300–480 | 25 |

### STACKED DIODE LASERS

| RCA Type | Pkg. | $P_{OM}$ at $I_{FM}$ W | A |
|---|---|---|---|
| TA7764 | OP-12 | 25–40 | 40 |
| TA7964 | OP-12 | 30–48 | 75 |
| TA7765 | OP-12 | 50–70 | 100 |

### LASER DIODE AND ARRAYS—Ga Al As

| RCA Type | Pkg. | $P_{OM}$ at $I_{FM}$ Min. W | A |
|---|---|---|---|
| TA7867 | OP-3 | 3 | 25 |
| TA8127 | OP-3 | 7 | 40 |
| TA8101 | OP-4A | 85 | 40 |
| TA8105 | OP-4A | 85 | 40 |
| TA8106 | OP-4A | 170 | 40 |
| TA8107 | OP-4A | 170 | 40 |
| TA8131 | OP-4A | 300 | 40 |
| TA8132 | OP-4A | 300 | 40 |

## SEMICONDUCTOR PRICING

| RCA Type | Net Each, Lots of 1-99 | 100-999 | 1000 Up |
|---|---|---|---|
| 1N248C, RC* | $1.30 | $0.95 | $0.79 |
| 1N249C, RC* | 1.39 | 1.01 | .84 |
| 1N250C, RC* | 2.26 | 1.64 | 1.37 |
| 1N440B | .53 | .38 | .32 |
| 1N441B | .60 | .43 | .36 |
| 1N442B | .66 | .51 | .43 |
| 1N443B | .79 | .58 | .48 |
| 1N444B | .92 | .67 | .56 |
| 1N445B | 1.12 | .82 | .68 |
| 1N536 | .36 | .27 | .22 |
| 1N537 | .40 | .29 | .24 |
| 1N538 | .45 | .32 | .27 |
| 1N539 | .50 | .36 | .30 |
| 1N540 | .56 | .41 | .34 |
| 1N547 | .79 | .57 | .48 |
| 1N1095 | .61 | .48 | .40 |
| 1N1183A, RA* | 1.86 | 1.36 | 1.13 |
| 1N1184A, RA* | 2.19 | 1.60 | 1.33 |
| 1N1186A, RA* | 3.17 | 2.30 | 1.92 |
| 1N1187A, RA* | 4.41 | 3.20 | 2.67 |
| 1N1188A, RA* | 5.58 | 4.08 | 3.38 |
| 1N1189A, RA* | 6.55 | 4.76 | 3.97 |
| 1N1190A, RA* | 7.72 | 5.62 | 4.68 |
| 1N1195A, RA* | 3.18 | 2.32 | 1.93 |
| 1N1196A, RA* | 4.09 | 2.98 | 2.48 |
| 1N1197A, RA* | 5.36 | 3.90 | 3.25 |
| 1N1198A, RA* | 5.78 | 4.20 | 3.50 |
| 1N1199A, RA* | 1.09 | .79 | .66 |
| 1N1200A, RA* | 1.25 | .91 | .76 |
| 1N1202A, RA* | 2.28 | 1.66 | 1.38 |
| 1N1203A, RA* | 3.17 | 2.30 | 1.92 |
| 1N1204A, RA* | 4.04 | 2.94 | 2.45 |
| 1N1205A, RA* | 4.82 | 3.50 | 2.92 |
| 1N1206A, RA* | 5.66 | 4.12 | 3.43 |
| 1N1341B, RB* | 1.12 | .82 | .68 |
| 1N1342B, RB* | 1.22 | .89 | .74 |
| 1N1344B, RB* | 1.86 | 1.36 | 1.13 |
| 1N1345B, RB* | 2.74 | 1.99 | 1.66 |
| 1N1346B, RB* | 3.50 | 2.54 | 2.12 |
| 1N1347B, RB* | 4.21 | 3.06 | 2.55 |
| 1N1348B, RB* | 5.02 | 3.65 | 3.04 |
| 1N1612, R* | .97 | .71 | .59 |
| 1N1613, R* | 1.11 | .80 | .67 |
| 1N1614, R* | 1.72 | 1.25 | 1.04 |
| 1N1615, R* | 3.43 | 2.50 | 2.08 |
| 1N1616, R* | 4.93 | 3.59 | 2.99 |
| 1N1763A | .42 | .30 | .25 |
| 1N1764A | .52 | .38 | .31 |
| 1N2326 | .55 | .40 | .33 |
| 1N2858A | .33 | .24 | .20 |
| 1N2859A | .37 | .27 | .22 |
| 1N2860A | .40 | .29 | .24 |
| 1N2861A | .42 | .30 | .25 |
| 1N2862A | .48 | .35 | .29 |
| 1N2863A | .58 | .42 | .35 |
| 1N2864A | .70 | .51 | .42 |
| 1N3193 | .35 | .26 | .21 |
| 1N3194 | .38 | .28 | .23 |
| 1N3195 | .53 | .39 | .32 |
| 1N3196 | .74 | .54 | .45 |
| 1N3253 | .38 | .28 | .23 |
| 1N3254 | .40 | .30 | .25 |
| 1N3255 | .56 | .41 | .34 |
| 1N3256 | .78 | .57 | .47 |
| 1N3563 | .94 | .69 | .57 |
| 1N3754 | .32 | .23 | .19 |
| 1N3755 | .33 | .24 | .20 |
| 1N3756 | .35 | .26 | .21 |
| 1N5211 | .38 | .28 | .23 |
| 1N5212 | .42 | .30 | .25 |
| 1N5213 | .56 | .41 | .34 |
| 1N5214 | .81 | .59 | .49 |
| 1N5215 | .42 | .30 | .25 |
| 1N5216 | .45 | .33 | .27 |
| 1N5217 | .60 | .44 | .36 |
| 1N5218 | .85 | .62 | .51 |
| 1N5391 | .27 | .20 | .16 |
| 1N5392 | .30 | .22 | .18 |
| 1N5393 | .34 | .24 | .20 |
| 1N5394 | .35 | .26 | .21 |
| 1N5395 | .37 | .27 | .22 |
| 1N5396 | .43 | .32 | .26 |
| 1N5397 | .52 | .38 | .31 |
| 1N5398 | .73 | .53 | .44 |
| 1N5399 | .93 | .68 | .56 |
| 1N5411 | .61 | .44 | .37 |
| 2N109 | 1.00 | .73 | .60 |
| 2N176 | 1.49 | 1.08 | .90 |
| 2N217 | .67 | .49 | .40 |
| 2N274 | 1.49 | 1.08 | .90 |
| 2N351 | 1.90 | 1.38 | 1.15 |
| 2N370 | 1.24 | .91 | .75 |
| 2N372 | 1.22 | .89 | .74 |
| 2N376 | 2.06 | 1.50 | 1.25 |
| 2N384 | 1.90 | 1.38 | 1.15 |
| JAN2N384 | 4.62 | 3.36 | 2.80 |
| 2N388 | .44 | .32 | .27 |
| JAN2N388 | .46 | .34 | .28 |
| 2N388A | .84 | .61 | .51 |
| 2N398 | .76 | .55 | .46 |
| JAN2N398 | .86 | .62 | .52 |
| 2N398A | .82 | .60 | .50 |

| RCA Type | Net Each, Lots of 1-99 | 100-999 | 1000 Up |
|---|---|---|---|
| JAN2N398A | $ 0.92 | $0.67 | $0.56 |
| 2N398B | 1.02 | .75 | .62 |
| 2N404 | .36 | .26 | .22 |
| JAN2N404 | .38 | .28 | .23 |
| 2N404A | .51 | .37 | .31 |
| JAN2N404A | .59 | .43 | .36 |
| 2N405 | .70 | .51 | .42 |
| 2N406 | .48 | .35 | .29 |
| 2N407 | .75 | .55 | .45 |
| 2N408 | .55 | .40 | .33 |
| 2N414 | .38 | .28 | .23 |
| 2N585 | 1.24 | .91 | .75 |
| 2N591 | .67 | .49 | .40 |
| 2N681* | 2.34 | 1.70 | 1.42 |
| 2N682* | 2.82 | 2.05 | 1.71 |
| 2N683* | 3.57 | 2.60 | 2.16 |
| 2N684* | 4.19 | 3.05 | 2.54 |
| 2N685* | 4.81 | 3.50 | 2.92 |
| 2N686* | 5.36 | 3.90 | 3.25 |
| 2N687* | 5.77 | 4.20 | 3.50 |
| 2N688* | 6.74 | 4.90 | 4.08 |
| 2N689* | 8.05 | 5.85 | 4.87 |
| 2N690* | 8.67 | 6.30 | 5.25 |
| 2N697 | .41 | .30 | .25 |
| 2N699 | .91 | .66 | .55 |
| 2N706 | .65 | .47 | .39 |
| 2N706A | 1.14 | .83 | .69 |
| 2N709 | 1.45 | 1.06 | .88 |
| 2N718A | 1.08 | .78 | .65 |
| 2N720A | 1.32 | .96 | .80 |
| 2N834 | 2.18 | 1.58 | 1.32 |
| 2N918 | 3.27 | 2.38 | 1.98 |
| JAN2N918 | 5.95 | 4.32 | 3.60 |
| 2N1023 | 3.14 | 2.28 | 1.90 |
| 2N1066 | 2.56 | 1.86 | 1.55 |
| 2N1177 | 1.32 | .97 | .80 |
| 2N1178 | 1.29 | .94 | .78 |
| 2N1179 | 1.29 | .94 | .78 |
| 2N1180 | 1.24 | .91 | .75 |
| 2N1183* | 2.15 | 1.56 | 1.30 |
| JAN2N1183* | 2.97 | 2.16 | 1.80 |
| 2N1183A* | 2.65 | 1.92 | 1.60 |
| JAN2N1183A* | 3.47 | 2.52 | 2.10 |
| 2N1183B* | 3.30 | 2.40 | 2.00 |
| JAN2N1183B* | 4.13 | 3.00 | 2.50 |
| 2N1184* | 2.48 | 1.80 | 1.50 |
| JAN2N1184* | 3.71 | 2.70 | 2.25 |
| 2N1184A* | 3.14 | 2.28 | 1.90 |
| JAN2N1184A* | 4.37 | 3.18 | 2.65 |
| 2N1184B* | 4.13 | 3.00 | 2.50 |
| JAN2N1184B* | 5.36 | 3.90 | 3.25 |
| 2N1224 | 1.65 | 1.20 | 1.00 |
| JAN2N1224 | 1.90 | 1.38 | 1.15 |
| 2N1225 | 1.82 | 1.32 | 1.10 |
| JAN2N1225 | 2.06 | 1.50 | 1.25 |
| 2N1226 | 1.98 | 1.44 | 1.20 |
| 2N1285 | 2.23 | 1.62 | 1.35 |
| 2N1300 | 1.57 | 1.14 | .95 |
| 2N1301 | 1.93 | 1.40 | 1.17 |
| 2N1302 | .38 | .28 | .23 |
| JAN2N1302 | .41 | .30 | .25 |
| 2N1303 | .38 | .28 | .23 |
| JAN2N1303 | .41 | .30 | .25 |
| 2N1304 | .46 | .34 | .28 |
| JAN2N1304 | .51 | .37 | .31 |
| 2N1305 | .46 | .34 | .28 |
| JAN2N1305 | .51 | .37 | .31 |
| 2N1306 | .58 | .42 | .35 |
| JAN2N1306 | .63 | .45 | .38 |
| 2N1307 | .54 | .40 | .33 |
| JAN2N1307 | .61 | .45 | .37 |
| 2N1308 | .86 | .62 | .52 |
| JAN2N1308 | .92 | .67 | .56 |
| 2N1309 | .86 | .62 | .52 |
| JAN2N1309 | .92 | .67 | .56 |
| 2N1395 | 2.39 | 1.74 | 1.45 |
| 2N1396 | 2.56 | 1.86 | 1.55 |
| 2N1397 | 2.81 | 2.04 | 1.70 |
| 2N1479 | 1.07 | .78 | .65 |
| JAN2N1479 | 1.32 | .96 | .80 |
| 2N1480 | 1.24 | .90 | .75 |
| JAN2N1480 | 1.49 | 1.08 | .90 |
| 2N1481 | 1.24 | .90 | .75 |
| JAN2N1481 | 1.49 | 1.08 | .90 |
| 2N1482 | 1.40 | 1.02 | .85 |
| JAN2N1482 | 1.65 | 1.20 | 1.00 |
| 2N1483* | 1.65 | 1.20 | 1.00 |
| JAN2N1483* | 1.98 | 1.44 | 1.20 |
| JANTX2N1483* | 7.85 | 5.70 | 4.75 |
| 2N1484* | 1.82 | 1.32 | 1.10 |
| JAN2N1484* | 2.15 | 1.56 | 1.30 |
| JANTX2N1484* | 8.60 | 5.20 | 4.84 |
| 2N1485* | 1.82 | 1.32 | 1.10 |
| JAN2N1485* | 2.15 | 1.56 | 1.30 |
| JANTX2N1485* | 9.40 | 6.85 | 5.70 |
| 2N1486* | 1.98 | 1.44 | 1.20 |
| JAN2N1486* | 2.31 | 1.68 | 1.40 |
| JANTX2N1486* | 10.30 | 8.55 | 7.10 |
| 2N1487* | 2.06 | 1.50 | 1.25 |
| JAN2N1487* | 2.39 | 1.74 | 1.45 |
| 2N1488* | 2.15 | 1.56 | 1.30 |
| JAN2N1488* | 2.48 | 1.80 | 1.50 |

*Mounting hardware supplied with device.

# RCA Semiconductor Pricing

| RCA Type | Net Each, Lots of | | |
|---|---|---|---|
| | 1-99 | 100-999 | 1000 Up |
| 2N1489* | $ 2.15 | $ 1.56 | $ 1.30 |
| JAN2N1489* | 2.48 | 1.80 | 1.50 |
| 2N1490* | 2.39 | 1.74 | 1.45 |
| JAN2N1490* | 2.72 | 1.98 | 1.65 |
| 2N1491 | 1.82 | 1.32 | 1.10 |
| 2N1492 | 4.29 | 3.12 | 2.60 |
| 2N1493 | 7.01 | 5.10 | 4.25 |
| JAN2N1493 | 7.43 | 5.40 | 4.50 |
| 2N1605 | .58 | .42 | .35 |
| 2N1605A | 1.02 | .75 | .62 |
| 2N1613 | .50 | .36 | .30 |
| 2N1683 | 2.48 | 1.80 | 1.50 |
| 2N1700 | 1.90 | 1.38 | 1.15 |
| 2N1701* | 2.31 | 1.68 | 1.40 |
| 2N1702* | 4.54 | 3.30 | 2.75 |
| 2N1711 | .68 | .49 | .41 |
| 2N1842A* | 2.20 | 1.60 | 1.33 |
| 2N1843A* | 2.61 | 1.90 | 1.58 |
| 2N1844A* | 3.30 | 2.40 | 2.00 |
| 2N1845A* | 3.84 | 2.80 | 2.33 |
| 2N1846A* | 4.46 | 3.75 | 2.71 |
| 2N1847A* | 5.10 | 3.70 | 3.09 |
| 2N1848A* | 5.51 | 4.00 | 3.34 |
| 2N1849A* | 6.54 | 4.75 | 3.96 |
| 2N1850A* | 7.56 | 5.50 | 4.58 |
| 2N1893 | .81 | .59 | .49 |
| 2N1905 | 4.13 | 3.00 | 2.50 |
| 2N1906 | 6.60 | 4.80 | 4.00 |
| 2N2015* | 9.08 | 6.60 | 5.50 |
| JAN2N2015* | 9.90 | 7.20 | 6.00 |
| 2N2016* | 9.90 | 7.20 | 6.00 |
| JAN2N2016* | 10.75 | 7.80 | 6.50 |
| 2N2102 | 1.07 | .78 | .65 |
| S2N2102 | 11.60 | 9.60 | 8.00 |
| 2N2147 | 1.98 | 1.44 | 1.20 |
| 2N2148 | 1.49 | 1.08 | .90 |
| 2N2208 | 1.82 | 1.32 | 1.10 |
| 2N2270 | .59 | .43 | .36 |
| 2N2304* | 4.29 | 3.12 | 2.60 |
| 2N2305* | 6.44 | 4.68 | 3.90 |
| 2N2338* | 6.60 | 4.80 | 4.00 |
| 2N2369 | 1.57 | 1.14 | .95 |
| 2N2369A | 1.90 | 1.38 | 1.15 |
| 2N2405 | 1.57 | 1.14 | .95 |
| 2N2475 | 1.63 | 1.19 | .99 |
| 2N2476 | 1.24 | .91 | .75 |
| 2N2477 | 1.40 | 1.02 | .85 |
| 2N2594 | 1.62 | 1.18 | .98 |
| 2N2631 | 3.80 | 2.76 | 2.30 |
| 2N2857 | 4.87 | 3.54 | 2.95 |
| JAN2N2857 | 5.45 | 3.96 | 3.30 |
| JANTX2N2857 | 11.25 | 9.30 | 7.75 |
| 2N2869 | 1.82 | 1.32 | 1.10 |
| 2N2870 | 3.22 | 2.34 | 1.95 |
| 2N2876* | 11.25 | 9.30 | 7.75 |
| 2N2895 | 1.44 | 1.02 | .85 |
| 2N2896 | 2.06 | 1.50 | 1.25 |
| 2N2897 | 1.16 | .84 | .70 |
| 2N3053 | .48 | .33 | .29 |
| 2N3054* | .94 | .69 | .57 |
| 2N3055* | 1.42 | 1.05 | .90 |
| JAN2N3055* | 1.98 | 1.44 | 1.20 |
| JANTX2N3055* | 8.25 | 6.00 | 5.00 |
| 2N3118 | 4.95 | 3.60 | 3.00 |
| 2N3119 | 5.36 | 3.90 | 3.25 |
| 2N3228* | 1.47 | 1.07 | .89 |
| 2N3229* | 22.21 | 18.38 | 15.32 |
| 2N3261 | 1.57 | 1.14 | .95 |
| 2N3262 | 7.43 | 5.40 | 4.50 |
| 2N3263 | 46.40 | 38.40 | 32.00 |
| 2N3264* | 40.60 | 33.60 | 28.00 |
| 2N3265* | 47.15 | 39.00 | 32.50 |
| 2N3266* | 40.45 | 33.50 | 27.90 |
| 2N3375* | 9.90 | 7.20 | 6.00 |
| JAN2N3375* | 17.00 | 14.15 | 10.75 |
| JANTX2N3375* | 21.60 | 17.85 | 14.90 |
| 2N3435 | 7.43 | 5.40 | 4.50 |
| 2N3439 | 1.19 | .86 | .72 |
| JAN2N3439 | 2.01 | 1.47 | 1.22 |
| 2N3440 | .89 | .65 | .54 |
| JAN2N3440 | 1.72 | 1.25 | 1.04 |
| 2N3441* | 1.49 | 1.08 | .90 |
| JAN2N3441* | 1.82 | 1.32 | 1.10 |
| 2N3442* | 2.89 | 2.10 | 1.75 |
| JAN2N3442* | 3.47 | 2.52 | 2.10 |
| 2N3478 | 2.06 | 1.50 | 1.25 |
| 2N3512 | 1.16 | .85 | .70 |
| 2N3525* | 1.77 | 1.29 | 1.07 |
| 2N3528 | 1.44 | 1.05 | .87 |
| 2N3529 | 1.75 | 1.28 | 1.06 |
| 2N3553 | 3.00 | 2.20 | 1.83 |
| JAN2N3553 | 5.78 | 4.20 | 3.50 |
| JANTX2N3553 | 8.74 | 6.36 | 5.30 |
| 2N3583* | 1.83 | 1.33 | 1.11 |
| 2N3584* | 2.34 | 1.71 | 1.42 |
| JAN2N3584* | 3.17 | 2.30 | 1.92 |
| 2N3585* | 3.84 | 2.80 | 2.33 |
| JAN2N3585* | 4.67 | 3.40 | 2.83 |
| 2N3600 | 4.21 | 3.06 | 2.55 |
| 2N3632* | 11.50 | 9.50 | 7.93 |
| 2N3650* | 9.90 | 7.20 | 6.00 |
| 2N3651* | 12.40 | 10.26 | 8.55 |
| 2N3652* | 18.71 | 15.48 | 12.90 |

| RCA Type | Net Each, Lots of | | |
|---|---|---|---|
| | 1-99 | 100-999 | 1000 Up |
| 2N3653* | $22.77 | $18.84 | $15.70 |
| 2N3668* | 2.39 | 1.74 | 1.45 |
| 2N3669* | 2.81 | 2.04 | 1.70 |
| 2N3670* | 3.80 | 2.76 | 2.30 |
| 2N3730 | 2.23 | 1.62 | 1.35 |
| 2N3731 | 2.81 | 2.04 | 1.70 |
| 2N3732 | 1.98 | 1.44 | 1.20 |
| 2N3733 | 12.70 | 10.50 | 8.75 |
| 2N3771* | 3.14 | 2.28 | 1.90 |
| JAN2N3771* | 5.35 | 3.90 | 3.25 |
| JANTX2N3771* | 15.50 | 11.50 | 9.50 |
| 2N3772* | 3.14 | 2.28 | 1.90 |
| JAN2N3772* | 5.35 | 3.90 | 3.25 |
| JANTX2N3772* | 15.50 | 11.50 | 9.50 |
| 2N3773* | 4.79 | 3.48 | 2.90 |
| 2N3839 | 15.15 | 12.55 | 10.45 |
| 2N3866 | 1.58 | 1.15 | .96 |
| JAN2N3866 | 4.44 | 3.24 | 2.70 |
| JANTX2N3866 | 5.94 | 4.32 | 3.60 |
| 2N3870 | 3.63 | 2.64 | 2.20 |
| 2N3871 | 4.54 | 3.30 | 2.75 |
| 2N3872 | 5.94 | 4.32 | 3.60 |
| 2N3873 | 7.34 | 5.34 | 4.45 |
| 2N3878 | 2.06 | 1.50 | 1.25 |
| 2N3879* | 3.22 | 2.34 | 1.95 |
| 2N3896* | 3.96 | 2.88 | 2.40 |
| 2N3897* | 4.87 | 3.54 | 2.95 |
| 2N3898* | 6.27 | 4.56 | 3.80 |
| 2N3899* | 7.67 | 5.58 | 4.65 |
| 2N4012* | 14.20 | 11.75 | 9.80 |
| 2N4036 | .89 | .65 | .54 |
| 2N4037 | .73 | .53 | .44 |
| 2N4063* | 1.35 | .98 | .82 |
| 2N4064* | 1.06 | .77 | .64 |
| 2N4101* | 2.72 | 1.61 | 1.34 |
| 2N4102 | 2.70 | 1.60 | 1.33 |
| 2N4103* | 5.12 | 3.72 | 3.10 |
| 2N4240* | 2.52 | 1.84 | 1.53 |
| 2N4314 | .81 | .59 | .49 |
| 2N4346 | 3.63 | 2.64 | 2.20 |
| 2N4347* | 2.06 | 1.50 | 1.25 |
| 2N4348* | 3.14 | 2.28 | 1.90 |
| 2N4427 | 1.78 | 1.30 | 1.08 |
| 2N4440* | 10.30 | 8.50 | 7.10 |
| JAN2N4440* | 18.00 | 15.00 | 13.20 |
| JANTX2N4440* | 24.00 | 20.00 | 16.50 |
| 2N4932* | 29.00 | 24.00 | 20.00 |
| 2N4933* | 29.00 | 24.00 | 20.00 |
| 2N5016* | 29.00 | 24.00 | 20.00 |
| 2N5034* | 1.34 | .98 | .81 |
| 2N5035* | 1.32 | .96 | .80 |
| 2N5036* | 1.42 | 1.04 | .86 |
| 2N5037* | 1.41 | 1.02 | .85 |
| 2N5038* | 8.17 | 5.94 | 4.75 |
| 2N5039* | 5.36 | 3.90 | 3.25 |
| 2N5070* | 29.00 | 24.00 | 20.00 |
| 2N5071* | 29.00 | 24.00 | 20.00 |
| 2N5090* | 11.40 | 8.30 | 6.90 |
| 2N5102* | 21.75 | 18.00 | 15.00 |
| 2N5108 | 12.90 | 10.70 | 8.90 |
| 2N5109 | 3.42 | 2.52 | 2.10 |
| 2N5179 | .90 | .65 | .54 |
| 2N5186 | .45 | .33 | .27 |
| 2N5187 | .63 | .46 | .38 |
| 2N5188 | .75 | .55 | .45 |
| 2N5189 | .76 | .56 | .46 |
| 2N5202* | 2.89 | 2.10 | 1.75 |
| 2N5239* | 4.34 | 3.16 | 2.63 |
| 2N5240* | 4.80 | 3.49 | 2.91 |
| 2N5262 | 1.62 | 1.18 | .98 |
| 2N5293* | .81 | .59 | .49 |
| 2N5294* | .81 | .59 | .49 |
| 2N5295* | .81 | .59 | .49 |
| 2N5296* | .81 | .59 | .49 |
| 2N5297* | .86 | .62 | .52 |
| 2N5298* | .86 | .62 | .52 |
| 2N5320 | 1.14 | .83 | .69 |
| 2N5321 | .91 | .66 | .55 |
| 2N5322 | 1.40 | 1.02 | .85 |
| 2N5323 | 1.01 | .73 | .61 |
| 2N5415 | 1.24 | .90 | .75 |
| 2N5416 | 1.60 | 1.18 | .98 |
| 2N5441 | 5.64 | 4.10 | 3.42 |
| 2N5442 | 6.77 | 4.92 | 4.10 |
| 2N5443 | 8.46 | 6.16 | 5.13 |
| 2N5444* | 5.97 | 4.34 | 3.62 |
| 2N5445* | 7.10 | 5.16 | 4.30 |
| 2N5446* | 8.79 | 6.40 | 5.33 |
| 2N5470 | 65.25 | 54.00 | 45.00 |
| 2N5490*–5* | .96 | .70 | .58 |
| 2N5496* | 1.04 | .76 | .63 |
| 2N5497* | 1.04 | .76 | .63 |
| 2N5567 | 3.05 | 2.22 | 1.85 |
| 2N5568 | 3.66 | 2.66 | 2.22 |
| 2N5569* | 3.38 | 2.46 | 2.05 |
| 2N5570* | 3.99 | 2.90 | 2.42 |
| 2N5571 | 3.25 | 2.36 | 1.97 |
| 2N5572 | 3.89 | 2.83 | 2.36 |
| 2N5573* | 3.58 | 2.60 | 2.17 |
| 2N5574* | 4.22 | 3.07 | 2.56 |
| 2N5575* | 26.10 | 21.60 | 18.00 |
| 2N5576* | 26.10 | 21.60 | 18.00 |
| 2N5577* | 29.00 | 24.00 | 20.00 |

| RCA Type | Net Each, Lots of | | |
|---|---|---|---|
| | 1-99 | 100-999 | 1000 Up |
| 2N5578* | $29.00 | $24.00 | $20.00 |
| 2N5579* | 29.00 | 24.00 | 20.00 |
| 2N5580* | 31.90 | 26.40 | 22.00 |
| 2N5671 | 15.80 | 13.10 | 10.90 |
| 2N5672 | 21.60 | 17.90 | 14.90 |
| 2N5754 | 1.19 | .82 | .72 |
| 2N5755 | 1.41 | 1.02 | .85 |
| 2N5756 | 1.69 | 1.23 | 1.02 |
| 2N5757 | 2.12 | 1.54 | 1.28 |
| 2N5781 | 1.41 | 1.02 | .85 |
| 2N5782 | 1.24 | .90 | .75 |
| 2N5783 | 1.16 | .84 | .70 |
| 2N5784 | 1.24 | .90 | .75 |
| 2N5785 | 1.08 | .78 | .65 |
| 2N5786 | .99 | .72 | .60 |
| 2N5804* | 6.52 | 4.74 | 3.95 |
| 2N5805* | 7.59 | 5.52 | 4.60 |
| 2N5838* | 4.00 | 2.91 | 2.42 |
| 2N5839* | 4.10 | 2.99 | 2.48 |
| 2N5840* | 4.70 | 3.42 | 2.85 |
| 2N5913 | 3.63 | 2.64 | 2.20 |
| 2N5914* | 9.90 | 7.20 | 6.00 |
| 2N5915* | 10.88 | 9.00 | 7.50 |
| 2N5916* | 12.33 | 10.20 | 8.50 |
| 2N5917* | 11.60 | 9.60 | 8.00 |
| 2N5918* | 21.75 | 18.00 | 15.00 |
| 2N5919* | 43.50 | 36.00 | 30.00 |
| 2N5920 | 94.25 | 78.00 | 65.00 |
| 2N5921 | 116.00 | 96.00 | 80.00 |
| 2N5954* | 2.15 | 1.56 | 1.30 |
| 2N5955* | 1.90 | 1.38 | 1.15 |
| 2N5956* | 1.65 | 1.20 | 1.00 |
| 2N5992* | 8.25 | 6.00 | 5.00 |
| 2N5993* | 11.60 | 9.60 | 8.00 |
| 2N5994* | 18.15 | 15.00 | 12.50 |
| 2N5995* | 8.25 | 6.00 | 5.00 |
| 2N5996* | 11.60 | 9.60 | 8.00 |
| 2N6032* | 34.65 | 28.70 | 23.90 |
| 2N6033* | 46.40 | 38.40 | 32.00 |
| 2N6077 | 3.66 | 2.67 | 2.22 |
| 2N6078 | 3.75 | 2.72 | 2.27 |
| 2N6079 | 4.62 | 3.36 | 2.80 |
| 2N6093 | 80.00 | 66.00 | 55.00 |
| 2N6098, 9 | 1.07 | .78 | .65 |
| 2N6100, 1 | 1.15 | .84 | .70 |
| 2N6102, 3 | 1.24 | .90 | .75 |
| 2N6106*, 7* | 1.40 | 1.02 | .85 |
| 2N6108*, 9* | 1.24 | .90 | .75 |
| 2N6110* | 1.15 | .84 | .70 |
| 2N6111* | 1.15 | .84 | .70 |
| 2N6175 | .81 | .59 | .49 |
| 2N6176 | .93 | .67 | .56 |
| 2N6177 | 1.11 | .81 | .67 |
| 2N6178 | .98 | .71 | .59 |
| 2N6179 | .74 | .54 | .45 |
| 2N6180 | 1.24 | .90 | .75 |
| 2N6181 | .87 | .64 | .53 |
| 2N6211* | 3.71 | 2.70 | 2.25 |
| 2N6212* | 4.54 | 3.30 | 2.75 |
| 2N6213 | 6.52 | 4.74 | 3.95 |
| 3N128 | 1.29 | .94 | .78 |
| 3N138 | 2.89 | 2.10 | 1.75 |
| 3N139 | 2.48 | 1.80 | 1.50 |
| 3N140 | 1.62 | 1.18 | .98 |
| 3N141 | 1.45 | 1.06 | .88 |
| 3N142 | 1.04 | .76 | .63 |
| 3N143 | 1.30 | .95 | .79 |
| 3N152 | 1.62 | 1.18 | .98 |
| 3N153 | 1.42 | 1.03 | .86 |
| 3N154 | 1.49 | 1.08 | .90 |
| 3N159 | 2.06 | 1.50 | 1.25 |
| 3N187 | 2.72 | 1.98 | 1.65 |
| 3N200 | 4.30 | 3.18 | 2.65 |
| 4403 | 1.40 | 1.02 | .85 |
| 4404 | 1.40 | 1.02 | .85 |
| 4448, 4453 | 1.40 | 1.02 | .85 |
| 7163 | 1.40 | 1.02 | .85 |
| 40004 | 1.90 | 1.38 | 1.15 |
| 40005 | 2.06 | 1.50 | 1.25 |
| 40006 | 3.80 | 2.76 | 2.30 |
| 40022 | .75 | .55 | .45 |
| 40050 | 1.16 | .85 | .70 |
| 40051 | 1.40 | 1.02 | .85 |
| 40080 | 1.08 | .78 | .65 |
| 40081 | 1.41 | 1.02 | .85 |
| 40082 | 4.04 | 2.94 | 2.45 |
| 40084 | .99 | .72 | .60 |
| 40108, R* | .99 | .72 | .60 |
| 40109, R* | 1.16 | .84 | .70 |
| 40110, R* | 1.57 | 1.14 | .95 |
| 40111, R* | 2.15 | 1.56 | 1.30 |
| 40112, R* | 2.48 | 1.80 | 1.50 |
| 40113, R* | 3.14 | 2.28 | 1.90 |
| 40114, R* | 3.71 | 2.70 | 2.25 |
| 40115, R* | 6.60 | 4.80 | 4.00 |
| 40208, R* | 1.11 | .80 | .67 |
| 40209, R* | 1.30 | .95 | .79 |
| 40210, R* | 1.72 | 1.25 | 1.04 |
| 40211, R* | 2.34 | 1.70 | 1.42 |
| 40212, R* | 2.89 | 2.10 | 1.75 |
| 40213, R* | 3.58 | 2.60 | 2.17 |
| 40214, R* | 4.13 | 3.00 | 2.50 |
| 40216* | 42.20 | 34.90 | 29.10 |

*Mounting hardware supplied with device.

# RCA Semiconductor Pricing

| RCA Type | Net Each, Lots of 1-99 | 100-999 | 1000 Up |
|---|---|---|---|
| 40250* | $ 0.94 | $ 0.69 | $ 0.53 |
| 40250V1* | 1.08 | .78 | .65 |
| 40251 | 1.49 | 1.08 | .90 |
| 40254 | .75 | .55 | .45 |
| 40259* | 12.40 | 10.25 | 8.55 |
| 40266 | .29 | .21 | .175 |
| 40267 | .33 | .24 | .20 |
| 40269 | .68 | .50 | .41 |
| 40279* | 109.85 | 90.90 | 75.75 |
| 40280 | 4.62 | 3.36 | 2.80 |
| 40281* | 10.60 | 8.75 | 7.30 |
| 40282* | 11.90 | 9.85 | 8.20 |
| 40285* | 37.70 | 31.20 | 26.00 |
| 40287* | 21.75 | 18.00 | 15.00 |
| 40290 | 2.48 | 1.80 | 1.50 |
| 40291* | 10.40 | 7.55 | 6.30 |
| 40292* | 11.30 | 9.35 | 7.80 |
| 40294 | 23.05 | 19.10 | 15.90 |
| 40305 | 15.10 | 12.50 | 10.40 |
| 40306* | 26.85 | 22.20 | 18.50 |
| 40307* | 28.85 | 23.90 | 19.90 |
| 40309 | .58 | .42 | .35 |
| 40309V1 | .78 | .57 | .47 |
| 40309V2* | .78 | .57 | .47 |
| 40310* | .91 | .66 | .55 |
| 40310V1 | 1.04 | .76 | .63 |
| 40311 | .59 | .43 | .36 |
| 40311V1 | .81 | .59 | .49 |
| 40311V2* | .81 | .59 | .49 |
| 40312* | .93 | .67 | .56 |
| 40312V1 | 1.06 | .77 | .64 |
| 40313* | 2.06 | 1.50 | 1.25 |
| 40314 | .61 | .44 | .37 |
| 40314V1 | .86 | .63 | .52 |
| 40314V2* | .86 | .63 | .52 |
| 40315 | .59 | .43 | .36 |
| 40315V1 | .83 | .60 | .50 |
| 40315V2* | .83 | .60 | .50 |
| 40316* | .99 | .72 | .60 |
| 40317 | .61 | .44 | .37 |
| 40317V1 | .86 | .63 | .52 |
| 40317V2* | .86 | .63 | .52 |
| 40318* | 2.10 | 1.52 | 1.27 |
| 40319 | .71 | .52 | .43 |
| 40319V1 | 1.24 | .90 | .75 |
| 40319V2* | 1.24 | .90 | .75 |
| 40320 | .61 | .44 | .37 |
| 40320V1 | .86 | .63 | .52 |
| 40320V2* | .86 | .63 | .52 |
| 40321 | .86 | .63 | .52 |
| 40321V1 | 1.32 | .96 | .80 |
| 40321V2* | 1.32 | .96 | .80 |
| 40322* | 2.15 | 1.56 | 1.30 |
| 40323 | .58 | .42 | .35 |
| 40323V1 | .78 | .57 | .47 |
| 40323V2* | .78 | .57 | .47 |
| 40324* | .91 | .66 | .55 |
| 40325* | 1.57 | 1.14 | .95 |
| 40326 | .61 | .44 | .37 |
| 40326V1 | .86 | .63 | .52 |
| 40326V2* | .86 | .63 | .52 |
| 40327 | .87 | .64 | .53 |
| 40327V1 | 1.32 | .96 | .80 |
| 40327V2* | 1.32 | .96 | .80 |
| 40328* | 2.19 | 1.60 | 1.33 |
| 40329 | .57 | .41 | .34 |
| 40340* | 29.00 | 24.00 | 20.00 |
| 40341* | 29.00 | 24.00 | 20.00 |
| 40346 | .64 | .47 | .39 |
| 40346V1 | 1.23 | .89 | .74 |
| 40346V2* | 1.23 | .89 | .74 |
| 40347 | .75 | .54 | .45 |
| 40347V1 | .91 | .66 | .55 |
| 40347V2* | .91 | .66 | .55 |
| 40348 | 1.06 | .77 | .64 |
| 40348V1 | 1.14 | .83 | .69 |
| 40348V2* | 1.14 | .83 | .69 |
| 40349 | 1.56 | 1.13 | .94 |
| 40349V1 | 1.64 | 1.19 | .99 |
| 40349V2* | 1.64 | 1.19 | .99 |
| 40360* | .79 | .58 | .48 |
| 40360V1 | .99 | .72 | .60 |
| 40360V2* | .99 | .72 | .60 |
| 40361 | .83 | .60 | .50 |
| 40361V1 | 1.11 | .81 | .67 |
| 40361V2* | 1.11 | .81 | .67 |
| 40362 | .76 | .55 | .46 |
| 40362V1 | 1.32 | .96 | .80 |
| 40362V2 | 1.32 | .96 | .80 |
| 40363* | 1.49 | 1.08 | .90 |
| 40364* | 2.15 | 1.56 | 1.30 |
| 40366 | 5.36 | 3.90 | 3.25 |
| 40366V1 | 7.92 | 5.75 | 4.80 |
| 40366V2* | 7.92 | 5.75 | 4.80 |
| 40367 | 7.84 | 5.70 | 4.75 |
| 40367V1 | 7.92 | 5.75 | 4.80 |
| 40367V2 | 7.92 | 5.75 | 4.80 |
| 40368 | 11.60 | 9.60 | 8.00 |
| 40369* | 13.05 | 10.80 | 9.00 |
| 40370 | .70 | .51 | .42 |
| 40372 | .99 | .72 | .60 |
| 40373 | 1.57 | 1.14 | 1.55 |
| 40374 | 2.56 | 1.86 | 1.55 |
| 40375 | $ 2.23 | $ 1.62 | $ 1.35 |
| 40378 | 1.47 | 1.07 | .89 |
| 40379 | 1.85 | 1.34 | 1.12 |
| 40385 | 5.36 | 3.90 | 3.25 |
| 40385V1 | 9.55 | 6.95 | 5.80 |
| 40385V2* | 9.55 | 6.95 | 5.80 |
| 40388 | 5.45 | 3.96 | 3.30 |
| 40389 | .74 | .54 | .45 |
| 40390 | 1.06 | .77 | .64 |
| 40391 | .81 | .59 | .49 |
| 40392* | .74 | .54 | .45 |
| 40394* | .81 | .59 | .49 |
| 40396 | 1.00 | .73 | .60 |
| 40405 | 2.15 | 1.56 | 1.30 |
| 40406 | .76 | .55 | .46 |
| 40407 | .58 | .42 | .35 |
| 40408 | .84 | .61 | .51 |
| 40409 | .87 | .64 | .53 |
| 40410 | .89 | .65 | .54 |
| 40411* | 3.30 | 2.40 | 2.00 |
| 40412 | 1.06 | .76 | .64 |
| 40412V1 | 1.14 | .83 | .69 |
| 40412V2* | 1.14 | .83 | .69 |
| 40414 | 6.10 | 4.44 | 3.70 |
| 40421 | 1.65 | 1.20 | 1.00 |
| 40428 | .35 | .26 | .21 |
| 40429* | 1.57 | 1.14 | .95 |
| 40430* | 1.89 | 1.37 | 1.14 |
| 40431* | 2.40 | 1.75 | 1.45 |
| 40432* | 2.88 | 2.09 | 1.74 |
| 40433 | 2.97 | 2.16 | 1.80 |
| 40437 | .48 | .35 | .29 |
| 40439 | 3.14 | 2.28 | 1.90 |
| 40440 | 2.31 | 1.68 | 1.40 |
| 40446* | 4.29 | 3.12 | 2.60 |
| 40462 | 1.16 | .84 | .70 |
| 40467A | 1.24 | .90 | .75 |
| 40468A | .75 | .54 | .45 |
| 40485* | 1.49 | 1.08 | .90 |
| 40486* | 1.79 | 1.30 | 1.08 |
| 40502 | 1.74 | 1.26 | 1.05 |
| 40503 | 2.05 | 1.49 | 1.24 |
| 40504 | 1.64 | 1.19 | .99 |
| 40505 | 1.94 | 1.41 | 1.17 |
| 40506 | 2.38 | 1.73 | 1.44 |
| 40507 | 1.63 | 1.19 | .99 |
| 40508 | 2.01 | 1.46 | 1.22 |
| 40509 | 1.65 | 1.20 | 1.00 |
| 40510 | 1.95 | 1.42 | 1.18 |
| 40511 | 2.56 | 1.86 | 1.55 |
| 40512 | 3.21 | 2.33 | 1.94 |
| 40513* | 1.24 | .90 | .75 |
| 40514* | 1.26 | .92 | .76 |
| 40519 | 1.63 | 1.19 | .99 |
| 40525 | 1.57 | 1.14 | .95 |
| 40526 | 1.78 | 1.30 | 1.08 |
| 40527 | 2.48 | 1.80 | 1.50 |
| 40528 | 1.29 | .94 | .78 |
| 40529 | 1.49 | 1.08 | .90 |
| 40530 | 1.79 | 1.30 | 1.08 |
| 40531 | 1.73 | 1.26 | 1.05 |
| 40532 | 1.94 | 1.41 | 1.18 |
| 40533 | 2.65 | 1.92 | 1.60 |
| 40534 | 1.46 | 1.06 | .88 |
| 40535 | 1.65 | 1.20 | 1.00 |
| 40536 | 1.95 | 1.42 | 1.18 |
| 40537 | .69 | .50 | .42 |
| 40538 | .59 | .43 | .36 |
| 40539 | .53 | .38 | .32 |
| 40542* | 1.31 | .95 | .79 |
| 40543* | 1.37 | 1.00 | .83 |
| 40544* | .58 | .42 | .35 |
| 40553* | 2.75 | 2.00 | 1.67 |
| 40554* | 4.44 | 3.22 | 2.68 |
| 40555* | 4.76 | 3.47 | 2.89 |
| 40559A | .70 | .51 | .42 |
| 40575* | 2.01 | 1.50 | 1.25 |
| 40576* | 2.48 | 1.80 | 1.50 |
| 40577, 40578 | 58.00 | 48.00 | 40.00 |
| 40581 | 4.87 | 3.54 | 2.95 |
| 40582* | 5.12 | 3.72 | 3.10 |
| 40583 | .35 | .26 | .21 |
| 40594 | 1.24 | .90 | .75 |
| 40595 | 1.44 | 1.04 | .87 |
| 40600 | 1.24 | .90 | .75 |
| 40601 | 1.16 | .84 | .70 |
| 40602 | .83 | .60 | .50 |
| 40603 | 1.04 | .76 | .63 |
| 40604 | .98 | .71 | .59 |
| 40605 | 45.00 | 37.25 | 31.05 |
| 40606* | 38.30 | 31.70 | 26.40 |
| 40608 | 2.48 | 1.80 | 1.50 |
| 40609 | 1.19 | .87 | .72 |
| 40610 | .83 | .60 | .50 |
| 40611 | .54 | .39 | .33 |
| 40612 | .67 | .49 | .40 |
| 40613 | .70 | .51 | .42 |
| 40614 | 1.24 | .90 | .75 |
| 40615 | .86 | .63 | .52 |
| 40616 | .56 | .41 | .34 |
| 40618* | .71 | .52 | .43 |
| 40619 | 1.29 | .94 | .78 |
| 40620 | .91 | .67 | .55 |
| 40621* | $ 0.79 | $ 0.58 | $ 0.48 |
| 40622* | .81 | .59 | .49 |
| 40623 | 1.32 | .97 | .80 |
| 40624* | .93 | .67 | .56 |
| 40625 | .74 | .54 | .45 |
| 40626 | 1.24 | .91 | .75 |
| 40627 | .99 | .72 | .60 |
| 40628 | .76 | .55 | .46 |
| 40629* | .74 | .54 | .45 |
| 40630* | .86 | .62 | .52 |
| 40631* | .97 | .71 | .59 |
| 40632* | 1.24 | .90 | .75 |
| 40633* | 1.27 | .92 | .77 |
| 40634 | .84 | .61 | .51 |
| 40635 | .63 | .46 | .38 |
| 40636* | 1.65 | 1.20 | 1.00 |
| 40637 | 1.00 | .73 | .60 |
| 40638 | 1.57 | 1.14 | .95 |
| 40639 | 1.87 | 1.36 | 1.13 |
| 40640* | 2.72 | 1.98 | 1.65 |
| 40641* | 2.85 | 2.08 | 1.73 |
| 40642 | .99 | .72 | .60 |
| 40643 | .91 | .66 | .55 |
| 40644 | .83 | .60 | .50 |
| 40653 | 2.61 | 1.90 | 1.58 |
| 40654 | 1.41 | 1.02 | .85 |
| 40655 | 1.69 | 1.23 | 1.02 |
| 40656 | 1.49 | 1.08 | .90 |
| 40657 | 1.77 | 1.29 | 1.07 |
| 40658 | 1.57 | 1.14 | .95 |
| 40659 | 1.85 | 1.35 | 1.12 |
| 40660 | 4.52 | 3.29 | 2.74 |
| 40661 | 5.41 | 3.94 | 3.28 |
| 40662* | 4.85 | 3.53 | 2.94 |
| 40663* | 5.74 | 4.18 | 3.48 |
| 40664 | 1.57 | 1.14 | .95 |
| 40665 | 14.00 | 11.65 | 9.70 |
| 40666* | 12.00 | 9.85 | 8.20 |
| 40667 | 1.65 | 1.20 | 1.00 |
| 40668* | 1.62 | 1.18 | .98 |
| 40669* | 2.18 | 1.58 | 1.32 |
| 40671 | 6.77 | 4.92 | 4.10 |
| 40672* | 7.10 | 5.16 | 4.30 |
| 40673 | 1.01 | .73 | .61 |
| 40680* | 5.12 | 3.72 | 3.10 |
| 40681* | 6.02 | 4.38 | 3.65 |
| 40682* | 7.43 | 5.40 | 4.50 |
| 40683 | 8.85 | 6.42 | 5.35 |
| 40684 | 1.35 | .99 | .82 |
| 40685 | 1.57 | 1.14 | .95 |
| 40686 | 1.85 | 1.35 | 1.12 |
| 40687 | 2.28 | 1.66 | 1.38 |
| 40688 | 7.13 | 5.18 | 4.32 |
| 40689 | 8.25 | 6.00 | 5.00 |
| 40690 | 9.95 | 7.24 | 6.03 |
| 40691 | 1.57 | 1.14 | .95 |
| 40692 | 1.89 | 1.37 | 1.14 |
| 40693 | 1.57 | 1.14 | .95 |
| 40694 | 1.64 | 1.19 | .99 |
| 40695 | 2.01 | 1.46 | 1.22 |
| 40696 | 1.41 | 1.02 | .85 |
| 40697 | 1.47 | 1.07 | .89 |
| 40698 | 1.85 | 1.34 | 1.12 |
| 40699 | 5.81 | 4.22 | 3.52 |
| 40700 | 6.93 | 5.04 | 4.20 |
| 40701 | 8.63 | 6.28 | 5.23 |
| 40702* | 6.14 | 4.46 | 3.72 |
| 40703* | 7.26 | 5.28 | 4.40 |
| 40704* | 8.96 | 6.52 | 5.43 |
| 40705 | 4.69 | 3.41 | 2.84 |
| 40706 | 5.58 | 4.06 | 3.38 |
| 40707* | 5.02 | 3.65 | 3.04 |
| 40708* | 5.91 | 4.30 | 3.58 |
| 40709 | 6.93 | 5.04 | 4.20 |
| 40710* | 7.26 | 5.28 | 4.40 |
| 40711 | 3.42 | 2.48 | 2.07 |
| 40712 | 4.06 | 2.95 | 2.46 |
| 40713* | 3.15 | 2.72 | 2.27 |
| 40714* | 4.39 | 3.19 | 2.66 |
| 40715* | 2.48 | 1.80 | 1.50 |
| 40716* | 3.27 | 2.38 | 1.98 |
| 40717 | 3.22 | 2.34 | 1.95 |
| 40718 | 3.83 | 2.78 | 2.32 |
| 40719* | 3.55 | 2.58 | 2.15 |
| 40720* | 4.16 | 3.02 | 2.52 |
| 40721* | 1.62 | 1.18 | .98 |
| 40722* | 2.18 | 1.58 | 1.32 |
| 40723 | 1.95 | 1.42 | 1.18 |
| 40724 | 2.05 | 1.49 | 1.24 |
| 40725* | 1.57 | 1.14 | .95 |
| 40726*, 40727* | 2.06 | 1.50 | 1.25 |
| 40728* | 2.39 | 1.74 | 1.45 |
| 40729 | 2.23 | 1.62 | 1.35 |
| 40730 | 2.56 | 1.86 | 1.55 |
| 40731 | 1.73 | 1.26 | 1.05 |
| 40732 | 2.23 | 1.62 | 1.35 |
| 40733 | 1.65 | 1.20 | 1.00 |
| 40734 | 2.15 | 1.56 | 1.30 |
| 40735 | 31.40 | 26.00 | 21.65 |
| 40736R | 2.48 | 1.80 | 1.50 |
| 40737 | 1.49 | 1.08 | .90 |
| 40738 | 1.57 | 1.14 | .95 |
| 40739 | 2.39 | 1.74 | 1.45 |

*Mounting hardware supplied with device.

# RCA Semiconductor Pricing

| RCA Type | Net Each, Lots of | | |
|---|---|---|---|
| | 1-99 | 100-999 | 1000 Up |
| 40740 | $ 3.38 | $ 2.46 | $ 2.05 |
| 40741* | 1.82 | 1.32 | 1.10 |
| 40742* | 1.90 | 1.38 | 1.15 |
| 40743* | 2.72 | 1.98 | 1.05 |
| 40744* | 3.71 | 2.70 | 2.25 |
| 40745* | 2.97 | 2.16 | 1.80 |
| 40746* | 3.05 | 2.22 | 1.85 |
| 40747* | 3.85 | 2.85 | 2.35 |
| 40748* | 4.87 | 3.54 | 2.95 |
| 40749 | 2.34 | 1.70 | 1.42 |
| 40750 | 2.48 | 1.80 | 1.50 |
| 40751 | 3.75 | 2.72 | 2.27 |
| 40752 | 4.95 | 3.60 | 3.00 |
| 40753* | 2.67 | 1.94 | 1.62 |
| 40754* | 2.81 | 2.04 | 1.70 |
| 40755* | 4.08 | 2.96 | 2.47 |
| 40756* | 5.28 | 3.84 | 3.20 |
| 40757* | 3.83 | 2.75 | 2.32 |
| 40758* | 3.96 | 2.88 | 2.40 |
| 40759* | 5.23 | 3.80 | 3.17 |
| 40760* | 6.44 | 4.68 | 3.90 |
| 40761 | 1.74 | 1.26 | 1.05 |
| 40762 | 2.05 | 1.49 | 1.24 |
| 40766 | 1.37 | 1.00 | .83 |
| 40767 | 1.54 | 1.12 | .93 |
| 40768 | 7.12 | 5.18 | 4.23 |
| 40769 | 1.95 | 1.42 | 1.18 |
| 40770 | 2.77 | 2.02 | 1.68 |
| 40771 | 1.77 | 1.28 | 1.07 |
| 40772 | 2.21 | 1.61 | 1.34 |
| 40773 | 1.88 | 1.37 | 1.14 |
| 40774 | 2.48 | 1.80 | 1.50 |
| 40775 | 3.07 | 2.23 | 1.86 |
| 40776 | 4.36 | 3.17 | 2.64 |
| 40777* | 3.55 | 2.58 | 2.15 |
| 40778* | 4.83 | 3.52 | 2.93 |
| 40779 | 4.74 | 3.44 | 2.87 |
| 40780 | 6.15 | 4.48 | 3.73 |
| 40781* | 5.45 | 3.95 | 3.29 |
| 40782 | 6.70 | 4.88 | 4.07 |
| 40783 | 5.20 | 3.78 | 3.15 |
| 40784 | 7.00 | 5.10 | 4.25 |
| 40785* | 5.95 | 4.32 | 3.60 |
| 40786* | 7.70 | 5.60 | 4.68 |
| 40787 | 8.66 | 6.30 | 5.25 |
| 40788 | 9.40 | 6.84 | 5.70 |
| 40789* | 10.83 | 8.96 | 7.47 |
| 40790* | 14.35 | 11.88 | 9.90 |
| 40791 | 10.77 | 8.91 | 7.43 |
| 40792 | 15.08 | 12.48 | 10.40 |
| 40793* | 11.42 | 9.46 | 7.88 |
| 40794 | 15.73 | 13.02 | 10.85 |
| 40795 | 4.59 | 3.34 | 2.78 |
| 40796* | 4.92 | 3.58 | 2.98 |
| 40797 | 4.87 | 3.54 | 2.95 |
| 40798* | 5.20 | 3.78 | 3.15 |
| 40799* | 4.54 | 3.30 | 2.75 |
| 40800* | 5.15 | 3.74 | 3.12 |
| 40801* | 6.07 | 4.42 | 3.68 |
| 40802* | 4.74 | 3.44 | 2.87 |
| 40803* | 5.38 | 3.91 | 3.26 |
| 40804* | 6.35 | 4.62 | 3.85 |
| 40805* | 6.00 | 4.37 | 3.64 |
| 40806* | 6.90 | 5.02 | 4.18 |
| 40807* | 8.25 | 6.00 | 5.00 |
| 40808 | .57 | .41 | .34 |
| 40809 | .78 | .57 | .47 |
| 40810 | 1.13 | .82 | .68 |
| 40811 | 1.32 | .96 | .80 |
| 40812 | 1.59 | 1.16 | .96 |
| 40813 | 1.98 | 1.44 | 1.20 |
| 40814 | .69 | .50 | .42 |
| 40815 | .86 | .62 | .52 |
| 40816 | .91 | .66 | .55 |
| 40817 | 1.15 | .84 | .70 |
| 40819 | 1.73 | 1.26 | 1.05 |
| 40820 | .94 | .68 | .57 |
| 40821 | .89 | .65 | .54 |
| 40822 | .86 | .62 | .52 |
| 40823 | .81 | .59 | .49 |
| 40831 | 1.98 | 1.32 | 1.10 |
| 40832 | 4.93 | 3.58 | 2.99 |
| 40833 | 2.03 | 1.48 | 1.23 |
| 40834 | 2.12 | 1.54 | 1.28 |
| 40835 | 2.20 | 1.60 | 1.33 |
| 40836 | 65.25 | 54.00 | 45.00 |
| 40837 | 109.00 | 90.00 | 75.00 |
| 40838 | 1.16 | .84 | .70 |
| 40839 | 1.16 | .84 | .70 |
| 40841 | .68 | .49 | .41 |
| 40842 | 1.75 | 1.27 | 1.06 |
| 40843R | 3.22 | 2.34 | 1.99 |
| 40844R | 4.12 | 3.00 | 2.50 |
| 40850 | 4.14 | 3.01 | 2.51 |
| 40851 | 4.69 | 3.41 | 2.84 |
| 40852 | 4.93 | 3.59 | 2.99 |
| 40853 | 8.15 | 5.93 | 4.94 |
| 40854 | 13.90 | 11.50 | 9.59 |
| 40856 | 18.85 | 15.00 | 13.00 |
| 40857 | 42.00 | 34.80 | 29.00 |
| 40858 | 11.50 | 8.35 | 6.95 |
| 40859 | 20.30 | 16.80 | 14.00 |
| 40860 | 50.70 | 42.00 | 35.00 |

*Mounting hardware supplied with device.

| RCA Type | Net Each, Lots of | | |
|---|---|---|---|
| | 1-99 | 100-999 | 1000 Up |
| 40861 | $14.40 | $11.95 | $ 9.95 |
| 40862 | 23.20 | 19.20 | 16.00 |
| 40863 | 55.10 | 45.60 | 38.00 |
| 40864 | 20.95 | 17.35 | 14.45 |
| 40865 | 31.90 | 26.40 | 22.00 |
| 40866 | 72.50 | 60.00 | 50.00 |
| 40867 | 1.34 | .98 | .81 |
| 40868 | 1.57 | 1.14 | .95 |
| 40869 | 2.06 | 1.50 | 1.25 |
| 40885 | .89 | .64 | .54 |
| 40886 | 1.00 | .73 | .61 |
| 40887 | 1.18 | .86 | .72 |
| 44001 | .33 | .24 | .20 |
| 44002 | .37 | .27 | .22 |
| 44003 | .40 | .29 | .24 |
| 44004 | .46 | .34 | .28 |
| 44005 | .53 | .39 | .32 |
| 44006 | .66 | .48 | .40 |
| 44007 | .73 | .53 | .44 |
| CA3031/702A | 4.95 | 3.60 | 3.00 |
| CA3032/702C | 3.30 | 2.40 | 2.00 |
| CA3034, V1 | 2.89 | 2.10 | 1.75 |

| RCA Type | Net per 100 Lots | |
|---|---|---|
| | 100-900 | 1000 Up |
| CA3000H | $ 4.75 | $1.90 |
| CA3001H | 5.40 | 2.70 |
| CA3002H | 4.50 | 1.80 |
| CA3005H | 3.00 | 1.20 |
| CA3015H | 4.75 | 1.90 |
| CA3015L | 6.00 | 2.40 |
| CA3018H | 2.00 | .80 |
| CA3018L | 3.13 | 1.25 |
| CA3020H | 3.10 | 1.25 |
| CA3023H | 3.10 | 1.25 |
| CA3026H | 2.50 | 1.00 |
| CA3028L | 2.45 | .98 |
| CA3028AH | 1.78 | .71 |
| CA3035H | 3.00 | 1.20 |
| CA3039L | 3.13 | 1.25 |
| CA3043H | 3.38 | 1.35 |
| CA3045H | 2.00 | .80 |
| CA3045L | 3.13 | 1.25 |
| CA3048H | 4.85 | 1.95 |
| CA3054H | 2.50 | 1.00 |
| CA3054L | 3.13 | 1.25 |
| CA3055H | 3.00 | 1.20 |
| CA3056H | 3.25 | 1.30 |
| CA3059H | 3.85 | 1.55 |
| CA3060H | 10.00 | 5.00 |
| CA3075H | 3.50 | 1.40 |
| CA3078H | 5.80 | 2.35 |
| CA3080H | 2.08 | .85 |
| CA3741L | 7.25 | 2.90 |

| RCA Type | Net Each, Lots of | | |
|---|---|---|---|
| | 1-99 | 100-999 | 1000 Up |
| CD2150 | $ 3.96 | $ 2.88 | $ 2.40 |
| CD2151 | 3.96 | 2.88 | 2.40 |
| CD2152 | 3.96 | 2.88 | 2.40 |
| CD2153 | 5.20 | 3.80 | 3.15 |
| CD2154 | 5.20 | 3.80 | 3.15 |
| CD2155D | 16.00 | 13.25 | 11.00 |
| CD2200, D | 10.72 | 7.80 | 6.50 |
| CD2201, D | 10.72 | 7.80 | 6.50 |
| CD2202, D | 10.72 | 7.80 | 6.50 |
| CD2203, D | 12.33 | 10.20 | 8.50 |
| CD2204, D | 6.60 | 4.80 | 4.00 |
| CD2205, D | 10.72 | 7.80 | 6.50 |
| CD2500E | 4.62 | 3.36 | 2.80 |
| CD2501E | 4.62 | 3.36 | 2.80 |
| CD2502E | 4.95 | 3.60 | 3.00 |
| CD2503E | 4.95 | 3.60 | 3.00 |

| RCA Type | Net per 100 Lots | |
|---|---|---|
| | 100-900 | 1000 Up |
| CD4000AH | $1.98 | $1.32 |
| CD4001AH | 2.06 | 1.38 |
| CD4002AH | 2.25 | 1.50 |
| CD4006AH | 7.00 | 4.65 |
| CD4007AH | 2.06 | 1.38 |
| CD4008AH | 5.00 | 3.35 |
| CD4009AH | 3.24 | 2.16 |
| CD4010AH | 3.24 | 2.16 |
| CD4011AH | 2.06 | 1.38 |
| CD4012AH | 2.25 | 1.50 |
| CD4013AH | 2.96 | 1.98 |
| CD4014AH | 7.00 | 4.65 |
| CD4015AH | 7.00 | 4.65 |
| CD4016AH | 2.96 | 1.98 |
| CD4017AH | 7.20 | 4.80 |
| CD4018AH | 6.30 | 4.20 |
| CD4019AH | 3.33 | 2.22 |
| CD4020AH | 8.58 | 5.70 |
| CD4021AH | 6.53 | 4.35 |
| CD4022AH | 6.40 | 4.25 |
| CD4023AH | 2.25 | 1.50 |

| RCA Type | Net per 100 Lots | |
|---|---|---|
| | 100-900 | 1000 Up |
| CD4024AH | $ 5.00 | $ 3.35 |
| CD4025AH | 2.25 | 1.50 |
| CD4026AH | 8.95 | 5.95 |
| CD4027AH | 4.00 | 2.65 |
| CD4028AH | 6.15 | 4.10 |
| CD4029AH | 8.65 | 5.75 |
| CD4030AH | 2.35 | 1.55 |
| CD4032AH | 6.40 | 4.25 |
| CD4033AH | 8.90 | 5.95 |
| CD4038AH | 6.40 | 4.25 |
| CH2101 | .55 | .26 |
| CH2270 | .50 | .22 |
| CH2405 | .70 | .43 |
| CH2857 | 1.00 | .70 |
| CH3053 | .45 | .19 |
| CH3375 | 2.16 | 1.80 |
| CH3439 | 1.35 | .54 |
| CH3440 | .80 | .32 |
| CH3866 | 1.10 | .60 |
| CH4036 | .50 | .26 |
| CH4037 | .45 | .23 |
| CH5109 | 1.20 | .70 |
| CH5262 | 1.00 | .50 |
| CH5320 | .75 | .46 |
| CH5321 | .65 | .32 |
| CH5322 | .85 | .51 |
| CH5323 | .75 | .37 |
| CH5918 | 5.40 | 4.50 |
| CH5919A | 8.40 | 7.00 |
| CH6105 | 14.40 | 12.00 |

| RCA Type | Net Each, Lots | |
|---|---|---|
| | 1-29 | 30 Up |
| CR101 | $ 5.75 | $ 5.47 |
| CR102 | 7.20 | 6.85 |
| CR103 | 8.15 | 7.75 |
| CR104 | 9.60 | 9.10 |
| CR105 | 10.55 | 10.05 |
| CR106 | 12.00 | 11.40 |
| CR107 | 12.95 | 12.30 |
| CR108 | 13.90 | 13.20 |
| CR109 | 15.35 | 14.60 |
| CR110 | 16.30 | 15.50 |
| CR201 | 3.10 | 2.96 |
| CR203 | 4.80 | 4.56 |
| CR204 | 5.75 | 5.47 |
| CR206 | 6.95 | 6.60 |
| CR208 | 8.40 | 8.00 |
| CR210 | 10.10 | 9.60 |
| CR212 | 12.00 | 11.40 |
| CR273/8008 | 60.00 | ....... |
| CR274/872A | 60.00 | ....... |
| CR275/866/3B25/3B28 | 13.10 | ....... |
| CR280 | 33.60 | 31.90 |
| CR282 | 260.00 | ....... |
| CR301 | 28.00 | 26.55 |
| CR302 | 40.00 | 37.95 |
| CR303 | 51.00 | 48.45 |
| CR304 | 57.60 | 54.72 |
| CR305 | 73.00 | 69.35 |
| CR306 | 83.00 | 78.85 |
| CR307 | 93.00 | 88.35 |
| CR311 | 30.00 | 28.50 |
| CR312 | 42.00 | 39.90 |
| CR313 | 53.00 | 50.35 |
| CR314 | 64.00 | 60.75 |
| CR315 | 75.00 | 71.25 |
| CR316 | 85.00 | 80.75 |
| CR317 | 95.00 | 90.25 |
| CR321 | 35.00 | 33.25 |
| CR322 | 49.00 | 46.55 |
| CR323 | 62.00 | 58.90 |
| CR324 | 76.00 | 72.20 |
| CR325 | 90.00 | 85.50 |
| CR331 | 37.00 | 35.15 |
| CR332 | 52.00 | 49.40 |
| CR333 | 65.00 | 61.75 |
| CR334 | 79.00 | 75.05 |
| CR335 | 93.00 | 88.35 |
| CR341 | 44.00 | 41.80 |
| CR342 | 61.00 | 57.95 |
| CR343 | 78.00 | 74.10 |
| CR344 | 94.00 | 89.30 |
| CR351 | 46.00 | 43.70 |
| CR352 | 64.00 | 60.80 |
| CR353 | 82.00 | 72.90 |
| CR354 | 98.00 | 93.10 |
| CR401 | 28.00 | 26.60 |
| CR402 | 32.00 | 30.40 |
| CR403 | 44.00 | 41.80 |
| CR404 | 30.00 | 28.50 |
| CR405 | 36.00 | 34.20 |
| CR406 | 54.00 | 51.30 |
| CR407 | 40.00 | 38.00 |
| CR408 | 48.00 | 45.00 |
| CR409 | 64.00 | 60.80 |
| CR501 | 40.00 | 38.00 |
| CR502 | 48.00 | 45.60 |
| CR503 | 50.00 | 47.50 |
| CR504 | 62.00 | 58.90 |
| CR505 | 64.00 | 60.80 |
| CR506 | 84.00 | 79.80 |

# RCA Semiconductor Pricing

| RCA Type | Net Each, Lots of 1-99 | 100-999 | 1000 Up |
|---|---|---|---|
| DA1000 | $28.42 | $23.52 | $19.60 |
| DA1001 | 18.42 | 15.24 | 12.70 |
| DA1002 | 39.15 | 32.40 | 27.00 |
| HC1000, 2000 | 29.00 | 24.00 | 20.00 |
| RCA410 | 3.71 | 2.70 | 2.25 |
| RCA411 | 3.96 | 2.88 | 2.40 |
| RCA413 | 4.12 | 3.00 | 2.50 |
| RCA423 | 4.45 | 3.24 | 2.70 |
| RCA431 | 5.62 | 4.08 | 3.40 |
| SQ2502 | 1.90 | 1.38 | 1.15 |
| SQ2503 | 1.40 | 1.02 | .85 |
| SQ2508 | 1.42 | 1.03 | .86 |
| SQ2519 | 1.32 | .97 | .80 |
| SQ2520 | 1.52 | 1.10 | .92 |
| SQ2521 | 1.62 | 1.18 | .98 |
| SQ2526, 7 | 1.52 | 1.10 | .92 |
| SQ2529, 2534 | 1.42 | 1.03 | .86 |
| SQ2535 | 1.82 | 1.32 | 1.10 |
| SQ2536 | 1.42 | 1.03 | .86 |
| SQ2543 | 2.06 | 1.50 | 1.25 |
| SQ2544, V1 | 2.48 | 1.80 | 1.50 |
| SQ2545, V1 | 1.90 | 1.38 | 1.15 |
| SQ2546 | 1.90 | 1.38 | 1.15 |
| SQ2554, 5 | 1.42 | 1.03 | .86 |
| SQ2556, 7 | 1.40 | 1.02 | .85 |
| SQ2558 | 1.57 | 1.14 | .95 |
| TA2394 | 1.65 | 1.14 | 1.00 |
| TA2415 | 4.95 | 3.42 | 3.00 |
| TA2725 | .83 | .72 | .50 |
| TA3055* | 1.35 | 1.35 | 1.35 |
| TA3056* | 1.45 | 1.45 | 1.45 |
| TA3057* | 1.75 | 1.75 | 1.75 |
| TA5510 | 2.39 | 1.74 | 1.45 |
| TA5577 | 50.00 | 50.00 | 50.00 |
| TA5584 | 15.00 | 15.00 | 15.00 |
| TA5677W | Order CD4033AD | | |
| TA5746, 7 | 15.00 | 15.00 | 15.00 |
| TA5790, 7 | 10.00 | 10.00 | 10.00 |
| TA5884V | Order CD4022AK | | |
| TA5884W | Order CD4022AD | | |
| TA5925W | Order CD4029AD | | |
| TA5939 | 10.65 | 8.82 | 7.35 |
| TA5987 | 6.19 | 4.50 | 3.75 |
| TA5987W | 35.00 | 35.00 | 35.00 |
| TA6022W | 16.00 | 13.30 | 11.00 |
| TA7006 | 10.90 | 9.00 | 7.50 |
| TA7007 | 17.40 | 14.40 | 12.00 |
| TA7036 | 47.85 | 39.60 | 33.00 |
| TA7130* | 15.00 | 15.00 | 15.00 |
| TA7130A* | 20.00 | 20.00 | 20.00 |
| TA7134 | Order 2N6177 | | |
| TA7153 | 2.64 | 1.82 | 1.60 |
| TA7279 | 9.08 | 9.08 | 9.08 |
| TA7280 | 7.84 | 7.84 | 7.84 |
| TA7393 | 11.45 | 9.48 | 7.90 |
| TA7394 | 21.75 | 18.00 | 15.00 |
| TA7395 | 30.40 | 25.15 | 20.95 |
| TA7403 | Order 40836 | | |
| TA7404 | 1.62 | 1.62 | 1.62 |
| TA7405 | 2.06 | 1.50 | 1.25 |
| TA7410 | Order 2N2612 | | |
| TA7476 | 7.00 | 7.00 | 7.00 |
| TA7487 | Order 2N5920 | | |
| TA7486 | 29.00 | 24.00 | 20.00 |
| TA7493 | 26.10 | 21.60 | 18.00 |
| TA7514 | 2.57 | 1.87 | 1.56 |
| TA7526 | 41.35 | 34.20 | 28.50 |
| TA7532 | 45.00 | 45.00 | 45.00 |
| TA7535 | $33.00 | $27.30 | $22.75 |
| TA7554 | Order 2N6178 | | |
| TA7555 | Order 2N6179 | | |
| TA7556 | Order 2N6180 | | |
| TA7557 | Order 2N6181 | | |
| TA7588 | 2.06 | 1.50 | 1.25 |
| TA7589 | Order 2N5954 | | |
| TA7594 | 45.70 | 37.80 | 31.50 |
| TA7606 | 18.85 | 15.60 | 13.00 |
| TA7607 | 50.70 | 42.00 | 35.00 |
| TA7608, R | 20.30 | 16.80 | 14.00 |
| TA7609, R | 55.00 | 45.50 | 38.00 |
| TA7610, R | 23.20 | 19.20 | 16.00 |
| TA7625A | Order HC2000 | | |
| TA7626 | 92.00 | 92.00 | 92.00 |
| TA7626A | 115.00 | 115.00 | 115.00 |
| TA7628 | 312.00 | 258.00 | 215.00 |
| TA7629 | 145.00 | 120.00 | 100.00 |
| TA7630 | 174.00 | 144.00 | 120.00 |
| TA7631 | 145.00 | 120.00 | 100.00 |
| TA7632 | 174.00 | 144.00 | 120.00 |
| TA7646 | 8.25 | 8.25 | 8.25 |
| TA7647 | 11.55 | 11.55 | 11.55 |
| TA7648 | 8.80 | 8.80 | 8.80 |
| TA7649 | 12.10 | 12.10 | 12.10 |
| TA7650 | 12.25 | 12.25 | 12.25 |
| TA7651 | 17.15 | 17.15 | 17.15 |
| TA7652 | 12.80 | 12.80 | 12.80 |
| TA7653 | 17.70 | 17.70 | 17.70 |
| TA7679 | Order 40837 | | |
| TA7680 | 7.00 | 7.00 | 7.00 |
| TA7687 | 87.00 | 72.00 | 60.00 |
| TA7687A | 150.00 | 124.20 | 103.50 |
| TA7688 | 94.50 | 78.00 | 65.00 |
| TA7688A, R | 200.00 | 165.60 | 138.00 |
| TA7689 | 250.00 | 207.00 | 172.50 |
| TA7690 | 217.50 | 180.00 | 150.00 |
| TA7690A, AR | 350.00 | 290.00 | 241.00 |
| TA7691 | 600.00 | 498.00 | 415.00 |
| TA7692 | 650.50 | 540.00 | 450.00 |
| TA7692A | 950.00 | 786.00 | 655.00 |
| TA7699, R | 31.90 | 26.40 | 22.00 |
| TA7703 | 362.00 | 300.00 | 250.00 |
| TA7705 | 74.95 | 62.05 | 51.70 |
| TA7706* | 65.00 | 65.00 | 65.00 |
| TA7707 | 60.00 | 60.00 | 60.00 |
| TA7711 | 29.00 | 24.00 | 20.00 |
| TA7716 | 25.50 | 21.00 | 17.50 |
| TA7719 | Order 2N2611 | | |
| TA7725 | 10.90 | 9.00 | 7.50 |
| TA7731 | 6.20 | 4.50 | 3.75 |
| TA7739 | Order 2N6175 | | |
| TA7740 | Order 2N6176 | | |
| TA7747, 8 | 72.50 | 60.00 | 50.00 |
| TA7750 | 2.40 | 1.74 | 1.45 |
| TA7751* | 2.97 | 2.16 | 1.80 |
| TA7752 | 25.00 | 25.00 | 25.00 |
| TA7753 | 35.00 | 35.00 | 35.00 |
| TA7762R | 14.50 | 12.00 | 10.00 |
| TA7763 | 50.00 | 41.40 | 34.50 |
| TA7764 | 84.85 | 70.20 | 58.50 |
| TA7765 | 100.05 | 82.80 | 69.00 |
| TA7779 | 1.20 | 1.20 | 1.20 |
| TA7787 | 150.10 | 124.20 | 103.50 |
| TA7789 | 500.25 | 414.00 | 345.00 |
| TA7790 | 714.85 | 591.60 | 493.00 |
| TA7791 | 4.95 | 3.60 | 3.00 |
| TA7802 | Order 44003 | | |
| TA7803 | Order 44004 | | |
| TA7804 | Order 44005 | | |
| TA7805 | Order 44006 | | |
| TA7806 | Order 44007 | | |
| TA7821 | $ 9.24 | $ 6.72 | $ 5.60 |
| TA7823 | 9.57 | 6.96 | 5.80 |
| TA7825 | 10.40 | 7.56 | 6.30 |
| TA7830 | 312.00 | 258.00 | 215.00 |
| TA7831 | 145.00 | 120.00 | 100.00 |
| TA7832 | 174.00 | 144.00 | 120.00 |
| TA7833 | 312.00 | 258.00 | 215.00 |
| TA7834 | 145.00 | 120.00 | 100.00 |
| TA7835 | 174.00 | 144.00 | 120.00 |
| TA7837 | 145.00 | 120.00 | 100.00 |
| TA7830 | 312.00 | 258.00 | 215.00 |
| TA7840 | 174.00 | 144.00 | 120.00 |
| TA7841 | 312.00 | 258.00 | 215.00 |
| TA7842 | 174.00 | 144.00 | 120.00 |
| TA7843 | 7.40 | 5.40 | 4.50 |
| TA7863 | 174.00 | 144.00 | 120.00 |
| TA7867 | 50.00 | 41.40 | 34.50 |
| TA7884 | 2.82 | 2.05 | 1.71 |
| TA7885 | 3.04 | 2.21 | 1.84 |
| TA7886 | 1.67 | 1.21 | 1.01 |
| TA7887 | 1.55 | 1.13 | .94 |
| TA7892 | .73 | .53 | .44 |
| TA7893 | .83 | .60 | .50 |
| TA7894 | 1.19 | .87 | .72 |
| TA7895 | 2.03 | 1.48 | 1.23 |
| TA7898 | 2.31 | 1.68 | 1.40 |
| TA7899 | 2.81 | 2.04 | 1.70 |
| TA7900 | 3.96 | 2.88 | 2.40 |
| TA7901 | 6.44 | 4.68 | 3.90 |
| TA7925 | 72.50 | 60.00 | 50.00 |
| TA7926 | 110.00 | 110.00 | 110.00 |
| TA7929 | 174.00 | 144.00 | 120.00 |
| TA7937 | 30.00 | 30.00 | 30.00 |
| TA7938 | 40.00 | 40.00 | 40.00 |
| TA7939 | 45.00 | 45.00 | 45.00 |
| TA7943 | 181.25 | 150.00 | 125.00 |
| TA7955–7 | 21.75 | 18.00 | 15.00 |
| TA7959 | 32.25 | 26.75 | 22.25 |
| TA7960 | 31.50 | 25.50 | 21.25 |
| TA7962 | 2.20 | 1.60 | 1.33 |
| TA7963 | 2.69 | 1.96 | 1.63 |
| TA7964 | 75.00 | 62.00 | 52.00 |
| TA7971 | 3.30 | 2.40 | 2.00 |
| TA7972 | 2.63 | 1.92 | 1.60 |
| TA7982 | 12.30 | 10.15 | 8.45 |
| TA7983 | 14.20 | 11.80 | 9.80 |
| TA7984 | 4.97 | 3.61 | 3.01 |
| TA7985 | 5.61 | 4.08 | 3.40 |
| TA7986 | 8.75 | 6.36 | 5.30 |
| TA7987 | 11.05 | 8.04 | 6.70 |
| TA7993 | 116.00 | 96.00 | 80.00 |
| TA7994 | 145.00 | 120.00 | 100.00 |
| TA7995 | 185.00 | 154.00 | 128.00 |
| TA7996 | Order 44002 | | |
| TA8104 | 7.50 | 7.50 | 7.50 |
| TA8141 | 9.90 | 7.20 | 6.00 |
| TA8158 | 3.10 | 2.26 | 1.88 |
| TA8159 | 3.33 | 2.42 | 2.20 |
| TA8160 | 1.24 | .90 | .75 |
| TA8161 | 1.16 | .85 | .70 |
| TA8162 | 1.00 | .73 | .60 |
| TA8163 | .38 | .28 | .23 |
| TA8164 | .41 | .30 | .25 |
| TA8344 | .68 | .49 | .41 |
| TA8345 | .54 | .40 | .33 |
| TA8346 | .46 | .37 | .28 |
| TA8347 | .48 | .35 | .29 |

*Mounting hardware supplied with device.

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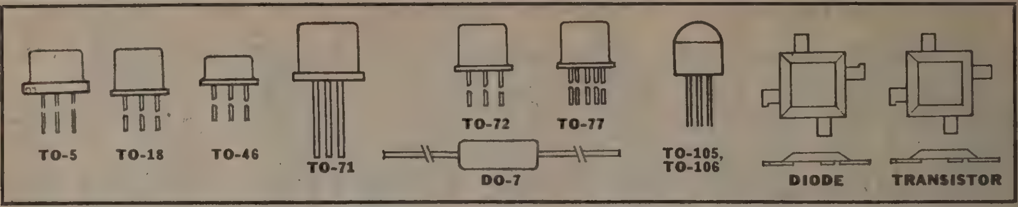
# RAYTHEON Silicon Planar Transistors



## GENERAL PURPOSE AMPLIFIERS

### NPN MEDIUM SPEED

NPN except as otherwise noted.

| Raytheon Number | Case TO- | Max. $V_{CB}$ V | $H_{FE}$ at $I_C$ | | $V_{CE}$ (sat) V | Min. $f_t$ MHz | Net Each, Lots of | |
|---|---|---|---|---|---|---|---|---|
| | | | Min. | mA | | | 1-99 | 100-999 |
| 2N497* | 5 | 60 | 12 | 200 | 5.0 | 40† | $ 1.89 | $ 1.26 |
| 2N657* | 5 | 100 | 30 | 200 | 5.0 | 40† | 2.20 | 1.47 |
| 2N696* | 5 | 60 | 20 | 150 | 1.5 | 40 | .52 | .45 |
| 2N697* | 5 | 60 | 40 | 150 | 1.5 | 50 | .52 | .45 |
| 2N698 | 5 | 120 | 20 | 150 | 5.0 | 40 | 1.57 | 1.05 |
| 2N699 | 5 | 120 | 40 | 150 | 5.0 | 50 | 1.32 | .88 |
| 2N699A | 5 | 120 | 40 | 150 | 5.0 | 50 | 4.90 | 3.25 |
| 2N717 | 18 | 60 | 20 | 150 | 1.5 | 40 | .99 | .66 |
| 2N718 | 18 | 60 | 40 | 150 | 1.5 | 50 | .46 | .40 |
| 2N718A‡ | 18 | 75 | 40 | 150 | 1.5 | 60 | .79 | .68 |
| 2N719 | 18 | 120 | 20 | 150 | 5.0 | 40 | 2.35 | 1.52 |
| 2N720A | 18 | 120 | 40 | 150 | 5.0 | 50 | 1.32 | .88 |
| 2N721§ | 18 | 50 | 20 | 150 | 1.5 | 50 | 1.46 | 1.27 |
| 2N722§ | 18 | 50 | 30 | 150 | 1.5 | 50 | 1.46 | 1.27 |
| 2N871 | 18 | 100 | 100 | 150 | 5.0 | 60 | 5.33 | 3.56 |
| 2N910* | 18 | 100 | 75 | 10 | 1.2 | 60 | 2.10 | 1.40 |
| 2N911* | 18 | 100 | 35 | 10 | 1.2 | 50 | 5.55 | 3.70 |
| 2N912* | 18 | 100 | 15 | 10 | 1.2 | 40 | 4.50 | 3.00 |
| 2N956 | 18 | 75 | 100 | 150 | 1.5 | 70 | .85 | .73 |
| 2N1131*§ | 5 | 50 | 20 | 150 | 1.5 | 50 | 1.46 | 1.27 |
| 2N1132*§ | 5 | 50 | 30 | 150 | 1.5 | 50 | 1.46 | 1.27 |
| 2N1420 | 5 | 60 | 100 | 150 | 1.5 | 50 | .65 | .56 |
| 2N1507 | 5 | 60 | 100 | 150 | 1.5 | 50 | 1.20 | .80 |
| 2N1613‡ | 5 | 75 | 40 | 150 | 1.5 | 60 | .79 | .68 |
| 2N1711‡ | 5 | 75 | 100 | 150 | 1.5 | 70 | .85 | .73 |
| 2N1890‡ | 5 | 100 | 100 | 150 | 5.0 | 60 | 5.30 | 3.55 |
| 2N1893‡ | 5 | 120 | 40 | 150 | 5.0 | 50 | 1.13 | .76 |
| 2N1990 | 5 | 100 | 20 | 30 | 0.5 | 40 | 2.25 | 1.50 |
| 2N2049 | 5 | 75 | 100 | 150 | 0.4 | 50 | 9.45 | 6.30 |
| 2N2102 | 5 | 120 | 40 | 150 | 0.5 | 60 | 1.00 | .67 |
| 2N2102A | 5 | 120 | 40 | 150 | 0.3 | 60 | 1.07 | .80 |
| 2N2192 | 5 | 60 | 100 | 150 | 0.35 | 50 | 3.00 | 2.00 |
| 2N2192A | 5 | 60 | 100 | 150 | 0.25 | 50 | 3.00 | 2.00 |
| 2N2192B | 5 | 60 | 100 | 150 | 0.18 | 50 | 8.50 | 5.00 |
| 2N2193 | 5 | 80 | 40 | 150 | 0.35 | 50 | 2.25 | 1.50 |
| 2N2193A | 5 | 80 | 40 | 150 | 0.25 | 50 | 2.40 | 1.60 |
| 2N2193B | 5 | 80 | 40 | 150 | 0.18 | 50 | 8.50 | 5.00 |
| 2N2194 | 5 | 60 | 20 | 150 | 0.35 | 50 | 1.50 | 1.00 |
| 2N2194A | 5 | 60 | 20 | 150 | 0.25 | 50 | 1.65 | 1.10 |
| 2N2194B | 5 | 60 | 20 | 150 | 0.18 | 50 | 4.50 | 3.00 |
| 2N2195 | 5 | 45 | 20 | 150 | 0.35 | 50 | 1.35 | .90 |
| 2N2195A | 5 | 45 | 20 | 150 | 0.25 | 50 | 1.50 | 1.00 |
| 2N2195B | 5 | 45 | 20 | 150 | 0.18 | 50 | 2.40 | 1.60 |
| 2N2243 | 5 | 120 | 40 | 150 | 0.35 | 50 | 4.80 | 3.20 |
| 2N2243A | 5 | 120 | 40 | 150 | 0.25 | 50 | 5.10 | 3.40 |
| 2N2270 | 5 | 60 | 50 | 150 | 0.9 | 100 | .88 | .59 |
| 2N2297 | 5 | 80 | 40 | 150 | 0.2 | 60 | 5.10 | 3.40 |
| 2N2303§ | 5 | 50 | 75 | 150 | 1.5 | 50 | 8.25 | 5.50 |
| 2N2350 | 46 | 60 | 100 | 150 | 0.35 | 50 | 3.58 | 2.39 |
| 2N2350A | 46 | 60 | 100 | 150 | 0.25 | 50 | 3.75 | 2.50 |
| 2N2351 | 46 | 80 | 40 | 150 | 0.35 | 50 | 3.55 | 2.35 |
| 2N2351A | 46 | 80 | 40 | 150 | 0.25 | 50 | 3.75 | 2.50 |
| 2N2352 | 46 | 60 | 20 | 150 | 0.35 | 50 | 2.95 | 2.87 |
| 2N2352A | 46 | 60 | 20 | 150 | 0.25 | 50 | 3.20 | 2.13 |
| 2N2353 | 46 | 45 | 20 | 150 | 0.35 | 50 | 1.98 | 1.32 |
| 2N2353A | 46 | 45 | 20 | 150 | 0.25 | 50 | 2.13 | 1.42 |
| 2N2405 | 5 | 120 | 60 | 150 | 0.5 | 40† | 1.57 | 1.14 |
| 2N3019‡ | 5 | 140 | 100 | 150 | 0.2 | 100 | 6.00 | 4.00 |
| 2N3020 | 5 | 140 | 40 | 150 | 0.2 | 100 | 4.50 | 3.00 |
| 2N3056 | 46 | 100 | 40 | 150 | 0.25 | 80 | 7.95 | 5.30 |
| 2N3057 | 46 | 100 | 100 | 150 | 0.25 | 100 | 8.40 | 5.60 |
| 2N3700‡ | 18 | 140 | 100 | 150 | 0.2 | 100 | 6.00 | 4.00 |
| 2N3701 | 18 | 140 | 40 | 150 | 0.2 | 80 | 5.70 | 3.80 |

*JAN type available. †Typ. ‡JAN and JANTX type available. §PNP.

### NPN HIGH SPEED

| Raytheon Number | Case TO- | Max. $V_{CB}$ V | $H_{FE}$ at $I_C$ | | $V_{CE}$ (sat) V | Max. $t_{ON}$ nsec | Net Ea., Lot | |
|---|---|---|---|---|---|---|---|---|
| | | | Min. | mA | | | 1-99 | 100-999 |
| 2N2217 | 5 | 60 | 20 | 150 | 0.4 | 35† | $3.00 | $2.00 |
| 2N2218* | 5 | 60 | 40 | 150 | 1.6 | 35† | .75 | .50 |
| 2N2218A* | 5 | 75 | 40 | 150 | 1.6 | 35 | 1.40 | .95 |
| 2N2219* | 5 | 60 | 100 | 150 | 1.6 | 35† | 1.05 | .70 |
| 2N2219A* | 5 | 75 | 100 | 150 | 1.6 | 35 | 5.25 | 3.50 |
| 2N2220 | 18 | 60 | 20 | 150 | 0.4 | 35† | 3.35 | 2.25 |
| 2N2221* | 18 | 60 | 40 | 150 | 1.6 | 35† | .75 | .50 |
| 2N2221A* | 18 | 75 | 40 | 150 | 1.6 | 35 | 1.40 | .95 |
| 2N2222* | 18 | 60 | 100 | 150 | 1.6 | 35† | 1.05 | .70 |
| 2N2222A* | 18 | 75 | 100 | 150 | 1.6 | 35 | 1.40 | .95 |
| 2N2958 | 18 | 60 | 40 | 150 | 0.5 | 95 | 2.25 | 1.50 |
| 2N2959 | 5 | 60 | 100 | 150 | 0.5 | 95 | 2.70 | 1.80 |
| 2N3115 | 18 | 60 | 40 | 150 | 0.5 | 95 | 1.95 | 1.30 |
| 2N3116 | 18 | 60 | 100 | 150 | 0.5 | 95 | 1.45 | .97 |

*JAN and JANTX types available. †Typical.

## GENERAL PURPOSE AMPLIFIERS (CONT'D)

### PNP HIGH SPEED

| Raytheon Number | Case TO- | Max. $V_{CB}$ V | $H_{FE}$ at $I_C$ | | $V_{CE}$ (sat) V | Max. $t_{ON}$ nsec | Net Ea., Lots | |
|---|---|---|---|---|---|---|---|---|
| | | | Min. | mA | | | 1-99 | 100-999 |
| 2N2800 | 5 | 50 | 30 | 150 | 1.2 | 70 | $ 6.75 | $4.50 |
| 2N2801 | 5 | 50 | 75 | 150 | 1.2 | 70 | 7.10 | 4.75 |
| 2N2837 | 18 | 50 | 30 | 150 | 1.2 | 70 | 6.75 | 4.50 |
| 2N2838 | 18 | 50 | 75 | 150 | 1.2 | 70 | 7.10 | 4.75 |
| 2N2904* | 5 | 60 | 40 | 150 | 1.6 | 45 | 1.33 | .89 |
| 2N2904A* | 5 | 60 | 40 | 150 | 1.6 | 45 | 2.45 | 1.62 |
| 2N2905* | 5 | 60 | 100 | 150 | 1.6 | 45 | 1.33 | .89 |
| 2N2905A* | 5 | 60 | 100 | 150 | 1.6 | 45 | 2.80 | 1.88 |
| 2N2906* | 18 | 60 | 40 | 150 | 1.6 | 45 | 1.33 | .89 |
| 2N2906A* | 18 | 60 | 40 | 150 | 1.6 | 45 | 2.33 | 1.55 |
| 2N2907* | 18 | 60 | 100 | 150 | 1.6 | 45 | 1.33 | .89 |
| 2N2907A* | 18 | 60 | 100 | 150 | 1.6 | 45 | 2.70 | 1.80 |
| 2N3485 | 46 | 60 | 40 | 150 | 1.6 | 50 | 8.70 | 5.80 |
| 2N3485A* | 46 | 60 | 40 | 150 | 1.6 | 50 | 12.00 | 8.00 |
| 2N3486 | 46 | 60 | 100 | 150 | 1.6 | 50 | 10.20 | 6.80 |
| 2N3486A* | 46 | 60 | 100 | 150 | 1.6 | 50 | 13.50 | 9.00 |
| 2N3671 | 5 | 60 | 75 | 150 | 1.6 | 50 | 4.50 | 3.00 |
| 2N3672 | 18 | 60 | 75 | 150 | 1.6 | 50 | 4.50 | 3.00 |
| 2N3673 | 46 | 60 | 75 | 150 | 1.6 | 50 | 5.20 | 3.40 |

*JAN and JANTX types available.

## NPN LOW LEVEL AMPLIFIERS

NPN except as otherwise noted.

| Raytheon Number | Case TO- | Max. $V_{CB}$ V | $H_{FE}$ at $I_C$ | | $V_{CE}$ (sat) V | Min. $f_t$ MHz | Net Ea., Lots | |
|---|---|---|---|---|---|---|---|---|
| | | | Min. | mA | | | 1-99 | 100-999 |
| 2N327B* | 5 | 50 | 9 | 3.0 | 0.3 | 2 | $ 2.25 | $ 1.50 |
| 2N328B* | 5 | 50 | 18 | 3.0 | 0.5 | 2 | 4.50 | 3.00 |
| 2N329B* | 5 | 50 | 36 | 3.0 | 0.6 | 2 | 6.50 | 4.35 |
| 2N760 | 18 | 45 | 76 | 1.0 | 1.0 | 50 | 1.80 | 1.20 |
| 2N760A† | 18 | 60 | 76 | 1.0 | 1.0 | 50 | 1.83 | 1.20 |
| 2N929‡ | 18 | 45 | 40 | 0.01 | 1.0 | 30 | 2.25 | 1.50 |
| 2N930‡ | 18 | 45 | 100 | 0.01 | 1.0 | 30 | 2.60 | 1.75 |
| 2N2483 | 18 | 60 | 40 | 0.01 | 0.35 | 60 | 3.00 | 2.00 |
| 2N2484‡ | 18 | 60 | 100 | 0.01 | 0.35 | 60 | 3.30 | 2.20 |
| 2N2604*† | 46 | 60 | 40 | 0.01 | 0.5 | 30 | 3.50 | 2.30 |
| 2N2605*† | 46 | 60 | 100 | 0.01 | 0.5 | 30 | 4.00 | 2.70 |
| 2N3117 | 18 | 60 | 250 | 0.01 | 0.35 | 60 | 6.00 | 4.00 |

*PNP. †JAN type available. ‡JAN and JANTX types available.

## ULTRA-HIGH FREQUENCY AMPLIFIERS (TO-72)

NPN except 2N4080 PNP. Types 2N915, 2N916 and 2N957, case TO-18.

| Raytheon Number | Max. $V_{CB}$ V | $H_{FE}$ at $I_C$ | | Min. $f_t$ MHz | Max. $C_{ob}$ pF | Max. NF at f | | Net Ea., Lots | |
|---|---|---|---|---|---|---|---|---|---|
| | | Min. | mA | | | dB | MHz | 1-99 | 100-999 |
| 2N915 | 70 | 50 | 10 | 250 | 3.5 | 2 | 1 | $2.25 | $1.50 |
| 2N916* | 45 | 50 | 10 | 300 | 6.0 | 2 | 1 | 1.80 | 1.20 |
| 2N917 | 30 | 20 | 3 | 500 | 1.7 | 6 | 60 | 1.27 | .92 |
| 2N918† | 30 | 20 | 3 | 600 | 1.7 | 6 | 60 | 1.41 | 1.02 |
| 2N957 | 40 | 45 | 10 | 200 | 6.0 | 2 | 1 | 3.60 | 2.75 |
| 2N2708 | 35 | 30 | 2 | 700 | 1.0 | 7.5 | 200 | 3.00 | 2.00 |
| 2N2865 | 25 | 20 | 4 | 600 | 2.5 | 4.5 | 200 | 3.30 | 2.20 |
| 2N4080 | 20 | 20 | 3 | 1000 | 1.7 | 6 | 200 | 6.80 | 4.53 |

*JAN type available. †JAN and JANTX types available.

## NPN ULTRA-HIGH SPEED LOGIC SWITCHES (TO-18)

$H_{FE}$ at $I_C = 10$ mA except as otherwise noted.

| Raytheon Number | Max. $V_{CB}$ V | Min. $H_{FE}$ | $V_{CE}$ (sat) V | Min. $f_t$ MHz | Maximum | | Net Ea., Lots | |
|---|---|---|---|---|---|---|---|---|
| | | | | | $t_{ON}$ nsec | $t_{OFF}$ nsec | 1-99 | 100-999 |
| 2N706* | 25 | 20 | 0.2 | 200 | 40† | 75† | $0.46 | $0.40 |
| 2N706A | 25 | 20 | 0.2 | 200 | 40 | 75 | 1.18 | .79 |
| 2N706B | 25 | 20 | 0.2 | 200 | 40 | 75 | 1.48 | .99 |
| 2N708 | 40 | 30 | 0.3 | 300 | 35 | 65 | .49 | .43 |
| 2N2368 | 40 | 20 | 0.6 | 400 | 12 | 15 | 1.07 | .93 |
| 2N2369‡ | 40 | 40 | 0.6 | 500 | 12 | 18 | 1.07 | .93 |
| 2N2369A* | 40 | 40 | 0.5 | 500 | 12 | 18 | 1.65 | 1.10 |
| 2N2894§ | 12 | 40# | 0.5 | 400 | 60 | 90 | 1.95 | 1.30 |
| 2N3011 | 30 | 30 | 0.5 | 400 | 15 | 20 | 1.00 | .67 |
| 2N3012§ | 12 | 30# | 0.5 | 400 | 60 | 75 | 1.95 | 1.30 |

*JAN type available. †Typical. ‡JAN and JANTX types available. §PNP. #$I_C = 30$ mA.

# RAYTHEON SILICON TRANSISTORS AND DIODES

## PNP CHOPPERS (TO-46)

$V_{CE(sat)} = 0.3$ V at $I_C = 10$ mA and $I_B = 2$ mA.

| Raytheon No. | Max. $V_{CB}$ V | Min. $H_{FE}$ at $I_C$ = 1.0 mA | $V_O$ at $I_B$ | | $r_d$ at $I_B$ | | Net Ea., Lots | |
|---|---|---|---|---|---|---|---|---|
| | | | mV | mA | Ohms | mA | 1-99 | 100-999 |
| 2N2946 | 40 | 30 | 2.0 | 1.0 | 45 | 1.0 | $2.88 | $1.92 |
| 2N3217 | 15 | 30 | 2.0 | 0.2 | 30 | 1.0 | 2.55 | 1.70 |
| 2N3218 | 25 | 30 | 2.0 | 0.2 | 50 | 1.0 | 2.25 | 1.50 |
| 2N3219 | 40 | 20 | 3.0 | 0.2 | 60 | 1.0 | 2.55 | 1.70 |
| 2N3910 | 60 | 40 | 0.8 | 0.2 | 15 | 1.0 | 3.93 | 2.62 |
| 2N3911 | 60 | 60 | 0.5 | 0.2 | 10 | 1.0 | 4.05 | 2.70 |

## PNP CORE DRIVERS (TO-5)

PNP except 2N3253 NPN. 2N3467 available as JAN.

| Raytheon Number | Max. $V_{CB}$ V | $H_{FE}$ at $I_C$ | | $V_{CE(sat)}$ at $I_C$ | | Min. $f_t$ MHz | Net Ea., Lots | |
|---|---|---|---|---|---|---|---|---|
| | | Min. | mA | V | mA | | 1-99 | 100-999 |
| 2N3244 | 40 | 50 | 500 | 0.5 | 500 | 175 | $15.75 | $10.50 |
| 2N3245 | 50 | 30 | 500 | 0.6 | 500 | 150 | 15.75 | 10.50 |
| 2N3253 | 75 | 25 | 375 | 0.6 | 500 | 175 | 9.75 | 6.50 |
| 2N3467* | 40 | 40 | 500 | 0.5 | 500 | 175 | 9.75 | 6.50 |

*JAN type available.

## NPN DIFFERENTIAL AMPLIFIERS (TO-77)

Ambient $P_D = 300$ mW one side (2N2060–2N2223A, 500 mW) and 600 mW both sides. ΔT −55° C to +125° C.

| Raytheon No. | Max. $V_{CE}$ V | One Side at 25° C | | | | Tracking $\Delta V_{BE}$ | Net Each, Lots of | |
|---|---|---|---|---|---|---|---|---|
| | | $H_{FE}$ at $I_C$ | | Matching | | $\Delta T$ | | |
| | | Min. | mA | $H_{FE}$ % | $V_{BE}$ mV | µV/° C | 1-99 | 100-999 |
| 2N2060* | 60 | 30 | 0.1 | 10 | 5 | 10 | $ 6.75 | $ 4.50 |
| 2N2223 | 60 | 25 | 0.1 | 20 | 15 | 25 | 4.45 | 3.30 |
| 2N2223A | 60 | 25 | 0.1 | 10 | 5 | 25 | 5.85 | 3.90 |
| 2N2453 | 30 | 150 | 1.0 | 10 | 3 | 10 | 9.35 | 6.25 |
| 2N2639 | 45 | 50 | 0.01 | 10 | 5 | 10 | 6.75 | 4.50 |
| 2N2640 | 45 | 50 | 0.01 | 20 | 10 | 20 | 4.00 | 3.00 |
| 2N2641 | 45 | 50 | 0.01 | … | … | … | 3.00 | 2.00 |
| 2N2642* | 45 | 100 | 0.01 | 10 | 5 | 10 | 24.00 | 16.00 |
| 2N2643 | 45 | 100 | 0.01 | 20 | 10 | 20 | 4.50 | 3.00 |
| 2N2644 | 45 | 100 | 0.01 | … | … | … | 5.00 | 3.50 |
| 2N2903A | 30 | 125 | 1.0 | 10 | 5 | 10 | 7.20 | 4.80 |
| 2N2913 | 45 | 60 | 0.01 | … | … | … | 2.00 | 1.50 |
| 2N2914 | 45 | 150 | 0.01 | … | … | … | 2.25 | 1.50 |
| 2N2915 | 45 | 60 | 0.01 | 10 | 3 | 10 | 5.40 | 4.00 |
| 2N2916 | 45 | 150 | 0.01 | 10 | 3 | 10 | 6.75 | 4.50 |
| 2N2917 | 45 | 60 | 0.01 | 20 | 5 | 20 | 2.70 | 2.00 |
| 2N2918 | 45 | 150 | 0.01 | 20 | 5 | 20 | 3.75 | 2.50 |
| 2N2919 | 60 | 60 | 0.01 | 10 | 3 | 10 | 4.70 | 3.50 |
| 2N2920* | 60 | 150 | 0.01 | 10 | 3 | 10 | 8.00 | 6.00 |
| 2N2936 | 55 | 100 | 0.01 | 10 | 5 | 10 | 22.00 | 14.00 |
| 2N2937 | 55 | 100 | 0.01 | … | … | … | 12.00 | 8.00 |

*JAN and JANTX types available.

Same as above except: in TO-71 case; ambient $P_D = 250$ mW one side and 300 mW both sides.

| Raytheon No. | Max. $V_{CE}$ V | One Side at 25° C | | | | Tracking $\Delta V_{BE}$ | Net Each, Lots of | |
|---|---|---|---|---|---|---|---|---|
| | | $H_{FE}$ at $I_C$ | | Matching | | $\Delta T$ | | |
| | | Min. | mA | $H_{FE}$ % | $V_{BE}$ mV | µV/° C | 1-99 | 100-999 |
| 2N2972 | 45 | 60 | 0.01 | … | … | … | $ 2.35 | $1.75 |
| 2N2973 | 45 | 150 | 0.01 | … | … | … | 11.60 | 7.75 |
| 2N2974 | 45 | 60 | 0.01 | 10 | 3 | 10 | 6.75 | 4.50 |
| 2N2975 | 45 | 150 | 0.01 | 10 | 3 | 10 | 9.00 | 6.00 |
| 2N2976 | 45 | 60 | 0.01 | 20 | 5 | 20 | 4.70 | 3.40 |
| 2N2977 | 45 | 150 | 0.01 | 20 | 5 | 20 | 6.00 | 4.00 |
| 2N2978 | 60 | 60 | 0.01 | 10 | 3 | 10 | 7.50 | 6.00 |
| 2N2979 | 60 | 150 | 0.01 | 10 | 3 | 10 | 8.50 | 6.50 |

## NPN DARLINGTON AMPLIFIERS

| Raytheon Number | Case TO- | Max. $V_{CE}$ V | $H_{FE}$ at $I_C$ | | $V_{CE(sat)}$ at $I_C/I_B$ | | Net Ea., Lots | |
|---|---|---|---|---|---|---|---|---|
| | | | Min. | mA | V | mA/mA | 1-99 | 100-999 |
| 2N997 | 18 | 40 | 7000 | 100 | 1.6 | 100/10 | $10.50 | $7.00 |
| 2N998 | 72 | 60 | 1600 | 10 | 1.8 | 100/10 | 10.50 | 7.00 |
| 2N999 | 72 | 60 | 7000 | 100 | 1.6 | 100/10 | 14.85 | 9.90 |

## GENERAL PURPOSE SILICON DIODES (DO-7)

$I_F$ at $V_F = 1.0$ volt except as otherwise noted.

| Raytheon No. | Min. | | Net Each | | Raytheon No. | Min. | | Net Each | |
|---|---|---|---|---|---|---|---|---|---|
| | $BV_R$ V | $I_F$ mA | 1-99 | 100-999 | | $BV_R$ V | $I_F$ mA | 1-99 | 100-999 |
| 1N456 | 30 | 40 | $0.33 | $0.22 | 1N482B | 40 | 100 | $0.50 | $0.34 |
| 1N456A | 30 | 100 | .36 | .24 | 1N483 | 80 | 100† | .50 | .34 |
| 1N457* | 70 | 20 | .35 | .24 | 1N483A | 80 | 100 | .50 | .34 |
| 1N457A | 70 | 100 | .35 | .24 | 1N483B‡ | 80 | 100 | .50 | .34 |
| 1N458* | 150 | 7 | .45 | .30 | 1N484 | 150 | 100† | .50 | .34 |
| 1N458A | 150 | 100 | .48 | .32 | 1N484A | 150 | 100 | .50 | .34 |
| 1N459* | 200 | 3 | .45 | .30 | 1N484B | 150 | 100 | .50 | .34 |
| 1N459A | 200 | 100 | .50 | .34 | 1N485 | 200 | 100† | .57 | .38 |
| 1N461 | 30 | 15 | .33 | .22 | 1N485A | 200 | 100 | .58 | .39 |
| 1N461A | 30 | 100 | .35 | .24 | 1N485B‡ | 200 | 100 | .58 | .39 |
| 1N462 | 70 | 5 | .35 | .24 | 1N486 | 250 | 100† | .80 | .54 |
| 1N462A | 70 | 100 | .38 | .26 | 1N486A | 250 | 100 | .80 | .54 |
| 1N463 | 200 | 1 | .43 | .29 | 1N486B‡ | 250 | 100 | .80 | .54 |
| 1N463A | 200 | 100 | .45 | .30 | 1N487 | 330 | 100† | .90 | .60 |
| 1N464 | 150 | 3 | .45 | .30 | 1N487A | 330 | 100 | 1.10 | .73 |
| 1N464A | 150 | 100 | .45 | .30 | 1N488 | 420 | 100† | 1.05 | .70 |
| 1N482 | 40 | 100† | .47 | .32 | 1N488A | 420 | 100 | 1.54 | 1.03 |
| 1N482A | 40 | 100 | .50 | .34 | | | | | |

*JAN type available; price on request. †$V_F = 1.1$ V. ‡JAN and JANTX types available; prices on request.

## SILICON PLANAR DIODES

In JEDEC DO-7; standard EIA color code band starting at cathode end. Complete specifications on request.

### ULTRA HIGH SPEED SWITCHING

| Raytheon No. | Net Ea., Lots | | Raytheon No. | Net Ea., Lots | |
|---|---|---|---|---|---|
| | 1-99 | 100-999 | | 1-99 | 100-999 |
| 1N903 | $0.60 | $0.40 | 1N916 | $0.45 | $0.30 |
| 1N903A | .75 | .50 | 1N916A | .50 | .34 |
| 1N904 | .60 | .40 | 1N916B | .40 | .27 |
| 1N904A | .75 | .50 | 1N3062 | 1.05 | .70 |
| 1N905 | .60 | .40 | 1N3063 | .60 | .40 |
| 1N905A | .75 | .50 | 1N3064 | .23 | .16 |
| 1N906 | .60 | .40 | JAN1N3064 | .23 | .16 |
| 1N906A | .75 | .50 | JANTX1N3064 | 2.10 | 1.40 |
| 1N907 | .60 | .40 | 1N3065 | 1.35 | .90 |
| 1N907A | .75 | .50 | 1N3066 | 1.05 | .70 |
| 1N908 | .70 | .47 | 1N3067 | .30 | .20 |
| 1N908A | .80 | .54 | 1N3068 | .30 | .20 |
| 1N914 | .30 | .20 | 1N3069 | .30 | .20 |
| JAN1N914 | .30 | .20 | 1N3596 | 3.00 | 2.00 |
| JANTX1N914 | 1.80 | 1.20 | 1N3598 | .75 | .50 |
| 1N914A | .36 | .24 | 1N3605 | .60 | .40 |
| 1N914B | .75 | .50 | 1N3606 | .75 | .50 |

Same as above except high conductance types.

| | | | | | |
|---|---|---|---|---|---|
| 1N3298 | $3.50 | $2.33 | 1N3730 | $5.55 | $3.70 |
| 1N3600 | 2.25 | 1.50 | 1N4308 | 3.00 | 2.00 |
| 1N3604 | .70 | .46 | | | |

### HIGH SPEED SWITCHING

| Raytheon No. | Net Ea., Lots | | Raytheon No. | Net Ea., Lots | |
|---|---|---|---|---|---|
| | 1-99 | 100-999 | | 1-99 | 100-999 |
| 1N251 | $0.30 | $0.20 | 1N3070 | $1.20 | $0.80 |
| JAN1N251 | .30 | .20 | JAN1N3070 | 1.20 | .80 |
| 1N252 | .65 | .44 | JANTX1N3070 | 3.00 | 2.00 |
| 1N925 | .30 | .20 | 1N3071 | 2.70 | 1.80 |
| 1N926 | .30 | .20 | 1N3485 | 2.25 | 1.50 |
| 1N927 | .30 | .20 | 1N3599 | 2.25 | 1.50 |
| 1N298 | .45 | .30 | | | |

### MEDIUM SPEED SWITCHING

| Raytheon No. | Net Ea., Lots | | Raytheon No. | Net Ea., Lots | |
|---|---|---|---|---|---|
| | 1-99 | 100-999 | | 1-99 | 100-999 |
| 1N643 | $0.90 | $0.60 | 1N799 | $0.45 | $0.30 |
| JAN1N643 | .90 | .60 | 1N800 | .45 | .30 |
| 1N643A | .90 | .60 | 1N801 | .45 | .30 |
| 1N658 | 1.35 | .90 | 1N802 | .45 | .30 |
| JAN1N658 | 1.35 | .90 | 1N803 | 1.50 | 1.00 |
| 1N658A | 1.98 | 1.32 | 1N804 | 1.50 | 1.00 |
| 1N659 | .45 | .30 | 1N806 | .45 | .30 |
| 1N659A | 1.50 | 1.00 | 1N807 | .75 | .50 |
| 1N660 | .45 | .30 | 1N808 | .75 | .50 |
| 1N661 | .96 | .64 | 1N809 | 2.00 | 1.33 |
| 1N662 | .24 | .16 | 1N811 | .45 | .30 |
| JAN1N662 | .24 | .16 | 1N812 | .45 | .30 |
| 1N662A | .60 | .40 | 1N813 | .30 | .20 |
| 1N663 | .57 | .38 | 1N814 | .80 | .54 |
| JAN1N663 | .57 | .38 | 1N815 | .45 | .30 |
| 1N663A | .60 | .40 | 1N818 | .30 | .20 |
| 1N778 | .75 | .50 | 1N837, A | 1.35 | .90 |
| 1N779 | 1.50 | 1.00 | 1N838 | 1.50 | 1.00 |
| 1N789 | .30 | .20 | 1N839 | 2.00 | 1.33 |
| 1N790 | .30 | .20 | 1N840 | 1.50 | 1.00 |
| 1N791 | .30 | .20 | 1N841 | 2.00 | 1.33 |
| 1N792 | .75 | .50 | 1N842 | 2.00 | 1.33 |
| 1N793 | .30 | .20 | 1N843 | 2.00 | 1.33 |
| 1N794 | .30 | .20 | 1N844 | 1.35 | .90 |
| 1N795 | .30 | .20 | 1N845 | 4.00 | 2.67 |
| 1N796 | .45 | .30 | 1N891 | .30 | .20 |
| 1N797 | .45 | .30 | 1N892 | 2.45 | 1.64 |
| 1N798 | .45 | .30 | 1N893 | 3.00 | 2.00 |

Same as above except high conductance types.

| | | | | | |
|---|---|---|---|---|---|
| 1N697 | $2.80 | $2.10 | 1N921 | $4.75 | $3.18 |
| JAN1N697 | 4.20 | 2.80 | 1N922 | 6.75 | 4.52 |
| 1N920 | 4.15 | 2.78 | 1N923 | 6.80 | 4.53 |

### SWITCHING

| Raytheon No. | Net Ea., Lots | | Raytheon No. | Net Ea., Lots | |
|---|---|---|---|---|---|
| | 1-99 | 100-999 | | 1-99 | 100-999 |
| 1N625 | $0.30 | $0.20 | 1N934 | $2.25 | $1.50 |
| 1N626 | .30 | .20 | 1N3595 | 1.95 | 1.30 |
| 1N627 | .30 | .20 | JAN1N3595 | 3.00 | 2.00 |
| 1N628 | .60 | .40 | 1N3864 | 4.05 | 2.70 |
| 1N629 | .67 | .45 | | | |

Same as above except high conductance types.

| | | | | | |
|---|---|---|---|---|---|
| 1N676 | $0.75 | $0.50 | JAN1N691 | $3.38 | $2.25 |
| 1N678 | 1.00 | .67 | 1N692 | 4.28 | 2.85 |
| 1N690 | 2.86 | 1.92 | 1N693 | 6.00 | 4.00 |
| 1N691 | 3.38 | 2.25 | | | |

**LARGER QUANTITY PRICES ON REQUEST**

# RAYTHEON Transistors and Diodes

## RAYPLASTIC AMPLIFIER TRANSISTORS

### NPN-PNP GENERAL PURPOSE (TO-116)

NPN except as otherwise noted.

| Raytheon Number | Maximum | | $h_{FE}$ at $I_C$ | | Min. $f_t$ MHz | Max. $C_{ob}$ pF | Net Ea., Lots | |
|---|---|---|---|---|---|---|---|---|
| | $BV_{CBO}$ V | $V_{CE(sat)}$ V | Min. | mA | | | 1-99 | 100-999 |
| 2N3567* | 80 | 0.25 | 40 | 150 | 60 | 20 | $0.24 | $0.18 |
| 2N3568* | 80 | 0.25 | 40 | 150 | 60 | 20 | .34 | .26 |
| 2N3569* | 80 | 0.25 | 100 | 150 | 60 | 20 | .30 | .22 |
| 2N3691 | 35 | 0.7 | 40 | 10 | 200 | 2.5 | .30 | .22 |
| 2N3692 | 35 | 0.7 | 100 | 10 | 200 | 3.5 | .30 | .22 |
| 2N3693 | 45 | ........ | 40 | 10 | 200 | 6 | .30 | .22 |
| 2N3694 | 45 | ........ | 100 | 10 | 200 | 6 | .30 | .22 |
| 2N4964† | 50 | 0.4 | 30 | 10‡ | 60 | 8 | .34 | .25 |
| 2N4971† | 50 | 0.4 | 40 | 150 | 200 | 8 | .41 | .30 |
| 2N4972† | 50 | 0.4 | 100 | 150 | 200 | 8 | .41 | .30 |

### NPN-PNP LOW LEVEL (TO-106)

NPN except as otherwise noted.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2N3565 | 30 | 0.35 | 150 | 1 | 40 | 4 | $0.22 | $0.16 |
| 2N4248† | 40 | 0.25 | 50 | 100‡ | ....... | 6 | .22 | .16 |
| 2N4249† | 60 | 0.25 | 100 | 100‡ | ....... | 6 | .27 | .20 |
| 2N4250 | 40 | 0.25 | 250 | 100‡ | ....... | 6 | .33 | .24 |
| 2N4965† | 50 | 0.4 | 80 | 10‡ | 60 | 8 | .35 | .26 |
| 2N4966 | 50 | 0.4 | 40 | 10‡ | 40 | 6 | .35 | .26 |
| 2N4967 | 50 | 0.4 | 100 | 10‡ | 40 | 6 | .35 | .26 |
| 2N4968 | 30 | 0.4 | 40 | 10‡ | 40 | 6 | .35 | .26 |
| 2N5133 | 20 | 0.4 | 60 | 1 | 40 | 5.0 | .19 | .14 |
| 2N5138† | 30 | 0.3 | 50 | 100‡ | 30 | 7 | .19 | .14 |

*TO-105 case. †PNP. ‡μA.

### NPN GENERAL PURPOSE HIGH SPEED

| Raytheon Number | TO- | Maximum | | $h_{FE}$ at $I_C$ | | Max. $T_{ON}$ nsec | Net Ea., Lots | |
|---|---|---|---|---|---|---|---|---|
| | | $BV_{CBO}$ V | $V_{CE(sat)}$ V | Min. | mA | | 1-99 | 100-999 |
| 2N3641 | 105 | 60 | 0.22 | 40 | 150 | 8* | $0.30 | $0.22 |
| 2N3642 | 105 | 60 | 0.22 | 40 | 150 | 8* | .30 | .22 |
| 2N3643 | 105 | 60 | 0.22 | 100 | 150 | 8* | .30 | .22 |
| 2N4141 | 106 | 60 | 0.4 | 100 | 150 | 50 | .35 | .26 |
| 2N4436 | 106 | 60 | 0.22 | 40 | 150 | 60 | .38 | .28 |
| 2N4437 | 106 | 60 | 0.22 | 100 | 150 | 60 | .51 | .38 |
| 2N5128 | 105 | 15 | 0.25 | 35 | 50 | 10* | .19 | .14 |
| 2N5129 | 106 | 15 | 0.25 | 35 | 50 | 10* | .22 | .16 |

### PNP GENERAL PURPOSE HIGH SPEED

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2N3638 | 105 | 25 | 1.0 | 30 | 50 | 75 | $0.29 | $0.18 |
| 2N3638A | 105 | 25 | 1.0 | 20 | 300 | 75 | .27 | .20 |
| 2N3644 | 105 | 45 | 1.0 | 100 | 150 | 40 | .33 | .24 |
| 2N3645 | 105 | 60 | 1.0 | 100 | 150 | 50 | .33 | .24 |
| 2N4143 | 106 | 30 | 0.4 | 100 | 150 | 50 | .35 | .26 |
| 2N4916 | 106 | 30 | 0.3 | 70 | 10 | 40 | .30 | .22 |
| 2N4917 | 106 | 30 | 0.3 | 150 | 10 | 40 | .33 | .24 |
| 2N5139 | 106 | 20 | 0.5 | 15 | 50 | 50 | .19 | .14 |
| 2N5142 | 105 | 20 | 2.0 | 15 | 300 | 100 | .22 | .16 |
| 2N5143 | 105 | 20 | 2.0 | 15 | 300 | 100 | .22 | .16 |

*Max. CX, pF.

### NPN-PNP RF (TO-106)

NPN except as otherwise noted.

| Raytheon Type | Maximum | | $h_{FE}$ at $I_g$ | | Min. $f_t$ MHz | Max. $C_{ob}$ pF | Net Ea., Lots | |
|---|---|---|---|---|---|---|---|---|
| | $BV_{CBO}$ V | $V_{CE(sat)}$ V | Min. | mA | | | 1-99 | 100-999 |
| 2N3563 | 30 | ........ | 20 | 8 | 600 | 1.7 | $0.27 | $0.20 |
| 2N3564 | 30 | 0.3 | 20 | 15 | 400 | 3.5 | .30 | .22 |
| 2N4121* | 40 | 0.3 | 70 | 10 | 400 | 4.5 | .27 | .20 |
| 2N4122* | 40 | 0.3 | 150 | 10 | 450 | 4.5 | .30 | .22 |

### NPN GENERAL PURPOSE MEDIUM SPEED (TO-106)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2N4944 | 80 | 0.25 | 40 | 150 | 60 | 25 | $0.36 | $0.27 |
| 2N4945 | 80 | 0.25 | 40 | 150 | 60 | 20 | .38 | .28 |
| 2N4946 | 80 | 0.25 | 100 | 150 | 60 | 25 | .41 | .30 |
| 2N5135† | 30 | 1.0 | 50 | 10 | 40 | 25 | .19 | .14 |
| 2N5136† | 30 | 0.25 | 20 | 150 | 40 | 35 | .22 | .16 |
| 2N5137 | 30 | 0.25 | 20 | 150 | 40 | 35 | .22 | .16 |

### NPN HF-UHF (TO-106)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2N5126 | 20 | 2.0 | 20 | 4 | 300 | 1.6 | $0.27 | $0.20 |
| 2N5127 | 20 | 0.3 | 15 | 2 | 150 | 3.5 | .24 | .18 |
| 2N5130 | 30 | 0.6 | 15 | 8 | 450 | 1.7 | .19 | .14 |
| 2N5131 | 20 | 1.0 | 30 | 10 | 100 | 6 | .22 | .16 |
| 2N5132 | 20 | 0.2 | 30 | 10 | 200 | 3.5 | .19 | .14 |

### NPN RF-AGC (TO-106)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2N3688 | 40 | ........ | 30 | 4 | 400 | 1.6 | $0.41 | $0.30 |
| 2N3689 | 40 | ........ | 30 | 4 | 400 | 1.6 | .41 | .30 |
| 2N3690 | 40 | ........ | 30 | 4 | 400 | 1.6 | .47 | .35 |

*PNP. †TO-105 case.

## RAYPLASTIC NPN SWITCHES (TO-106)

| Raytheon Type | Maximum | | $h_{FE}$ at $I_C$ | | Min. $f_t$ MHz | Maximum | | Net Each | |
|---|---|---|---|---|---|---|---|---|---|
| | $BV_{CBO}$ V | $V_{CE(sat)}$ V | Min. | mA | | $T_{ON}$ ns | $T_{OFF}$ ns | 1-99 | 100-999 |
| 2N3646 | 40 | 0.5 | 30 | 30 | 300 | 18 | 28 | $0.27 | $0.20 |
| 2N4274 | 30 | 0.5 | 35 | 10 | 400 | 12 | 12 | .27 | .20 |
| 2N4275 | 40 | 0.5 | 35 | 10 | 400 | 12 | 12 | .27 | .20 |
| 2N4969 | 50 | 0.4 | 40 | 150 | 200 | 55 | 380 | .35 | .26 |
| 2N4970 | 50 | 0.4 | 100 | 150 | 200 | 65 | 440 | .38 | .28 |
| 2N5134 | 20 | 0.25 | 20 | 10 | 250 | 18 | 18 | .19 | .14 |

## NPN-PNP TYPES AVAILABLE

**Data sheets and pricing on request.**

### NPN GP MEDIUM SPEED AMPLIFIERS

| Raytheon Number | Raytheon Number | Raytheon Number | Raytheon Number | Raytheon Number | Raytheon Number |
|---|---|---|---|---|---|
| 2N498* | 2N870 | 2N2868 | 2N2898 | 2N3057A† | 2N3110 |
| 2N656* | 2N1889 | 2N2895 | 2N2899 | 2N3107 | 2N3122 |
| 2N699B | 2N1893A | 2N2896 | 2N2900 | 2N3108 | 2N3388 |
| 2N720 | 2N2364, A | 2N2897 | 2N3056A | 2N3109 | |

### NPN GENERAL PURPOSE HIGH SPEED AMPLIFIERS

| | | | | | |
|---|---|---|---|---|---|
| 2N3299 | 2N3300 | 2N3301 | 2N3302 | 2N3326 | .......... |

### PNP GENERAL PURPOSE HIGH SPEED AMPLIFIERS

| | | | | | |
|---|---|---|---|---|---|
| 2N2695 | 2N3073 | 2N3133 | 2N3136 | 2N3251 | 2N3503 |
| 2N2696 | 2N3120 | 2N3134 | 2N3250 | 2N3251A† | 2N3504 |
| 2N3072 | 2N3121 | 2N3135 | 2N3250A† | 2N3502 | 2N3505 |

### NPN LOW LEVEL AMPLIFIERS

| | | | | | |
|---|---|---|---|---|---|
| 2N930A | 2N2484A | 2N2509 | 2N2510 | 2N2511 | 2N2586 |

### PNP LOW LEVEL AMPLIFIERS

| | | | | | |
|---|---|---|---|---|---|
| 2N327A | 2N328A | 2N329A* | 2N2861 | 2N2862 | .......... |

### NPN-PNP ULTRA HIGH SPEED LOGIC SWITCHES

NPN except 2N869A, 2N3209, PNP.

| | | | | | |
|---|---|---|---|---|---|
| 2N706C | 2N744 | 2N784 | 2N834A | 2N2205 | 2N3209 |
| 2N743 | 2N744A | 2N784A | 2N835 | 2N2481† | 2N3210 |
| 2N743A | 2N783 | 2N834 | 2N869A | 2N3010 | 2N4137 |

### NPN CORE DRIVERS

| | | | | | |
|---|---|---|---|---|---|
| 2N2410 | 2N3252 | 2N3722 | 2N3725 | 2N3735† | 2N4046 |
| 2N2476 | 2N3444 | 2N3724 | 2N3725A | 2N3830 | 2N4047 |
| 2N2477 | 2N3554 | 2N3724A | 2N3734 | 2N3831 | .......... |

### PNP CORE DRIVERS

| | | | | | |
|---|---|---|---|---|---|
| 2N3468 | 2N3762 | 2N3763† | 2N4030 | 2N4032 | 2N5022, 3 |

### NPN DIFFERENTIAL AND DUAL AMPLIFIERS

| | | | | | |
|---|---|---|---|---|---|
| 2N2060A | 2N2903 | 2N2919A | 2N2981 | 2N3044–2N3048 | 2N3424 |
| 2N2480, A | 2N2915A | 2N2920A | 2N2982 | | 2N3728 |
| 2N2652, A | 2N2916A | 2N2980 | 2N3043 | 2N3423 | 2N3729 |

### PNP DIFFERENTIAL AND DUAL AMPLIFIERS

| | | | | | |
|---|---|---|---|---|---|
| 2N2802–2N2807 | 2N3726 | 2N3804, A | 2N3810* | 2N3812–2N3816 | 2N4937–2N4942 |
| | 2N3727 | 2N3805, A | 2N3810A | | |
| 2N3347–2N3352 | 2N3800–2N3803 | 2N3806–2N3809 | 2N3811* | 2N3816A | .......... |
| | | | 2N3811A | 2N3817, A | .......... |

*JAN type available. †JAN and JANTX types available.

### MANY OTHER TYPES AVAILABLE FROM RAYTHEON— WRITE OR CALL FOR INFORMATION

## SILICON BEAM LEAD PRODUCTS

New four-beam lead configuration on diode and transistor beam lead devices. Silicon Nitride passivation coat gives complete hermetic sealing to all junctions. Data sheets on request.

### DIODES

| Raytheon Number | Description | Net Ea., Lots | |
|---|---|---|---|
| | | 26-75 | 100-975 |
| BD914 | High speed switching | $1.10 | $0.75 |
| BD3600 | | 1.40 | .95 |

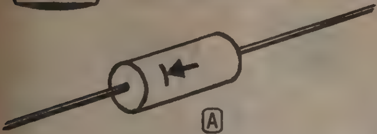
### NPN TRANSISTORS

| | | | |
|---|---|---|---|
| BT706 | Ultra high speed switch | $1.50 | $1.00 |
| BT918 | Ultra high frequency amplifier | 1.15 | .80 |
| BT929 | Low level amplifier | 1.25 | .85 |
| BT930 | Low level amplifier | 1.40 | .95 |
| BT2218 | General purpose/high speed | 1.50 | 1.00 |
| BT2218A | | 1.80 | 1.20 |
| BT2219 | | 1.85 | 1.25 |
| BT2219A | | 2.25 | 1.50 |
| BT2221 | | 1.50 | 1.00 |
| BT2221A | | 1.80 | 1.20 |
| BT2222 | | 1.85 | 1.25 |
| BT2222A | | 2.25 | 1.50 |
| BT2369 | Ultra high speed switch | 2.10 | 1.40 |
| BT2369A | | 2.25 | 1.50 |
| BT2483 | Low level amplifier | 1.40 | .95 |
| BT2484 | | 1.65 | 1.10 |

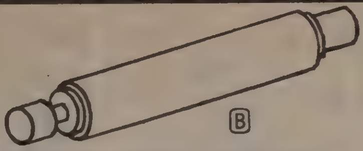
### PNP TRANSISTORS

| | | | |
|---|---|---|---|
| BT2604 | Low level amplifier | $1.25 | $0.85 |
| BT2605 | | 1.65 | 1.10 |
| BT2894 | Ultra high speed switch | 1.55 | 1.05 |
| BT2904 | General purpose/high speed | 1.35 | .90 |
| BT2904A | | 1.50 | 1.00 |
| BT2905 | | 1.60 | 1.05 |
| BT2905A | | 1.70 | 1.15 |
| BT2906 | | 1.35 | .90 |
| BT2906A | | 1.50 | 1.00 |
| BT2907 | | 1.60 | 1.05 |
| BT2907A | | 1.70 | 1.15 |
| BT2944 | Chopper | 3.35 | 2.25 |
| BT2946 | | 2.60 | 1.75 |

# SARKES TARZIAN SILICON AND SELENIUM RECTIFIERS



A



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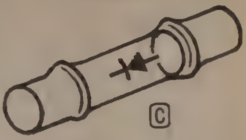


C

## HIGH VOLTAGE SILICON RECTIFIERS

### AXIAL LEAD (FIG. A)

Epoxy-sealed phenolic tube construction with 2" lg. (min.) axial leads. Body dia., .375".

| JEDEC No. | S-T No. | PIV V | Max. mADC at 55° C mA | Body Size, In. Lgth. x Dia. | Net Each |
|---|---|---|---|---|---|
| 1N1730 | S-5518 | 1000 | 200 | .5 x .375 | $ 3.10 |
| 1N1731 | S-5519 | 1500 | 200 | .5 x .375 | 3.60 |
| 1N1732 | S-5520 | 2000 | 200 | 1 x .375 | 4.50 |
| 1N1733 | S-5521 | 3000 | 150 | 1 x .375 | 5.75 |
| 1N1734 | S-5522 | 5000 | 100 | 1 x .375 | 8.40 |
| 1N2373 | S-5523 | 600 | 250 | .5 x .375 | 1.25 |
| 1N2374 | S-5524 | 1000 | 250 | .5 x .375 | 2.10 |
| 1N2375 | S-5525 | 1500 | 200 | .5 x .375 | 2.10 |
| 1N2376 | S-5526 | 2000 | 200 | .9 x .375 | 2.90 |
| 1N2377 | S-5527 | 2400 | 150 | .9 x .375 | 3.35 |
| 1N2378 | S-5528 | 3000 | 150 | 1 x .375 | 4.20 |
| 1N2379 | S-5529 | 4000 | 100 | 1.25 x .375 | 5.00 |
| 1N2380 | S-5530 | 6000 | 100 | 2.5 x .375 | 7.10 |
| 1N2381 | S-5531 | 10000 | 75 | 2.5 x .375 | 11.40 |
| 1N2382 | S-5532 | 4000 | 150 | 1 x .375 | 6.80 |
| 1N2383 | S-5533 | 6000 | 100 | 1.5 x .375 | 7.30 |
| 1N2384 | S-5534 | 8000 | 70 | 1.5 x .375 | 9.35 |
| 1N2385 | S-5535 | 10000 | 70 | 2 x .375 | 12.00 |

### HVC SERIES AXIAL LEAD (FIG. A)

| S-T No. | Max. PIV V | Max. Avg. Rect. Cur. (55° C) mA | Max. Fwd. V Drop at Rated Cur. | Body Lgth., In. | Net Each |
|---|---|---|---|---|---|
| HVC180 | 1800 | 250 | 4 VDC | 9/16 | $ 3.35 |
| HVC240 | 2400 | 250 | 5 VDC | 11/16 | 3.60 |
| HVC300 | 3000 | 200 | 6 VDC | 3/4 | 3.85 |
| HVC400 | 4000 | 200 | 8 VDC | 7/8 | 4.00 |
| HVC500 | 5000 | 200 | 10 VDC | 1 | 4.15 |
| HVC600 | 6000 | 150 | 12 VDC | 1 1/16 | 4.55 |
| HVC650 | 6500 | 150 | 13 VDC | 1 3/16 | 5.00 |
| HVC750 | 7500 | 150 | 15 VDC | 1 5/16 | 5.40 |
| HVC840 | 8400 | 100 | 16 VDC | 1 3/8 | 5.85 |
| HVC960 | 9600 | 100 | 18 VDC | 1 1/2 | 6.65 |
| HVC1000 | 10000 | 100 | 20 VDC | 1 3/4 | 7.10 |
| HVC1200 | 12000 | 75 | 22 VDC | 1 15/16 | 8.35 |
| HVC1500 | 15000 | 75 | 25 VDC | 2 5/16 | 10.40 |
| HVC1800 | 18000 | 75 | 30 VDC | 2 5/8 | 12.50 |
| HVC2100 | 21000 | 50 | 35 VDC | 3 | 14.60 |
| HVC2500 | 25000 | 50 | 40 VDC | 3 1/2 | 17.50 |
| HVC3000 | 30000 | 50 | 50 VDC | 4 1/16 | 20.80 |

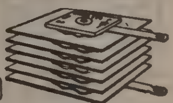
### FERRULE MOUNTING

Ratings at 55° C ambient. Body dia. Fig. B, .40". Body dia. Fig. C, 2 1/32".

| JEDEC No. | S-T No. | Fig. | Maximum Ratings |  |  | Body Lgth., In. | Net Each |
|---|---|---|---|---|---|---|---|
|  |  |  | PIV V | DC mA | Drop V |  |  |
| 1N1108 | 80SM | B | 800 | 450 | 2 | 1 15/32 | $ 3.15 |
| 1N1109 | 120SM | B | 1200 | 425 | 3 | 1 15/16 | 4.00 |
| 1N1110 | 160SM | B | 1600 | 400 | 4 | 2 13/32 | 4.75 |
| 1N1111 | 200SM | B | 2000 | 375 | 5 | 2 7/8 | 5.65 |
| 1N1112 | 240SM | B | 2400 | 350 | 6 | 3 11/32 | 6.50 |
| 1N1113 | 280SM | B | 2800 | 325 | 7 | 3 13/16 | 7.35 |
| 1N1133 | S-5490 | C | 1500 | 75 | 4 | 2 1/2 | 3.35 |
| 1N1134 | S-5491 | C | 1500 | 100 | 4 | 1 13/16 | 3.35 |
| 1N1135 | S-5492 | C | 1800 | 65 | 5 | 2 1/2 | 3.75 |
| 1N1136 | S-5493 | C | 1800 | 85 | 5 | 1 13/16 | 3.75 |
| 1N1137 | S-5494 | C | 2400 | 50 | 5 | 2 1/2 | 4.15 |
| 1N1138 | S-5495 | C | 2400 | 60 | 6 | 1 13/16 | 4.15 |

| JEDEC No. | S-T No. | Fig. | Maximum Ratings |  |  | Body Lgth., In. | Net Each |
|---|---|---|---|---|---|---|---|
|  |  |  | PIV V | DC mA | Drop V |  |  |
| 1N1139 | S-5496 | C | 3600 | 65 | 9 | 4 5/16 | 5.40 |
| 1N1140 | S-5497 | C | 3600 | 65 | 9 | 2 1/2 | 5.40 |
| 1N1141 | S-5498 | C | 4800 | 60 | 12 | 4 5/16 | 7.50 |
| 1N1142 | S-5499 | C | 4800 | 50 | 12 | 2 1/2 | 7.50 |
| 1N1143 | S-5500 | C | 6000 | 50 | 15 | 4 5/16 | 8.75 |
| 1N1143A | S-5501 | C | 6000 | 65 | 15 | 4 5/16 | 8.75 |
| 1N1144 | S-5502 | C | 7200 | 50 | 18 | 6 1/16 | 10.00 |
| 1N1145 | S-5503 | C | 7200 | 60 | 18 | 4 5/16 | 10.00 |
| 1N1146 | S-5504 | C | 8000 | 45 | 20 | 6 1/16 | 10.85 |
| 1N1147 | S-5505 | C | 12000 | 45 | 30 | 6 1/16 | 15.00 |
| 1N1148 | S-5506 | C | 14000 | 50 | 35 | 6 1/16 | 17.10 |
| 1N1149 | S-5507 | C | 16000 | 45 | 40 | 6 1/16 | 19.10 |

Tube Replacement



D

## TUBE REPLACEMENT SILICON RECTIFIERS

All nave avalanche characteristics for maximum reliability and ease of application.

| S-T No. | JEDEC No. | Maximum |  | Replacement for Tube Type | Net Each |
|---|---|---|---|---|---|
|  |  | PIV V | DC mA |  |  |
| S-5011A | 1N1150A | 1600 | 750 | 80, 82, 83, 83V, 5Z3 | $ 6.20 |
| S-5017 | 1N1237 | 1600 | 750 | OZ4, 5X4, 5Y4, 6AX5, 6X5 | 5.25 |
| S-5018 | 1N1238 | 1600 | 750 | 5AU4, 5AW4, 5AZ4, 5T4, 5U4, 5V4, 5W4, 5Y3, 5Z4, 5931, 6087, 6106 | 5.25 |
| S-5019* | 1N1239 | 2800 | 500 | 5R4 | 7.79 |
| S-5033 | 1N1262 | 4500 | 250† | 6AU4, 6AX4, 6BL4, 6U4, 6W4, 12AX4, 17AX4, 25W4 | 9.50 |
| S-5130 | ........ | 10400 | 300† | 3B28, 866, 866A | 9.65 |
| S-5207* | 1N2490 | 1600 | 500 | 6X4, 6063, 6202 | 7.07 |
| S-5251 | 1N2389 | 1600 | 600 | 5AU4, 5AW4, 5AZ4, 5T4, 5U4, 5V4, 5W4, 5Y3, 5Z4 | 6.10 |
| S-5343 | ........ | 7000 | 300† | 3B28‡, 816‡, 836‡, 866‡ | 8.33 |
| S-5344 | ........ | 15000 | 1500 | 575A, 872A | 29.74 |
| S-5347* | ........ | 1600 | 500 | 6BW4, 12BW4 | 7.07 |
| S-5367 | ........ | 19000 | 250† | 8020‡ | 26.87 |
| S-5373 | ........ | 10000 | 1250 | 8008, 673 | 39.34 |
| S-5991 | 1N2389 | 1600 | 750 | 5AU4, 5AW4, 5AZ4, 5T4, 5U4, 5V4, 5W4, 5Y3, 5Z4 | 4.50 |

*Hermetically sealed. †Resistive load; derate 20% for capacitive load. ‡At reduced voltage.

## "CONDENSED-STACK" SELENIUM RECTIFIERS (FIG. D)

Approx. rectifier drop, 5 V. Max. plate temp., 85° C operating.

| S-T No. | Max. Volts |  | Max. Current |  |  | Min. Series Resist.* | Size, Inches W. x H. x D. | Net Each |
|---|---|---|---|---|---|---|---|---|
|  | rms V | PIV V | Peak mA | rms mA | DC mA |  |  |  |
| 50-75 | 130 | 380 | 750 | 187 | 75 | 22 | 1 1/16 sq. x 25/32 | $1.10 |
| 100-150 | 130 | 380 | 1500 | 375 | 150 | 22 | 1 sq. x 1 3/16 | 1.40 |
| 200-250 | 130 | 380 | 2500 | 625 | 250 | 15 | 1 1/4 sq. x 1 1/4 | 2.00 |
| 300-500 | 130 | 380 | 5000 | 1250 | 500 | 5 | 1.6 sq. x 1 15/16 | 3.00 |

*Ohms.

## SUPER-SEL SELENIUM RECTIFIERS

DC output values at 35° C ambient. CT circuit for 6–10 VDC output. BR circuit for all others.

### 6-10 VDC OUTPUT

| S-T No. | Maximum |  | Net Each |
|---|---|---|---|
|  | DC Amps | AC Volts |  |
| SSD-10 | 0.6 | 13 | $ 1.55 |
| SSD-11 | 1.2 | 13 | 1.65 |
| SSD-12 | 2.2 | 13 | 1.96 |
| SSD-13 | 3.0 | 13 | 2.11 |
| SSD-14 | 5.0 | 13 | 4.05 |
| SSD-15 | 6.5 | 13 | 4.75 |
| SSD-16 | 10.0 | 13 | 5.85 |
| SSD-17 | 14.0 | 13 | 7.05 |
| SSD-18 | 18.0 | 13 | 7.50 |
| SSD-19 | 36.0 | 13 | 12.30 |
| SSD-20 | 54.0 | 13 | 18.90 |

### 6-20 VDC OUTPUT

|  |  |  |  |
|---|---|---|---|
| SSD-21 | 0.6 | 26 | $ 2.16 |
| SSD-22 | 1.2 | 26 | 2.28 |
| SSD-23 | 2.2 | 26 | 2.94 |
| SSD-24 | 3.0 | 26 | 3.35 |
| SSD-25 | 5.0 | 26 | 5.75 |
| SSD-26 | 6.5 | 26 | 6.30 |
| SSD-27 | 10.0 | 26 | 8.55 |
| SSD-28 | 14.0 | 26 | 11.00 |
| SSD-29 | 18.0 | 26 | 11.70 |
| SSD-30 | 36.0 | 26 | 20.50 |
| SSD-31 | 54.0 | 26 | 31.00 |

### 20-40 VDC OUTPUT

|  |  |  |  |
|---|---|---|---|
| SSD-32 | 0.6 | 52 | $ 3.12 |
| SSD-33 | 1.2 | 52 | 3.28 |
| SSD-34 | 2.2 | 52 | 4.60 |
| SSD-35 | 3.0 | 52 | 6.60 |
| SSD-36 | 5.0 | 52 | 8.80 |
| SSD-37 | 6.5 | 52 | 9.90 |
| SSD-38 | 10.0 | 52 | 14.10 |
| SSD-39 | 14.0 | 52 | 19.00 |
| SSD-40 | 18.0 | 52 | 20.10 |
| SSD-41 | 36.0 | 52 | 36.70 |
| SSD-42 | 54.0 | 52 | 55.50 |

### 40-60 VDC OUTPUT

| S-T No. | Maximum |  | Net Each |
|---|---|---|---|
|  | DC Amps | AC Volts |  |
| SSD-43 | 0.6 | 78 | $ 4.03 |
| SSD-44 | 1.2 | 78 | 4.27 |
| SSD-45 | 2.2 | 78 | 6.23 |
| SSD-46 | 3.0 | 78 | 7.30 |
| SSD-47 | 5.0 | 78 | 11.80 |
| SSD-48 | 6.5 | 78 | 13.60 |
| SSD-49 | 10.0 | 78 | 19.55 |
| SSD-50 | 14.0 | 78 | 27.00 |
| SSD-51 | 18.0 | 78 | 28.80 |
| SSD-52 | 36.0 | 78 | 52.80 |
| SSD-53 | 54.0 | 78 | 80.00 |

### 60-80 VDC OUTPUT

|  |  |  |  |
|---|---|---|---|
| SSD-54 | 0.6 | 104 | $ 4.98 |
| SSD-55 | 1.2 | 104 | 5.26 |
| SSD-56 | 2.2 | 104 | 7.90 |
| SSD-57 | 3.0 | 104 | 9.20 |
| SSD-58 | 5.0 | 104 | 14.80 |
| SSD-59 | 6.5 | 104 | 17.00 |
| SSD-60 | 10.0 | 104 | 25.00 |
| SSD-61 | 14.0 | 104 | 35.00 |
| SSD-62 | 18.0 | 104 | 37.20 |
| SSD-63 | 36.0 | 104 | 69.00 |
| SSD-64 | 54.0 | 104 | 104.00 |

### 80-100 VDC OUTPUT

|  |  |  |  |
|---|---|---|---|
| SSD-65 | 0.6 | 130 | $ 5.90 |
| SSD-66 | 1.2 | 130 | 6.25 |
| SSD-67 | 2.2 | 130 | 9.50 |
| SSD-68 | 3.0 | 130 | 11.25 |
| SSD-69 | 5.0 | 130 | 17.80 |
| SSD-70 | 6.5 | 130 | 20.60 |
| SSD-71 | 10.0 | 130 | 30.80 |
| SSD-72 | 14.0 | 130 | 42.70 |
| SSD-73 | 18.0 | 130 | 45.80 |
| SSD-74 | 36.0 | 130 | 85.30 |
| SSD-75 | 54.0 | 130 | 128.50 |

# SARKES TARZIAN SILICON AVALANCHE RECTIFIERS

A

B

C

D

E

F

G

H

## LOW CURRENT RECTIFIERS

### M SERIES 1.0 AMP (FIG. A)

**Size:** 1″ lg.; ¼″ dia. ferrule. **Max. Cur. at 100° C*:** DC Load, 1 A; 4 ms surge, 60 A.

| Sarkes Tarzian Number | JEDEC No. | Max. PIV | Max. rms Volts | Net Each, Lots of | |
|---|---|---|---|---|---|
| | | | | 1-99 | 100 Up |
| 10M | 1N1081 | 100 | 70 | $0.65 | $0.51 |
| 20M | 1N1082 | 200 | 140 | .70 | .53 |
| 30M | 1N1083 | 300 | 210 | .75 | .57 |
| M-500 | 1N1084 | 400 | 280 | .80 | .59 |
| 50M | .......... | 500 | 350 | .95 | .69 |
| 60M | .......... | 600 | 420 | 1.35 | .95 |

### F SERIES 1.0 AMP (FIG. B) (PLASTIC CASE)

**Size:** .250″ lg.; .125″ dia. **Max. Cur. at 100° C*:** DC Load, 1 A; 4 ms surge, 60 A.

| | | | | | |
|---|---|---|---|---|---|
| F-2 | 1N2482 | 200 | 140 | $0.35 | $0.27 |
| | 1N2069 | | | .33 | .27 |
| F-4 | 1N2483 | 400 | 280 | .38 | .32 |
| | 1N2070 | | | .39 | .33 |
| F-6 | 1N2484 | 600 | 420 | .45 | .34 |
| | 1N2071 | | | .45 | .38 |
| F-8 | .......... | 800 | 500 | .82 | .60 |
| F-10 | .......... | 1000 | 700 | .90 | .65 |
| F-15 | .......... | 1500 | 1060 | 1.25 | 1.03 |
| F-20 | .......... | 2000 | 1410 | 1.75 | 1.30 |
| F-25 | .......... | 2500 | 1760 | 2.25 | 1.70 |

### C SERIES 1.0 AMP (FIG. C)(HERMETIC CASE)

**Size:** 1¹⁄₆₄″ lg.; ⁷⁄₃₂″ dia. **Max. Cur. at 100° C*:** DC Load, 1 A; 4 ms surge, 60 A.

| | | | | | |
|---|---|---|---|---|---|
| 10C | 1N2610 | 100 | 70 | $0.60 | $0.39 |
| 20C | 1N2611 | 200 | 140 | .67 | .44 |
| 30C | 1N2612 | 300 | 210 | .70 | .46 |
| 40C | 1N2613 | 400 | 280 | .88 | .56 |
| 50C | 1N2614 | 500 | 350 | .95 | .60 |
| 60C | 1N2615 | 600 | 420 | 1.05 | .66 |
| 80C | 1N2616 | 800 | 560 | 1.25 | .77 |
| 100C | 1N2617 | 1000 | 700 | 1.75 | 1.08 |

*In most cases based on proper heat sink to limit case temp. rise to 60° C. †DC load, 0.6; surge, 30. ‡DC load, 0.4; surge, 20.

## MEDIUM CURRENT RECTIFIERS

### LA SERIES 2 AMPS (FIG. D)

**Size:** 1″ lg.; ¼″ dia. ferrule; DC Load, 2 A; 4 ms surge, 100 A.

| | | | | | |
|---|---|---|---|---|---|
| 10LA | 1N1085A | 100 | 70 | $3.34 | $2.66 |
| 20LA | 1N1086A | 200 | 140 | 4.00 | 3.20 |
| 30LA | 1N1087A | 300 | 210 | 4.67 | 3.73 |
| 40LA | 1N1088A | 400 | 280 | 5.35 | 4.27 |
| 50LA | .......... | 500 | 350 | 5.87 | 4.70 |
| 60LA | .......... | 600 | 420 | 6.45 | 5.15 |

### 3AF SERIES 3 AMPS (FIG. E)

**Size:** .425″ long; .375″ dia.; DC Load, 3 amps; 4 ms surge, 150 amps.

| | | | | | |
|---|---|---|---|---|---|
| 3AF1 | .......... | 100 | 70 | $0.70 | $0.55 |
| 3AF2 | .......... | 200 | 140 | .90 | .68 |
| 3AF4 | .......... | 400 | 280 | 1.00 | .82 |
| 3AF6 | .......... | 600 | 420 | 1.40 | 1.12 |
| 3AF8 | .......... | 800 | 560 | 2.15 | 1.62 |
| 3AF10 | .......... | 1000 | 700 | 3.10 | 2.20 |

### H3 SERIES 6 AMPS (FIG. F)

Items listed are positive base. For negative base change letter P to **N**, or add **R** to JEDEC No. **Size:** Stud lgth., ⁷⁄₁₆″; ht. above panel; .800″; hex O.D., ⁷⁄₁₆″. DC Load, 6 amps; 4 ms surge, 150 amps.

| Sarkes Tarzian Number | JEDEC No. | Maximum | | Net Each, Lots of | |
|---|---|---|---|---|---|
| | | PIV V | rms Volts | 1-99 | 100 Up |
| 10H3P | 1N1342 | 100 | 70 | $1.19 | $0.89 |
| 20H3P | 1N1344 | 200 | 140 | 1.90 | 1.23 |
| 30H3P | 1N1345 | 300 | 210 | 2.75 | 2.00 |
| 40H3P | 1N1346 | 400 | 280 | 3.70 | 2.93 |
| 50H3P | 1N1347 | 500 | 350 | 4.35 | 3.08 |
| 60H3P | 1N1348 | 600 | 420 | 5.25 | 3.65 |

### ST2 SERIES 12 AMPS (FIG. F)

Same as H3 Series except 12 A, DC load; 260 A 4 ms surge.

| | | | | | |
|---|---|---|---|---|---|
| ST210P | 1N1200 | 100 | 70 | $1.30 | $0.97 |
| ST220P | 1N1202 | 200 | 140 | 2.30 | 1.50 |
| ST230P | 1N1203 | 300 | 210 | 3.30 | 2.20 |
| ST240P | 1N1204 | 400 | 280 | 4.20 | 2.60 |
| ST250P | 1N1205 | 500 | 350 | 4.90 | 3.05 |
| ST260P | 1N1206 | 600 | 420 | 5.90 | 3.20 |
| ST280P | .......... | 800 | 560 | 6.75 | 5.75 |
| ST2100P | .......... | 1000 | 700 | 9.50 | 7.45 |

## HIGH CURRENT HERMETICALLY SEALED RECTIFIERS

### ST3A SERIES 25 AMP (FIG. G)

For negative base change letter P to **N** or add **R** to JEDEC No. DC Load, 25 amps; recurrent peak, 400 amps. **Size:** Stud lgth., ⁷⁄₁₆″; ht. above panel, 1″; hex O.D., ⁹⁄₁₆″.

| | | | | | |
|---|---|---|---|---|---|
| ST3A10P | 1N1191 | 100 | 70 | $1.55 | $1.24 |
| | 1N1192 | | | 1.60 | 1.29 |
| ST3A20P | 1N1193 | 200 | 140 | 2.14 | 1.70 |
| | 1N1194 | | | 2.25 | 1.80 |
| ST3A30P | 1N1195 | 300 | 210 | 3.80 | 2.30 |
| ST3A40P | 1N1196 | 400 | 280 | 4.35 | 2.90 |
| ST3A50P | 1N1197 | 500 | 350 | 5.55 | 2.80 |
| ST3A60P | 1N1198 | 600 | 420 | 6.75 | 3.90 |
| ST3A80P | .......... | 800 | 560 | 8.05 | 4.88 |
| ST3A100P | .......... | 1000 | 700 | 9.70 | 5.85 |

## HIGH CURRENT RECTIFIERS (CONT'D)

### ST4 SERIES 35 AMP (FIG. G)

DC Load, 35 amps; recurrent peak, 500 amps. **Size:** Stud lgth. ⁷⁄₁₆″; ht. above panel, 1″; hex O.D., 1¹⁄₁₆″.

| Sarkes Tarzian Number | JEDEC No. | Maximum | | Net Each, Lots of | |
|---|---|---|---|---|---|
| | | PIV V | rms Volts | 1-99 | 100 Up |
| ST410P | 1N1183 | 100 | 70 | $1.85 | $1.30 |
| | 1N1184 | | | 2.20 | 1.55 |
| ST420P | 1N1185 | 200 | 140 | 2.75 | 2.20 |
| | 1N1186 | | | 3.10 | 2.30 |
| ST430P | 1N1187 | 300 | 210 | 4.60 | 3.15 |
| ST440P | 1N1188 | 400 | 280 | 5.25 | 3.50 |
| ST450P | 1N1189 | 500 | 350 | 6.35 | 4.30 |
| ST460P | 1N1190 | 600 | 420 | 6.80 | 4.60 |
| ST480P | .......... | 800 | 560 | 8.25 | 5.22 |
| ST4100P | .......... | 1000 | 700 | 9.90 | 6.61 |

### ST5A SERIES 50 AMP (FIG. G)

DC Load, 50 amps; recurrent peak, 1000 amps. **Size:** Stud lgth. ⁷⁄₁₆″; ht. above panel, 1″; hex O.D., 1¹⁄₁₆″.

| | | | | | |
|---|---|---|---|---|---|
| ST5A10P | .......... | 100 | 70 | $ 3.25 | $2.60 |
| ST5A20P | .......... | 200 | 140 | 3.81 | 3.00 |
| ST5A30P | .......... | 300 | 210 | 4.63 | 3.65 |
| ST5A40P | .......... | 400 | 280 | 5.48 | 4.35 |
| ST5A50P | .......... | 500 | 350 | 6.57 | 5.20 |
| ST5A60P | .......... | 600 | 420 | 8.30 | 6.50 |
| ST5A80P | .......... | 800 | 560 | 9.95 | 7.95 |
| ST5A100P | .......... | 1000 | 700 | 11.90 | 9.55 |

### ST7 SERIES 160 AMP (FIG. H)

DC Load, 160 amps; recurrent peak, 3000 amps. **Size:** Stud lgth. 1³⁄₁₆″; ht. above panel, 6″; hex O.D., 1¼″.

| | | | | | |
|---|---|---|---|---|---|
| ST710P | 1N3261 | 100 | 70 | $12.90 | $10.32 |
| ST720P | 1N3263 | 200 | 140 | 14.85 | 12.60 |
| ST730P | 1N3265 | 300 | 210 | 17.95 | 14.50 |
| ST740P | 1N3267 | 400 | 280 | 20.80 | 16.60 |
| ST750P | 1N3268 | 500 | 350 | 28.45 | 22.75 |
| ST760P | 1N3269 | 600 | 420 | 34.60 | 27.65 |
| ST780P | .......... | 800 | 560 | 36.50 | 28.55 |
| ST7100P | .......... | 1000 | 700 | 40.00 | 32.05 |

### ST9 SERIES 250 AMP (FIG. H)

DC Load, 250 amps; recurrent peak, 5000 amps. **Size:** Stud lgth., 1³⁄₁₆″; ht. above panel, 6″; hex O.D., 1¼″.

| | | | | | |
|---|---|---|---|---|---|
| ST910P | 1N3162 | 100 | 70 | $ 19.35 | $ 15.73 |
| ST920P | 1N3164 | 200 | 140 | 26.30 | 23.75 |
| ST930P | 1N3166 | 300 | 210 | 33.45 | 27.10 |
| ST940P | 1N3168 | 400 | 280 | 47.65 | 38.55 |
| ST950P | 1N3169 | 500 | 350 | 57.70 | 46.85 |
| ST960P | 1N3170 | 600 | 420 | 71.45 | 57.65 |
| ST980P | 1N3172 | 800 | 560 | 115.00 | 101.20 |
| ST9100P | 1N3174 | 1000 | 700 | 160.00 | 140.00 |

### ST20 SERIES 350 AMP (FIG. H)

**Size:** Stud lgth., 1³⁄₁₆″; ht. above panel, 6″; hex O.D., 1¼″.

| Sarkes Tarzian Number | Maximum | | DC Load Amps | Net Each, Lots of | |
|---|---|---|---|---|---|
| | PIV V | rms V | | 1-99 | 100 Up |
| ST2010P | 100 | 70 | 350* | $18.85 | $14.75 |
| ST2020P | 200 | 140 | 350* | 25.00 | 19.20 |
| ST2030P | 300 | 210 | 350* | 28.25 | 21.60 |
| ST2040P | 400 | 280 | 350* | 31.90 | 25.10 |
| ST2050P | 500 | 350 | 350* | 39.20 | 33.60 |
| ST2060P | 600 | 420 | 350* | 46.50 | 39.40 |
| ST2080P | 800 | 560 | 350 | 50.50 | 44.30 |
| ST20100P | 1000 | 700 | 350 | 58.00 | 50.50 |

*Recurrent peak, 7000 amps.

## LOW CURRENT BRIDGE RECTIFIERS

Compact single phase bridge rectifiers. Easy to mount. 2.0–6.0 A, 100–1000 V PIV. Single phase units to 400A and 3-phase units to 500 A available upon request.

### S-6211 SERIES 2 AMPS (FIG. I)

| Sarkes Tarzian Number | Max. PIV V | Max. rms Volts | Approx. DC Output Volts | Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 1-24 | 25-99 | 100 Up |
| S-6211 | 200 | 140 | 120 | $2.12 | $1.82 | $1.69 |
| S-6211-1 | 400 | 280 | 240 | 2.34 | 2.00 | 1.86 |
| S-6211-2 | 600 | 420 | 360 | 2.56 | 2.19 | 2.04 |
| S-6211-3 | 800 | 560 | 480 | 3.21 | 2.75 | 2.55 |
| S-6211-4 | 1000 | 700 | 600 | 4.94 | 4.23 | 3.94 |

### S-5959 2.5 AMPS (FIG. J)

| | | | | | | |
|---|---|---|---|---|---|---|
| S-5959 | 200 | 140 | 120 | $1.94 | $1.66 | $1.54 |
| S-5959-1 | 400 | 280 | 240 | 2.22 | 1.90 | 1.77 |
| S-5959-2 | 600 | 420 | 360 | 2.44 | 2.09 | 1.94 |
| S-5959-3 | 800 | 560 | 480 | 3.06 | 2.62 | 2.43 |
| S-5959 4 | 1000 | 700 | 600 | 4.71 | 4.03 | 3.75 |

### S-6121 6.0 AMPS (FIG. K)

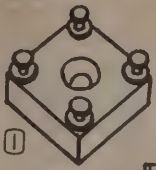
| | | | | | | |
|---|---|---|---|---|---|---|
| S-6121 | 100 | 70 | 60 | $4.01 | $3.43 | $3.19 |
| S-6121-1 | 200 | 140 | 120 | 4.21 | 3.60 | 3.35 |
| S-6121-2 | 300 | 210 | 180 | 4.36 | 3.73 | 3.47 |
| S-6121-3 | 400 | 280 | 240 | 4.41 | 3.78 | 3.51 |
| S-6121-4 | 500 | 350 | 300 | 5.01 | 4.29 | 3.99 |
| S-6121-5 | 600 | 420 | 360 | 5.61 | 4.81 | 4.47 |

# SARKES TARZIAN SILICON ZENER VOLTAGE REGULATORS, KLIPVOLT SURGE SUPPRESSORS

## 1 W ±5% TOL. ZENERS (FIG. L)

Net Each, Lots of 1–99 .......... $2.05
Net Each, Lots of 100–499 ....... 1.55

| $I_T$ mA | Zener Volts | JEDEC No. | Zener Volts | JEDEC No. |
|---|---|---|---|---|
| 100 | ...... | .......... | 5.6 | 1N1765A |
| 100 | ...... | .......... | 6.2 | 1N1766A |
| 37 | 6.8 | 1N3016B | 6.8 | 1N1767A |
| 34 | 7.5 | 1N3017B | 7.5 | 1N1768A |
| 31 | 8.2 | 1N3018B | 8.2 | 1N1769A |
| 28 | 9.1 | 1N3019B | 9.1 | 1N1770A |
| 25 | 10 | 1N3020B | 10 | 1N1771A |
| 23 | 11 | 1N3021B | 11 | 1N1772A |
| 21 | 12 | 1N3022B | 12 | 1N1773A |
| 19 | 13 | 1N3023B | 13 | 1N1774A |
| 17 | 15 | 1N3024B | 15 | 1N1775A |
| 15.5 | 16 | 1N3025B | 16 | 1N1776A |
| 14 | 18 | 1N3026B | 18 | 1N1777A |
| 12.5 | 20 | 1N3027B | 20 | 1N1778A |
| 11.5 | 22 | 1N3028B | 22 | 1N1779A |
| 10.5 | 24 | 1N3029B | 24 | 1N1780A |
| 9.5 | 27 | 1N3030B | 27 | 1N1781A |
| 8.5 | 30 | 1N3031B | 30 | 1N1782A |
| 7.5 | 33 | 1N3032B | 33 | 1N1783A |
| 7.0 | 36 | 1N3033B | 36 | 1N1784A |
| 6.5 | 39 | 1N3034B | 39 | 1N1785A |
| 6.0 | 43 | 1N3035B | 43 | 1N1786A |
| 5.5 | 47 | 1N3036B | 47 | 1N1787A |
| 5.0 | 51 | 1N3037B | 51 | 1N1788A |
| 4.5 | 56 | 1N3038B | 56 | 1N1789A |
| 4.0 | 62 | 1N3039B | 62 | 1N1790A |
| 3.7 | 68 | 1N3040B | 68 | 1N1791A |
| 3.3 | 75 | 1N3041B | 75 | 1N1792A |
| 3.0 | 82 | 1N3042B | 82 | 1N1793A |
| 2.8 | 91 | 1N3043B | 91 | 1N1794A |
| 2.5 | 100 | 1N3044B | 100 | 1N1795A |
| 2.3 | 110 | 1N3045B | 110 | 1N1796A |
| 2.0 | 120 | 1N3046B | 120 | 1N1797A |
| 1.9 | 130 | 1N3047B | 130 | 1N1798A |
| 1.7 | 150 | 1N3048B | 150 | 1N1799A |
| 1.6 | 160 | 1N3049B | 160 | 1N1800A |
| 1.4 | 180 | 1N3050B | 180 | 1N1801A |
| 1.2 | 200 | 1N3051B | 200 | 1N1802A |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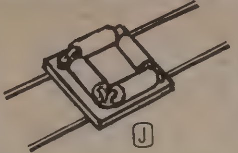
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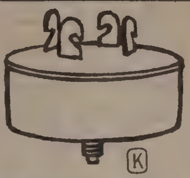
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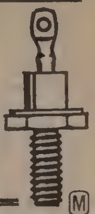
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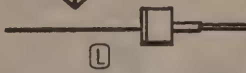
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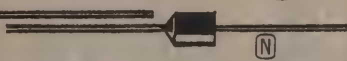

N

## 10 WATT ZENER DIODES ±5% TOLERANCE (FIG. M)

Reverse polarity available on special order (non-cancellable). Add **R** to JEDEC No. $I_T$ values same for 1N2974B–1N3015B as listed for 1N1351A–1N1815A.
Net Each, Lots of 1–99 .................. $3.76; 100–499 .................. $2.99

| Zener Volts | $I_T$ mA | JEDEC No. | Zener Volts | $I_T$ mA | JEDEC No. | Zener Volts | JEDEC No. | Zener Volts | JEDEC No. |
|---|---|---|---|---|---|---|---|---|---|
| 5.6 | 1000 | 1N1803A | 43 | 150 | 1N1366A | 10 | 1N2974B | 47 | 1N2995B |
| 6.2 | 1000 | 1N1804A | 47 | 150 | 1N1367A | 11 | 1N2975B | 50 | 1N2996B |
| 6.8 | 1000 | 1N1805A | 51 | 150 | 1N1368A | 12 | 1N2976B | 51 | 1N2997B |
| 7.5 | 1000 | 1N1806A | 56 | 150 | 1N1369A | 13 | 1N2977B | 52 | 1N2998B |
| 8.2 | 1000 | 1N1807A | 62 | 50 | 1N1370A | 14 | 1N2978B | 56 | 1N2999B |
| 9.1 | 500 | 1N1808A | 68 | 50 | 1N1371A | 15 | 1N2979B | 62 | 1N3000B |
| 10 | 500 | 1N1351A | 75 | 50 | 1N1372A | 16 | 1N2980B | 68 | 1N3001B |
| 11 | 500 | 1N1352A | 82 | 50 | 1N1373A | 17 | 1N2981B | 75 | 1N3002B |
| 12 | 500 | 1N1353A | 91 | 50 | 1N1374A | 18 | 1N2982B | 82 | 1N3003B |
| 13 | 500 | 1N1354A | 100 | 50 | 1N1375A | 19 | 1N2983B | 91 | 1N3004B |
| 15 | 500 | 1N1355A | 110 | 50 | 1N1809A | 20 | 1N2984B | 100 | 1N3005B |
| 16 | 500 | 1N1356A | 120 | 50 | 1N1810A | 22 | 1N2985B | 105 | 1N3006B |
| 18 | 150 | 1N1357A | 130 | 50 | 1N1811A | 24 | 1N2986B | 110 | 1N3007B |
| 20 | 150 | 1N1358A | 150 | 50 | 1N1812A | 25 | 1N2987B | 120 | 1N3008B |
| 22 | 150 | 1N1359A | 160 | 50 | 1N1813A | 27 | 1N2988B | 130 | 1N3009B |
| 24 | 150 | 1N1360A | 180 | 50 | 1N1814A | 30 | 1N2989B | 140 | 1N3010B |
| 27 | 150 | 1N1361A | 200 | 50 | 1N1815A | 33 | 1N2990B | 150 | 1N3011B |
| 30 | 150 | 1N1362A | 6.8 | 1000 | 1N2970B | 36 | 1N2991B | 160 | 1N3012B |
| 33 | 150 | 1N1363A | 7.5 | 1000 | 1N2971B | 39 | 1N2992B | 175 | 1N3013B |
| 36 | 150 | 1N1364A | 8.2 | 1000 | 1N2972B | 43 | 1N2993B | 180 | 1N3014B |
| 39 | 150 | 1N1365A | 9.1 | 500 | 1N2973B | 45 | 1N2994B | 200 | 1N3015B |

## PLASTIC CASE SILICON ZENER VOLTAGE REGULATORS (FIG. N)

Standard voltage tolerance ±10%; add suffix **A** for ±5%, suffix. Specifications at 25° C.

### 1 WATT AND 2 WATT

Max. dissipation 1 W, VR Series; 2 W, 2VR Series.

| Sarkes Tarzian Number | | $V_B$ V | Test Cur. mA | Dynamic Imped. Ohms |
|---|---|---|---|---|
| 1 Watt | 2 Watt | | | |
| VR6 | 2VR6 | 6 | 25 | 4 |
| VR7 | 2VR7 | 7 | 25 | 5 |
| VR8.5 | 2VR8.5 | 8.5 | 25 | 6 |
| VR10 | 2VR10 | 10 | 12 | 8 |
| VR12 | 2VR12 | 12 | 12 | 10 |
| VR14 | 2VR14 | 14 | 12 | 11 |
| VR18 | 2VR18 | 18 | 12 | 17 |
| VR20 | 2VR20 | 20 | 12 | 20 |
| VR24 | 2VR24 | 24 | 4 | 28 |
| VR28 | 2VR28 | 28 | 4 | 42 |
| VR33 | 2VR33 | 33 | 4 | 50 |
| VR39 | 2VR39 | 39 | 4 | 70 |
| VR47 | 2VR47 | 47 | 4 | 98 |
| VR56 | 2VR56 | 56 | 4 | 140 |
| VR67 | 2VR67 | 67 | 2 | 200 |
| VR80 | 2VR80 | 80 | 2 | 280 |
| VR90 | 2VR90 | 90 | 1 | 340 |
| VR105 | 2VR105 | 105 | 1 | 400 |
| VR110 | 2VR110 | 110 | 1 | 490 |
| VR120 | 2VR120 | 120 | 1 | 570 |
| VR130 | 2VR130 | 130 | 1 | 650 |
| VR150 | 2VR150 | 150 | 1 | 860 |
| VR160 | 2VR160 | 160 | 1 | 970 |
| VR180 | 2VR180 | 180 | 1 | 1200 |
| VR200 | 2VR200 | 200 | 1 | 1400 |

### 3 WATT

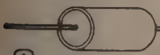
Max. dissipation, 3 watts.

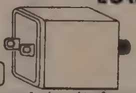
| Sarkes Tarzian No. | $V_B$ V | Test Cur. mA | Dyn. Imped. Ohms | Sarkes Tarzian No. | $V_B$ V | Test Cur. mA | Dyn. Imped. Ohms |
|---|---|---|---|---|---|---|---|
| 3VR6 | 6 | 250 | 1.0 | 3VR67 | 67 | 30 | 30 |
| 3VR8.5 | 8.5 | 250 | 1.5 | 3VR90 | 90 | 30 | 60 |
| 3VR12 | 12 | 250 | 2.0 | 3VR120 | 120 | 15 | 100 |
| 3VR18 | 18 | 75 | 3.0 | 3VR150 | 150 | 15 | 200 |
| 3VR24 | 24 | 75 | 5.0 | 3VR180 | 180 | 15 | 300 |
| 3VR33 | 33 | 75 | 8.0 | 3VR200 | 200 | 15 | 350 |
| 3VR47 | 47 | 30 | 15.0 | | | | |

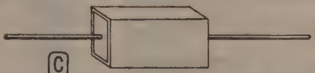
### VR, 2VR AND 3VR PRICING

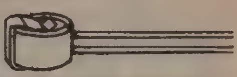
| Sarkes Tarzian Number | Tolerance | Net Each, Lots of | |
|---|---|---|---|
| | | 1-99 | 100 Up |
| VR6–VR100 | ±10% | $1.25 | $0.93 |
| VR6A–VR100A | ±5% | 1.80 | 1.35 |
| VR101–VR200 | ±10% | 1.90 | 1.43 |
| VR101A–VR200A | ±5% | 2.26 | 1.70 |
| 2VR6–2VR100 | ±10% | 1.50 | 1.12 |
| 2VR6A–2VR100A | ±5% | 2.08 | 1.63 |
| 2VR101–2VR200 | ±10% | 2.28 | 1.72 |
| 2VR101A–2VR200A | ±5% | 2.72 | 2.04 |
| 3VR6–3VR200 | ±10% | 2.72 | 2.05 |
| 3VR6A–3VR200A | ±5% | 3.30 | 2.45 |

## LOW CURRENT SUPPRESSORS


A


B


C


D

Protect semiconductor components and circuits from voltage transients in 1/10 the time required for silicon device reaction. Polarized types function in DC circuitry and non-polarized types in AC circuits.

### POLARIZED

Max. discharge current .250 amp, Fig. A types; .850 amp all others. Suffix **C** indicates sealed construction type.

| Max. DC Block'g Volts | S-T No. | Fig. | Net Each, Lots of | | S-T No. | Fig. | Net Each, Lots of | |
|---|---|---|---|---|---|---|---|---|
| | | | 1-9 | 10-99 | | | 1-9 | 10-99 |
| 22 | S-235 | A | $0.60 | $0.54 | S-235C | A | $1.05 | $0.95 |
| 22 | S-236 | B | .69 | .62 | S-236C | C | 1.74 | 1.57 |
| 44 | S-237 | A | .65 | .59 | S-237C | A | 1.10 | .99 |
| 44 | S-238 | B | .76 | .69 | S-238C | C | 1.81 | 1.63 |
| 66 | S-239 | A | .75 | .67 | S-239C | A | 1.20 | 1.08 |
| 66 | S-240 | B | .90 | .81 | S-240C | C | 1.95 | 1.75 |
| 88 | S-241 | A | .80 | .72 | S-241C | A | 1.25 | 1.12 |
| 88 | S-242 | B | .97 | .87 | S-242C | C | 2.02 | 1.82 |
| 110 | S-243 | A | .85 | .77 | S-243C | A | 1.30 | 1.17 |
| 110 | S-244 | B | 1.04 | .94 | S-244C | C | 2.09 | 1.88 |
| 132 | S-245 | A | .90 | .81 | S-245C | A | 1.35 | 1.21 |
| 132 | S-246 | B | 1.11 | 1.00 | S-246C | C | 2.16 | 1.94 |
| 154 | S-247 | A | .95 | .86 | S-247C | A | 1.40 | 1.26 |
| 154 | S-248 | B | 1.18 | 1.06 | S-248C | C | 2.23 | 1.92 |

### SINGLE PHASE NON-POLARIZED

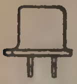
Max. discharge current .200 amp, Fig. A and D types; .700 amp all others. Suffix **C** indicates sealed construction type.

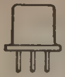
| Max. Volts | | S-T No. | * | Net Each, Lots of | | S-T No. | * | Net Each, Lots of | |
|---|---|---|---|---|---|---|---|---|---|
| rms V | Clamp V | | | 1-9 | 10-99 | | | 1-9 | 10-99 |
| 26 | 63 | S-235 | A | $0.60 | $0.54 | S-235C | A | $1.05 | $0.95 |
| 26 | 63 | S-236 | B | .69 | .62 | S-236C | C | 1.74 | 1.57 |
| 52 | 125 | S-250 | B | .83 | .75 | S-250C | C | 1.88 | 1.69 |
| 78 | 190 | S-251 | A | .80 | .72 | S-251C | A | 1.25 | 1.12 |
| 78 | 190 | S-252 | B | .97 | .87 | S-252C | C | 2.02 | 1.82 |
| 104 | 250 | S-253 | A | .90 | .81 | S-253C | A | 1.35 | 1.21 |
| 104 | 250 | S-254 | B | 1.01 | .91 | S-254C | C | 2.06 | 1.85 |
| 130 | 310 | S-255 | A | 1.00 | .90 | S-255C | A | 1.45 | 1.30 |
| 130 | 310 | S-256 | B | 1.25 | 1.12 | S-256C | C | 2.30 | 2.07 |
| 130 | 310 | S-871 | D | .55 | .50 | ....... | ... | ....... | ....... |

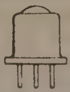
*Figure.

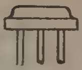
# Siliconix incorporated

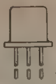
# N-CHANNEL AND P-CHANNEL JUNCTION FETs

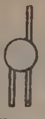

TO-5

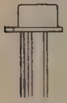

TO-18

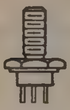

TO-18, TO-72 w/Lens

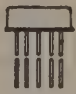

TO-46

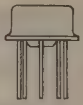

TO-72

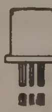

Flatpac


TO-52


TO-60


TO-78


TO-99


SI-71

## N-CHANNEL AF-RF-UHF, RF POWER

**RF**—U183, U184: NF = 2.5 dB at 100 MHz. **RF Power**—U221, U222, U244 and U266. **General Purpose RF**—2N3823: NF = 200 dB at 10 Hz (2N3823, 2.5 dB at 100 MHz). **AF-RF**—2N4220–2N4224. **UHF**—2N4416–2N4417: UHF = 400 MHz; $G_{PS}$ = 10 dB. 2N5397, 2N5398: UHF = 450 MHz; $g_{ps}$ = 15 dB.

| Siliconix Type | Case TO- | Maximum<br>$C_{rss}$ pF | <br>$I_{DSS}$ mA | <br>$I_{GSS}$ nA | Minimum<br>$BV_{GSS}$ V | <br>$g_{fs}$ µmho | Net Each, Lots of<br>1-29 | <br>30-99 |
|---|---|---|---|---|---|---|---|---|
| **U183** | 72 | 4.0 | 20.0 | 2.0 | 25 | 2000 | $ 1.25 | $ 1.00 |
| **U184** | 72 | 1.0 | 30.0 | 1.0 | 25 | 3000 | 1.40 | 1.15 |
| **U221** | 5 | 6.0 | 110.0 | 1.0 | 50 | 15,000 | 11.50 | 9.20 |
| **U222** | 5 | 6.0 | 250.0 | 1.0 | 50 | 20,000 | 14.50 | 11.60 |
| **U244** | 60 | 15.0 | 300.0 | 1.0 | 25 | 80,000 | 23.80 | 19.05 |
| **U266** | 60 | 16.0 | 100.0 | 6.0 | 150 | 20,000 | 43.30 | 34.65 |
| **2N3821*** | 72 | 3.0 | 2.5 | 0.1 | 50 | 1500 | 2.00 | 1.60 |
| **2N3822*** | 72 | 3.0 | 10.0 | 0.1 | 50 | 3000 | 1.80 | 1.45 |
| **2N3823*** | 72 | 2.0 | 20.0 | 0.5 | 50 | 3500 | 1.50 | 1.20 |
| **2N4220** | 72 | 2.0 | 3.0 | 0.1 | 30 | 1000 | 1.40 | 1.15 |
| **2N4220A*** | 72 | 2.0 | 3.0 | 0.1 | 30 | 1000 | 1.65 | 1.30 |
| **2N4221** | 72 | 6.0 | 6.0 | 0.1 | 30 | 2000 | 1.40 | 1.15 |
| **2N4221A*** | 72 | 2.0 | 6.0 | 0.1 | 30 | 2000 | 1.65 | 1.30 |
| **2N4222** | 72 | 2.0 | 15.0 | 0.1 | 30 | 2500 | 1.40 | 1.15 |
| **2N4222A*** | 72 | 2.0 | 15.0 | 0.1 | 30 | 2500 | 1.65 | 1.30 |
| **2N4223†** | 72 | 2.0 | 18.0 | 2.5 | 30 | 3000 | 1.10 | .90 |
| **2N4224†** | 72 | 2.0 | 20.0 | 0.5 | 30 | 2000 | 1.35 | 1.05 |
| **2N4416*** | 72 | 0.8 | 15.0 | 0.1 | 30 | 4500 | 2.00 | 1.60 |
| **2N4416A** | 72 | 0.8 | 15.0 | 0.1 | 35 | 4500 | 2.30 | 1.85 |
| **2N4417** | .‡ | ...... | 15.0 | 0.1 | 30 | 4500 | 3.95 | 3.15 |
| **2N5397** | 72 | 1.2 | 30.0 | 0.1 | 25 | 6000 | 4.40 | 3.50 |
| **2N5398** | 72 | 1.3 | 40.0 | 0.1 | 25 | 5500 | 3.65 | 2.95 |

*NF = 2.5 dB at 100 Hz. †NF = 5.0 dB at 200 MHz. †OD81 case. *JAN and JANTX types available.

## N-CHANNEL LOW NOISE

NF at f = 1 kHz.

| Siliconix Type | Case TO- | Max.<br>NF dB | <br>$I_{GSS}$ nA | Min. $BV_{GSS}$ V | Max. $I_{DSS}$ mA | Min. $g_{fs}$ µmho | Net Each, Lots of<br>1-29 | <br>30-99 |
|---|---|---|---|---|---|---|---|---|
| **2N3089*** | 18 | 3.0† | 1.0 | 30 | 0.5 | 300 | $ 2.90 | $ 2.35 |
| **2N3089A*** | 18 | 0.5‡ | 1.0 | 30 | 0.5 | 300 | 6.70 | 5.35 |
| **2N4338** | 18 | 1 | 0.1 | 50 | 0.6 | 600 | 2.15 | 1.75 |
| **2N4339§** | 18 | 1 | 0.1 | 50 | 1.5 | 800 | 1.80 | 1.45 |
| **2N4340§** | 18 | 1 | 0.1 | 50 | 3.6 | 1300 | 1.80 | 1.45 |
| **2N4341** | 18 | 1 | 0.1 | 50 | 9.0 | 2000 | 2.00 | 1.60 |
| **2N4867** | 72 | 10.0 | 0.25 | 40 | 1.2 | 700 | 7.10 | 5.65 |
| **2N4867A** | 72 | 5.0 | 0.25 | 40 | 1.2 | 700 | 14.85 | 11.90 |
| **2N4868** | 72 | 10.0 | 0.25 | 40 | 3.0 | 1000 | 5.60 | 4.50 |
| **2N4868A** | 72 | 5.0 | 0.25 | 40 | 3.0 | 1000 | 11.85 | 9.50 |
| **2N4869** | 72 | 10.0 | 0.25 | 40 | 7.5 | 1300 | 3.65 | 2.95 |
| **2N4869A** | 72 | 5.0 | 0.25 | 40 | 7.5 | 1300 | 9.65 | 7.70 |

*Low noise amplifier. †At f = 10 Hz. ‡At f = 15 kHz. §Also available in Flatpac.

## P-CHANNEL LOW NOISE

NF at f = 1 kHz.

| Siliconix Type | Case TO- | Max.<br>NF dB | <br>$I_{GSS}$ nA | Min. $BV_{GSS}$ V | Max. $I_{DSS}$ mA | Min. $g_{fs}$ µmho | Net Each, Lots of<br>1-29 | <br>30-99 |
|---|---|---|---|---|---|---|---|---|
| **U168** | 18 | 25 | 30 | 20 | 6.0 | 800 | $3.05 | $2.45 |
| **2N3578** | 18 | 18 | 15 | 20 | 2.5 | 1500 | 5.75 | 4.60 |

## P-CHANNEL ANALOG SWITCHING

$BV_{GSS}$ = 30 V min.

| Siliconix Type | Case | Maximum<br>$r_{DS}$ Ohm | <br>$C_{rss}$ pF | <br>$I_{DSS}$ mA | Min. $g_{fs}$ µmho | Max. $I_{GSS}$ nA | Net Each, Lots of<br>1-29 | <br>30-99 |
|---|---|---|---|---|---|---|---|---|
| **2N3376** | TO-72 | 1500 | 3 | 6 | 800 | 3 | $2.85 | $2.25 |
| **2N3378** | TO-72 | 750 | 3 | 20 | 1500 | 3 | 5.90 | 4.70 |
| **2N3380** | TO-72 | 600 | 3 | 20 | 1500 | 3 | 3.75 | 3.00 |
| **2N3382** | TO-72 | 300 | 6 | 30 | 4500 | 15 | 4.10 | 3.30 |
| **2N3384** | TO-72 | 180 | 6 | 30 | 7500 | 15 | 7.40 | 5.90 |
| **2N3386** | TO-72 | 150 | 6 | 30 | 7500 | 15 | 4.10 | 3.30 |
| **2N5114** | TO-18 | 75 | 7 | 15 | ...... | 0.5 | 5.50 | 4.40 |
| **2N5115** | TO-18 | 100 | 7 | 60 | ...... | 0.5 | 5.25 | 4.20 |

**LARGER QUANTITY PRICES**
**AVAILABLE ON REQUEST**

## N-CHANNEL ANALOG SWITCHING (TO-18)

Maximum ratings except as otherwise noted.

| Siliconix Type | $r_{DS}$ Ohms | $I_D$ (OFF) nA | $C_{rss}$ pF | Min. $BV_{GSS}$ V | $I_{DSS}$ mA | $I_{GSS}$ nA | Net Each, Lots of<br>1-29 | <br>30-99 |
|---|---|---|---|---|---|---|---|---|
| **U200** | 150 | 1 | 8 | 30 | 25 | 1 | $ 3.50 | $ 2.80 |
| **U201** | 75 | 1 | 8 | 30 | 75 | 1 | 3.30 | 2.65 |
| **U202** | 50 | 1 | 8 | 30 | 150 | 1 | 3.00 | 2.40 |
| **U240§** | 5 | 3 | 35 | 25 | 150‡ | 3 | 11.85 | 9.50 |
| **U241§** | 10 | 3 | 35 | 25 | 100‡ | 3 | 7.40 | 5.90 |
| **U242§** | 6 | 3 | 35 | 25 | 150‡ | 3 | 6.70 | 5.35 |
| **U243§** | 12 | 3 | 35 | 25 | 100‡ | 3 | 5.90 | 4.70 |
| **U290*** | 2.5 | 0.5 | 30 | 30 | 500‡ | 0.5 | 35.55 | 28.40 |
| **U291*** | 4.0 | 0.5 | 30 | 30 | 300‡ | 0.5 | 29.55 | 23.65 |
| **2N3684†** | 600 | 150 | 1.2 | 50 | 7.5 | 0.1 | 1.70 | 1.35 |
| **2N3685†** | 800 | 150 | 1.2 | 50 | 3.0 | 0.1 | 1.70 | 1.35 |
| **2N3686†** | 1200 | 150 | 1.2 | 50 | 1.2 | 0.1 | 2.25 | 1.80 |
| **2N3687†** | 2400 | 150 | 1.2 | 50 | 0.5 | 0.1 | 2.25 | 1.80 |
| **2N3824†** | 250 | 0.1 | 3 | 50 | ..... | 0.1 | 1.35 | 1.05 |
| **2N3970** | 30 | 0.25 | 6 | 40 | 150 | 0.25* | 4.50 | 3.60 |
| **2N3971** | 60 | 0.25 | 6 | 40 | 75 | 0.25* | 3.90 | 3.10 |
| **2N3972** | 100 | 0.25 | 6 | 40 | 30 | 0.25* | 4.50 | 3.60 |
| **2N4091** | 30 | 0.2 | 5 | 40 | 30‡ | 0.2* | 2.90 | 2.35 |
| **2N4092** | 50 | 0.2 | 5 | 40 | 15‡ | 0.2* | 1.80 | 1.45 |
| **2N4093** | 80 | 0.2 | 5 | 40 | 8‡ | 0.2* | 2.25 | 1.80 |
| **2N4391** | 30 | 0.1 | 3.5 | 40 | 150 | 0.1 | 3.35 | 2.70 |
| **2N4392** | 60 | 0.1 | 3.5 | 40 | 75 | 0.1 | 2.75 | 2.20 |
| **2N4393** | 100 | 0.1 | 3.5 | 40 | 30 | 0.1 | 2.55 | 2.05 |
| **2N4856*** | 25 | 0.25 | 0.8 | 40 | 50‡ | 0.25 | 3.15 | 2.50 |
| **2N4856A** | 25 | 0.25 | 0.8 | 40 | 50‡ | 0.25 | 3.75 | 3.00 |
| **2N4857*** | 40 | 0.25 | 0.8 | 40 | 100 | 0.25 | 2.60 | 2.10 |
| **2N4857A** | 40 | 0.25 | 0.8 | 40 | 100 | 0.25 | 3.05 | 2.45 |
| **2N4858*** | 60 | 0.25 | 0.8 | 40 | 80 | 0.25 | 2.30 | 1.85 |
| **2N4858A** | 60 | 0.25 | 0.8 | 40 | 80 | 0.25 | 2.60 | 2.10 |
| **2N4859*** | 25 | 0.25 | 0.8 | 30 | 50‡ | 0.25 | 3.00 | 2.40 |
| **2N4859A** | 25 | 0.25 | 0.8 | 30 | 50‡ | 0.25 | 3.60 | 2.85 |
| **2N4860*** | 40 | 0.25 | 0.8 | 30 | 100 | 0.25 | 2.45 | 1.95 |
| **2N4860A** | 40 | 0.25 | 0.8 | 30 | 100 | 0.25 | 2.90 | 2.35 |
| **2N4861*** | 60 | 0.25 | 0.8 | 30 | 80 | 0.25 | 2.10 | 1.65 |
| **2N4861A** | 60 | 0.25 | 0.8 | 30 | 80 | 0.25 | 2.40 | 1.90 |
| **2N5432§** | 5 | 0.2 | 15 | 25 | 150‡ | 0.2 | 18.65 | 14.95 |
| **2N5433§** | 7 | 0.2 | 15 | 25 | 100‡ | 0.2 | 11.65 | 9.30 |
| **2N5434§** | 10 | 0.2 | 15 | 25 | 30‡ | 0.2 | 14.80 | 11.80 |

*$I_{DGO}$ rating. †TO-72 case. ‡Minimum. §TO-52 case. *JAN and JANTX types available.

## P-CHANNEL GENERAL PURPOSE FETs

| Siliconix Type | Case TO- | Max. $I_{GSS}$ nA | Min. $BV_{GSS}$ V | Max. $I_{DSS}$ mA | Min. $g_{fs}$ µmho | Max. $C_{iss}$ pF | Net Each, Lots of<br>1-29 | <br>30-99 |
|---|---|---|---|---|---|---|---|---|
| **U110** | 18 | 4 | 20 | 1 | 110 | 6 | $2.90 | $2.35 |
| **U112** | 18 | 10 | 20 | 9 | 1000 | 17 | 1.65 | 1.30 |
| **U133** | 18 | 3 | 50 | 1.5 | 330 | 10 | 7.15 | 5.75 |
| **U146** | 18 | 10 | 20 | 0.025* | 60 | 6 | 2.15 | 1.75 |
| **U147** | 18 | 20 | 20 | 0.065* | 180 | 10 | 1.85 | 1.50 |
| **U148** | 18 | 60 | 20 | 0.2* | 540 | 17 | 1.40 | 1.15 |
| **U149** | 18 | 200 | 20 | 0.44* | 1400 | 30 | 1.40 | 1.15 |
| **2N2606†** | 18 | 1 | 30 | 0.5 | 110 | 6 | 4.10 | 3.30 |
| **2N2607†** | 18 | 3 | 30 | 1.5 | 330 | 10 | 2.60 | 2.10 |
| **2N2608†** | 18 | 10 | 30 | 4.5 | 1000 | 17 | 2.60 | 2.10 |
| **2N2609†** | 18 | 30 | 30 | 10 | 2500 | 30 | 2.30 | 1.85 |
| **2N2841** | 18 | 1 | 30 | 0.125 | 60 | 6 | 3.35 | 2.70 |
| **2N2842** | 18 | 3 | 30 | 0.325 | 180 | 10 | 2.90 | 2.35 |
| **2N2843** | 18 | 10 | 30 | 1 | 540 | 17 | 1.40 | 1.15 |
| **2N2844** | 18 | 30 | 30 | 2.2 | 1400 | 30 | 2.90 | 2.35 |
| **2N3112** | 72 | 0.05 | 20 | 0.175 | 50 | 3.5 | 5.90 | 4.70 |
| **2N3328** | 72 | 1 | 20 | 1 | 100 | 4 | 4.40 | 3.50 |
| **2N3329** | 72 | 10 | 20 | 3 | 1000 | 32 | 2.30 | 1.85 |
| **2N3330** | 72 | 10 | 20 | 6 | 1500 | 32 | 2.15 | 1.75 |
| **2N3331** | 72 | 10 | 20 | 15 | 2000 | 32 | 2.60 | 2.10 |
| **2N3909** | 72 | 10 | 20 | 15 | 1000 | 32 | 2.00 | 1.60 |

*Minimum. †JAN type available.

## N-CHANNEL GENERAL PURPOSE FETs

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **U197** | 18 | 0.5 | 30 | 1 | 200 | 7 | $1.85 | $1.50 |
| **U198** | 18 | 0.5 | 30 | 6 | 600 | 7 | 1.65 | 1.30 |
| **U199** | 18 | 0.5 | 30 | 20 | 1500 | 7 | 1.35 | 1.05 |
| **2N3066** | 18 | 1 | 50 | 4 | 400 | 10 | 1.80 | 1.45 |
| **2N3067** | 18 | 1 | 50 | 1 | 300 | 10 | 1.40 | 1.15 |
| **2N3068** | 18 | 1 | 50 | 0.25 | 200 | 10 | 2.10 | 1.65 |
| **2N3069** | 18 | 1 | 50 | 10 | 1000 | 15 | 4.85 | 3.90 |
| **2N3070** | 18 | 1 | 50 | 2.5 | 750 | 15 | 1.65 | 1.30 |
| **2N3071** | 18 | 1 | 50 | 0.6 | 500 | 15 | 3.90 | 3.10 |
| **2N3365** | 18 | 5 | 40 | 4 | 400 | 15 | 1.40 | 1.15 |
| **2N3366** | 18 | 5 | 40 | 1 | 250 | 15 | 1.25 | 1.00 |
| **2N3367** | 18 | 5 | 40 | 0.25 | 100 | 15 | 1.80 | 1.45 |
| **2N3436** | 18 | 0.5 | 50 | 15 | 2500 | 18 | 1.95 | 1.55 |
| **2N3437** | 18 | 0.5 | 50 | 4 | 1500 | 18 | 1.40 | 1.15 |
| **2N3438** | 18 | 0.5 | 50 | 1 | 800 | 18 | 1.95 | 1.55 |
| **2N3452** | 72 | 0.1 | 50 | 4 | 200 | 6 | 2.30 | 1.85 |
| **2N3453** | 72 | 0.1 | 50 | 1 | 150 | 6 | 2.10 | 1.65 |
| **2N3454** | 72 | 0.1 | 50 | 0.25 | 100 | 6 | 2.45 | 1.95 |
| **2N3455** | 72 | 0.04 | 50 | 4 | 400 | 5 | 2.45 | 1.95 |
| **2N3456** | 72 | 0.04 | 50 | 1 | 300 | 5 | 2.30 | 1.85 |
| **2N3457** | 72 | 0.25 | 50 | 0.25 | 150 | 5 | 2.75 | 2.20 |
| **2N3458** | 18 | 0.25 | 50 | 15 | 2500 | 18 | 2.10 | 1.65 |
| **2N3459** | 18 | 0.25 | 50 | 4 | 1500 | 18 | 2.00 | 1.60 |
| **2N3460** | 18 | 0.25 | 50 | 1 | 800 | 18 | 2.25 | 1.80 |
| **2N4117** | 72 | 0.01 | 40 | 0.09 | 70 | 3 | 2.55 | 2.05 |
| **2N4117A** | 72 | 0.001 | 40 | 0.09 | 70 | 3 | 2.85 | 2.25 |
| **2N4118** | 72 | 0.01 | 40 | 0.24 | 80 | 3 | 2.00 | 1.60 |
| **2N4118A** | 72 | 0.001 | 40 | 0.24 | 80 | 3 | 3.35 | 2.70 |
| **2N4119** | 72 | 0.01 | 40 | 0.6 | 100 | 3 | 1.80 | 1.45 |
| **2N4119A** | 72 | 0.001 | 40 | 0.6 | 100 | 3 | 3.15 | 2.50 |
| **2N5647** | 72 | 0.01 | 50 | 0.6 | 300 | 3 | 5.25 | 4.20 |
| **2N5648** | 72 | 0.01 | 50 | 1.0 | 400 | 3 | 4.65 | 3.70 |
| **2N5649** | 72 | 0.01 | 50 | 1.6 | 450 | 3 | 4.95 | 3.95 |

# Siliconix incorporated

# N-CHANNEL AND P-CHANNEL JUNCTION AND MOS FETs

## N-CHANNEL WIDEBAND AMPLIFIERS (TO-72)

$BV_{GSS}$ = 30 volts min. $C_{iss}$ = 2.0 pF max. $C_{rss}$ = 0.5 pF max.

| Siliconix Type | Maximum | | Minimum | | Maximum | | Net Each, Lots of | |
|---|---|---|---|---|---|---|---|---|
| | $I_{GSS}$ nA | $V_P$ V | $I_{DSS}$ mA | $g_{fs}$ µmho | $r_{DS}$ Ohms | $I_D$ (OFF) nA | 1-29 | 30-99 |
| **U273** | 0.005 | 3 | 0.5 | 500 | ...... | ..... | $3.35 | $2.70 |
| **U273A** | 0.002 | 3 | 0.5 | 500 | ...... | ..... | 3.95 | 3.15 |
| **U274** | 0.005 | 5 | 1.0 | 600 | ...... | ..... | 3.15 | 2.50 |
| **U274A** | 0.002 | 5 | 1.0 | 600 | ...... | ..... | 3.75 | 3.00 |
| **U275** | 0.005 | 7 | 3.0 | 800 | ...... | ..... | 3.35 | 2.70 |
| **U275A** | 0.002 | 7 | 3.0 | 800 | ...... | ..... | 3.95 | 3.15 |

## P-CHANNEL CONSUMER-INDUSTRIAL (TO-18)

$BV_{GSS}$ = 40 V min. $C_{iss}$ = 20 pF max. $C_{rss}$ = 5.5 pF max.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **U300** | 0.1 | 10 | 30.0 | 8000 | 60 | 0.1 | $5.80 | $4.65 |
| **U301** | 0.1 | 6 | 15.0 | 8000 | 100 | 0.1 | 5.25 | 4.20 |

## P-CHANNEL SWITCHES, CHOPPERS, COMMUTATORS (TO-18)

$BV_{GSS}$ = 30 V min. $C_{iss}$ = 27.0 pF max. $C_{rss}$ = 7.0 pF max.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **U304** | 0.5 | 10 | 30.0 | ....... | 85 | 0.5 | $5.80 | $4.65 |
| **U305** | 0.5 | 6 | 15.0 | ....... | 110 | 0.5 | 5.35 | 4.30 |
| **U306** | 0.5 | 4 | 5.0 | ....... | 175 | 0.5 | 5.00 | 4.00 |

## N-CHANNEL VHF-UHF

$BV_{GSS}$ = 25 V max. $V_P$ = 6.0 V max. $I_{GSS}$ = 0.1 nA max. (U310, 0.5 nA).

| Siliconix Type | Case | Minimum | | Maximum | | Net Each, Lots of | |
|---|---|---|---|---|---|---|---|
| | | $I_{DSS}$ mA | $g_{fs}$ µmho | $C_{iss}$ pF | $C_{rss}$ pF | 1-29 | 30-99 |
| **U310** | TO-52 | 20.0 | 10,000 | 7.5 | 2.5 | $ 8.60 | $ 6.85 |
| **U312** | TO-52 | 10.0 | 6000 | 5.0 | 1.5 | 4.40 | 3.50 |
| **UT100** | OD80 | 10.0 | 6000 | 5.0 | 2.0 | 8.05 | 6.45 |
| **UT101** | OD80 | 10.0 | 6000 | 5.0 | 2.0 | 37.75 | 29.85 |
| **UT103** | OD81 | 10.0 | 6000 | 5.0 | 1.2 | 7.45 | 5.95 |
| **UT104** | OD82 | 10.0 | 6000 | 5.0 | 1.2 | 8.05 | 6.45 |

## N-CHANNEL PHOTOFETS

In TO-72 case with lens. $S_{IN}$ = 1.0 µA/mW/cm² min. $I_{GSS}$ = 0.25 nA max. at 40 volts. Spectral response = 0.4–1.1 microns.

**P-236**—Net Ea., Lots of 1–29 ..... **$7.85**; 30–99 ..... **$6.25**
**P-237**—Net Ea., Lots of 1–29 ..... **6.35**; 30–99 ..... **5.05**
**P-238**—Net Ea., Lots of 1–29 ..... **5.60**; 30–99 ..... **4.50**

## P-CHANNEL PHOTOFET P102

In TO-18 case with lens. $S_{IN}$ = 0.4 µA/mW/cm² min. $I_{GSS}$ = 10 nA max. at 30 volts. Spectral response = 0.4–1.1 microns.

**P102**—Net Ea., Lots of 1–29 ...... **$3.35**; 30–99 ...... **$2.70**

## N-CHANNEL EPOXY FETS

Prefix **E,** epoxy case; prefix **EP,** epoxy case with lens. **E100–E103**—Amplifiers, choppers. **E108–E113**—Analog switches, choppers and commutators. **E300**—VHF-UHF. **EP120–EP123**—Photodiodes and amplifiers. $BV_{GSS}$ = 30 V except E108–E110, 10 V; E111–E300, 25 V.

| Siliconix Type | Maximum | | Minimum | | Max. $C_{iss}$ pF | Net Each, Lots of | |
|---|---|---|---|---|---|---|---|
| | $I_{GSS}$ nA | $V_P$ V | $I_{DSS}$ mA | $g_{fs}$ µmho | | 1-29 | 30-99 |
| **E100** | 0.5 | 10.0 | 0.2 | 500 | 8.0 | $1.05 | $0.85 |
| **E101** | 0.5 | 1.5 | 0.2 | 500 | 8.0 | 1.40 | 1.15 |
| **E102** | 0.5 | 4.0 | 0.9 | 1000 | 8.0 | 1.35 | 1.05 |
| **E103** | 0.5 | 10.0 | 4.0 | 1000 | 8.0 | 1.20 | .95 |
| **E108** | 10.0 | 10.0 | 80.0 | ....... | 8.0* | 4.95 | 3.95 |
| **E109** | 10.0 | 6.0 | 40.0 | ....... | 12.0* | 3.75 | 3.00 |
| **E110** | 10.0 | 4.0 | 10.0 | ....... | 18.0* | 4.40 | 3.50 |
| **E111** | 3.0 | 10.0 | 20.0 | ....... | 30.0* | 1.20 | .95 |
| **E112** | 3.0 | 5.0 | 5.0 | ....... | 50.0* | 1.20 | .95 |
| **E113** | 3.0 | 3.0 | 2.0 | ....... | 100.0* | 1.20 | .95 |
| **E300** | 0.5 | 6.6 | 6.0 | 4500 | 5.5 | 1.40 | 1.15 |
| **EP120** | 0.5 | 10.0 | 0.2 | 500 | 8.0 | 1.45 | 1.15 |
| **EP121** | 0.5 | 1.5 | 0.2 | 500 | 8.0 | 2.45 | 2.00 |
| **EP122** | 0.5 | 4.0 | 0.9 | 1000 | 8.0 | 2.00 | 1.65 |
| **EP123** | 0.5 | 10.0 | 4.0 | 1500 | 8.0 | 1.65 | 1.35 |

*Maximum $r_{DS}$, ohms.

## VOLTAGE CONTROLLED RESISTORS

Drain-source resistance may be increased from $r_{ds(on)}$ (as low as 40 ohms typ.) to over 50 megohms by increasing the gate-source voltage from zero to $V_P$. Suffix denotes channel material.

| Siliconix Type | Min.-Max. | Typ. $r_{DS}$ at $V_{gs}$ = | | | Net Each, Lots of | |
|---|---|---|---|---|---|---|
| | $V_P$ Volts | 0 Ohms | 0.8 $V_P$ Ohms | $V_P$ Megohms | 1-29 | 30-99 |
| **VCR2N** | 3.5–7 | 40 | 300 | > 50 | $ 2.25 | $ 1.80 |
| **VCR3P** | 3.5–7 | 120 | 500 | > 50 | 2.25 | 1.80 |
| **VCR4N** | 3.5–7 | 400 | 3000 | > 50 | 2.25 | 1.80 |
| **VCR5P** | 3.5–7 | 600 | 4500 | > 50 | 2.25 | 1.80 |
| **VCR6P** | 2–4 | 650 | 4200 | > 50 | 2.25 | 1.80 |
| **VCR7N** | 2.5–5 | 6K | 42K | > 50 | 2.25 | 1.80 |
| **VCR10N** | 8–12 | 150 | ......... | ........... | 7.55 | 6.05 |
| **VCR11N** | Dual VCR10N 5%* | | | 200‡ | 28.55 | 18.05 |
| **VCR12N** | Quad VCR10N 10%* | | | 200‡ | 48.05 | 38.45 |
| **VCR13N** | Quad VCR10N 5%* | | | 200‡ | 60.00 | 48.00 |

*Max. $r_{RD}$ match to 2 Kohms. ‡Ohms.

**LARGER QUANTITY PRICES AVAILABLE**

## DUAL CHANNEL FETS (TO-71)

$BV_{GSS}$ = 50 V min. except U257, 2N5911, 2N5912, 25 V; 2N5515–2N5523, 2N5564, 40 V.

| Siliconix Type | Maximum Ratings | | | | | | Net Each, Lots of | |
|---|---|---|---|---|---|---|---|---|
| | $V_{GS1}$-$V_{GS2}$ mV | $V_{GS}/T$ µV/°C | $I_{GS1}$-$I_{G2}$* nA | $I_G$ pA | $V_P$ V | $I_{DSS}$ mA | 1-29 | 30-99 |
| **U231†** | 5.0 | 10.0 | 10.0 | 50 | 4.5 | 5.0 | $ 8.90 | $ 7.10 |
| **U232†** | 10.0 | 25.0 | 10.0 | 50 | 4.5 | 5.0 | 5.80 | 4.65 |
| **U233†** | 15.0 | 50.0 | 10.0 | 50 | 4.5 | 5.0 | 4.65 | 3.70 |
| **U234†** | 20.0 | 75.0 | 10.0 | 50 | 4.5 | 5.0 | 3.90 | 3.10 |
| **U235†** | 25.0 | 100.0 | 10.0 | 50 | 4.5 | 5.0 | 3.60 | 2.85 |
| **U257‡** | 100.0 | ....... | ...... | ..... | 5.0 | 40.0 | 5.90 | 4.70 |
| **U280** | 10.0 | 10.0 | 10.0 | 50 | 4.5 | 6.0 | 12.10 | 9.65 |
| **U281** | 25.0 | 10.0 | 10.0 | 50 | 4.5 | 6.0 | 9.10 | 7.30 |
| **U282** | 10.0 | 20.0 | 10.0 | 50 | 4.5 | 6.0 | 8.30 | 6.65 |
| **U283** | 25.0 | 20.0 | 10.0 | 50 | 4.5 | 6.0 | 6.85 | 5.50 |
| **U284** | 25.0 | 40.0 | 10.0 | 50 | 4.5 | 6.0 | 5.25 | 4.20 |
| **U285** | 50.0 | 75.0 | 10.0 | 50 | 4.5 | 6.0 | 3.60 | 2.85 |
| **2N3921** | 5.0 | 10.0 | ...... | 250 | 2.7 | 10.0 | 11.20 | 8.95 |
| **2N3922** | 5.0 | 25.0 | ...... | 250 | 2.7 | 10.0 | 7.15 | 5.75 |
| **2N4084** | 15.0 | 10.0 | ...... | 250 | 2.7 | 10.0 | 10.60 | 8.50 |
| **2N4085** | 15.0 | 25.0 | ...... | 250 | 2.7 | 10.0 | 6.70 | 5.35 |
| **2N5196** | 5.0 | 5.0 | 5.0 | 15 | 4.0 | 7.0 | 20.75 | 16.60 |
| **2N5197** | 5.0 | 10.0 | 5.0 | 15 | 4.0 | 7.0 | 12.85 | 10.25 |
| **2N5198** | 10.0 | 20.0 | 5.0 | 15 | 4.0 | 7.0 | 8.45 | 6.75 |
| **2N5199** | 15.0 | 40.0 | 5.0 | 15 | 4.0 | 7.0 | 6.65 | 5.30 |
| **2N5515** | 5.0 | 5.0 | 10.0 | 100 | 4.0 | 7.5 | 17.55 | 14.05 |
| **2N5516** | 5.0 | 10.0 | 10.0 | 100 | 4.0 | 7.5 | 13.15 | 10.50 |
| **2N5517** | 10.0 | 20.0 | 10.0 | 100 | 4.0 | 7.5 | 10.40 | 8.30 |
| **2N5518** | 15.0 | 40.0 | 10.0 | 100 | 4.0 | 7.5 | 7.70 | 6.15 |
| **2N5519** | 5.0 | 5.0 | 10.0 | 100 | 4.0 | 7.5 | 5.80 | 4.65 |
| **2N5520** | 5.0 | 5.0 | 10.0 | 100 | 4.0 | 7.5 | 26.80 | 21.45 |
| **2N5521** | 5.0 | 10.0 | 10.0 | 100 | 4.0 | 7.5 | 19.95 | 15.95 |
| **2N5522** | 10.0 | 20.0 | 10.0 | 100 | 4.0 | 7.5 | 14.80 | 11.80 |
| **2N5523** | 15.0 | 40.0 | 10.0 | 100 | 4.0 | 7.5 | 11.20 | 8.95 |
| **2N5545** | 5.0 | 10.0 | 5.0 | 50 | 4.5 | 8.0 | 10.65 | 8.55 |
| **2N5546** | 10.0 | 20.0 | 5.0 | 50 | 4.5 | 8.0 | 7.00 | 5.60 |
| **2N5547** | 15.0 | 40.0 | 5.0 | 50 | 4.5 | 8.0 | 5.50 | 4.40 |
| **2N5564** | 5.0 | 10.0 | ...... | ..... | 3.0 | 30.0 | 14.95 | 11.95 |
| **2N5565** | 25.0 | 25.0 | ...... | ..... | 3.0 | 30.0 | 11.20 | 8.95 |
| **2N5902‡** | 5.0 | 5.0 | 2.0 | 3 | 4.5 | 0.5 | 17.85 | 14.25 |
| **2N5903‡** | 5.0 | 10.0 | 2.0 | 3 | 4.5 | 0.5 | 12.55 | 10.05 |
| **2N5904‡** | 10.0 | 20.0 | 2.0 | 3 | 4.5 | 0.5 | 8.50 | 6.80 |
| **2N5905‡** | 15.0 | 40.0 | 2.0 | 1 | 4.5 | 0.5 | 5.90 | 4.70 |
| **2N5906‡** | 5.0 | 5.0 | 0.2 | 1 | 4.5 | 0.5 | 21.50 | 17.20 |
| **2N5907‡** | 5.0 | 10.0 | 0.2 | 1 | 4.5 | 0.5 | 14.85 | 11.90 |
| **2N5908‡** | 10.0 | 20.0 | 0.2 | 3 | 4.5 | 0.5 | 10.25 | 8.20 |
| **2N5909‡** | 15.0 | 40.0 | 0.2 | 1 | 4.5 | 0.5 | 7.10 | 5.65 |
| **2N5911‡** | 10.0 | 20.0 | 20.0 | 100 | 5.0 | 40.0 | 11.85 | 9.50 |
| **2N5912‡** | 15.0 | 40.0 | 20.0 | 100 | 5.0 | 40.0 | 6.35 | 5.05 |
| **DU4340** | Two 2N4340's | | | | | | 3.90 | 3.10 |

*At 125° C. †SI-71 case. ‡TO-78 case.

## N-CHANNEL MOS FETS (TO-18)

Depletion except M116 and M117 are enhancement types. $BV_{DSS}$ = 20 V min. (M116, M117, 30 V min.).

| Siliconix Type | Typical | | Maximum | | | Net Each, Lots of | |
|---|---|---|---|---|---|---|---|
| | $V_{GS(th)}$ V | $r_{DS}$ (ON) Ohms | $I_D$ (OFF) nA | $I_{GSS}$ nA | $C_{gd}$ pF | 1-29 | 30-99 |
| **M100** | 5.0* | 150 | 1.0 | 1.5 | 1.6† | $ 6.25 | $5.00 |
| **M101** | 8.0* | 300 | 1.0 | ........ | 1.6† | 6.25 | 5.00 |
| **M116§•** | 2.0 | 95 | 10.0 | 0.1 | 2.5‡ | 8.60 | 6.85 |
| **M117•** | 2.0 | 95 | 10.0 | 0.001 | 2.5‡ | 9.55 | 7.65 |
| **2N3631** | 6.0* | 100 | 0.1 | ........ | 1.6† | 10.30 | 8.25 |

## P-CHANNEL MOS FETS (TO-72)

Enhancement except M106, common source, dual and M107, M108, separate sources, dual.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **M103§** | 4.2 | 150 | 0.2 | 0.1 | 4.0‡ | $ 7.90 | $ 6.35 |
| **M104§** | 4.2 | 1500 | 0.1 | 0.1 | 0.5‡ | 6.95 | 5.55 |
| **M106§#** | 3.7 | 130 | 0.2 | 0.1 | 4.0‡ | 15.85 | 12.65 |
| **M107§#** | 3.7 | 130 | 0.2 | 0.1 | 4.0‡ | 15.85 | 12.65 |
| **M108#** | 3.0 | 140 | 0.2 | 0.001 | 4.0‡ | 17.40 | 13.90 |
| **M113§** | 2.5 | 90 | 0.2 | 0.1 | 4.0‡ | 9.55 | 7.65 |
| **M114§** | 3.0 | 200 | 0.2 | 0.1 | 4.0‡ | 8.50 | 6.80 |
| **M119§** | 3.8 | 210 | 0.8 | 0.25 | 8.0‡ | 11.65 | 9.30 |
| **M163** | 3.2 | 450 | 0.2 | 0.01 | 0.7† | 4.10 | 3.30 |
| **M164** | 3.2 | 450 | 0.4 | 0.01 | 0.7 | 3.65 | 2.95 |
| **M511§** | 3.8 | 175 | 10.0 | 1.0 | 2.5‡ | 5.90 | 4.70 |
| **M511A§** | 4.2 | 300 | 10.0 | 1.0 | 2.5‡ | 5.90 | 4.70 |
| **M517§** | 3.0 | 140 | 0.3 | 1.5 | 7.0‡ | 9.40 | 7.50 |
| **3N163** | 3.2 | 450 | 0.2 | 0.010 | 0.7† | 4.40 | 3.50 |
| **3N164** | 3.2 | 450 | 0.4 | 0.010 | 0.7† | 4.10 | 3.30 |
| **3N167§** | 3.8 | 18 | 0.5 | 0.1 | 12.0† | 14.05 | 11.20 |
| **3N168§** | 4.0 | 28 | 1.0 | 0.5 | 12.0† | 20.55 | 16.40 |

*$V_P$. †$C_{rss}$. ‡Body guarded. §Gate protected. #TO-99 case. •TO-72 case.

## CURRENT LIMITER DIODES (TO-18)

| Siliconix Type | $I_O$ ±20% µA | Minimum | | Max. $V_L$ V | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|
| | | $Z_D$ MΩ | $Z_k$ MΩ | | 1-29 | 30-99 | 100-999 |
| **CL2210** | 220 | 6 | 1 | 1 | $2.90 | $2.35 | $1.95 |
| **CL3310** | 330 | 4 | 0.6 | 1.1 | 2.90 | 2.35 | 1.95 |
| **CL4710** | 470 | 2.5 | 0.4 | 1.3 | 2.90 | 2.35 | 1.95 |
| **CL6810** | 680 | 1.4 | 0.25 | 1.5 | 2.90 | 2.35 | 1.95 |
| **CL1020** | 1000 | 1 | 0.12 | 1.8 | 2.90 | 2.35 | 1.95 |
| **CL1520** | 1500 | 0.65 | 0.08 | 2.1 | 2.90 | 2.35 | 1.95 |
| **CL2220** | 2200 | 0.5 | 0.05 | 2.5 | 2.90 | 2.35 | 1.95 |
| **CL3320** | 3300 | 0.35 | 0.025 | 3.0 | 2.90 | 2.35 | 1.95 |
| **CL4720** | 4700 | 0.25 | 0.015 | 3.5 | 2.90 | 2.35 | 1.95 |

# Texas Instruments Transistors

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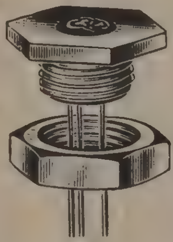

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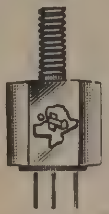

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## GERMANIUM POWER TRANSISTORS

Ratings at 25° C and $I_{CBO}$ at $V_{CBO}$ except as otherwise noted.

| TI Type | Case | $P_D$ Case W | $V_{CBO}$ V | $h_{FE}$ at $I_C$ | | Net, Lots | | TI Type | Case | $P_D$ Case W | $V_{CBO}$ V | $h_{FE}$ at $I_C$ | | Net, Lots | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Min.-Max. | A | 1-99 | 100 Up | | | | | Min.-Max. | A | 1-99 | 100 Up |
| TI156 | ** | 25 | 30 | 25–75 | .5 | $1.95 | $1.30 | 2N1541 | V | 106 | 80 | 50–100 | 3 | $1.85 | $1.38 |
| TI156L | PP | 25 | 30 | 25–75 | .5 | 2.25 | 1.50 | 2N1542 | V | 106 | 100 | 50–100 | 3 | 2.35 | 1.75 |
| TI159 | K | 20 | 40 | 20–60 | 1 | 3.00 | 2.00 | 2N1543 | V | 106 | 120 | 50–100 | 3 | 3.60 | 2.65 |
| TI160 | K | 20 | 60 | 20–60 | 1 | 3.90 | 2.60 | 2N1544 | V | 106 | 40 | 75–150 | 3 | 1.65 | 1.24 |
| TI161 | K | 20 | 80 | 20–60 | 1 | 5.85 | 3.90 | 2N1545 | V | 106 | 60 | 75–150 | 3 | 1.85 | 1.35 |
| TI162 | K | 20 | 100 | 20–60 | 1 | 7.65 | 5.10 | 2N1546 | V | 106 | 80 | 75–150 | 3 | 2.30 | 1.70 |
| 2N250A | V | 90 | 40 | 25–100 | 3 | 1.73 | 1.15 | 2N1547 | V | 106 | 100 | 75–150 | 3 | 2.75 | 2.05 |
| 2N251A | V | 90 | 60 | 25–100 | 3 | 1.88 | 1.25 | 2N1548 | V | 106 | 120 | 75–150 | 3 | 4.00 | 2.95 |
| 2N456A | V | 150 | 40 | 30–90 | 5 | 1.80 | 1.20 | 2N2552 | C | 20 | 40 | 20–60 | 1 | 1.88 | 1.25 |
| 2N456B | V | 150 | 40 | 30–90 | 5 | 1.80 | 1.20 | 2N2553* | C | 20 | 60 | 20–60 | 1 | 2.48 | 1.65 |
| 2N457A | V | 150 | 60 | 30–90 | 5 | 2.18 | 1.45 | 2N2554 | C | 20 | 80 | 20–60 | 1 | 1.95 | 1.30 |
| 2N457B | V | 150 | 60 | 30–90 | 5 | 2.18 | 1.45 | 2N2555* | C | 20 | 100 | 20–60 | 1 | 4.50 | 3.00 |
| 2N458A | V | 150 | 80 | 30–90 | 5 | 2.63 | 1.75 | 2N2556 | B | 20 | 40 | 20–60 | 1 | 2.48 | 1.65 |
| 2N458B | V | 150 | 80 | 30–90 | 5 | 2.63 | 1.75 | 2N2557* | B | 20 | 60 | 20–60 | 1 | 2.48 | 1.65 |
| 2N511 | V | 150 | 40 | 20–60 | 10 | 4.05 | 2.70 | 2N2558 | B | 20 | 80 | 20–60 | 1 | 3.68 | 2.45 |
| 2N511A | V | 150 | 60 | 20–60 | 10 | 4.73 | 3.15 | 2N2559* | B | 20 | 100 | 20–60 | 1 | 4.50 | 3.00 |
| 2N511B | V | 150 | 80 | 20–60 | 10 | 5.18 | 3.45 | 2N2560 | C | 20 | 40 | 20–60 | 3 | 1.58 | 1.05 |
| 2N512 | V | 150 | 40 | 20–60 | 15 | 4.73 | 3.15 | 2N2561 | C | 20 | 60 | 20–60 | 3 | 3.60 | 2.40 |
| 2N512A | V | 150 | 60 | 20–60 | 15 | 5.40 | 3.60 | 2N2562 | C | 20 | 80 | 20–60 | 3 | 5.78 | 3.85 |
| 2N512B | V | 150 | 80 | 20–60 | 15 | 7.10 | 4.74 | 2N2563 | C | 20 | 100 | 20–60 | 3 | 6.00 | 4.00 |
| 2N1021 | V | 150 | 100 | 30–90 | 5 | 3.08 | 2.05 | 2N2564 | G | 20 | 40 | 20–60 | 3 | 3.00 | 2.00 |
| 2N1021A | V | 150 | 100 | 30–90 | 5 | 3.08 | 2.05 | 2N2565 | G | 20 | 60 | 20–60 | 3 | 3.75 | 2.50 |
| 2N1022 | V | 150 | 120 | 30–90 | 5 | 3.60 | 2.40 | 2N2566 | G | 20 | 80 | 20–60 | 3 | 5.78 | 3.85 |
| 2N1022A | V | 150 | 120 | 30–90 | 5 | 3.60 | 2.40 | 2N2567 | G | 20 | 100 | 20–60 | 3 | 6.00 | 4.00 |
| 2N1038 | G | 20 | 40 | 20–60 | 1 | 1.80 | 1.20 | 2N2659 | G | 15 | 50 | 30–90 | .5 | 1.65 | 1.10 |
| 2N1039* | G | 20 | 60 | 20–60 | 1 | 2.40 | 1.60 | 2N2660 | G | 15 | 70 | 30–90 | .5 | 1.95 | 1.30 |
| 2N1040 | G | 20 | 80 | 20–60 | 1 | 3.60 | 2.40 | 2N2661 | G | 15 | 90 | 30–90 | .5 | 2.85 | 1.90 |
| 2N1041* | G | 20 | 100 | 20–60 | 1 | 4.50 | 3.00 | 2N2662 | C | 15 | 50 | 30–90 | .5 | 1.65 | 1.10 |
| 2N1042* | B | 20 | 40 | 20–60 | 3 | 2.85 | 1.90 | 2N2663 | C | 15 | 70 | 30–90 | .5 | 2.40 | 1.60 |
| 2N1043* | B | 20 | 60 | 20–60 | 3 | 4.20 | 2.80 | 2N2664 | C | 15 | 90 | 30–90 | .5 | 3.00 | 2.00 |
| 2N1044* | B | 20 | 80 | 20–60 | 3 | 4.80 | 3.20 | 2N2665 | G | 15 | 50 | 30–90 | .5 | 2.40 | 1.60 |
| 2N1045* | B | 20 | 100 | 20–60 | 3 | 7.20 | 4.80 | 2N2666 | G | 15 | 70 | 30–90 | .5 | 3.00 | 2.00 |
| 2N1529 | V | 106 | 40 | 20–40 | 3 | 1.45 | 1.08 | 2N2667 | G | 15 | 90 | 30–90 | .5 | 3.75 | 2.50 |
| 2N1530 | V | 106 | 60 | 20–40 | 3 | 1.60 | 1.15 | 2N2668 | C | 15 | 50 | 30–90 | .5 | 2.33 | 1.55 |
| 2N1531 | V | 106 | 80 | 20–40 | 3 | 2.30 | 1.70 | 2N2669 | C | 15 | 70 | 30–90 | .5 | 3.00 | 2.00 |
| 2N1532 | V | 106 | 100 | 20–40 | 3 | 3.00 | 2.24 | 2N2670 | C | 15 | 90 | 30–90 | .5 | 3.90 | 2.60 |
| 2N1533 | V | 106 | 120 | 20–40 | 3 | 4.35 | 3.25 | TI3027 | V | 150 | 45 | 40–250 | 3 | 1.20 | .80 |
| 2N1534 | V | 106 | 40 | 35–70 | 3 | 1.40 | 1.05 | TI3028 | V | 106 | 60 | 40–250 | 3 | 1.43 | .95 |
| 2N1535 | V | 106 | 60 | 35–70 | 3 | 1.50 | 1.14 | TI3029 | V | 106 | 80 | 30–250 | 5 | 1.65 | 1.10 |
| 2N1536 | V | 106 | 80 | 35–70 | 3 | 1.70 | 1.25 | TI3030 | V | 106 | 100 | 30–250 | 5 | 1.88 | 1.25 |
| 2N1537 | V | 106 | 100 | 35–70 | 3 | 3.90 | 2.90 | TI3031 | V | 106 | 120 | 30–90 | 5 | 2.03 | 1.35 |
| 2N1538 | V | 106 | 120 | 35–70 | 3 | 5.50 | 4.05 | 2N3146 | V | 150 | 150 | 25–90 | 10 | 4.35 | 2.90 |
| 2N1539 | V | 106 | 40 | 50–100 | 3 | 1.50 | 1.12 | 2N3147 | V | 150 | 180 | 25–90 | 10 | 5.48 | 3.65 |
| 2N1540 | V | 106 | 60 | 50–100 | 3 | 1.58 | 1.18 | | | | | | | | |

*JAN type available. **Case PP except wire leads instead of lug terminals.

## GERMANIUM PNP HIGH-FREQUENCY POWER SWITCH

$h_{fe}$ at 10 MHz $\geq 1$. Ratings at 25° C.

| TI Type | Case | $I_C$ A | $P_D$ Case W | $V_{(BR)CBO}$ V | $I_{CBO}$ at $V_{CB}$ | | $h_{FE}$ at $I_C$ | | Net Each, Lots of | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | mA | V | Min.-Max. | A | 1-99 | 100 Up |
| 2N1046* | V | 20 | 50 | 100 | 2 | 75 | 60–200 | 5 | $10.25 | $7.50 |
| 2N1907 | V | 20 | 60 | 100 | 10 | 100 | 30–170 | 10 | 9.38 | 6.75 |
| 2N1908 | V | 20 | 60 | 130 | 10 | 130 | 30–170 | 10 | 12.75 | 9.00 |

*JAN type available.

## GERMANIUM SMALL-SIGNAL TRANSISTORS

Power dissipation in free air.

### PNP HIGH-VOLTAGE SWITCHING

| TI Type | Case | $P_D$ mW | Col. Cur. mA | Col. Voltage V | Net Each, Lots of | | TI Type | Case | $P_D$ mW | Col. Cur. mA | Col. Voltage V | Net Each, Lots of | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1-99 | 100 Up | | | | | | 1-99 | 100 Up |
| 2N398 | I | 50 | 100 | 105 | $0.90 | $0.60 | 2N398B | I | 250 | 200 | 105 | $1.23 | $0.82 |
| 2N398A | I | 150 | 200 | 105 | .98 | .65 | | | | | | | |

### PNP HIGH-FREQUENCY SMALL SIGNAL

| TI Type | Case | $P_D$ mW | Col. Cur. mA | Col. Voltage V | Net Each, Lots of | | TI Type | Case | $P_D$ mW | Col. Cur. mA | Col. Voltage V | Net Each, Lots of | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1-99 | 100 Up | | | | | | 1-99 | 100 Up |
| TIXM101 | G3 | 75 | 50 | 15 | $19.00 | $12.65 | 2N2191 | HH | 125 | 30 | 60 | $ 1.85 | $ 1.23 |
| 2N1141 | G | 300 | 100 | 35 | 4.73 | 3.15 | 2N2415 | G3 | 75 | 20 | 15 | 5.80 | 3.85 |
| 2N1141A | G | 300 | 100 | 35 | 13.70 | 9.14 | 2N2416 | G3 | 75 | 20 | 15 | 3.50 | 2.25 |
| 2N1142* | G | 300 | 100 | 30 | 4.05 | 2.70 | 2N2996 | G3 | 75 | 50 | 15 | 1.43 | .95 |
| 2N1142A | G | 300 | 100 | 30 | 6.29 | 4.18 | 2N2997 | G3 | 75 | 50 | 30 | 3.08 | 2.05 |
| 2N1143 | G | 300 | 100 | 25 | 3.34 | 2.22 | 2N2998 | G3 | 75 | 20 | 15 | 15.00 | 10.00 |
| 2N1143A | G | 300 | 100 | 30 | 5.86 | 3.91 | 2N2999 | G3 | 75 | 20 | 15 | 22.50 | 15.00 |
| 2N1195 | G | 225 | 40 | 30 | 3.95 | 2.63 | 2N3371 | U | 150 | 100 | 25 | 5.43 | 3.62 |
| 2N2188 | HH | 125 | 30 | 40 | 1.28 | .85 | 2N5043 | G3 | 30 | 30 | 15 | 19.00 | 12.65 |
| 2N2189 | HH | 125 | 30 | 40 | 1.64 | 1.09 | 2N5044 | G3 | 30 | 30 | 15 | 9.50 | 6.33 |
| 2N2190 | HH | 125 | 30 | 60 | 1.47 | .98 | | | | | | | |

### PNP GENERAL PURPOSE

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2N315A | I | 150 | 500 | 30 | $2.25 | $1.50 | 2N1370* | I | 150 | 150 | 25 | $0.72 | $0.48 |
| 2N317A | I | 150 | 500 | 70 | 4.35 | 2.90 | 2N1371* | I | 150 | 150 | 25 | 1.14 | .76 |
| 2N520 | I | 100 | 300 | 15 | 1.28 | .85 | 2N1372 | I | 250 | 200 | 25 | .81 | .54 |
| 2N520A | I | 100 | 300 | 25 | 1.28 | .85 | 2N1373 | I | 250 | 200 | 45 | 1.20 | .80 |
| 2N522A | I | 150 | 300 | 25 | 3.00 | 2.00 | 2N1374 | I | 250 | 200 | 25 | 1.02 | .68 |
| 2N658 | I | 250 | 1000 | 30 | 1.28 | .85 | 2N1375 | I | 250 | 200 | 45 | 1.38 | .92 |
| 2N659 | I | 250 | 1000 | 30 | 1.30 | .87 | 2N1376 | I | 250 | 200 | 25 | 1.29 | .86 |
| 2N660 | I | 250 | 1000 | 30 | 1.48 | .99 | 2N1377 | I | 250 | 200 | 45 | 1.50 | 1.00 |
| 2N661 | I | 250 | 1000 | 30 | 1.71 | 1.14 | 2N1378 | I | 250 | 200 | 12 | 1.29 | .86 |
| 2N662 | I | 250 | 1000 | 30 | 1.40 | .93 | 2N1379 | I | 250 | 200 | 25 | 1.44 | .96 |
| 2N1273* | I | 150 | 150 | 15 | .42 | .28 | 2N1380 | I | 250 | 200 | 12 | .66 | .44 |
| 2N1274* | I | 150 | 150 | 25 | .50 | .33 | 2N1381 | I | 250 | 200 | 25 | .72 | .48 |

*Specific beta range available; specifications and prices on request. *JAN type available.

**SEE THE FOLLOWING TI PAGES FOR ADDITIONAL ILLUSTRATIONS**

# Texas Instruments Transistors

## GERMANIUM SMALL SIGNAL TRANSISTORS (CONT'D)

### PNP SWITCHING

Power dissipation in free air.

| TI Type | Case | $P_D$ mW | Col. Cur. mA | Col. Voltage V | Net Each, Lots of | |
|---|---|---|---|---|---|---|
| | | | | | 1-99 | 100 Up |
| JAN2N358A§ | I | 150 | 500 | 30 | $3.92 | $2.62 |
| 2N377§ | I | 150 | 200 | 25 | 1.50 | 1.00 |
| 2N388*§ | I | 150 | 200 | 25 | .47 | .34 |
| 2N388A§ | I | 150 | 200 | 40 | .88 | .64 |
| 2N395 | I | 150 | 250 | 30 | .50 | .33 |
| 2N396 | I | 150 | 250 | 30 | .61 | .41 |
| 2N397 | I | 150 | 250 | 30 | 1.11 | .74 |
| 2N404* | I | 150 | 100 | 25 | .42 | .28 |
| 2N404A* | I | 150 | 150 | 40 | .58 | .39 |
| 2N426 | I | 150 | 400 | 30 | .72 | .48 |
| 2N427* | I | 150 | 400 | 30 | .92 | .61 |
| 2N428* | I | 150 | 400 | 30 | 1.23 | .82 |
| 2N438§ | I | 150 | 300 | 30 | 1.50 | 1.00 |
| 2N438A§ | I | 150 | 300 | 25 | 1.50 | 1.00 |
| 2N439§ | I | 150 | 300 | 30 | 1.87 | 1.25 |
| 2N440§ | I | 150 | 300 | 30 | 2.85 | 1.90 |
| 2N581 | I | 150 | 100 | 18 | .50 | .33 |
| 2N582 | I | 150 | 100 | 25 | .66 | .48 |
| 2N587§ | I | 150 | 200 | 40 | 3.34 | 2.22 |
| 2N594†‡§ | I | 150 | 300 | 20 | 2.75 | 1.83 |
| 2N595†‡§ | I | 150 | 300 | 20 | 4.25 | 2.83 |
| 2N596†‡§ | I | 150 | 300 | 20 | 5.65 | 3.77 |
| 2N634A§ | I | 150 | 300 | 25 | .96 | .64 |
| 2N635A§ | I | 150 | 300 | 25 | 1.34 | .89 |
| 2N636A§ | I | 150 | 300 | 25 | 2.00 | 1.33 |
| 2N705* | U | 150 | 50 | 15 | 1.04 | .69 |
| 2N710‡ | U | 150 | 50 | 15 | 1.34 | .89 |
| 2N711 | U | 150 | 50 | 12 | .89 | .59 |
| 2N711A | U | 150 | 100 | 15 | .89 | .59 |
| 2N711B | U | 150 | 100 | 15 | .94 | .63 |
| 2N797§ | U | 150 | 150 | 20 | 4.27 | 2.85 |
| 2N960 | U | 150 | 100 | 15 | .96 | .64 |
| 2N961 | U | 150 | 100 | 12 | .91 | .61 |
| 2N962* | U | 150 | 100 | 12 | .86 | .57 |
| 2N963 | U | 150 | 100 | 12 | .83 | .55 |
| 2N964* | U | 150 | 100 | 15 | .99 | .66 |
| 2N965 | U | 150 | 100 | 12 | $0.94 | $0.63 |
| 2N966 | U | 150 | 100 | 12 | .89 | .59 |
| 2N967 | U | 150 | 100 | 12 | .87 | .58 |
| 2N968 | U | 150 | 200 | 15 | .90 | .60 |
| 2N969 | U | 150 | 200 | 12 | .84 | .56 |
| 2N970 | U | 150 | 200 | 12 | .81 | .54 |
| 2N971 | U | 150 | 200 | 7 | .80 | .53 |
| 2N972 | U | 150 | 200 | 15 | .93 | .62 |
| 2N973 | U | 150 | 200 | 12 | .89 | .59 |
| 2N974 | U | 150 | 200 | 12 | .83 | .55 |
| 2N975 | U | 150 | 200 | 7 | .81 | .54 |
| 2N985 | U | 150 | 200 | 15 | 2.83 | 1.89 |
| 2N1302§* | I | 150 | 300 | 25 | .42 | .30 |
| 2N1303* | I | 150 | 300 | 30 | .42 | .30 |
| 2N1304§* | I | 150 | 300 | 25 | .50 | .36 |
| 2N1305* | I | 150 | 300 | 30 | .48 | .35 |
| 2N1306§* | I | 150 | 100 | 25 | .62 | .45 |
| 2N1307* | I | 150 | 300 | 30 | .58 | .42 |
| 2N1308§* | I | 150 | 300 | 25 | .91 | .66 |
| 2N1309* | I | 150 | 300 | 30 | .91 | .66 |
| 2N1404 | I | 150 | 300 | 25 | .58 | .39 |
| 2N1605§ | I | 150 | 300 | 25 | .62 | .46 |
| 2N1808§ | I | 150 | 300 | 25 | .58 | .39 |
| 2N1891†§ | I | 150 | 300 | 25 | 2.49 | 1.66 |
| 2N1892 | I | 150 | 300 | 30 | .68 | .45 |
| 2N1993§ | I | 150 | 300 | 30 | 1.48 | .99 |
| 2N1994†§ | I | 150 | 300 | 30 | 2.33 | 1.55 |
| 2N1995†§ | I | 150 | 300 | 25 | 3.75 | 2.50 |
| 2N1996†§ | I | 150 | 300 | 20 | 5.14 | 3.43 |
| 2N1997 | I | 250 | 500 | 45 | 1.77 | 1.18 |
| 2N1998 | I | 250 | 500 | 35 | 1.88 | 1.25 |
| 2N1999 | I | 250 | 500 | 25 | 2.07 | 1.38 |
| 2N2000 | I | 300 | 1000 | 50 | 2.50 | 1.67 |
| 2N2001 | I | 300 | 1000 | 30 | 2.17 | 1.45 |
| 2N2635 | U | 150 | 100 | 30 | .94 | .63 |
| JAN2N3449 | U | 150 | 100 | 6 | 3.00 | 2.00 |

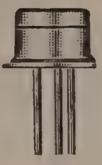
†Bi-directional. ‡Replacement only. §NPN. *JAN type available.

## NPN-PNP SILICON POWER TRANSISTORS

Power dissipation at 25° C Tc. NPN except as otherwise noted.

| TI Type | Case | $P_D$ W | $V_{CEO}$ V | $h_{FE}$ at $I_C$ | | Net, Lots | |
|---|---|---|---|---|---|---|---|
| | | | | Min.-Max. | A | 1-99 | 100 Up |
| TIP29 | M4 | 30 | 40 | 15–75 | 1 | $0.70 | $0.50 |
| TIP29A | M4 | 30 | 60 | 15–75 | 1 | .80 | .60 |
| TIP29B | M4 | 30 | 80 | 15–75 | 1 | .91 | .68 |
| TIP29C | M4 | 30 | 100 | 15–75 | 1 | 1.03 | .77 |
| TIP30§ | M4 | 30 | 40 | 15–75 | 1 | .85 | .64 |
| TIP30A§ | M4 | 30 | 60 | 15–75 | 1 | .95 | .71 |
| TIP30B§ | M4 | 30 | 80 | 15–75 | 1 | 1.06 | .80 |
| TIP30C§ | M4 | 30 | 100 | 15–75 | 1 | 1.21 | .91 |
| TIP31 | M4 | 40 | 40 | 10–50 | 3 | .91 | .68 |
| TIP31A | M4 | 40 | 60 | 10–50 | 3 | .99 | .75 |
| TIP31B | M4 | 40 | 80 | 10–50 | 3 | 1.10 | .83 |
| TIP31C | M4 | 40 | 100 | 10–50 | 3 | 1.24 | .93 |
| TIP32§ | M4 | 40 | 40 | 10–50 | 3 | 1.05 | .79 |
| TIP32A§ | M4 | 40 | 60 | 10–50 | 3 | 1.14 | .85 |
| TIP32B§ | M4 | 40 | 80 | 10–50 | 3 | 1.24 | .93 |
| TIP32C§ | M4 | 40 | 100 | 10–50 | 3 | 1.40 | 1.05 |
| TIP33 | M7 | 80 | 40 | 20–100 | 3 | 1.33 | 1.00 |
| TIP33A | M7 | 80 | 60 | 20–100 | 3 | 1.42 | 1.07 |
| TIP33B | M7 | 80 | 80 | 20–100 | 3 | 1.56 | 1.17 |
| TIP33C | M7 | 80 | 100 | 20–100 | 3 | 1.74 | 1.31 |
| TIP34§ | M7 | 80 | 40 | 20–100 | 3 | 1.60 | 1.20 |
| TIP34A§ | M7 | 80 | 60 | 20–100 | 3 | 1.70 | 1.28 |
| TIP34B§ | M7 | 80 | 80 | 20–100 | 3 | 1.86 | 1.40 |
| TIP34C§ | M7 | 80 | 100 | 20–100 | 3 | 2.04 | 1.53 |
| TIP35 | M7 | 125 | 40 | 10–50 | 15 | 3.10 | 2.34 |
| TIP35A | M7 | 125 | 60 | 10–50 | 15 | 3.28 | 2.47 |
| TIP35B | M7 | 125 | 80 | 10–50 | 15 | 3.55 | 2.67 |
| TIP35C | M7 | 125 | 100 | 10–50 | 15 | 3.90 | 2.93 |
| TIP36§ | M7 | 125 | 40 | 10–50 | 15 | 3.80 | 2.87 |
| TIP36A§ | M7 | 125 | 60 | 10–50 | 15 | 4.00 | 3.00 |
| TIP36B§ | M7 | 125 | 80 | 10–50 | 15 | 4.25 | 3.20 |
| TIP36C§ | M7 | 125 | 100 | 10–50 | 15 | 4.60 | 3.47 |
| TIP41 | M4 | 65 | 40 | 15–75 | 3 | 1.19 | .90 |
| TIP41A | M4 | 65 | 60 | 15–75 | 3 | 1.28 | .96 |
| TIP41B | M4 | 65 | 80 | 15–75 | 3 | 1.40 | 1.05 |
| TIP41C | M4 | 65 | 100 | 15–75 | 3 | 1.60 | 1.20 |
| TIP42§ | M4 | 65 | 40 | 15–75 | 3 | 1.42 | 1.07 |
| TIP42A§ | M4 | 65 | 60 | 15–75 | 3 | 1.53 | 1.15 |
| TIP42B§ | M4 | 65 | 80 | 15–75 | 3 | 1.67 | 1.25 |
| TIP42C§ | M4 | 65 | 100 | 15–75 | 3 | 1.85 | 1.39 |
| 2N389* | D | 85 | 60† | 12–60 | 1 | 21.00 | 14.00 |
| 2N389A | D | 85 | 60† | 12–60 | 1 | 21.00 | 14.00 |
| 2N424* | D | 85 | 80† | 12–60 | 1 | 16.50 | 11.00 |
| 2N424A | D | 85 | 80† | 12–60 | 1 | 16.50 | 11.00 |
| T1486 | I | 15 | 60 | 20–80 | 0.2 | 4.90 | 3.25 |
| T1487 | S | 15 | 60 | 20–80 | 0.2 | 5.60 | 3.75 |
| 2N497* | I | 4 | 60 | 12–36 | 0.2 | 1.89 | 1.26 |
| 2N497A | I | 5 | 60 | 12–36 | 0.2 | 2.05 | 1.37 |
| 2N498* | I | 4 | 100 | 12–36 | 0.2 | 2.12 | 1.41 |
| 2N498A | I | 5 | 100 | 12–36 | 0.2 | 3.45 | 2.30 |
| 2N656* | I | 4 | 60 | 30–90 | 0.2 | 2.03 | 1.35 |
| 2N656A | I | 5 | 60 | 30–90 | 0.2 | $2.40 | $1.60 |
| 2N657* | I | 4 | 100 | 30–90 | 0.2 | 2.20 | 1.47 |
| 2N657A | I | 5 | 100 | 30–90 | 0.2 | 9.00 | 6.00 |
| 2N1047 | F | 40 | 80 | 12–36 | 0.5 | 14.30 | 9.55 |
| 2N1047A | F | 40 | 80 | 12–36 | 0.5 | 14.30 | 9.55 |
| 2N1047B | F | 40 | 80 | 12–36 | 0.5 | 25.95 | 17.30 |
| 2N1048 | F | 40 | 120 | 12–36 | 0.5 | 18.10 | 12.05 |
| 2N1048A | F | 40 | 120 | 12–36 | 0.5 | 18.10 | 12.05 |
| 2N1048B | F | 40 | 120 | 12–36 | 0.5 | 38.30 | 25.50 |
| 2N1049 | F | 40 | 80 | 30–90 | 0.5 | 16.75 | 11.15 |
| 2N1049A* | F | 40 | 80 | 30–90 | 0.5 | 16.75 | 11.15 |
| 2N1049B | F | 40 | 80 | 30–90 | 0.5 | 33.75 | 22.50 |
| 2N1050 | F | 40 | 120 | 30–90 | 0.5 | 22.10 | 14.20 |
| 2N1050A* | F | 40 | 120 | 30–90 | 0.5 | 22.10 | 14.20 |
| 2N1050B | F | 40 | 120 | 30–90 | 0.5 | 46.90 | 31.20 |
| TI1121 | D | 80* | 100 | 30–120 | 2 | 18.00 | 12.00 |
| TI1122 | D | 80* | 100 | 15–60 | 2 | 16.30 | 10.85 |
| TI1123 | D | 80* | 75 | 30–120 | 2 | 14.30 | 9.55 |
| TI1124 | D | 80* | 75 | 15–60 | 2 | 12.70 | 8.45 |
| TI1125 | D | 80* | 50 | 30–120 | 2 | 9.50 | 6.35 |
| TI1126 | D | 80* | 50 | 15–60 | 2 | 8.65 | 5.75 |
| TI1131 | Z | 80* | 100 | 30–120 | 2 | 18.15 | 12.25 |
| TI1132 | Z | 80* | 100 | 15–60 | 2 | 16.65 | 11.10 |
| TI1133 | Z | 80* | 75 | 30–120 | 2 | 14.70 | 9.80 |
| TI1134 | Z | 80* | 75 | 15–60 | 2 | 13.05 | 8.70 |
| TI1135 | Z | 80* | 50 | 30–120 | 2 | 9.90 | 6.60 |
| TI1136 | Z | 80* | 50 | 15–60 | 2 | 9.00 | 6.00 |
| TI1141 | D | 80* | 100 | 20–80 | 5 | 22.20 | 14.80 |
| TI1142 | D | 80* | 100 | 10–40 | 5 | 20.40 | 13.60 |
| TI1143 | D | 80* | 75 | 20–80 | 5 | 19.95 | 13.30 |
| TI1144 | D | 80* | 75 | 10–40 | 5 | 17.40 | 11.60 |
| TI1145 | D | 80* | 50 | 20–80 | 5 | 14.85 | 9.90 |
| TI1146 | D | 80* | 50 | 10–40 | 5 | 12.75 | 8.50 |
| TI1151 | Z | 80* | 100 | 20–80 | 5 | 22.95 | 15.30 |
| TI1152 | Z | 80* | 100 | 10–40 | 5 | 21.15 | 14.10 |
| TI1153 | Z | 80* | 75 | 20–80 | 5 | 19.70 | 13.80 |
| TI1154 | Z | 80* | 75 | 10–40 | 5 | 18.15 | 12.10 |
| TI1155 | Z | 80* | 50 | 20–80 | 5 | 15.60 | 10.40 |
| TI1156 | Z | 80* | 50 | 10–40 | 5 | 13.50 | 9.00 |
| 2N1714* | I | 15 | 60 | 20–60 | 0.2 | 6.00 | 4.00 |
| 2N1715* | I | 15 | 100 | 20–60 | 0.2 | 8.25 | 5.50 |
| 2N1716* | I | 15 | 60 | 40–120 | 0.2 | 7.50 | 5.00 |
| 2N1717* | I | 15 | 100 | 40–120 | 0.2 | 11.25 | 7.50 |
| 2N1718 | S | 15 | 60 | 20–60 | 0.2 | 6.75 | 4.50 |
| 2N1719 | S | 15 | 100 | 20–60 | 0.2 | 9.00 | 6.00 |
| 2N1720 | S | 15 | 60 | 40–120 | 0.2 | 8.25 | 5.50 |
| 2N1721 | S | 15 | 100 | 40–120 | 0.2 | 12.00 | 8.00 |
| 2N1722** | D | 50 | 80 | 20–90 | 2 | 43.50 | 29.00 |
| 2N1722A | D | 50 | 120 | 30–90 | 2 | 60.00 | 40.00 |
| 2N1723 | D | 50 | 80 | 50–150 | 2 | 41.50 | 29.00 |

*At 55° C. †$V_{(BR)CER}$. §PNP. *JAN type available. **JAN and JANTX types available.
**Silicon Power Transistors continued on following page.**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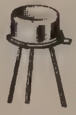
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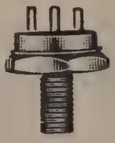
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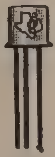
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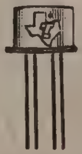
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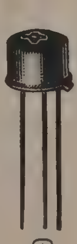
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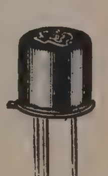

J

**SEE OTHER TI PAGES FOR ADDITIONAL ILLUSTRATIONS**

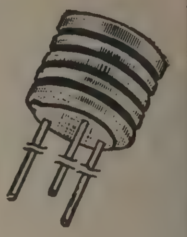
# Texas Instruments Transistors

## NPN-PNP SILICON POWER TRANSISTORS (CONTINUED)

$P_D$ at 25° C $T_C$. NPN except as otherwise noted.

| TI Type | Case | $I_C$ A | $P_D$ W | $V_{(BR)CEO}$ V | $I_{CEX}$ at $V_{CE}$ mA | $I_{CEX}$ at $V_{CE}$ V | $h_{FE}$ at $I_C$ Min.-Max. | $h_{FE}$ at $I_C$ A | Net Each, Lots of 1-99 | Net Each, Lots of 100 Up |
|---|---|---|---|---|---|---|---|---|---|---|
| 2N1724** | Z | 5 | 50 | 80 | 2 | 60 | 20–90 | 2 | $ 27·60 | $18·40 |
| 2N1724A | Z | 5 | 50 | 120 | 2 | 100 | 30–90 | 2 | 34·50 | 23·00 |
| 2N1725 | Z | 5 | 50 | 80 | 2 | 60 | 50–150 | 2 | 27·60 | 18·40 |
| 2N1936‡ | Z | 20 | 150 | 60 | 10 | 60 | 10–50 | 10 | 60·00 | 40·00 |
| 2N1937* | Z | 20 | 150 | 80 | 10 | 80 | 10–50 | 10 | 66·00 | 44·00 |
| 2N2150 | T | 2 | 30 | 80 | 0.05 | 120 | 20–60 | 1 | 18·00 | 12·00 |
| 2N2151** | T | 2 | 30 | 80 | 0.05 | 120 | 40–120 | 1 | 21·00 | 14·00 |
| 2N2880** | O | 5 | 30 | 70 | 0.05 | 60 | 40–120 | 1 | 33·00 | 22·00 |
| 2N2987 | I | 1 | 15 | 80 | 0.015 | 90 | 25–75 | 0.2 | 8·25 | 5·50 |
| 2N2988 | I | 1 | 15 | 100 | 0.015 | 150 | 25–75 | 0.2 | 11·25 | 7·50 |
| 2N2989 | I | 1 | 15 | 80 | 0.015 | 90 | 60–120 | 0.2 | 10·20 | 6·75 |
| 2N2990 | I | 1 | 15 | 100 | 0.015 | 150 | 60–120 | 0.2 | 13·10 | 8·75 |
| 2N2991 | S | 1 | 15 | 80 | 0.015 | 90 | 25–75 | 0.2 | 9·00 | 6·00 |
| 2N2992 | S | 1 | 15 | 100 | 0.015 | 150 | 25–75 | 0.2 | 12·00 | 8·00 |
| 2N2993 | S | 1 | 15 | 80 | 0.015 | 90 | 60–120 | 0.2 | 10·90 | 7·25 |
| 2N2994 | S | 1 | 15 | 100 | 0.015 | 150 | 60–120 | 0.2 | 13·90 | 9·25 |
| TIP3055 | M7 | 15 | 90 | 60 | 0.7 | 30 | 20–70 | 4 | 1·50 | 1·00 |
| 2N3418 | I | 3 | 15 | 60 | 0.05 | 80 | 10–60 | 5 | 10·45 | 6·95 |
| 2N3419 | I | 3 | 15 | 80 | 0.05 | 120 | 10–60 | 5 | 10·80 | 7·20 |
| 2N3420** | I | 3 | 15 | 60 | 0.05 | 80 | 15–120 | 5 | 10·45 | 6·95 |
| 2N3421** | I | 3 | 15 | 80 | 0.05 | 120 | 15–120 | 5 | 10·80 | 7·20 |
| 2N3551 | Y | 12 | 40 | 60 | 10 | 60 | 20–90 | 10 | 100·00 | 67·50 |
| 2N3552 | Y | 12 | 40 | 80 | 10 | 80 | 20–90 | 10 | 112·50 | 75·00 |
| 2N3713 | V | 10 | 150 | 60 | 10 | 60 | 25–75 | 1 | 4·40 | 2·95 |
| 2N3714 | V | 10 | 150 | 80 | 10 | 80 | 25–75 | 1 | 4·70 | 3·15 |
| 2N3715 | V | 10 | 150 | 60 | 10 | 60 | 50–150 | 1 | 4·85 | 3·25 |
| 2N3716 | V | 10 | 150 | 80 | 10 | 80 | 50–150 | 1 | 6·75 | 4·50 |
| 2N3789§ | V | 10 | 150 | 60 | 5 | 60 | 25–90 | 1 | 7·50 | 5·00 |
| 2N3790§ | V | 10 | 150 | 80 | 5 | 80 | 25–90 | 1 | 8·90 | 5·95 |
| 2N3791§ | V | 10 | 150 | 60 | 5 | 60 | 50–180 | 1 | 8·75 | 5·85 |
| 2N3792§ | V | 10 | 150 | 80 | 5 | 80 | 50–180 | 1 | 9·50 | 6·35 |
| 2N3846 | Z | 20 | 150 | 200 | 10 | 300 | 10–60 | 10 | 67·50 | 45·00 |
| 2N3847 | Z | 20 | 150 | 300 | 10 | 400 | 10–60 | 10 | 99·00 | 66·00 |
| 2N3996 | Z | 5 | 30 | 80 | 0.05 | 90 | 40–120 | 1 | 23·00 | 15·00 |
| 2N3997 | Z | 5 | 30 | 80 | 0.05 | 90 | 80–240 | 1 | 24·00 | 16·00 |
| 2N3998** | O | 5 | 30 | 80 | 0.05 | 90 | 40–120 | 1 | 18·30 | 12·20 |
| 2N3999** | O | 5 | 30 | 80 | 0.05 | 90 | 80–240 | 1 | 19·60 | 13·05 |
| 2N4000 | I | 1 | 15 | 80 | 0.05 | 90 | 30–120 | 0.5 | 7·10 | 4·75 |
| 2N4001 | I | 1 | 15 | 100 | 0.05 | 110 | 30–120 | 0.5 | 7·65 | 5·10 |
| 2N4002 | Z | 30 | 100 | 80 | 2 | 90 | 20–80 | 15 | 112·50 | 75·00 |
| 2N4003 | Z | 30 | 100 | 100 | 2 | 110 | 20–80 | 15 | 148·00 | 99·00 |
| 2N4004 | M5 | 20 | 40 | 80 | 2 | 90 | 30–150 | 10 | 112·50 | 75·00 |
| 2N4005 | M5 | 20 | 40 | 100 | 2 | 110 | 30–150 | 10 | 148·00 | 99·00 |
| 2N4300 | I | 2 | 15 | 80 | 0.075 | 90 | 30–120 | 1 | 8·10 | 5·40 |
| 2N4301 | Z | 10 | 50 | 80 | 0.5 | 90 | 30–120 | 5 | 31·50 | 21·00 |
| 2N4398§ | V | 30 | 200 | 40 | 10 | 30 | 15–60 | 15 | 11·25 | 7·50 |
| 2N4399§ | V | 30 | 200 | 60 | 10 | 30 | 15–60 | 15 | 13·50 | 9·05 |
| 2N4901§ | V | 5 | 87 | 40 | 2 | 40 | 20–80 | 1 | 2·75 | 1·84 |
| 2N4902§ | V | 5 | 87 | 60 | 2 | 60 | 20–80 | 1 | 3·30 | 2·21 |
| 2N4903§ | V | 5 | 87 | 80 | 2 | 80 | 20–80 | 1 | 4·25 | 2·84 |
| 2N4904§ | V | 5 | 87 | 40 | 2 | 40 | 25–100 | 2.5 | 3·35 | 2·25 |
| 2N4905§ | V | 5 | 87 | 60 | 2 | 60 | 25–100 | 2.5 | 4·45 | 2·98 |
| 2N4906§ | V | 5 | 87 | 80 | 2 | 80 | 25–100 | 2.5 | 5·60 | 3·75 |
| 2N4913 | V | 5 | 87 | 40 | 2 | 40 | 25–100 | 2.5 | 2·40 | 1·60 |
| 2N4914 | V | 5 | 87 | 60 | 2 | 60 | 25–100 | 2.5 | 2·60 | 1·75 |
| 2N4915 | V | 5 | 87 | 80 | 2 | 80 | 25–100 | 2.5 | 4·20 | 2·80 |
| 2N5301 | V | 30 | 200 | 40 | 10 | 40 | 15–60 | 15 | 6·90 | 4·60 |
| 2N5302 | V | 30 | 200 | 60 | 10 | 60 | 15–60 | 15 | 7·65 | 5·10 |
| 2N5303 | V | 20 | 200 | 80 | 10 | 80 | 15–60 | 10 | 18·00 | 12·00 |
| 2N5333§ | I | 2 | 15 | 80 | 0.5 | 50 | 30–120 | 1 | 13·50 | 9·00 |
| 2N5384§ | Z | 5 | 30 | 80 | 0.5 | 50 | 20–80 | 2 | 27·00 | 18·00 |
| 2N5385§ | O | 5 | 30 | 80 | 0.5 | 50 | 20–80 | 2 | 22·50 | 15·00 |
| 2N5386§ | Z | 12 | 50 | 80 | 0.5 | 50 | 20–80 | 6 | 73·50 | 49·00 |
| 2N5387 | Z | 7.5 | 100 | 200 | 10 | 100 | 25–100 | 2 | 38·00 | 25·50 |
| 2N5388 | Z | 7.5 | 100 | 250 | 10 | 125 | 25–100 | 2 | 42·00 | 28·00 |
| 2N5389 | Z | 7.5 | 100 | 300 | 10 | 150 | 25–100 | 2 | 48·00 | 32·00 |
| 2N5390* | E | 2 | 15 | 80 | 1 | 80 | † | 2 | 37·80 | 25·20 |
| 2N5938 | M8 | 3 | 20 | 50 | 0.1 | 55 | 30–150 | 1 | 49·50 | 29·80 |
| 2N5939 | X | 10 | 40 | 80 | 0.5 | 75 | 40–200 | 5 | 74·70 | 49·80 |
| 2N5940 | X | 10 | 40 | 70 | 0.5 | 65 | 40–200 | 5 | 55·00 | 37·00 |

*Power Darlington. †2,000–20,000. ‡Replacement only. §PNP. **JAN and JANTX types available.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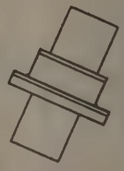
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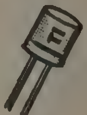
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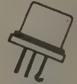
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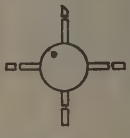

M2

## SILICON TRANSISTORS

### NPN SWITCH

$P_D$ = 360 mW at 25° C free air. Collector in electrical contact with case except Case M3.

| TI Type | Case | Min. $f_T$ MHz | Rated $V_{CEO}$ V | Net Each, Lots of 1-99 | Net Each, Lots of 100-499 | Net Each, Lots of 500-999 | TI Type | Case | Min. $f_T$ MHz | Rated $V_{CEO}$ V | Net Each, Lots of 1-99 | Net Each, Lots of 100-499 | Net Each, Lots of 500-999 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2N706** | U | 200 | 15 | $0.59 | $0.40 | $0.31 | 2N2481** | U | 300 | 15 | $1.36 | $0.91 | $0.61 |
| 2N706A* | U | 200 | 15 | .63 | .42 | .33 | 2N3010* | U | 600 | 6 | 1.17 | .78 | .52 |
| 2N706B* | U | 200 | 15 | .63 | .42 | .33 | 2N3011 | U | 400 | 12 | .98 | .67 | .48 |
| 2N708 | U | 300 | 15 | .49 | .43 | .42 | 2N3013* | G1 | 350 | 15 | 1.36 | .91 | .61 |
| 2N709* | U | 600 | 6 | 1.29 | .86 | .57 | 2N3014 | G1 | 350 | 20 | 1.29 | .86 | .57 |
| 2N743* | U | 282 | 12 | .94 | .63 | .42 | 2N4418† | M3 | 500 | 15 | .53 | .37 | ..... |
| 2N744** | U | 282 | 12 | .99 | .66 | .44 | 2N4419† | M3 | 400 | 12 | .51 | .33 | ..... |
| 2N914 | U | 300 | 15 | .95 | .63 | .55 | 2N4420† | M3 | 350 | 20 | .58 | .40 | ..... |
| 2N2368 | U | 400 | 15 | .95 | .69 | .46 | 2N4421† | M3 | 300 | 12 | .50 | .33 | ..... |
| 2N2369 | U | 500 | 15 | .98 | .73 | .48 | 2N4422† | M3 | 350 | 15 | .52 | .34 | ..... |
| 2N2369A** | U | 500 | 15 | 1.10 | .79 | .53 | | | | | | | |

*$P_D$ = 300 mW. †$P_D$ = 250 mW. *JAN type available. **JAN and JANTX types available.

### PNP SWITCH

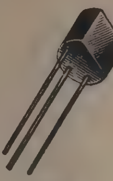
$P_D$ = 360 mW at 25° C free air except as otherwise noted. Collector in electrical contact with case.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2N2411* | U | 140 | 20 | $1.61 | $1.07 | $0.71 | 2N3250A | U | 250 | 60 | $1.39 | $0.92 | $0.61 |
| 2N2412* | U | 140 | 20 | 1.73 | 1.15 | .77 | 2N3251 | U | 300 | 40 | 1.42 | .94 | .63 |
| 2N2894 | U | 400 | 12 | 1.24 | .83 | .55 | 2N3251A** | U | 300 | 60 | 1.44 | .96 | .64 |
| 2N3012 | U | 400 | 12 | 1.17 | .78 | .52 | 2N3576 | U | 400 | 15 | 2.45 | 1.63 | 1.09 |
| 2N3250 | U | 250 | 40 | 1.37 | .91 | .60 | 2N3829 | G1 | 350 | 20 | 5.45 | 3.62 | 2.42 |

*$P_D$ = 300 mW. **JAN and JANTX types available.

SEE OTHER TI PAGES FOR ADDITIONAL ILLUSTRATIONS

# Texas Instruments Transistors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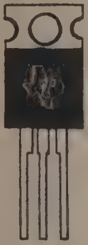
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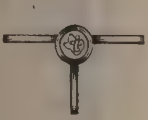
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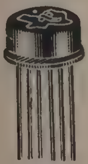
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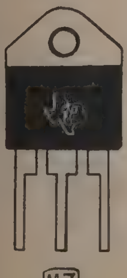

M7

## SILICON TRANSISTORS

### NPN HIGH-FREQUENCY AMPLIFIER/OSCILLATOR

$P_D = 200$ mW (TIS39, 720 mW) at 25° C free air; 2N4874–2N4876 $P_D = 6000$ mW at 25° C case.

| TI Type | Case | Min. $f_T$ MHz | Max. $C_{obo}$ pF | Net Each, Lots of | | | TI Type | Case | Min. $f_T$ MHz | Max. $C_{obo}$ pF | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1-99 | 100-499 | 500-999 | | | | | 1-99 | 100-499 | 500-999 |
| TIS39 | I | 800 | 6 | $ 8.10 | $ 5.40 | $ 4.55 | 2N3572 | G3 | 1000 | 0.85 | $5.90 | $3.95 | $3.55 |
| TIS56 | G3 | 500 | 0.32 | 2.70 | 1.80 | 1.80 | 2N4252 | G3 | 600 | 0.45 | 1.95 | 1.30 | 1.23 |
| TIS57 | G3 | 500 | 0.32 | 1.80 | 1.20 | 1.20 | 2N4253 | G3 | 600 | 0.45 | 1.70 | 1.15 | 1.08 |
| 2N917 | U* | 500 | 1.7 | 2.48 | 1.65 | 1.10 | 2N4874 | G* | 900 | 3.5 | 5.85 | 3.90 | 3.77 |
| 2N918** | G3 | 600 | 1.7 | 3.30 | 2.20 | 1.85 | 2N4875 | G* | 800 | 3.5 | 4.95 | 3.42 | 3.27 |
| 2N3570 | G3 | 1500 | 0.75 | 16.95 | 13.30 | 12.25 | 2N4876 | G* | 650 | 3.5 | 4.20 | 2.80 | 2.73 |
| 2N3571 | G3 | 1200 | 0.85 | 7.35 | 4.90 | 4.35 | | | | | | | |

*Collector in electrical contact with case. **JAN and JANTX types available.

### NPN HIGH FREQUENCY HIGH POWER

$V_{CC} = 28$ V; $f = 400$ MHz except 2N3632, $f = 175$ MHz.

| TI Type | Case | Max. $P_{IE}$ W | $P_{OE}$ W | Net Ea., Lots of | | TI Type | Case | Max. $P_{IE}$ W | $P_{OE}$ W | Net Ea., Lots of | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1-99 | 100 Up | | | | | 1-99 | 100 Up |
| 2N3375 | G2 | 1 | 3 | $10.80 | $ 8.95 | 2N4040 | M2 | 3 | 8 | $33.54 | $23.68 |
| 2N3632 | G2 | 3.5 | 13.5 | 12.75 | 10.55 | 2N4041 | M2 | 1 | 8.3 | 15.00 | 11.00 |
| 2N3866 | G | 0.1 | 1 | 1.90 | 1.50 | | | | | | |

### NPN LOW-LEVEL AMPLIFIER (CASE U)

Collector in electrical contact with case.

| TI Type | $I_C$ Range mA | Min. $f_T$ MHz | Net Each, Lots of | | | TI Type | $I_C$ Range mA | Min. $f_T$ MHz | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1-99 | 100-499 | 500-999 | | | | 1-99 | 100-499 | 500-999 |
| 2N929** | 0.01–30 | 30 | $1.49 | $0.98 | $0.67 | 2N2484 | 0.001–10 | 60 | $1.36 | $0.91 | $0.61 |
| 2N929A | 0.01–30 | 30 | 1.49 | .98 | .67 | 2N2586 | 0.001–10 | 45 | 1.86 | 1.25 | .83 |
| 2N930** | 0.01–30 | 30 | 1.36 | .91 | .61 | 2N3117 | 0.01 –30 | 60 | 4.70 | 3.15 | 2.10 |
| 2N930A | 0.01–30 | 30 | 1.36 | .91 | .61 | 2N4104 | 0.001–50 | 60 | 5.60 | 3.70 | 2.50 |
| 2N2483 | 0.01–10 | 60 | 1.49 | .98 | .67 | | | | | | |

### PNP LOW-LEVEL AMPLIFIER (CASE U)

Collector in electrical contact with case.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2N2604* | 0.01–10 | 30 | $2.60 | $1.74 | $1.16 | 2N3799 | 60 | 0.2 | $4.35 | $2.70 | $1.94 |
| 2N2605* | 0.01–10 | 30 | 2.35 | 1.56 | 1.05 | 2N3962 | 60 | 0.25 | 3.80 | 2.65 | 1.90 |
| 2N2861 | 0.01–10 | 60 | 1.32 | .88 | .59 | 2N3963 | 80 | 0.25 | 5.20 | 3.48 | 2.35 |
| 2N2862 | 0.01–10 | 45 | 1.22 | .81 | .54 | 2N3964 | 45 | 0.25 | 5.00 | 3.30 | 2.22 |
| 2N3798 | 60 | 0.2 | 3.70 | 2.48 | 1.66 | 2N3965 | 60 | 0.25 | 5.60 | 3.72 | 2.50 |

*Case GG. **JAN and JANTX types available.

### NPN MEMORY DRIVER (CASE I)

Collector in electrical contact with case. $P_D = 1000$ mW at 25° C free air except as otherwise noted. Storage time given is maximum.

| TI Type | Min. $f_T$ MHz | Storage Time at $I_C$ | | Net Each, Lots of | | | TI Type | Min. $f_T$ MHz | Storage Time at $I_C$ | | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | nsec | mA | 1-99 | 100-499 | 500-999 | | | nsec | mA | 1-99 | 100-499 | 500-999 |
| 2N2537† | 250 | 20 | 20 | $1.66 | $1.10 | $0.73 | 2N3444† | 150 | 40 | 1000 | $1.66 | $1.10 | $0.74 |
| 2N2538† | 250 | 20 | 20 | 1.86 | 1.24 | .83 | 2N3467** | 175 | 60 | 500 | 2.66 | 1.77 | 1.18 |
| 2N2539‡ | 250 | 20 | 20 | 1.66 | 1.10 | .73 | 2N3468* | 150 | 60 | 500 | 2.80 | 1.86 | 1.24 |
| 2N2540‡ | 250 | 20 | 20 | 1.86 | 1.24 | .83 | 2N3554† | 150 | 65 | 1000 | 1.42 | .94 | .63 |
| 2N3015† | 250 | 60§ | 500 | 1.51 | .99 | .66 | 2N3724† | 300 | 60 | 500 | 1.47 | .98 | .65 |
| 2N3244* | 175 | 140 | 500 | 2.46 | 1.63 | 1.09 | 2N3724A | 300 | 60 | 500 | 2.21 | 1.34 | .89 |
| 2N3245* | 150 | 120 | 500 | 2.60 | 1.73 | 1.16 | 2N3725† | 300 | 60 | 500 | 1.59 | 1.05 | .71 |
| 2N3252† | 200 | 40 | 1000 | 1.36 | .91 | .61 | 2N3725A | 300 | 60 | 500 | 2.18 | 1.45 | .97 |
| 2N3253†* | 175 | 40 | 1000 | 1.49 | .99 | .66 | | | | | | | |

*PNP. †$P_D = 800$ mW. ‡$P_D = 500$ mW; Case U. §Turn-off time. *JAN type available.

### NPN GENERAL PURPOSE

Collector in electrical contact with case. $h_{FE}$ given is minimum.

| TI Type | Case | Rated $V_{CBO}$ V | $h_{FE}$ | Net Each, Lots of | | | TI Type | Case | Rated $V_{CBO}$ V | $h_{FE}$ | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1-99 | 100-499 | 500-999 | | | | | 1-99 | 100-499 | 500-999 |
| TI482 | I | 20 | 20 | $5.70 | $3.78 | $2.95 | 2N1975 | I | 100 | 15 | $2.20 | $1.48 | $1.00 |
| TI483 | I | 40 | 20 | 6.35 | 4.23 | 3.17 | 2N2102 | I | 120 | 10 | .99 | .75 | .69 |
| TI484 | I | 40 | 40 | 7.75 | 5.16 | 4.01 | 2N2102A | I | 120 | 10 | 1.07 | .80 | .74 |
| 2N696 | I | 60 | 20 | .52 | .46 | .42 | 2N2192, A | I | 60 | 100 | 1.86 | 1.24 | .83 |
| 2N697 | I | 60 | 40 | .52 | .46 | .42 | 2N2193 | I | 60 | 40 | 1.75 | 1.15 | .78 |
| 2N698 | I | 120 | 20 | 1.57 | 1.05 | .90 | 2N2193A | I | 60 | 40 | 1.75 | 1.15 | .78 |
| 2N699 | I | 120 | 40 | 1.32 | .88 | .75 | 2N2194 | I | 60 | 20 | 1.75 | 1.15 | .78 |
| 2N717 | U | 60 | 20 | .99 | .66 | .55 | 2N2194A | I | 60 | 20 | 1.75 | 1.15 | .78 |
| 2N718 | U | 60 | 40 | .40 | .38 | .35 | 2N2217 | I | 60 | 20 | 1.00 | .81 | .55 |
| 2N718A** | U | 75 | 40 | .75 | .50 | .47 | 2N2218** | I | 60 | 40 | 1.00 | .81 | .55 |
| 2N719 | U | 120 | 20 | 2.35 | 1.56 | 1.10 | 2N2218A** | I | 60 | 40 | 1.10 | .86 | .58 |
| 2N719A | U | 120 | 20 | 2.50 | 1.67 | 1.25 | 2N2219** | I | 60 | 100 | 1.00 | .70 | .57 |
| 2N720 | U | 120 | 40 | 1.10 | .70 | .58 | 2N2219A** | I | 60 | 100 | 1.31 | .87 | .59 |
| 2N720A | U | 120 | 40 | 1.15 | .75 | .62 | 2N2220 | U | 60 | 20 | 1.11 | .74 | .50 |
| 2N730 | U | 60 | 20 | .70 | .47 | .44 | 2N2221** | U | 60 | 40 | 1.11 | .74 | .50 |
| 2N731 | U | 60 | 40 | 1.10 | .75 | .47 | 2N2221A** | U | 60 | 40 | 1.10 | .86 | .58 |
| 2N870 | U | 100 | 40 | 2.48 | 1.65 | 1.10 | 2N2222** | U | 60 | 100 | .95 | .63 | .53 |
| 2N871 | U | 100 | 100 | 2.73 | 1.82 | 1.21 | 2N2222A** | U | 60 | 100 | 1.20 | .79 | .56 |
| 2N910 | U | 100 | 75 | 1.78 | 1.18 | .80 | 2N2243 | I | 60 | 40 | 1.86 | 1.24 | .83 |
| 2N911 | U | 100 | 35 | 1.78 | 1.18 | .80 | 2N2243A | I | 60 | 40 | 1.86 | 1.24 | .83 |
| 2N912 | U | 100 | 15 | 2.20 | 1.48 | 1.00 | 2N2270 | I | 60 | 50 | .90 | .60 | .58 |
| 2N956 | U | 75 | 100 | .85 | .74 | .68 | 2N3036 | I | 120 | 50 | 5.50 | 3.70 | 3.10 |
| 2N1420 | I | 60 | 100 | 1.20 | .80 | .65 | 2N3053 | I | 60 | 50 | .70 | .45 | .44 |
| 2N1507 | I | 60 | 100 | 1.20 | .80 | .65 | 2N3114 | I | 150 | 30 | 6.00 | 4.00 | 4.00 |
| 2N1613** | I | 75 | 40 | .79 | .68 | .50 | 2N5058 | I | 300 | 35 | 4.35 | 2.90 | 1.94 |
| 2N1711 | I | 75 | 100 | .85 | .74 | .50 | 2N5059 | I | 250 | 35 | 3.70 | 2.48 | 1.66 |
| 2N1889 | I | 100 | 40 | 2.20 | 1.48 | 1.00 | A5T2222 | M3 | 60 | 100 | .48 | .40 | .40 |
| 2N1890 | I | 100 | 100 | 2.20 | 1.48 | 1.00 | A5T3903 | M3 | 60 | 50 | .75 | .50 | .50 |
| 2N1893 | I | 120 | 40 | 1.35 | .90 | .54 | A5T3904 | M3 | 60 | 100 | .82 | .55 | .55 |
| 2N1973 | I | 100 | 75 | 2.20 | 1.48 | 1.00 | A5T5058 | M3 | 300 | 35 | 1.12 | .98 | .98 |
| 2N1974 | I | 100 | 35 | 1.35 | .90 | .54 | A5T5059 | M3 | 250 | 30 | 1.05 | .91 | .91 |

**JAN and JANTX types available.

SEE OTHER TI PAGES FOR ADDITIONAL ILLUSTRATIONS

# Texas Instruments Transistors

## SILICON TRANSISTORS

### PNP GENERAL PURPOSE

Collector in electrical contact with case.

| TI Type | Case | Rated $V_{CBO}$ V | $h_{FE}$ | Net Each, Lots of 1-99 | 100-499 | 500-999 | TI Type | Case | Rated $V_{CBO}$ V | $h_{FE}$ | Net Each, Lots of 1-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2N721 | U | 50 | 20 | $ 1.46 | $1.27 | $1.05 | 2N3486 | GG | 60 | 100 | $10.20 | $6.80 | $3.00 |
| 2N722 | U | 50 | 30 | 1.46 | 1.27 | 1.05 | 2N3486A | GG | 60 | 100 | 13.50 | 9.00 | 3.45 |
| 2N1131* | I | 50 | 20 | 1.24 | .82 | .55 | 2N3494 | I | 80 | 35 | 3.22 | 2.15 | 1.44 |
| 2N1132* | I | 50 | 30 | 1.46 | 1.27 | .90 | 2N3495 | I | 120 | 35 | 3.70 | 2.48 | 1.66 |
| 2N2303 | I | 50 | 75 | 8.25 | 5.50 | 3.15 | 2N3496 | U | 80 | 35 | 3.22 | 2.15 | 1.44 |
| 2N2904** | I | 60 | 40 | 1.24 | .82 | .55 | 2N3497 | U | 120 | 35 | 3.70 | 2.48 | 1.66 |
| 2N2904A** | I | 60 | 40 | 1.60 | 1.07 | .72 | 2N3502 | I | 45 | 100 | 1.90 | 1.65 | 1.36 |
| 2N2905** | I | 60 | 100 | 1.36 | .91 | .61 | 2N3503 | I | 60 | 100 | 6.25 | 5.25 | 3.50 |
| 2N2905A** | I | 60 | 100 | 1.62 | 1.07 | .72 | 2N3504 | U | 45 | 100 | 2.00 | 1.32 | .89 |
| 2N2906** | U | 60 | 40 | 1.24 | .82 | .55 | 2N3505 | U | 60 | 100 | 3.10 | 2.06 | 1.38 |
| 2N2906A** | U | 60 | 40 | 1.60 | 1.07 | .72 | A5T2907 | M3 | 60 | 100 | .50 | .43 | .43 |
| 2N2907** | U | 60 | 100 | 1.24 | .82 | .55 | A5T3644 | M3 | 45 | 100 | .43 | .38 | .38 |
| 2N2907A** | U | 60 | 100 | 1.38 | .91 | .61 | A5T3645 | M3 | 60 | 100 | .45 | .40 | .40 |
| 2N3485 | GG | 60 | 40 | 8.70 | 5.80 | 3.25 | A5T3905 | M3 | 40 | 50 | .75 | .50 | .50 |
| 2N3485A | GG | 60 | 40 | 12.00 | 8.00 | 3.15 | A5T3906 | M3 | 40 | 100 | .82 | .55 | .55 |

*JAN type available. **JAN and JANTX types available.

### NPN GROWN JUNCTION

| TI Type | Case | Rated $V_{CBO}$ V | $h_{fe}$ | Net Ea., Lots 1-99 | 100 Up | TI Type | Case | Rated $V_{CBO}$ V | $h_{fe}$ | Net Ea., Lots 1-99 | 100 Up |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2N117* | A | 45 | 9–20 | $ 8.15 | $5.45 | TI481 | J | 80 | 9–36 | $ 1.90 | $1.45 |
| 2N118* | A | 45 | 18–40 | 8.15 | 5.45 | TI492 | I | 15 | 80–200 | 1.55 | 1.20 |
| 2N118A | A | 45 | 18–90 | 8.15 | 5.45 | TI493 | I | 30 | 80–200 | 1.90 | 1.45 |
| 2N119* | A | 45 | 36–90 | 11.05 | 7.35 | TI494 | I | 45 | 80–200 | 2.50 | 1.90 |
| 2N120 | A | 45 | 76–333 | 12.60 | 8.40 | TI495 | I | 40 | 15–45 | 3.00 | 2.30 |
| 2N332* | I | 45 | 9–20 | 4.65 | 3.10 | TI496 | J | 70 | 10 min.* | 1.75 | 1.35 |
| 2N332A | I | 45 | 18–40 | 4.90 | 3.30 | 2N541 | I | 40 | 15–45 | 6.00 | 4.00 |
| 2N333** | I | 45 | 18–40 | 4.65 | 3.10 | 2N542 | I | 40 | 40–125* | 6.20 | 4.10 |
| 2N333A | I | 45 | 18–40 | 4.90 | 3.30 | 2N543 | I | 40 | 120–250* | 7.95 | 5.30 |
| 2N334** | I | 45 | 18–40 | 4.65 | 3.10 | 2N1149 | A | 45 | 9–20 | 8.65 | 5.75 |
| 2N334A | I | 45 | 18–90 | 4.90 | 3.30 | 2N1150 | A | 45 | 18–40 | 8.65 | 5.75 |
| 2N335* | I | 45 | 36–90 | 4.90 | 3.30 | 2N1151 | A | 45 | 18–90 | 8.65 | 5.75 |
| 2N335A | I | 45 | 36–90 | 5.20 | 3.50 | 2N1152 | A | 45 | 36–90 | 11.35 | 7.55 |
| 2N336* | I | 45 | 76–333 | 5.95 | 3.95 | 2N1153 | A | 45 | 76–333 | 13.35 | 8.90 |
| 2N336A | I | 45 | 76–333 | 6.25 | 4.20 | 2N1276 | I | 40 | 9–22 | 3.85 | 2.55 |
| 2N470 | I | 15 | 10–25 | 3.00 | 2.00 | 2N1277 | I | 40 | 18–44 | 4.25 | 2.84 |
| 2N471 | I | 30 | 10–25 | 4.25 | 3.50 | 2N1278 | I | 40 | 37–90 | 4.75 | 3.15 |
| 2N472 | I | 45 | 10–25 | 6.75 | 4.00 | 2N1279 | I | 40 | 76–333 | 5.60 | 3.70 |
| 2N473 | I | 15 | 20–50 | 3.38 | 2.25 | 2N1586 | A | 15 | 9–27 | 4.65 | 3.10 |
| 2N474 | I | 30 | 20–50 | 5.50 | 4.00 | 2N1587 | A | 30 | 9–27 | 4.50 | 3.00 |
| 2N475 | I | 45 | 20–50 | 7.50 | 5.00 | 2N1588 | A | 60 | 9–27 | 6.15 | 4.10 |
| 2N476 | I | 15 | 30–60 | 8.25 | 5.50 | 2N1589 | A | 15 | 25–75 | 4.90 | 3.25 |
| 2N477 | I | 30 | 30–60 | 9.38 | 6.25 | 2N1590 | A | 30 | 25–75 | 5.25 | 3.50 |
| 2N478 | I | 15 | 40–100 | 3.60 | 2.40 | 2N1591 | A | 60 | 25–75 | 6.30 | 4.20 |
| 2N479 | I | 30 | 40–100 | 7.10 | 4.75 | 2N1592 | A | 15 | 70–210 | 7.75 | 5.15 |
| 2N480 | I | 45 | 40–100 | 9.30 | 6.20 | 2N1593 | A | 30 | 70–210 | 9.05 | 6.05 |
| TI480 | J | 50 | 9–36 | 1.55 | 1.20 | 2N1594 | A | 60 | 70–210 | 10.30 | 6.85 |

### MEDIUM-POWER GROWN JUNCTION

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2N122† | M1 | 120 | 3 min. | $60.00 | $40.00 | 2N342* | J | 60 | 9–32 | $ 9.48 | $ 7.11 |
| 2N243 | A | 60 | 9–30 | 11.00 | 8.24 | 2N342A | J | 85 | 9–32 | 9.52 | 7.16 |
| 2N244 | A | 60 | 9–30 | 16.36 | 12.24 | 2N343* | J | 60 | 28–90 | 14.72 | 11.03 |
| 2N339 | J | 55 | 9–90 | 8.12 | 6.08 | 2N1154 | A | 50 | 9 min. | 10.12 | 7.56 |
| 2N340 | J | 85 | 9–90 | 8.64 | 6.48 | 2N1155 | A | 80 | 9 min. | 10.52 | 7.92 |
| 2N341* | J | 125 | 9–90 | 14.00 | 10.49 | 2N1156 | A | 120 | 9 min. | 14.12 | 10.58 |

*$h_{FE}$. †Grown junction power. *JAN type available. **USN type available.

### GROWN JUNCTION SWITCH

| TI Type | Case | Rated $V_{CBO}$ V | $h_{FE}$ | Net Ea., Lots 1-99 | 100 Up | TI Type | Case | Rated $V_{CBO}$ V | $h_{FE}$ | Net Ea., Lots 1-99 | 100 Up |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2N264 | A | 45 | 20–55 | $11.50 | $7.65 | 2N338* | I | 45 | 45–150 | $5.50 | $3.65 |
| 2N337* | I | 45 | 20–55 | 4.85 | 3.20 | | | | | | |

### GROWN JUNCTION TETRODE

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3N34 | H | 30 | 30* | $5.00 | $4.15 | 3N35* | H | 30 | 70* | $22.50 | $15.00 |

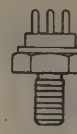
*$h_{fe}$. *JAN type available.

### UNIJUNCTION

| TI Type | Case | Intrinsic Standoff Ratio | $I_{EB2O}$ µA | Net Ea., Lots 1-99 | 100 Up | TI Type | Case | Intrinsic Standoff Ratio | $I_{EB2O}$ µA | Net Ea., Lots 1-99 | 100 Up |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2N489* | I | .51–.62 | 12 | $ 7.10 | $4.75 | 2N494C | I | .62–.75 | 2 | $14.95 | $9.90 |
| 2N489A | I | .51–.62 | 20 | 7.65 | 5.10 | 2N1671 | I | .47–.62 | 12 | 2.95 | 1.98 |
| 2N489B | I | .51–.62 | 0.2 | 9.15 | 6.10 | 2N1671A | I | .47–.62 | 12 | 3.20 | 2.14 |
| 2N490* | I | .51–.62 | 12 | 7.80 | 5.20 | 2N1671B | I | .47–.62 | 0.2 | 3.55 | 2.36 |
| 2N490A** | I | .51–.62 | 20 | 8.35 | 5.55 | 2N2160 | I | .47–.80 | 12 | 1.49 | .99 |
| 2N490B | I | .51–.62 | 0.2 | 9.85 | 6.55 | 2N2646 | U | .56–.75 | 12 | 1.05 | .67* |
| 2N491* | I | .56–.68 | 12 | 8.40 | 5.60 | 2N2647 | U | .68–.82 | 0.2 | 1.89 | 1.26* |
| 2N491A** | I | .56–.68 | 20 | 8.90 | 5.95 | 2N3980 | U | .68–.82 | 0.01 | 3.40 | 2.25* |
| 2N491B | I | .56–.68 | 0.2 | 10.40 | 6.95 | 2N4851 | U | .56–.75 | 0.1 | 1.10 | .75* |
| 2N492* | I | .56–.68 | 12 | 9.80 | 6.55 | 2N4852 | U | .70–.85 | 0.1 | 1.10 | .75* |
| 2N492A** | I | .56–.68 | 20 | 10.40 | 6.95 | 2N4853 | U | .70–.85 | 0.05 | 2.25 | 1.50* |
| 2N492B | I | .56–.68 | 0.2 | 11.90 | 7.95 | 2N4891 | M3 | .55–.82 | 0.01 | .76 | .66 |
| 2N493* | I | .62–.75 | 12 | 10.75 | 7.20 | 2N4892 | M3 | .51–.69 | 0.01 | .88 | .77 |
| 2N493A** | I | .62–.75 | 20 | 11.20 | 7.50 | 2N4893 | M3 | .55–.82 | 0.01 | .78 | .69 |
| 2N493B | I | .62–.75 | 0.2 | 12.75 | 8.50 | 2N4894 | M3 | .74–.86 | 0.01 | .99 | .87 |
| 2N494* | I | .62–.75 | 12 | 10.90 | 7.30 | 2N4947 | U | .51–.69 | 0.01 | 2.03 | 1.35* |
| 2N494A** | I | .62–.75 | 12 | 11.40 | 7.60 | 2N4948** | U | .55–.82 | 0.01 | 1.35 | .90* |
| 2N494B | I | .62–.75 | 0.2 | 12.90 | 8.60 | 2N4949** | U | .74–.86 | 0.01 | 2.40 | 1.60* |

*500–999 prices on request. *MIL type available. **JAN and JANTX types available.

**SEE OTHER TI PAGES FOR ADDITIONAL ILLUSTRATIONS**



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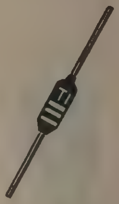

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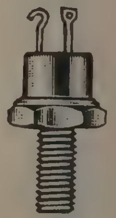

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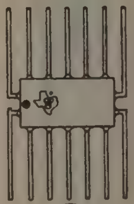

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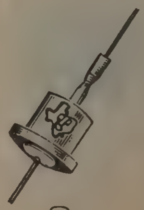

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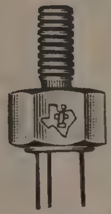
# Texas Instruments Transistors

R



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T

U

## SILICON TRANSISTORS

### NPN AND PNP RADIATION TOLERANT (CASE GG)

**TI Type 2N5332**—Pre-Irradiation: $I_{CBO} = 0.01\ \mu A$ max.; $h_{FE} = 20–80$; $V_{CE(sat)} = 0.2$ V max. Post-Irradiation: $I_{CBO} = 10\ \mu A$ max.; $h_{FE} = 10$ min.; $V_{CE(sat)} = 0.6$ V max. **TI Type 2N5399**—Same except: Pre-Irradiation $h_{FE} = 30–90$; Post-Irradiation $h_{FE} = 12$ min.; $V_{CE\ (sat)} = 0.5$ V max. Collector in electrical contact with case. Specify 2N5332 (PNP) or 2N5399 (NPN).
Net Each, Lots of: 1–99............**$14.00**; 100–499...........**$9.40**; 500 Up..........**$8.90**

### NPN AND PNP CHOPPER (CASE GG)

Collector in electrical contact with case.

| TI Type | Net Each, Lots of 1-99 | 100-499 | 500-999 | TI Type | Net Each, Lots of 1-99 | 100-499 | 500-999 | TI Type | Net Each, Lots of 1-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2N2432*** | $4.22 | $2.80 | $1.89 | 2N2944A† | $2.76 | $1.84 | $1.78 | 2N2946† | $ 2.70 | $1.90 | $1.33 |
| 2N2432A*** | 4.30 | 2.85 | 1.94 | 2N2945† | 2.50 | 1.65 | 1.10 | 2N2946A†** | 2.70 | 1.90 | 1.33 |
| 2N2944† | 2.76 | 1.84 | 1.78 | 2N2945A†** | 2.50 | 1.65 | 1.10 | 2N4138 | 12.00 | 8.00 | 8.00 |

### NPN AND PNP DOUBLE-EMITTER CHOPPER (CASE G3)

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3N74 | $12.40 | $8.25 | $6.00 | 3N78 | $ 4.72 | $3.15 | $2.87 | 3N110† | $9.90 | $6.60 | $5.80 |
| 3N75** | 10.10 | 6.75 | 4.35 | 3N79 | 3.68 | 2.45 | 2.25 | 3N111† | 8.85 | 5.90 | 5.25 |
| 3N76** | 7.40 | 4.95 | 3.60 | 3N108†* | 12.20 | 8.15 | 7.20 | | | | |
| 3N77 | 7.50 | 5.00 | 4.28 | 3N109† | 11.00 | 7.30 | 6.45 | | | | |

*Case U. †PNP; all other types NPN. *JAN type available. **JAN and JANTX types available.

### N-CHANNEL AND P-CHANNEL DUAL FIELD EFFECT

| TI Type | Case | Net Each, Lots of 1-99 | 100-499 | 500-999 | TI Type | Case | Net Each, Lots of 1-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|---|
| TIS25 | M6 | $ 8.90 | $ 7.40 | $6.70 | 2N5045 | M6 | $ 8.10 | $ 6.75 | $6.15 |
| TIS26 | M6 | 7.10 | 5.90 | 5.35 | 2N5046 | M6 | 6.25 | 5.20 | 4.75 |
| TIS27 | M6 | 5.50 | 4.60 | 4.20 | 2N5047 | M6 | 4.75 | 3.95 | 3.60 |
| 2N3333* | LL | 271.50 | 235.00† | ........ | 2N5545 | M6 | 12.50 | 10.40 | 9.50 |
| 2N3334* | LL | 213.00 | 184.50† | ........ | 2N5546 | M6 | 7.90 | 6.60 | 6.00 |
| 2N3335* | LL | 193.50 | 167.80† | ........ | 2N5547 | M6 | 6.60 | 5.45 | 4.95 |
| 2N3336* | LL | 98.00 | 85.00† | ........ | | | | | |

| TI Type | Case | Net per Pair, Lots of 1-99 | 100-999 | TI Type | Case | Net per Pair, Lots of 1-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| TIS68 | QQ | $2.37 | $2.07 | TIS70 | QQ | $1.76 | $1.54 |
| TIS69 | QQ | 2.11 | 1.85 | | | | |

*P-channel; all others N-channel. †100 Up quantity.

### N-CHANNEL AND P-CHANNEL FIELD-EFFECT

| TI Type | Case | Polarity | Net Ea., Lots of 1-99 | 100 Up | TI Type | Case | Polarity | Net Ea., Lots of 1-99 | 100 Up |
|---|---|---|---|---|---|---|---|---|---|
| TIS14 | G3 | N-channel | $2.50 | $1.90 | 2N2499 | G3 | P-channel | $3.60 | $2.40 |
| TIS58 | QQ | N-channel | .62 | .55 | 2N3819 | QQ | N-channel | .56 | .49 |
| TIS59 | QQ | N-channel | .61 | .53 | 2N3820 | QQ | P-channel | .72 | .63 |
| TIS73* | M3 | N-channel | 1.76 | 1.54 | 2N5245 | M3 | N-channel | .70 | .62 |
| TIS74* | M3 | N-channel | 1.54 | 1.34 | 2N5246 | M3 | N-channel | .58 | .50 |
| TIS75* | M3 | N-channel | 1.60 | 1.40 | 2N5247 | M3 | N-channel | .83 | .73 |
| TIS78 | M3 | N-channel | 1.54 | 1.34 | 2N5248 | QQ | N-channel | .61 | .53 |
| TIS79 | M3 | N-channel | 1.20 | 1.05 | 2N5548 | M3 | P-MOS | 1.82 | 1.60 |

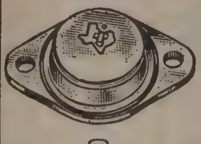
*Field effect chopper.

| TI Type | Case | Polarity | Net Each, Lots of 1-99 | 100-499 | 500 Up | TI Type | Case | Polarity | Net Each, Lots of 1-99 | 100-499 | 500 Up |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TIXS35 | H* | N-channel | $39.30 | $26.50 | $22.50 | 2N4220 | G3 | N-channel | $1.80 | $1.35 | $1.23 |
| TIXS36 | H* | N-channel | 36.30 | 24.50 | 20.50 | 2N4220A | G3 | N-channel | 2.10 | 1.50 | 1.35 |
| TIXS80 | G3 | N-channel | 8.25 | 5.50 | 4.85 | 2N4221 | G3 | N-channel | 1.82 | 1.30 | 1.17 |
| TIXS81 | G3 | N-channel | 6.75 | 4.50 | 4.05 | 2N4221A | G3 | N-channel | 2.03 | 1.45 | 1.30 |
| 2N2386 | I‡ | P-channel | 2.70 | 1.80 | 1.75 | 2N4222 | G3 | N-channel | 1.82 | 1.30 | 1.17 |
| 2N2386A | I‡ | P-channel | 2.78 | 1.85 | 1.70 | 2N4222A | G3 | N-channel | 2.03 | 1.45 | 1.30 |
| 2N2497 | I‡ | P-channel | 3.75 | 2.50 | 2.35 | 2N4223 | G3 | N-channel | 1.90 | 1.35 | 1.23 |
| 2N2498 | G3 | P-channel | 3.70 | 2.45 | 2.30 | 2N4224 | G3 | N-channel | 1.82 | 1.30 | 1.17 |
| 2N2500 | G3 | P-channel | 5.25 | 3.50 | 3.30 | 2N4391† | U‡ | N-channel | 3.35 | 2.40 | 2.20 |
| 2N2608 | G1 | P-channel | 2.90 | 2.00 | 1.80 | 2N4392† | U‡ | N-channel | 3.00 | 2.15 | 1.95 |
| 2N2609 | G1 | P-channel | 5.70 | 3.50 | 2.95 | 2N4393† | U‡ | N-channel | 2.65 | 1.90 | 1.75 |
| 2N3329 | G3 | P-channel | 3.80 | 2.55 | 2.40 | 2N4416 | G3 | N-channel | 2.15 | 1.45 | 1.35 |
| 2N3330 | G3 | P-channel | 3.75 | 2.50 | 2.35 | 2N4416A | G3 | N-channel | 2.25 | 1.50 | 1.40 |
| 2N3331 | G3 | P-channel | 3.65 | 2.45 | 2.33 | 2N4856†§ | U‡ | N-channel | 3.20 | 2.30 | 2.10 |
| 2N3332 | G3 | P-channel | 5.30 | 3.55 | 3.35 | 2N4856A† | U‡ | N-channel | 3.35 | 2.40 | 2.20 |
| 2N3458 | U‡ | N-channel | 1.95 | 1.40 | 1.25 | 2N4857† | U‡ | N-channel | 2.90 | 2.05 | 1.85 |
| 2N3459 | U‡ | N-channel | 2.15 | 1.55 | 1.40 | 2N4857A† | U‡ | N-channel | 3.00 | 2.15 | 1.95 |
| 2N3460 | U‡ | N-channel | 2.65 | 1.90 | 1.70 | 2N4858† | U‡ | N-channel | 2.70 | 1.80 | 1.65 |
| 2N3821 | G3 | N-channel | 2.50 | 1.80 | 1.65 | 2N4858A† | U‡ | N-channel | 2.65 | 1.90 | 1.75 |
| 2N3822 | G3 | N-channel | 2.10 | 1.50 | 1.35 | 2N4859†§ | U‡ | N-channel | 2.60 | 1.85 | 1.70 |
| 2N3823* | G3 | N-channel | 1.95 | 1.40 | 1.25 | 2N4859A† | U‡ | N-channel | 2.80 | 2.00 | 1.80 |
| 2N3824† | G3 | N-channel | 1.90 | 1.35 | 1.20 | 2N4860† | U‡ | N-channel | 2.35 | 1.68 | 1.55 |
| 2N3909 | G3 | P-channel | 2.05 | 1.40 | 1.35 | 2N4860A† | U‡ | N-channel | 2.70 | 1.80 | 1.65 |
| 2N3909A | G3 | P-channel | 2.10 | 1.45 | 1.40 | 2N4861† | U‡ | N-channel | 2.20 | 1.56 | 1.45 |
| 2N3966 | G3 | N-channel | 3.80 | 2.70 | 2.40 | 2N4861A† | U‡ | N-channel | 2.35 | 1.68 | 1.55 |
| 2N3970† | U‡ | N-channel | 3.35 | 2.40 | 2.20 | 2N5543 | G‡ | N-channel | 4.50 | 3.00 | 2.70 |
| 2N3971† | U‡ | N-channel | 3.00 | 2.15 | 1.95 | 2N5544 | G‡ | N-channel | 3.25 | 2.50 | 2.25 |
| 2N3972† | U‡ | N-channel | 2.65 | 1.90 | 1.75 | 2N5549† | U‡ | N-channel | 4.35 | 3.30 | 2.70 |
| 2N3993† | G3 | P-channel | 5.60 | 4.05 | 3.50 | 3N160 | G3 | P-MOS | 5.95 | 4.50 | 3.80 |
| 2N3993A† | G3 | P-channel | 5.70 | 4.20 | 3.64 | 3N161 | G3 | P-MOS | 6.15 | 4.70 | 4.00 |
| 2N3994† | G3 | P-channel | 4.80 | 3.42 | 2.97 | 3N174 | G3 | P-MOS | 6.50 | 5.30 | 4.90 |
| 2N3994A† | G3 | P-channel | 4.95 | 3.54 | 3.08 | 3N201 | G3 | N-channel | 1.55 | 1.10 | 1.00 |
| 2N4091† | U‡ | N-channel | 3.35 | 2.40 | 2.20 | 3N202 | G3 | N-channel | 1.45 | 1.05 | .95 |
| 2N4092† | U‡ | N-channel | 3.00 | 2.15 | 1.95 | 3N203 | G3 | N-channel | 1.40 | 1.00 | .90 |
| 2N4093† | U‡ | N-channel | 2.65 | 1.90 | 1.75 | | | | | | |

*Gate-2 in electrical contact with case. †Field effect chopper. ‡Gate in electrical contact with case. §JAN and JANTX types available. *JAN type available.

**SEE OTHER TI PAGES FOR ADDITIONAL ILLUSTRATIONS**

# Texas Instruments Transistors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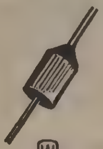
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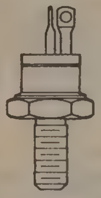
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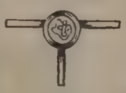
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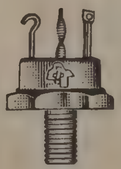
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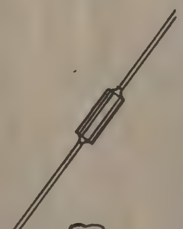
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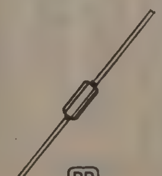

BB

## SILICON TRANSISTORS
### MINIATURE μMESA™ (CASE M5)

| TI Type | Polarity | Nearest Equivalent | Net Ea., Lots of 1-99 | 100-499* | TI Type | Polarity | Nearest Equivalent | Net Ea., Lots 1-99 | 100-499* |
|---|---|---|---|---|---|---|---|---|---|
| 2N849 | NPN | 2N706A | $ 8.85 | $ 5.90 | 2N2393 | PNP | 2N1131 | $ 8.85 | $ 5.90 |
| 2N850 | NPN | 2N753 | 9.75 | 6.50 | 2N2394 | PNP | 2N1132 | 18.00 | 12.00 |
| 2N851 | NPN | 2N743 | 11.70 | 7.80 | 2N2395 | NPN | 2N696 | 10.10 | 6.75 |
| 2N852 | NPN | 2N744 | 12.80 | 8.45 | 2N2396 | NPN | 2N697 | 11.55 | 7.70 |
| 2N2387 | NPN | 2N929 | 11.55 | 7.70 | 2N3037 | NPN | 2N2243 | 18.00 | 12.00 |
| 2N2388 | NPN | 2N930 | 14.40 | 9.65 | 2N3038 | NPN | 2N1890 | 19.50 | 13.00 |
| 2N2389 | NPN | 2N1613 | 14.40 | 9.65 | 2N3039 | PNP | 2N2904 | 22.50 | 15.00 |
| 2N2390 | NPN | 2N1711 | 15.80 | 10.55 | 2N3040 | PNP | 2N2904 | 24.00 | 16.00 |

*500 Up quantity pricing on request.

### NPN MINIATURE DUAL FLATPACK (CASE LL)

| TI Type | Nearest Equivalent Dual/Single | Net Each, Lots of 1-99 | 100-499 | 500-999 | TI Type | Nearest Equivalent Dual/Single | Net Each, Lots of 1-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|---|
| 2N3043 | 2N2642/930 | $39.40 | $26.00 | $19.60 | 2N3049* | 2N2805/2412 | $34.50 | $23.00 | $20.05 |
| 2N3044 | 2N2643/930 | 33.00 | 22.00 | 16.80 | 2N3050* | 2N2806/2412 | 24.00 | 16.00 | 14.67 |
| 2N3045 | 2N2644/930 | 14.25 | 9.50 | 7.97 | 2N3051* | 2N2807/2412 | 21.00 | 14.00 | 11.75 |
| 2N3046 | 2N2639/929 | 36.00 | 24.00 | 19.25 | 2N3052* | 2N914 | 27.00 | 18.00 | 14.40 |
| 2N3047 | 2N2640/929 | 28.50 | 19.00 | 14.80 | 2N3838† | 2N2222/2907 | 27.75 | 18.50 | 16.50 |
| 2N3048 | 2N2641/929 | 12.75 | 8.50 | 7.00 | | | | | |

*PNP; †NPN-PNP; all others are NPN.

### NPN FOR CONSUMER CIRCUIT APPLICATIONS

| TI Type | Case | Nearest Equivalent | Net Ea., Lots of 1-99 | 100 Up | TI Type | Case | Nearest Equivalent | Net Ea., Lots 1-99 | 100 Up |
|---|---|---|---|---|---|---|---|---|---|
| TIS62 | M3 | 2N918 | $0.37 | $0.32 | 2N3706 | QQ | 2N2217 | $0.27 | $0.24 |
| TIS63 | M3 | 2N918 | .32 | .28 | 2N3707 | QQ | 2N929 | .34 | .29 |
| TIS64 | M3 | 2N918 | .29 | .25 | 2N3708 | QQ | 2N929 | .27 | .24 |
| TIS84 | M3 | TIS56 | .50 | .43 | 2N3709 | QQ | 2N929 | .29 | .25 |
| TIS86 | M3 | 2N4252 | .48 | .42 | 2N3710 | QQ | 2N929 | .30 | .27 |
| TIS87 | M3 | 2N4252 | .51 | .45 | 2N3711 | QQ | 2N929 | .32 | .28 |
| TIS92 | M3 | 2N2219 | .35 | .31 | 2N3712 | I | 2N3114 | 3.00 | 2.00 |
| TIS92M | M3* | 2N2219 | .37 | .32 | 2N4994 | M3 | 2N915 | .30 | .27 |
| TIS97 | M3 | ........... | .34 | .29 | 2N4995 | M3 | 2N915 | .32 | .28 |
| TIS98 | M3 | ........... | .29 | .25 | 2N4996 | M3 | 2N4254 | .48 | .42 |
| TIS99 | M3 | ........... | .30 | .27 | 2N4997 | M3 | 2N4255 | .51 | .45 |
| TIS101 | M3 | 2N3712 | .61 | .53 | 2N5449 | M3 | 2N3704 | .34 | .29 |
| TIS108 | M3 | TIS56 | .48 | .42 | 2N5450 | M3 | 2N3705 | .29 | .25 |
| 2N3704 | QQ | 2N2217 | .34 | .29 | 2N5451 | M3 | 2N3706 | .27 | .24 |
| 2N3705 | QQ | 2N2217 | .29 | .25 | | | | | |

### PNP FOR CONSUMER CIRCUIT APPLICATIONS

| TI Type | Case | Nearest Equivalent | Net Ea., Lots of 1-99 | 100 Up | TI Type | Case | Nearest Equivalent | Net Ea., Lots 1-99 | 100 Up |
|---|---|---|---|---|---|---|---|---|---|
| TIS37 | QQ | ........... | $0.38 | $0.34 | 2N4059 | QQ | 2N2604 | $0.29 | $0.25 |
| TIS38 | QQ | ........... | .35 | .31 | 2N4060 | QQ | 2N2604 | .30 | .27 |
| TIS93 | M3 | 2N2905 | .42 | .36 | 2N4061 | QQ | 2N2604 | .32 | .28 |
| TIS93M | M3* | 2N2905 | .43 | .38 | 2N4062 | QQ | 2N2605 | .34 | .29 |
| 2N3702 | QQ | 2N2904 | .37 | .32 | 2N5447 | M3 | 2N3702 | .37 | .32 |
| 2N3703 | QQ | 2N2904 | .34 | .29 | 2N5448 | M3 | 2N3703 | .34 | .29 |
| 2N4058 | QQ | 2N2605 | .35 | .31 | | | | | |

*Pair.

## MICROWAVE NPN SILICON AMP-OSC TRANSISTORS (CASE M8)

Power dissipation at 25° C free air. Base in electrical contact with case.

| TI Type | Typ. $f_T$ MHz | Pwr. Diss. mW | $C_{obo}$ pF | Min. Osc. Pwr. Out at Freq. mW | MHz | Net Each, Lots of 1-24 | 25-99 | 100-999 |
|---|---|---|---|---|---|---|---|---|
| 2N3833 | 2000 | 1000 | 1.7 | 100 | 2000 | $50.00 | $43.50 | $29.00 |
| 2N3834 | 1600 | 1000 | 1.7 | 75 | 2000 | 40.00 | 31.00 | 22.00 |
| 2N3835 | 1200 | 1000 | 1.7 | 30 | 2000 | 25.00 | 20.75 | 14.50 |

## SILICON NPN DARLINGTON TRANSISTOR (CASE U)

**TI Type 2N997**—$h_{FE} = 7{,}000\text{–}70{,}000$ (1,000 min. at −55° C). Rated $V_{CBO} = 75$ V. $V_{CE(sat)} = 1.6$ V max. $P_D = 1.5$ W at $T_C = 25°$ C.
Net Each, Lots of: 1–99............**$10.50**; 100–499............**$7.00**; 500 Up............**$5.25**

## GENERAL PURPOSE SILICON DIODES (CASE AA)

$I_F$ measured at 1 volt and 25° C except as otherwise noted. $P_D$ at 25° C.

| TI Type | $V_R$ (max) V | Min. $I_F$ mA | $P_D$ mW | Net Ea., Lots 1-99 | 100 Up | TI Type | $V_R$ (max) V | Min. $I_F$ mA | $P_D$ mW | Net Ea., Lots 1-99 | 100 Up |
|---|---|---|---|---|---|---|---|---|---|---|---|
| T151 | 10 | 200 | 400 | $0.39 | $0.26 | 1N483A | 70 | 200 | 250 | $0.51 | $0.32 |
| T152 | 20 | 200 | 400 | .42 | .28 | 1N483B | 70 | 200 | 250 | .51 | .32 |
| T153 | 30 | 200 | 400 | .45 | .30 | 1N484 | 130 | 100* | 250 | .51 | .32 |
| T154 | 40 | 200 | 400 | .50 | .33 | 1N484A | 130 | 200 | 250 | .51 | .32 |
| T155 | 60 | 200 | 400 | .57 | .34 | 1N484B | 130 | 200 | 250 | .51 | .32 |
| T156 | 100 | 400 | 400 | .65 | .40 | 1N485 | 180 | 100* | 250 | .58 | .38 |
| T157 | 150 | 400 | 400 | .73 | .46 | 1N485A | 180 | 200 | 250 | .58 | .38 |
| T158 | 175 | 400 | 400 | .81 | .53 | 1N485B | 180 | 200 | 250 | .58 | .38 |
| T159 | 200 | 400 | 400 | .90 | .60 | 600C‡ | 27 | 3 | 100 | 1.94 | 1.58 |
| T160 | 300 | 400 | 400 | .96 | .67 | 601C‡ | 45 | 3 | 100 | 3.60 | 2.94 |
| 1N456 | 25 | 40 | 200 | .35 | .23 | 604C‡ | 4.7 | 60 | 150 | 3.25 | 2.66 |
| 1N456A | 25 | 100 | 500 | .35 | .23 | 606C‡ | 6.8 | 35 | 150 | 3.25 | 2.66 |
| 1N457* | 60 | 20 | 200 | .44 | .29 | 608C‡ | 10 | 25 | 125 | 3.25 | 2.66 |
| 1N457A | 60 | 100 | 500 | .44 | .29 | 610C‡ | 15 | 12 | 125 | 3.30 | 2.70 |
| 1N458* | 125 | 7 | 200 | .47 | .31 | 612C‡ | 22 | 7 | 125 | 3.40 | 2.78 |
| 1N458A | 125 | 100 | 500 | .47 | .31 | 614C‡ | 33 | 5 | 125 | 3.50 | 2.86 |
| 1N459* | 175 | 3 | 200 | .48 | .32 | 616C‡ | 47 | 3 | 100 | 3.60 | 2.94 |
| 1N459A | 175 | 100 | 500 | .48 | .32 | 618C‡ | 68 | 1.5 | 100 | 3.60 | 2.94 |
| 1N461 | 25 | 15 | 200 | .34 | .23 | 620C‡ | 100 | 0.9 | 100 | 3.65 | 2.99 |
| 1N461A | 25 | 100 | 200 | .34 | .23 | 622C‡ | 150 | 6.5† | 90 | 3.70 | 3.03 |
| 1N462 | 60 | 5 | 200 | .36 | .24 | 624C‡ | 220 | 3† | 80 | 3.75 | 3.07 |
| 1N463 | 175 | 1 | 200 | .44 | .29 | 1N645§** | 225 | 400 | 600 | 1.40 | .80 |
| 1N464 | 125 | 3 | 200 | .45 | .30 | 1N645A§ | 225 | 400 | 600 | 1.65 | 1.10 |
| 1N482 | 36 | 100* | 250 | .48 | .32 | 1N646§* | 300 | 400 | 600 | 1.60 | 1.05 |
| 1N482A | 36 | 200 | 250 | .48 | .32 | 1N647§** | 400 | 400 | 600 | 1.70 | 1.10 |
| 1N482B | 36 | 200 | 250 | .48 | .32 | 1N648§* | 500 | 400 | 600 | 1.80 | 1.20 |
| 1N483 | 70 | 100* | 250 | .51 | .32 | 1N649§** | 600 | 400 | 600 | 2.25 | 1.40 |

*Measured at 1.1 volts. †Measured at 4 volts. ‡Case M. §Case N. *MIL type available. **JAN and JANTX types available.

**SEE OTHER TI PAGES FOR ADDITIONAL ILLUSTRATIONS**

TI PRODUCTS ARE STOCKED AT HOLLYWOOD AND ORLANDO, FL;
HUNTSVILLE, AL; WINSTON-SALEM, NC; AND GAITHERSBURG, MD

# Texas Instruments Products

## SILICON COMPUTER DIODES (CASE MM)

$V_F$ = 1 volt except as otherwise noted. $t_{rr}$ at 25° C.

| TI Type | $V_{(BR)}$ V | Max. $t_{rr}$ nsec | $I_F$ mA | Net Ea., Lots | | TI Type | $V_{(BR)}$ V | Max. $t_{rr}$ nsec | $I_F$ mA | Net Ea., Lots | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1-99 | 100 Up | | | | | 1-99 | 100 Up |
| TID31 | 75 | 6* | 200 | $2.60 | $1.12 | 1N914A | 100 | 4▲ | 20 | $0.37 | $0.24 |
| TID32 | 100 | 10* | 200 | 2.30 | 1.09 | 1N914B | 100 | 4▲ | 100 | .77 | .52 |
| TID33 | 75 | 10* | 200 | 2.11 | 1.02 | 1N915 | 65 | 10† | 50 | .93 | .58 |
| TID34 | 100 | 10* | 150 | 2.03 | .97 | 1N916 | 100 | 4▲ | 10 | .50 | .32 |
| TID35 | 75 | 10* | 150 | 1.94 | .88 | 1N916A | 100 | 4▲ | 20 | .56 | .37 |
| TID36 | 100 | 10* | 100 | 1.45 | .82 | 1N916B | 100 | 4▲ | 30 | .72 | .48 |
| TID37 | 75 | 6* | 100 | 1.45 | .84 | 1N917 | 50 | 3† | 10 | 2.00 | 1.30 |
| TID40 | 250 | 30† | 50 | 2.32 | 1.74 | 1N3064 | 75 | 4▲ | 10 | .24 | .14 |
| TID41 | 200 | 30† | 100 | 2.10 | 1.58 | 1N3070** | 200 | 50■ | 100 | 1.22 | .98 |
| TID42 | 150 | 30† | 100 | 2.20 | 1.65 | 1N4148** | 75 | 4▲ | 10 | .33 | .22 |
| TID43 | 150 | 30† | 150 | 2.44 | 1.83 | 1N4149 | 75 | 4▲ | 10 | .50 | .32 |
| TID44 | 100 | 30† | 200 | 2.56 | 1.92 | 1N4150 | 50 | 6 | 200 | 1.60 | .78 |
| TI71 | 40 | 10† | 6 | .76 | .65 | 1N4151 | 75 | 4† | 50 | .73 | .48 |
| TI72 | 40 | 20† | 10 | .87 | .74 | 1N4152 | 40 | 4† | 20Ɪ | .65 | .41 |
| TI73 | 40 | 20† | 20 | 1.03 | .85 | 1N4153* | 75 | 4† | 20Ɪ | .90 | .60 |
| TI74 | 40 | 30† | 30 | 1.19 | 1.02 | 1N4154 | 35 | 4† | 30 | .35 | .21 |
| TI75 | 40 | 50† | 75 | 1.52 | 1.30 | 1N4305 | 75 | 4† | 10‡ | .58 | .38 |
| 1N251* | 40 | 150‡ | 5 | .32 | .21 | 1N4444 | 70 | 7† | 100 | 1.49 | .97 |
| 1N625 | 30 | 1000§ | 4♦ | .40 | .26 | 1N4446 | 75 | 4▲ | 20 | .38 | .24 |
| 1N626 | 50 | 1000§ | 4♦ | .40 | .26 | 1N4447 | 75 | 4▲ | 20 | .56 | .36 |
| 1N627 | 100 | 1000§ | 4♦ | .51 | .34 | 1N4448 | 75 | 4▲ | 100 | .78 | .52 |
| 1N628 | 150 | 1000§ | 4♦ | .61 | .40 | 1N4449 | 75 | 4† | 30 | .78 | .52 |
| 1N629 | 200 | 1000§ | 100 | .68 | .44 | 1N4454** | 75 | 4† | 10 | .33 | .19 |
| 1N643* | 200 | 300# | 10 | .98 | .65 | 1N4531** | 75 | 4▲ | 10 | .45 | .30 |
| 1N658 | 120 | 300• | 100 | 1.48 | .98 | 1N4532** | 75 | 4† | 10 | .83 | .56 |
| 1N659 | 60 | 300§ | 6 | .56 | .36 | 1N4533 | 40 | 4† | 20Ɪ | .72 | .48 |
| 1N660 | 110 | 300§ | 6 | .65 | .34 | 1N4534 | 75 | 4† | 20Ɪ | 1.00 | .67 |
| 1N661 | 240 | 300§ | 6 | .98 | .68 | 1N4536 | 35 | 4† | 30 | .42 | .28 |
| 1N662* | 100 | 500** | 10 | .25 | .15 | 1N4606 | 85 | 4† | 200 | 1.23 | .81 |
| 1N663* | 100 | 500# | 100 | .58 | .38 | 1N4727 | 30 | 4▲ | 10‡ | .37 | .23 |
| 1N914** | 100 | 4▲ | 10 | .32 | .21 | 1N4938** | 200 | 50§ | 100 | 1.22 | .98 |

*$I_F = I_R$ = 200 mA, recovery to 20 mA, $R_L$ = 100 ohms. †Lumatron: 10 mA $I_F$, switched to 10 mA $I_R$, recovery to 1 mA. ‡JAN256: 5 mA $I_F$, switched to $V_R$ = 10 V, recovery to 20 K. §JAN256: 30 mA $I_F$, switched to $V_R$ = 35 V, recovery to 400 K. #JAN256: 5 mA $I_F$, switched to $V_R$ = 40 V, recovery to 200 K. •JAN256: 5 mA $I_F$, switched to $V_R$ = 40 V, recovery to 80 K. ▲EGG Type 2236A: 10 mA $I_F$, switched to $V_R$ = 6 V, recovery to 1 mA reverse. ■Lumatron: 30 mA $I_F$, switched to 30 mA $I_R$, recovery to 1 mA. ♦$V_F$ = 1.5 V. Ɪ$V_F$ = 0.88 V. ‡$V_F$ = 0.85 V. *JAN type available at same price. **JAN and JANTX types available. **JAN256: 5 mA $I_F$, switched to $V_R$ = 40 V, recovery to 100 K.

## MULTIPLE DIODES

$t_{fr}$ = 40 ns max. at $I_F$ = 500 mA; $t_{rr}$ = 20 ns max. at $I_F$ = 200 mA.

| Min. $V_{(BR)}$ V | TI Type | Case | Description | Net Ea., Lots of | | | TI Type | Case | Description | Net Each | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1-9 | 10-99 | 100 Up | | | | 1-99 | 100 Up |
| 60 | TID17 | U | Dual diode | $ 4.38 | $ 2.92 | $2.10* | TID121 | FF | 8-diode array, | $3.90 | $3.30 |
| 40 | TID18 | U | | 3.10 | 2.05 | 1.50* | TID122 | FF | common cathode | 3.50 | 2.90 |
| 60 | TID19 | U | Dual diode | 4.38 | 2.92 | 2.10* | TID123 | FF | 8-diode array, | 3.90 | 3.30 |
| 40 | TID20 | U | | 3.10 | 2.05 | 1.50* | TID124 | FF | common anode | 3.50 | 2.90 |
| 60 | TID21A | JJ | 8-diode array, | 6.00 | 6.00 | 4.90 | TID125 | FF | 16-diode array | 4.90 | 4.20 |
| 40 | TID22A | JJ | common cathode | 4.95 | 4.95 | 4.10 | TID126 | FF | | 4.25 | 3.65 |
| 60 | TID23A | JJ | 8-diode array, | 6.00 | 6.00 | 4.90 | TID129 | FF | Dual 10-diode | 9.65 | 8.20 |
| 40 | TID24A | JJ | common anode | 4.95 | 4.95 | 4.10 | TID130 | FF | array | 8.65 | 7.40 |
| 60 | TID25A | JJ | 16-diode array | 9.05 | 9.05 | 7.50 | TID131 | P | Dual 8-diode | 9.05 | 7.50 |
| 40 | TID26A | JJ | | 7.60 | 7.60 | 6.30 | TID132 | P | array | 7.60 | 6.30 |
| 60 | TID29A | P | Dual 10-diode | 11.50 | 11.50 | 9.65 | TID133 | FF | Dual 8-diode | 4.90 | 4.20 |
| 40 | TID30A | P | array | 9.75 | 9.75 | 8.15 | TID134 | FF | array | 4.25 | 3.65 |

*100–499 qty.; 500–1000 qty. prices available on request.

## SILICON POWER REGULATORS (CASE R)

### 10 WATT DOUBLE ANODE

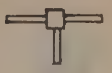
**TI Type 1N1816, R–1N1836, R**— ± 10% tol. Net Each, Lots 1–99 ........ **$5.10** 100 Up.. **$4.50**
**TI Type 1N1816A, AR–1N1836A, R**— ± 5% tol. Net Each, Lots 1–99 ..... **5.80** 100 Up.. **5.05**
**TI Type 1N1816C–1N1836C**— ± 10% tol. clipper. Net Each, Lots 1–99 ... **6.50** 100 Up.. **5.65**
**TI Type 1N1816CA–1N1836CA**— ± 5% tol. clipper. Net Each, Lots 1–99 ... **7.00** 100 Up.. **6.10**

| TI Type | Nom. $V_Z$ V | $I_{ZT}$ mA | TI Type | Nom. $V_Z$ V | $I_{ZT}$ mA | TI Type | Nom. $V_Z$ V | $I_{ZT}$ mA |
|---|---|---|---|---|---|---|---|---|
| 1N1816 | 13 | 500 | 1N1823 | 27 | 250 | 1N1830 | 51 | 150 |
| 1N1817 | 15 | 500 | 1N1824 | 30 | 150 | 1N1831 | 56 | 150 |
| 1N1818 | 16 | 500 | 1N1825 | 33 | 150 | 1N1832 | 62 | 50 |
| 1N1819 | 18 | 500 | 1N1826 | 36 | 150 | 1N1833 | 68 | 50 |
| 1N1820 | 20 | 250 | 1N1827 | 39 | 150 | 1N1834 | 75 | 50 |
| 1N1821 | 22 | 250 | 1N1828 | 43 | 150 | 1N1835 | 82 | 50 |
| 1N1822 | 24 | 250 | 1N1829 | 47 | 150 | 1N1836 | 91 | 50 |

### 10 WATT SINGLE ANODE

**TI Type 1N2970, R–1N3011, R**— ± 20% tol. Net Each, Lots 1–99 .......... **$3.60** 100 Up.. **$2.40**
**TI Type 1N2970A, AR–1N3011A, AR**— ± 10% tol. Net Each, Lots 1–99 .... **3.98** 100 Up.. **2.65**
**TI Type 1N2970B, BR–1N3011B, BR**— ± 5% tol. Net Each, Lots 1–99 ..... **4.95** 100 Up.. **3.30**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1N2970 | 6.8 | 370 | 1N2984 | 20 | 125 | 1N2998 | 52 | 50 |
| 1N2971 | 7.5 | 335 | 1N2985 | 22 | 115 | 1N2999 | 56 | 45 |
| 1N2972 | 8.2 | 305 | 1N2986 | 24 | 105 | 1N3000 | 62 | 40 |
| 1N2973 | 9.1 | 275 | 1N2987 | 25 | 100 | 1N3001 | 68 | 37 |
| 1N2974 | 10 | 250 | 1N2988 | 27 | 95 | 1N3002 | 75 | 33 |
| 1N2975 | 11 | 230 | 1N2989 | 30 | 85 | 1N3003 | 82 | 30 |
| 1N2976 | 12 | 210 | 1N2990 | 33 | 75 | 1N3004 | 91 | 28 |
| 1N2977 | 13 | 190 | 1N2991 | 36 | 70 | 1N3005 | 100 | 25 |
| 1N2978 | 14 | 180 | 1N2992 | 39 | 65 | 1N3006 | 105 | 25 |
| 1N2979 | 15 | 170 | 1N2993 | 43 | 60 | 1N3007 | 110 | 23 |
| 1N2980 | 16 | 155 | 1N2994 | 45 | 55 | 1N3008 | 120 | 20 |
| 1N2981 | 17 | 145 | 1N2995 | 47 | 55 | 1N3009 | 130 | 19 |
| 1N2982 | 18 | 140 | 1N2996 | 50 | 50 | 1N3010 | 140 | 18 |
| 1N2983 | 19 | 130 | 1N2997 | 51 | 50 | 1N3011 | 150 | 17 |



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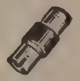

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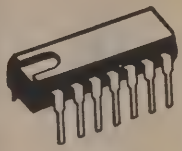

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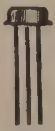

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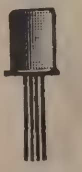

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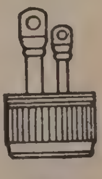

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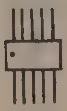
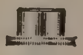


JJ

**SEE OTHER TI PAGES FOR ADDITIONAL ILLUSTRATIONS**

# Texas Instruments Products



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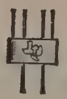

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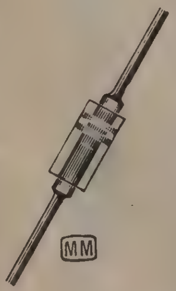

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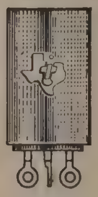


PP

## SILICON VOLTAGE REGULATOR DIODES (CASE N)

Case N except 650 Series, Case M. PD = 400 mW at 25° C except 650 Series, 150 mW.

| TI Type | Vz V | Tol. ± | TI Type | Vz V | Tol. ± | TI Type | Vz V | Tol. ± |
|---|---|---|---|---|---|---|---|---|
| 650 | 3.7–4.5 | ....... | 653C7 | 7.6 | 5% | 1N759** | 12.0 | 10%* |
| 650C0 | 3.7 | 5% | 653C8 | 7.8 | 5% | 1N761 | 4.3–5.4 | ....... |
| 650C1 | 3.8 | 5% | 653C9 | 8.0 | 5% | 1N762 | 5.2–6.4 | ....... |
| 650C2 | 3.9 | 5% | 654C9 | 8.5–9.5 | ....... | 1N763 | 6.2–8.0 | ....... |
| 650C3 | 4.0 | 5% | 655C9 | 9.5–10.5 | ....... | 1N764 | 7.5–10.0 | ....... |
| 650C4 | 4.1 | 5% | 1N702 | 2.0–3.2 | ....... | 1N765 | 9.0–12.0 | ....... |
| 650C5 | 4.2 | 5% | 1N702A | 2.3–2.9 | ....... | 1N766 | 11.0–14.5 | ....... |
| 650C6 | 4.3 | 5% | 1N703 | 3.0–3.9 | ....... | 1N957 | 6.8 | 20%† |
| 650C7 | 4.4 | 5% | 1N703A | 3.23–3.67 | ....... | 1N958 | 7.5 | 20%† |
| 651 | 4.3–5.4 | ....... | 1N704 | 3.7–4.5 | ....... | 1N959 | 8.2 | 20%† |
| 651C0 | 4.5 | 5% | 1N704A | 3.9–4.3 | ....... | 1N960 | 9.1 | 20%† |
| 651C1 | 4.6 | 5% | 1N705 | 4.3–5.4 | ....... | 1N961 | 10.0 | 20%† |
| 651C2 | 4.7 | 5% | 1N705A | 4.58–5.12 | ....... | 1N3506 | 3.3 | 5% |
| 651C3 | 4.8 | 5% | 1N706 | 5.2–6.4 | ....... | 1N3507 | 3.6 | 5% |
| 651C4 | 4.9 | 5% | 1N706A | 5.5–6.1 | ....... | 1N3508 | 3.9 | 5% |
| 651C5 | 5.0 | 5% | 1N707 | 6.2–8.0 | ....... | 1N3509 | 4.3 | 5% |
| 651C6 | 5.1 | 5% | 1N707A | 6.65–7.55 | ....... | 1N3510 | 4.7 | 5% |
| 651C7 | 5.2 | 5% | 1N708 | 5.6 | 10%* | 1N3511 | 5.1 | 5% |
| 651C8 | 5.3 | 5% | 1N709 | 6.2 | 10%* | 1N3512 | 5.6 | 5% |
| 651C9 | 5.4 | 5% | 1N710 | 6.8 | 10%* | 1N3513 | 6.2 | 5% |
| 652 | 5.2–6.4 | ....... | 1N711 | 7.5 | 10%* | 1N3514 | 6.8 | 5% |
| 652C0 | 5.5 | 5% | 1N712 | 8.2 | 10%* | 1N3515 | 7.5 | 5% |
| 652C1 | 5.5 | 5% | 1N713 | 9.1 | 10%* | 1N3516 | 8.2 | 5% |
| 652C2 | 5.7 | 5% | 1N714 | 10.0 | 10%* | 1N3517 | 9.1 | 5% |
| 652C3 | 5.8 | 5% | 1N715 | 11.0 | 10%* | 1N3518 | 10.0 | 5% |
| 652C4 | 5.9 | 5% | 1N716 | 12.0 | 10%* | 1N3519 | 11.0 | 5% |
| 652C5 | 6.0 | 5% | 1N746** | 3.3 | 10%* | 1N3520 | 12.0 | 5% |
| 652C6 | 6.1 | 5% | 1N747** | 3.6 | 10%* | 1N4099 | 6.46–7.14 | ....... |
| 652C7 | 6.2 | 5% | 1N748** | 3.9 | 10%* | 1N4100 | 7.125–7.875 | ....... |
| 652C8 | 6.3 | 5% | 1N749** | 4.3 | 10%* | 1N4101 | 7.79–8.61 | ....... |
| 652C9 | 6.4 | 5% | 1N750** | 4.7 | 10%* | 1N4102 | 8.265–9.135 | ....... |
| 653 | 6.2–8.0 | ....... | 1N751** | 5.1 | 10%* | 1N4103 | 8.645–9.555 | ....... |
| 653C0 | 6.5 | 5% | 1N752** | 5.6 | 10%* | 1N4104 | 9.5–10.5 | ....... |
| 653C1 | 6.6 | 5% | 1N753** | 6.2 | 10%* | 1N4105 | 10.45–11.55 | ....... |
| 653C2 | 6.7 | 5% | 1N754** | 6.8 | 10%* | 1N4106 | 11.4–12.6 | ....... |
| 653C3 | 6.8 | 5% | 1N755** | 7.5 | 10%* | 1N4360 | 2.28–2.52 | ....... |
| 653C4 | 7.0 | 5% | 1N756** | 8.2 | 10%* | 1N4370** | 2.4 | 10%* |
| 653C5 | 7.2 | 5% | 1N757** | 9.1 | 10%* | 1N4371** | 2.7 | 10%* |
| 653C6 | 7.4 | 5% | 1N758** | 10.1 | 10%* | 1N4372** | 3.0 | 10%* |

*Add suffix **A** for ±5% devices. †Add suffix **A** for ±10% and suffix **B** for ±5% devices. **JAN and JANTX types available.

| TI Type | Net Each, Lots of 1-99 | Net Each, Lots of 100 Up | TI Type | Net Each, Lots of 1-99 | Net Each, Lots of 100 Up |
|---|---|---|---|---|---|
| 650–653 | $4.35 | $3.65 | 1N957B–1N961B | $1.05 | $0.85 |
| 650C0–655C9 | 4.85 | 4.15 | 1N3506–1N3520 | 1.10 | .90 |
| 1N702–1N766 | .90 | .60 | 1N4099–1N4106 | 5.05 | 3.80 |
| 1N702A–1N759A | 1.05 | .85 | 1N4360 | 1.05 | .85 |
| 1N957–1N961 | .80 | .50 | 1N4370–1N4372 | .90 | .60 |
| 1N957A–1N961A | .90 | .60 | 1N4370A–1N4327A | 1.05 | .85 |

## SILICON RECTIFIERS

| TI Type | Case | Rated VR V | Rated IO A | Net Ea., Lots 1-99 | Net Ea., Lots 100 Up | TI Type | Case | Rated VR V | Rated IO A | Net Ea., Lots 1-99 | Net Ea., Lots 100 Up |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1N253 | R | 100 | 1 | $1.05 | $0.70 | 1N550 | R | 100 | 0.5 | $1.05 | $0.70 |
| 1N254 | R | 200 | 0.4 | 1.13 | .70 | 1N551 | R | 200 | 0.5 | 1.12 | .75 |
| 1N255 | R | 400 | 0.4 | 1.58 | 1.05 | 1N552 | R | 300 | 0.5 | 1.42 | .95 |
| 1N256 | R | 600 | 0.2 | 2.16 | 1.44 | 1N553 | R | 400 | 0.5 | 1.72 | 1.15 |
| 1N332 | R | 400 | 0.4 | 1.72 | 1.10 | 1N554 | R | 500 | 0.5 | 1.80 | 1.20 |
| 1N333 | R | 400 | 0.2 | 1.72 | 1.10 | 1N555 | R | 600 | 0.5 | 2.40 | 1.60 |
| 1N334 | R | 300 | 0.4 | 1.42 | .90 | 1N599 | Q | 50 | 0.3 | .47 | .31 |
| 1N335 | R | 300 | 0.2 | 1.42 | .90 | 1N599A | Q | 50 | 0.3 | .54 | .36 |
| 1N336 | R | 200 | 0.4 | 1.12 | .72 | 1N600 | Q | 100 | 0.3 | .49 | .33 |
| 1N337 | R | 200 | 0.2 | 1.12 | .72 | 1N600A | Q | 100 | 0.3 | .63 | .42 |
| 1N338 | R | 100 | 1 | 1.05 | .70 | 1N601 | Q | 150 | 0.3 | .52 | .35 |
| 1N339 | R | 100 | 0.4 | 1.05 | .70 | 1N601A | Q | 150 | 0.3 | .65 | .43 |
| 1N340 | R | 100 | 0.2 | 1.05 | .70 | 1N602 | Q | 200 | 0.3 | .52 | .35 |
| 1N341 | R | 400 | 0.4 | 1.72 | 1.10 | 1N602A | Q | 200 | 0.3 | .66 | .44 |
| 1N342 | R | 400 | 0.2 | 1.72 | 1.10 | 1N603 | Q | 300 | 0.3 | .60 | .40 |
| 1N343 | R | 300 | 0.4 | 1.42 | .90 | 1N603A | Q | 300 | 0.3 | .66 | .44 |
| 1N344 | R | 300 | 0.2 | 1.42 | .90 | 1N604 | Q | 400 | 0.3 | .67 | .45 |
| 1N345 | R | 200 | 0.4 | 1.12 | .72 | 1N604A | Q | 400 | 0.3 | .79 | .53 |
| 1N346 | R | 200 | 0.2 | 1.12 | .72 | 1N605 | Q | 500 | 0.3 | .76 | .51 |
| 1N347 | R | 100 | 1 | 1.05 | .70 | 1N605A | Q | 500 | 0.3 | 1.43 | .95 |
| 1N348 | R | 100 | 0.4 | 1.05 | .70 | 1N606 | Q | 600 | 0.3 | .96 | .64 |
| 1N349 | R | 100 | 0.2 | 1.05 | .70 | 1N606A | Q | 600 | 0.3 | 2.02 | 1.35 |
| 1N440B | Q | 100 | 0.75 | .66 | .44 | 1N607, A* | R | 50 | 0.8 | 1.00 | .67 |
| 1N441B | Q | 200 | 0.75 | .69 | .46 | 1N608, A* | R | 100 | 0.8 | 1.05 | .70 |
| 1N442B | Q | 300 | 0.75 | .79 | .53 | 1N609, A* | R | 150 | 0.8 | 1.05 | .70 |
| 1N443B | Q | 400 | 0.75 | .97 | .65 | 1N610, A* | R | 200 | 0.8 | 1.12 | .75 |
| 1N444B | Q | 500 | 0.65 | 1.05 | .70 | 1N611, A* | R | 300 | 0.8 | 1.42 | .95 |
| 1N445B | Q | 600 | 0.65 | 1.42 | .95 | 1N612, A* | R | 400 | 0.8 | 1.72 | 1.15 |
| 1N530 | Q | 100 | 0.3 | .49 | .33 | 1N613, A* | R | 500 | 0.8 | 1.80 | 1.20 |
| 1N531 | Q | 200 | 0.3 | .52 | .35 | 1N614, A* | R | 600 | 0.8 | 2.40 | 1.60 |
| 1N532 | Q | 300 | 0.3 | .60 | .40 | 1N1095 | Q | 500 | 0.75 | .76 | .51 |
| 1N533 | Q | 400 | 0.3 | .67 | .45 | 1N1096 | Q | 600 | 0.75 | .97 | .64 |
| 1N534 | Q | 500 | 0.3 | .76 | .51 | 1N1100 | Q | 100 | 0.75 | .49 | .33 |
| 1N535 | Q | 600 | 0.3 | .96 | .64 | 1N1101 | Q | 200 | 0.75 | .63 | .42 |
| 1N536 | Q | 50 | 0.75 | .45 | .30 | 1N1102 | Q | 300 | 0.75 | .60 | .40 |
| 1N537 | Q | 100 | 0.75 | .49 | .33 | 1N1103 | Q | 400 | 0.75 | .67 | .45 |
| 1N538 | Q | 200 | 0.75 | .52 | .35 | 1N1104 | Q | 500 | 0.75 | .76 | .51 |
| 1N539 | Q | 300 | 0.75 | .60 | .40 | 1N1105 | Q | 600 | 0.75 | .97 | .64 |
| 1N540 | Q | 400 | 0.75 | .67 | .45 | 1N1115 | R | 100 | 1.5 | 1.05 | .70 |
| 1N547 | Q | 600 | 0.25 | .96 | .64 | 1N1116 | R | 200 | 1.5 | 1.12 | .75 |

*Add suffix **R** for reverse polarity (1N607**R**, 1N607A**R**).

**SEE OTHER TI PAGES FOR ADDITIONAL ILLUSTRATIONS**

TI PRODUCTS ARE STOCKED AT HOLLYWOOD AND ORLANDO, FL;
HUNTSVILLE, AL; WINSTON-SALEM, NC; AND GAITHERSBURG, MD

# Texas Instruments Products

## SILICON RECTIFIERS (CONTINUED)

| TI Type | Case | Rated | | Net Ea., Lots | | TI Type | Case | Rated | | Net Ea., Lots | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $V_R$ V | $I_O$ A | 1-99 | 100 Up | | | $V_R$ V | $I_O$ A | 1-99 | 100 Up |
| 1N1117 | R | 300 | 1.5 | $1.42 | $0.95 | 1N1613 | R | 100 | 5 | $1.20 | $0.80 |
| 1N1118 | R | 400 | 1.5 | 1.72 | 1.10 | 1N1614 | R | 200 | 5 | 1.87 | 1.25 |
| 1N1119 | R | 500 | 1.5 | 1.80 | 1.20 | 1N1615 | R | 400 | 5 | 3.71 | 2.48 |
| 1N1120 | R | 600 | 1.5 | 2.40 | 1.60 | 1N1616 | R | 600 | 5 | 5.36 | 3.58 |
| 1N1124A* | R | 200 | 3.3 | 1.86 | 1.24 | 1N1692 | Q | 100 | 0.6 | .49 | .33 |
| 1N1125A* | R | 300 | 3.3 | 2.25 | 1.50 | 1N1693 | Q | 200 | 0.6 | .52 | .35 |
| 1N1126A* | R | 400 | 3.3 | 3.05 | 2.05 | 1N1694 | Q | 300 | 0.6 | .60 | .40 |
| 1N1127A* | R | 500 | 3.3 | 4.05 | 2.70 | 1N1695 | Q | 400 | 0.6 | .67 | .45 |
| 1N1128A* | R | 600 | 3.3 | 4.95 | 3.30 | 1N1696 | Q | 500 | 0.6 | .76 | .51 |
| 1N1487 | Q | 100 | 0.75 | .49 | .33 | 1N1697 | Q | 600 | 0.6 | .97 | .64 |
| 1N1488 | Q | 200 | 0.75 | .52 | .35 | 1N2069 | W | 200 | 0.75 | .45 | .29 |
| 1N1489 | Q | 300 | 0.75 | .60 | .40 | 1N2069A | W | 200 | 0.75 | .50 | .31 |
| 1N1490 | Q | 400 | 0.75 | .67 | .45 | 1N2070 | W | 400 | 0.75 | .55 | .33 |
| 1N1491 | Q | 500 | 0.75 | .76 | .51 | 1N2070A | W | 400 | 0.75 | .57 | .35 |
| 1N1492 | Q | 600 | 0.75 | .97 | .64 | 1N2071 | W | 600 | 0.75 | .62 | .42 |
| 1N1581 | R | 50 | 10 | 1.05 | .70 | 1N2071A | W | 600 | 0.75 | .70 | .46 |
| 1N1582 | R | 100 | 10 | 1.20 | .80 | 1N4001 | W | 50 | 1 | .39 | .26 |
| 1N1583 | R | 200 | 10 | 1.90 | 1.25 | 1N4002 | W | 100 | 1 | .44 | .29 |
| 1N1584 | R | 300 | 10 | 2.95 | 1.95 | 1N4003 | W | 200 | 1 | .50 | .33 |
| 1N1586 | R | 400 | 10 | 3.76 | 2.50 | 1N4004 | W | 400 | 1 | .56 | .37 |
| 1N1586 | R | 500 | 10 | 4.45 | 3.00 | 1N4005 | W | 600 | 1 | .66 | .45 |
| 1N1587 | R | 600 | 10 | 4.90 | 3.25 | 1N4006 | W | 800 | 1 | .99 | .65 |
| 1N1612 | R | 50 | 5 | 1.07 | :72 | 1N4007 | W | 1000 | 1 | 1.49 | .99 |

*Add suffix **R** for reverse polarity (1N1124A**R**).

## UNIDIRECTIONAL THYRISTORS

$I_{GT}$ at 25° C.

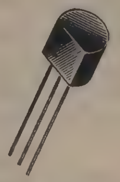
| TI Type | Case | $I_O$ A | Max. Fwd.-Rev. WV | Max. $I_{GT}$ mA | Net Each, Lots of | | TI Type | Case | $I_O$ A | Max. Fwd.-Rev. WV | Max. $I_{GT}$ mA | Net Each, Lots of | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1-99 | 100 Up | | | | | | 1-99 | 100 Up |
| TIC44 | M3 | 0.6 | 30 | 0.2 | $0.77 | $0.51 | TI145A4 | I | 0.56 | 400 | 25 | $ 5.25 | $ 3.50 |
| TIC45 | M3 | 0.6 | 60 | 0.2 | .83 | .55 | 2N1595 | I | 1 | 50 | 10 | 3.00 | 2.00 |
| TIC46 | M3 | 0.6 | 100 | 0.2 | .96 | .64 | 2N1596 | I | 1 | 100 | 10 | 4.50 | 3.05 |
| TIC47 | M3 | 0.6 | 200 | 0.2 | 1.09 | .85 | 2N1597 | I | 1 | 200 | 10 | 9.35 | 6.20 |
| TIC106A | M4 | 3.2 | 100 | 0.2 | .74 | .54 | 2N1598 | I | 1 | 300 | 10 | 14.45 | 9.65 |
| TIC106B | M4 | 3.2 | 200 | 0.2 | .81 | .60 | 2N1599 | I | 1 | 400 | 10 | 19.35 | 12.90 |
| TIC106C | M4 | 3.2 | 300 | 0.2 | 1.08 | .80 | 2N2322 | I | 1 | 25 | 0.35* | 2.25 | 1.50 |
| TIC106D | M4 | 3.2 | 400 | 0.2 | 1.33 | .98 | 2N2323 | I | 1 | 50 | 0.35* | 2.47 | 1.65 |
| TIC106F | M4 | 3.2 | 50 | 0.2 | .71 | .52 | 2N2324 | I | 1 | 100 | 0.35* | 4.05 | 2.70 |
| TIC106Y | M4 | 3.2 | 30 | 0.2 | .68 | .50 | 2N2325 | I | 1 | 150 | 0.35* | 5.92 | 3.25 |
| TIC116A | M4 | 5 | 100 | 20 | 1.12 | .83 | 2N2326 | I | 1 | 200 | 0.35* | 7.50 | 5.20 |
| TIC116B | M4 | 5 | 200 | 20 | 1.28 | .95 | 2N3001 | U | 0.25 | 30 | 0.02 | 3.63 | 2.42 |
| TIC116C | M4 | 5 | 300 | 20 | 1.50 | 1.11 | 2N3002 | U | 0.25 | 60 | 0.02 | 3.90 | 2.60 |
| TIC116D | M4 | 5 | 400 | 20 | 1.73 | 1.28 | 2N3003 | U | 0.25 | 100 | 0.02 | 6.54 | 4.36 |
| TIC116E | M4 | 5 | 500 | 20 | 2.25 | 1.67 | 2N3004 | U | 0.25 | 200 | 0.02 | 9.08 | 6.05 |
| TIC116F | M4 | 5 | 50 | 20 | .97 | .92 | 2N3005 | U | 0.25 | 30 | 0.2 | 3.30 | 2.20 |
| TIC116M | M4 | 5 | 600 | 20 | 2.90 | 2.15 | 2N3006 | U | 0.25 | 60 | 0.2 | 3.63 | 2.42 |
| TIC126A | M4 | 7.5 | 100 | 20 | 1.28 | .95 | 2N3007 | U | 0.25 | 100 | 0.2 | 5.99 | 3.96 |
| TIC126B | M4 | 7.5 | 200 | 20 | 1.42 | 1.05 | 2N3008 | U | 0.25 | 200 | 0.2 | 8.25 | 5.50 |
| TIC126C | M4 | 7.5 | 300 | 20 | 1.73 | 1.28 | 2N3555 | I | 1 | 30 | 0.02 | 7.45 | 4.95 |
| TIC126D | M4 | 7.5 | 400 | 20 | 2.25 | 1.67 | 2N3556 | I | 1 | 60 | 0.02 | 8.95 | 5.95 |
| TIC126E | M4 | 7.5 | 500 | 20 | 2.83 | 2.10 | 2N3557 | I | 1 | 100 | 0.02 | 11.20 | 7.45 |
| TIC126F | M4 | 7.5 | 50 | 20 | 1.12 | .83 | 2N3558 | I | 1 | 200 | 0.02 | 14.20 | 9.45 |
| TIC126M | M4 | 7.5 | 600 | 20 | 3.58 | 2.65 | 2N3559 | I | 1 | 30 | 0.2 | 5.75 | 3.83 |
| TI145A0 | I | 0.56 | 50 | 25 | 1.65 | 1.10 | 2N3560 | I | 1 | 60 | 0.2 | 6.15 | 4.10 |
| TI145A1 | I | 0.56 | 100 | 25 | 1.80 | 1.20 | 2N3561 | I | 1 | 100 | 0.2 | 8.60 | 5.75 |
| TI145A2 | I | 0.56 | 200 | 25 | 2.10 | 1.40 | 2N3562 | I | 1 | 200 | 0.2 | 9.50 | 6.33 |
| TI145A3 | I | 0.56 | 300 | 25 | 3.30 | 2.20 | | | | | | | |

*At −65° C.

## BIDIRECTIONAL THYRISTORS

$I_{GT}$ = 50 mA max. at 25° C except TIC250B thru TIC272M, $I_{GT}$ = 100 mA max. and 2N5273 thru 2N5275, $I_{GT}$ = 150 mA max.

| TI Type | Case | $I_T$ (rms) A | Max. Fwd.-Rev. WV | Net Each, Lots of | | TI Type | Case | $I_T$ (rms) A | Max. Fwd.-Rev. WV | Net Each, Lots of | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1-99 | 100-999 | | | | | 1-99 | 100-999 |
| TIC220B | II | 6 | 200 | $2.25 | $1.70 | TIC242E | UU | 15 | 500 | $ 5.10 | $ 3.85 |
| TIC220D | II | 6 | 400 | 2.65 | 2.00 | TIC250B | VV | 20 | 200 | 5.15 | 3.80 |
| TIC220E | II | 6 | 500 | 3.40 | 2.55 | TIC250D | VV | 20 | 400 | 7.25 | 5.35 |
| TIC221B | TT | 6 | 200 | 2.95 | 2.20 | TIC250E | VV | 20 | 500 | 8.55 | 6.40 |
| TIC221D | TT | 6 | 400 | 3.45 | 2.60 | TIC250M | VV | 20 | 600 | 10.00 | 7.40 |
| TIC221E | TT | 6 | 500 | 4.15 | 3.10 | TIC252B | WW | 20 | 200 | 5.55 | 4.10 |
| TIC222B | UU | 6 | 200 | 2.65 | 2.00 | TIC252D | WW | 20 | 400 | 7.65 | 5.65 |
| TIC222D | UU | 6 | 400 | 3.00 | 2.25 | TIC252E | WW | 20 | 500 | 9.15 | 6.75 |
| TIC222E | UU | 6 | 500 | 3.75 | 2.80 | TIC252M | WW | 20 | 600 | 10.75 | 7.75 |
| TIC226B | M4 | 8 | 200 | 1.30 | .98 | TIC260B | VV | 25 | 200 | 5.75 | 4.20 |
| TIC226D | M4 | 8 | 400 | 1.66 | 1.25 | TIC260D | VV | 25 | 400 | 8.10 | 5.95 |
| TIC230B | II | 10 | 200 | 3.00 | 2.25 | TIC260E | VV | 25 | 500 | 9.60 | 7.10 |
| TIC230D | II | 10 | 400 | 3.65 | 2.75 | TIC260M | VV | 25 | 600 | 11.10 | 8.20 |
| TIC230E | II | 10 | 500 | 4.40 | 3.30 | TIC262B | WW | 25 | 200 | 6.25 | 4.50 |
| TIC231B | TT | 10 | 200 | 3.75 | 2.80 | TIC262D | WW | 25 | 400 | 8.50 | 6.25 |
| TIC231D | TT | 10 | 400 | 4.35 | 3.25 | TIC262E | WW | 25 | 500 | 10.00 | 7.40 |
| TIC231E | TT | 10 | 500 | 5.05 | 3.80 | TIC262M | WW | 25 | 600 | 11.50 | 8.50 |
| TIC232B | UU | 10 | 200 | 3.40 | 2.55 | TIC270B | VV | 40 | 200 | 8.00 | 5.90 |
| TIC232D | UU | 10 | 400 | 4.00 | 3.00 | TIC270D | VV | 40 | 400 | 11.25 | 8.25 |
| TIC232E | UU | 10 | 500 | 4.75 | 3.55 | TIC270E | VV | 40 | 500 | 13.25 | 9.75 |
| TIC240B | II | 15 | 200 | 3.12 | 2.35 | TIC270M | VV | 40 | 600 | 15.25 | 11.25 |
| TIC240D | II | 15 | 400 | 4.15 | 3.10 | TIC272B | WW | 40 | 200 | 8.40 | 6.25 |
| TIC240E | II | 15 | 500 | 4.80 | 3.60 | TIC272D | WW | 40 | 400 | 11.70 | 8.60 |
| TIC241B | TT | 15 | 200 | 4.00 | 3.00 | TIC272E | WW | 40 | 500 | 13.70 | 10.10 |
| TIC241D | TT | 15 | 400 | 4.85 | 3.65 | TIC272M | WW | 40 | 600 | 15.70 | 11.60 |
| TIC241E | TT | 15 | 500 | 5.50 | 4.15 | 2N5273 | L | 25 | 200 | 7.50 | 5.00 |
| TIC242B | UU | 15 | 200 | 3.52 | 2.65 | 2N5274 | L | 25 | 400 | 15.30 | 10.20 |
| TIC242D | UU | 15 | 400 | 4.45 | 3.35 | 2N5275 | L | 25 | 600 | 24.00 | 16.00 |



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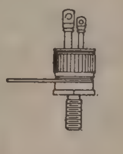

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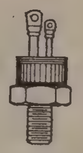

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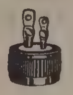

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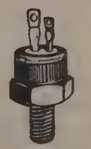


WW

**SEE PRECEDING TI PAGES FOR ADDITIONAL ILLUSTRATIONS**

# Texas Instruments Sensistors

## SENSISTOR® SOLID STATE TEMPERATURE SENSING SILICON RESISTORS

- DESIGNED TO MEET OR EXCEED ALL ELECTRICAL REQUIREMENTS OF MIL-T-23648 FOR POSITIVE-TC THERMISTORS
- TG⅛ ELECTRICALLY EQUIVALENT TO RTH42
- TM⅛ ELECTRICALLY EQUIVALENT TO RTH22
- AVERAGE POSITIVE TC OF +0.7%/°C (+7,000 ppm)
- RTH22 MIL-APPROVED 33Ω TO 10K
- RTH42 MIL-APPROVED 10Ω TO 2.7K

### MECHANICAL DATA

TG⅛ resistor encapsulated in hard-glass hermetically sealed package (0.105″ dia. x 0.350″ l.) with welded unborated solder-coated dumet leads. TM⅛ (0.140″ dia. x 0.406″ l.) and TM¼ (0.200″ dia. x 0.585″ l.) resistors encapsulated in molded packages with solder-coated copper leads. A-nickel leads or gold plated A-nickel leads are also available upon request.

### MAXIMUM RATINGS

Power Dissipation at Ambient Temperature: TG⅛ 250 mW at or below 25° C, 125 mW at 100° C (see Figure 1). TM⅛ 125 mW at or below 100° C (see Figure 2). TM¼ 250 mW at or below 100° C. Operating Ambient Temperature Range: −65° C to +150° C. Storage Temperature Range: −65° C to +150° C.

### ELECTRICAL AND THERMAL CHARACTERISTICS

| TI Type | Zero-Power Resistance Ratio $R_{25° C}/R_{125° C}$ | Thermal Time Constant | |
|---|---|---|---|
| | | Typical | Maximum |
| TG⅛ | 0.55 ±15% | 35 s | 60 s |
| TM⅛ | 0.55 ±15% | 35 s | 40 s |
| TM¼ | 0.55 ±15% | 54 s | 60 s |

### ±5% AND ±10% STANDARD TOLERANCE VALUES

Standard zero-power resistance values (ohms) at 25° C $T_A$.

| Ohms | Ohms | Ohms | Ohms | Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|---|---|---|---|
| 10 | 27 | 56 | 150 | 390 | 820 | 2.2K | 5.0K |
| 12 | 33 | 68 | 180 | 470 | 1000 | 2.7K | 5.6K |
| 15 | 39 | 82 | 220 | 500 | 1200 | 3.3K | 6.8K |
| 18 | 47 | 100 | 270 | 560 | 1500 | 3.9K | 8.2K |
| 22 | 50 | 120 | 330 | 680 | 1800 | 4.7K | 10.0K |

### PERFORMANCE CHARACTERISTICS

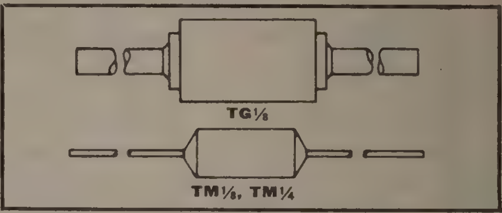
Resistance change is maximum at $T_A = 25°$ C.

| Test per Applicable MIL-T-23648 Procedure | Resistance Change |
|---|---|
| Short-Time Overload | ±1% |
| Dielectric Withstanding Voltage | ±1% |
| Low Temperature Storage | ±1% |
| High Temperature Storage | ±2% |
| Terminal Strength | ±1% |
| Thermal Shock | ±2% |
| Resistance to Soldering Heat | ±1% |
| Moisture Resistance | ±2% |
| 1000-Hour Load Life at $T_A = 100°$ C | ±2% |
| High Frequency Vibration | ±1% |
| Shock and Immersion | ±1% |

### STANDARD VALUES PRICING

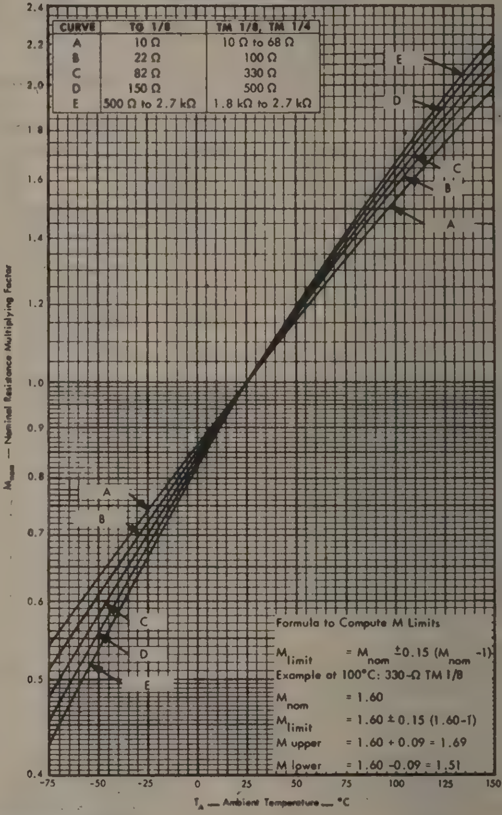
| TI Type | Tolerance | Resistance Value Range | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|
| | | | 25-99 | 100-249 | 250-499 | 500 Up |
| TG⅛ | ±10%<br>±5% | 10 ohms to 10K | $2.00<br>2.40 | $1.65<br>2.00 | $1.35<br>1.78 | $1.15<br>1.41 |
| TM⅛ | ±10%<br>±5% | 10 ohms to 10K | 5.00<br>6.00 | 4.50<br>5.20 | 4.00<br>4.40 | 3.20<br>3.50 |
| TM¼ | ±10%<br>±5% | 10 ohms to 10K | 4.00<br>4.80 | 3.50<br>4.05 | 3.00<br>3.30 | 2.50<br>2.75 |

**HIGHER VALUES AVAILABLE ON SPECIAL ORDER**



### TYPICAL CHARACTERISTICS

#### NOMINAL RESISTANCE MULTIPLYING FACTOR vs. AMBIENT TEMPERATURE



Formula to Compute M Limits

$M_{limit} = M_{nom} \pm 0.15\,(M_{nom} - 1)$

Example at 100°C: 330-Ω TM 1/8

$M_{nom} = 1.60$

$M_{limit} = 1.60 \pm 0.15\,(1.60 - 1)$

$M\ upper = 1.60 + 0.09 = 1.69$

$M\ lower = 1.60 - 0.09 = 1.51$

### DISSIPATION DERATING CURVE

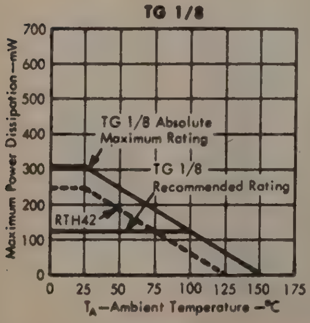


FIGURE 1

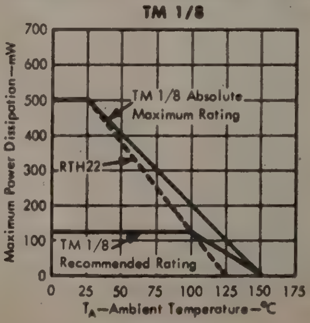


FIGURE 2

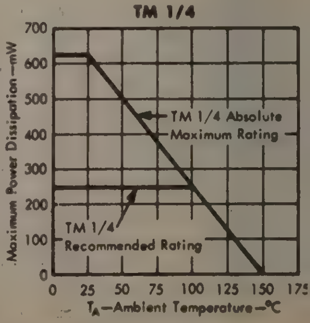
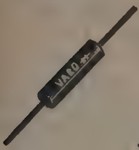


FIGURE 3

# Varo Silicon Rectifiers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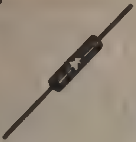
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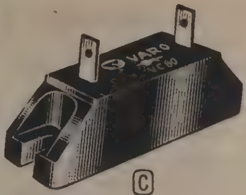

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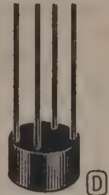
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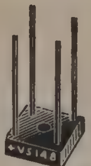

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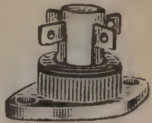

F

## DIFFUSED SILICON RECTIFIERS

### SERIES VF HIGH VOLTAGE RECTIFIERS (FIG. A)

Compact, low cost rectifiers for high voltage, low current use. Epoxy encapsulated ¼″ round package with tinned copper leads. Fast Recovery types have 250 nsec max. reverse recovery time with $I_f$ and $I_R = 2$ mA. **Half Cycle Surge:** 3 amps max. at 60 Hz. **Operating Temperature:** −55° to +125° C.

| Varo No. | Av. $I_o$ mA | PIV V | Lgth. | Standard Type $V_F$ V | Standard Type Net Ea., Lots 1-99 | Standard Type Net Ea., Lots 100-999 | Fast Recovery* $V_F$ V | Fast Recovery* Net Ea., Lots 1-99 | Fast Recovery* Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|---|
| **VF5-5** | 5 | 5000 | 1″ | 12 | **$1.60** | **$1.36** | 15 | **$1.77** | **$1.50** |
| **VF5-7** | 5 | 7000 | 1″ | 12 | **1.71** | **1.45** | 15 | **1.89** | **1.60** |
| **VF5-10** | 5 | 10,000 | 1″ | 18 | **1.96** | **1.66** | 30 | **2.16** | **1.83** |
| **VF5-12** | 5 | 12,000 | 1″ | 18 | **2.22** | **1.88** | 30 | **2.44** | **2.07** |
| **VF5-15** | 5 | 15,000 | 2″ | 35 | **2.30** | **1.95** | 60 | **2.54** | **2.15** |
| **VF5-20** | 5 | 20,000 | 2″ | 35 | **2.97** | **2.52** | 60 | **3.27** | **2.77** |
| **VF5-25** | 5 | 25,000 | 2″ | 35 | **3.72** | **3.15** | 60 | **4.09** | **3.47** |
| **VF5-30** | 5 | 30,000 | 3″ | 50 | **4.46** | **3.78** | 90 | **4.91** | **4.16** |
| **VF5-40** | 5 | 40,000 | 3″ | 50 | **5.95** | **5.04** | 90 | **6.54** | **5.54** |
| **VF10-5** | 10 | 5000 | 1″ | 12 | **1.77** | **1.50** | 15 | **1.95** | **1.65** |
| **VF10-7** | 10 | 7000 | 1″ | 12 | **1.89** | **1.60** | 15 | **2.08** | **1.76** |
| **VF10-10** | 10 | 10,000 | 1″ | 8 | **2.16** | **1.83** | 30 | **2.38** | **2.02** |
| **VF10-12** | 10 | 12,000 | 1″ | 18 | **2.44** | **2.07** | 30 | **2.68** | **2.27** |
| **VF10-15** | 10 | 15,000 | 2″ | 35 | **2.54** | **2.15** | 60 | **2.80** | **2.37** |
| **VF10-20** | 10 | 20,000 | 2″ | 35 | **3.27** | **2.77** | 60 | **3.60** | **3.05** |
| **VF10-25** | 10 | 25,000 | 2″ | 35 | **4.09** | **3.47** | 60 | **4.51** | **3.82** |
| **VF10-30** | 10 | 30,000 | 3″ | 50 | **4.91** | **4.16** | 90 | **5.39** | **4.57** |
| **VF10-40** | 10 | 40,000 | 3″ | 50 | **6.54** | **5.54** | 90 | **7.20** | **6.10** |
| **VF25-5** | 25 | 5000 | 1″ | 12 | **1.95** | **1.65** | 15 | **2.14** | **1.81** |
| **VF25-7** | 25 | 7000 | 1″ | 12 | **2.08** | **1.76** | 15 | **2.29** | **1.94** |
| **VF25-10** | 25 | 10,000 | 1″ | 18 | **2.38** | **2.02** | 30 | **2.62** | **2.22** |
| **VF25-12** | 25 | 12,000 | 1″ | 18 | **2.68** | **2.27** | 30 | **2.94** | **2.49** |
| **VF25-15** | 25 | 15,000 | 2″ | 35 | **2.80** | **2.37** | 60 | **3.08** | **2.61** |
| **VF25-20** | 25 | 20,000 | 2″ | 35 | **3.60** | **3.05** | 60 | **3.95** | **3.35** |
| **VF25-25** | 25 | 25,000 | 2″ | 35 | **4.51** | **3.82** | 60 | **4.96** | **4.20** |
| **VF25-30** | 25 | 30,000 | 3″ | 50 | **5.39** | **4.57** | 90 | **5.94** | **5.03** |
| **VF25-40** | 25 | 40,000 | 3″ | 50 | **7.20** | **6.10** | 90 | **7.91** | **6.70** |

*Add suffix **X** to Varo Number.

### SERIES VA/VB HIGH VOLTAGE RECTIFIERS (FIG. B)

High reliability miniature rectifiers in epoxy encapsulated package. Low leakage current. Withstand 500G shock, 100 Hz vibration with peak acceleration of 10G. **DC Reverse Current:** .05 $\mu$A at PIV at 25° C (fast recovery types, 0.3 $\mu$A); 5.0 $\mu$A at 100° C (fast recovery, 60 $\mu$A). **Reverse Recovery.** Fast recovery types, 300 nsec. **Max. One-Half Surge:** 3 amps at 60 Hz. **Operating Temperature:** −55° to +150° C. **Size:** VA series, .060″ dia. x .150″ long; VB, .100″ dia. x 0.4″ long; leads 0.4″ long.

| Varo No. | PIV V | Standard Type $I_o$ mA | Standard Type $V_F$ V | Standard Type Net Ea., Lots 1-99 | Standard Type Net Ea., Lots 100-999 | Fast Recovery Type* $I_o$ mA | Fast Recovery Type* $V_F$ V | Fast Recovery Type* Net Ea., Lots 1-99 | Fast Recovery Type* Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|---|
| **VA10** | 1000 | 50 | 4 | **$1.36** | **$1.02** | 40 | 6 | **$1.80** | **$1.35** |
| **VA15** | 1500 | 50 | 4 | **1.44** | **1.08** | 40 | 6 | **1.93** | **1.45** |
| **VA20** | 2000 | 50 | 4 | **1.55** | **1.16** | 40 | 6 | **2.07** | **1.55** |
| **VA25** | 2500 | 50 | 4 | **1.66** | **1.25** | 20 | 8 | **2.20** | **1.65** |
| **VA30** | 3000 | 25 | 6 | **1.93** | **1.45** | 20 | 8 | **2.85** | **2.13** |
| **VA35** | 3500 | 25 | 6 | **2.70** | **2.02** | ...... | ...... | ...... | ...... |
| **VB10** | 1000 | 100 | 5 | **1.41** | **1.07** | 50 | 6 | **1.88** | **1.43** |
| **VB15** | 1500 | 100 | 5 | **1.51** | **1.15** | 50 | 6 | **2.01** | **1.53** |
| **VB20** | 2000 | 100 | 5 | **1.59** | **1.20** | 50 | 6 | **2.12** | **1.60** |
| **VB25** | 2500 | 100 | 5 | **1.72** | **1.30** | 25 | 12 | **2.30** | **1.73** |
| **VB30** | 3000 | 50 | 10 | **1.88** | **1.42** | 25 | 12 | **2.50** | **1.90** |
| **VB40** | 4000 | 50 | 10 | **2.05** | **1.56** | 25 | 12 | **2.74** | **2.08** |
| **VB50** | 5000 | 50 | 10 | **2.40** | **1.82** | 25 | 12 | **3.20** | **2.42** |
| **VB60** | 6000 | 50 | 10 | **2.62** | **1.99** | ...... | ...... | ...... | ...... |
| **1N4441** | 1500 | ...... | ...... | ...... | ...... | 25 | 4 | **2.01** | **1.53** |

*Add suffix **X** to Varo VA/VB Number.

### SERIES VC HIGH VOLTAGE POWER RECTIFIERS (FIG. C)

High voltage, high current rectifiers with low leakage current; 1 to 2 amps average DC output. Epoxy encapsulated package. **DC Reverse Current:** Standard, 1 $\mu$A max. at 25° C, 1 mA at 125° C; fast recovery, 2 $\mu$A max. at 25° C, 2 mA at 125° C. **Reverse Recovery:** Fast recovery types, 300 nsec. **Peak 1-Cycle Surge:** 50 amps non-recurrent at 60 Hz; fast recovery types 35 amps. **Insulation Strength:** 10,000 volts. **Oper. Temp.:** −50° C to +125° C. **Size:** 3″ x ¾″ x ¾″.

| Varo No. | PIV Volts | Standard Type $V_F$* V | Standard Type $I_o$ Amps | Standard Type Net Ea., Lots 1-99 | Standard Type Net Ea., Lots 100-999 | Fast Recovery Type† $V_F$* V | Fast Recovery Type† $I_o$ Amps | Fast Recovery Type† Net Ea., Lots 1-99 | Fast Recovery Type† Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|---|
| **VC20** | 2000 | 4 | 2 | **$5.20** | **$4.00** | 4.8 | 2 | **$5.98** | **$4.60** |
| **VC30** | 3000 | 6 | 2 | **5.52** | **4.25** | 7.2 | 2 | **6.34** | **4.88** |
| **VC40** | 4000 | 8 | 2 | **5.85** | **4.50** | 9.6 | 2 | **6.72** | **5.17** |
| **VC50** | 5000 | 10 | 1.5 | **6.18** | **4.75** | 12.0 | 1.5 | **7.10** | **5.45** |
| **VC60** | 6000 | 12 | 1.5 | **6.50** | **5.00** | 14.4 | 1.5 | **7.47** | **5.75** |
| **VC70** | 7000 | 12 | 1.5 | **6.82** | **5.25** | 14.4 | 1.5 | **7.85** | **6.03** |
| **VC80** | 8000 | 14 | 1 | **7.15** | **5.50** | 16.8 | 1 | **8.22** | **6.32** |

*At 100 mA. †Add suffix **X** to Varo No. (e.g., VC20**X**).

## EPOXY BRIDGE RECTIFIERS

### 1-AMP (FIG. D)

**VE27, VE47 and VE67:** Controlled avalanche types with 200 watts max. power dissipation in $V_{(BR)}$ region for 100 $\mu$sec; 1 watt continuous. **VE18, VE28, VE48 and VE68:** Non-controlled avalanche types. **VE18X, VE28X and VE48X:** Fast recovery types with 200 nsec max reverse recovery time. **Peak Surge Current:** 4 amps max., 1 sec at 60 Hz; one-cycle, 25 amps max. (non-recurrent). **Reverse Current:** 10 mA max. at 150° C; 10 $\mu$A DC at 40° C. **Operating/Storage Temp.:** −50° to +150° C. **Size:** .32″ dia. x .2″.

| Varo No. | $V_R$/ $V_{RM}$ V | Max. $V_R$ (RMS) | $V_{FM}$ V/ Leg | Max. $I_o$ Amps | Avalanche Volts Min. | Avalanche Volts Max. | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|
| **VE27** | 200 | 140 | 1.2 | 1 | 250 | 700 | **$1.20** | **$1.10** |
| **VE47** | 400 | 280 | 1.2 | 1 | 450 | 900 | **1.30** | **1.20** |
| **VE67** | 600 | 420 | 1.2 | 1 | 650 | 1100 | **1.59** | **1.45** |
| **VE18** | 100 | 70 | 1.2 | 1 | ...... | ...... | **1.00** | **.90** |
| **VE28** | 200 | 140 | 1.2 | 1 | ...... | ...... | **1.10** | **1.00** |
| **VE48** | 400 | 280 | 1.2 | 1 | ...... | ...... | **1.20** | **1.10** |
| **VE68** | 600 | 420 | 1.2 | 1 | ...... | ...... | **1.49** | **1.25** |
| **VE18X** | 100 | 70 | 1.5 | 1 | ...... | ...... | **1.49** | **1.35** |
| **VE28X** | 200 | 140 | 1.5 | 1 | ...... | ...... | **1.65** | **1.50** |
| **VE48X** | 400 | 280 | 1.5 | 1 | ...... | ...... | **1.80** | **1.65** |

### 2-AMP (FIG. E)

**VS247, VS447 and VS647:** Controlled avalanche types with 300 watts max. power dissipation in $V_{(BR)}$ region for 100 $\mu$sec; 1 watt continuous. **VS148, VS248, VS448 and VS648:** Non-controlled avalanche types. **VS148X, VS248X and VS448X:** Fast recovery types with 200 nsec max. reverse recovery time. **Peak Surge Current:** 8 amps, 1 sec at 60 Hz; one-cycle, 50 amps (non-recurrent). Fast recovery types, 6 amps, 1 sec; one-cycle, 35 amps. **Reverse Current:** 10 mA max. at 150° C; 10 $\mu$A DC at 40° C. **Insulation Strength:** 2000 VDC, circuit to case. **Operating/Storage Temperature:** −50° to +150° C. **Size:** .600″ sq. x .200″.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **VS247** | 200 | 140 | 1.2 | 2 | 250 | 700 | **$1.20** | **$1.10** |
| **VS447** | 400 | 280 | 1.2 | 2 | 450 | 900 | **1.30** | **1.20** |
| **VS647** | 600 | 420 | 1.2 | 2 | 650 | 1100 | **1.60** | **1.50** |
| **VS148** | 100 | 70 | 1.2 | 2 | ...... | ...... | **1.00** | **.90** |
| **VS248** | 200 | 140 | 1.2 | 2 | ...... | ...... | **1.10** | **1.00** |
| **VS448** | 400 | 280 | 1.2 | 2 | ...... | ...... | **1.20** | **1.10** |
| **VS648** | 600 | 420 | 1.2 | 2 | ...... | ...... | **1.50** | **1.40** |
| **VS148X** | 100 | 70 | 1.5 | 2 | ...... | ...... | **1.65** | **1.50** |
| **VS248X** | 200 | 140 | 1.5 | 2 | ...... | ...... | **1.81** | **1.65** |
| **VS448X** | 400 | 280 | 1.5 | 2 | ...... | ...... | **1.98** | **1.81** |

### 6-AMP (FIG. E)

**VH247, VH447 and VH647:** Controlled avalanche types with 400 watts max. power dissipation in $V_{(BR)}$ region for 100 $\mu$sec; 2 watts continuous. **VH148, VH248, VH448 and VH648:** Non-controlled avalanche types. **Peak Surge Current:** 25 amps, 1 sec at 60 Hz; one-cycle, 100 amps (non-recurrent). **Reverse Current:** 10 mA max. at 150° C; 10 $\mu$A at 40° C. **Insulation Strength:** 2000 VDC. **Oper./Storage Temp.:** −50° to +150° C. **Size:** .600″ sq. x .200″.

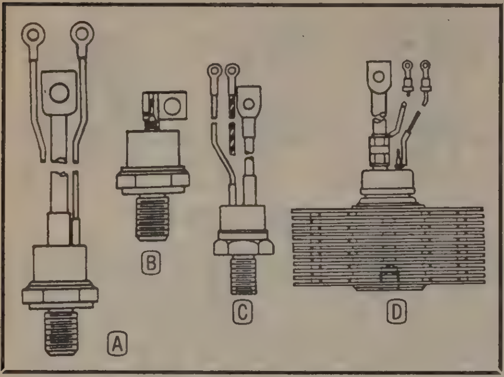
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **VH247** | 200 | 140 | 1.2 | 6 | 250 | 700 | **$2.25** | **$1.85** |
| **VH447** | 400 | 280 | 1.2 | 6 | 450 | 900 | **2.59** | **2.13** |
| **VH647** | 600 | 420 | 1.2 | 6 | 650 | 1100 | **2.98** | **2.45** |
| **VH148** | 100 | 70 | 1.2 | 6 | ...... | ...... | **1.93** | **1.58** |
| **VH248** | 200 | 140 | 1.2 | 6 | ...... | ...... | **2.15** | **1.75** |
| **VH448** | 400 | 280 | 1.2 | 6 | ...... | ...... | **2.49** | **2.03** |
| **VH648** | 600 | 420 | 1.2 | 6 | ...... | ...... | **2.88** | **2.35** |

## SILICON AVALANCHE INTEGRATED FULL WAVE BRIDGE RECTIFIERS (FIG. F)

Electrically insulated welded package offers minimum size and maximum mounting ease. **Average DC Forward Current:** 10 amps at 100° C; (VT Series, 25 amps). **Peak Surge Current:** 100 amps, one-cycle at 60 Hz (VT Series, 250 amps). **Avalanche Power Dissipation:** 600 watts, 100 $\mu$sec square wave (VT Series, 1500 watts); 4 watts continuous. **Max. Reverse Current:** 1.0 mA at 100° C. **Max. Forward Voltage Drop:** 1.2 volts/leg at 100° C and $I_o$. **Insulation Strength:** 2000 VDC minimum. **Operating/Storage Temperature:** −65° to +160° C. **Size:** .752″ dia. x .405″; terminals .395″ long with .070″ dia. holes. Also available with flag terminals. **Mounting:** Press-fit, TO-3 flange or single stud. For lots of 1–99, add **25c** for TO-3; **40c** for stud.

| Varo No. | $V_{RM}$ (wkg) V | Maximum $V_R$ (RMS) | Maximum $I_o$ Amps | Avalanche Volts Min. | Avalanche Volts Max. | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|
| **1N4436** | 200 | 140 | 10 | 250 | 500 | **$4.15** | **$3.05** |
| **1N4437** | 400 | 280 | 10 | 450 | 700 | **5.45** | **4.00** |
| **1N4438** | 600 | 400 | 10 | 650 | 900 | **7.45** | **5.45** |
| **VT200** | 200 | 140 | 25 | 250 | 500 | **5.35** | **3.95** |
| **VT400** | 400 | 280 | 25 | 450 | 700 | **7.00** | **5.30** |
| **VT600** | 600 | 400 | 25 | 650 | 900 | **9.85** | **7.10** |

# Westinghouse **Semiconductors**



SCR types are listed by half sine-wave average current rating at 180° conduction angle. Surge ratings are peak one-half cycle currents at 60 Hz. Voltage ratings are maximum steady state blocking voltages. Complete with mounting hardware.

## FAST SWITCHING THYRISTORS

**2191 Series (Fig. A or B)**—40 A; 63 A rms; $t_{off} = 15$ μsec max.

**2192 Series (Fig. A or B)**—Same except $t_{off} = 40$ μsec max. Specify flexible (Fig. A) or flag (Fig. B) terminals.

| $V_{FB}$ V | W-H Type | Net Ea., Lots of 1-9 | 10-99 | W-H Type | Net Ea., Lots of 1-9 | 10-99 |
|---|---|---|---|---|---|---|
| 100 | 2191B | $29.90 | $18.80 | 2192B | $ 28.60 | $17.10 |
| 200 | 2191D | 34.30 | 20.60 | 2192D | 32.80 | 19.70 |
| 300 | 2191F | 36.30 | 21.75 | 2192F | 34.65 | 20.80 |
| 400 | 2191H | 40.50 | 24.00 | 2192H | 38.20 | 22.90 |
| 500 | 2191K | 47.70 | 28.60 | 2192K | 45.60 | 27.30 |
| 600 | 2191M | 55.40 | 33.30 | 2192M | 52.90 | 31.80 |
| 700 | 2191P | 66.20 | 39.70 | 2192P | 63.20 | 37.90 |
| 800 | 2191S | 77.00 | 46.20 | 2192S | 73.50 | 44.10 |
| 900 | ........ | ........ | ........ | 2192V | 86.70 | 52.00 |
| 1000 | ........ | ........ | ........ | 2192Z | 101.40 | 60.90 |

**2193 Series (Fig. A or B)**—40 A; 63 A rms max.; $t_{off} = 10$ μsec max. Specify flexible (Fig. A) or flag (Fig. B) terminals.

| $V_{FB}$ V | W-H Type | Net Ea., Lots of 1-9 | 10-99 | $V_{FB}$ V | W-H Type | Net Ea., Lots of 1-9 | 10-99 |
|---|---|---|---|---|---|---|---|
| 100 | 2193B | $32.60 | $19.60 | 400 | 2193H | $43.70 | $26.20 |
| 200 | 2193D | 37.40 | 22.50 | 500 | 2193K | 52.10 | 31.30 |
| 300 | 2193F | 39.60 | 23.80 | 600 | 2193M | 60.50 | 36.50 |

**2541 Series (Fig. A or B)**—80 A; 125 A rms; $t_{off} = 10$ μsec max.

**2542 Series (Fig. A or B)**—Same except $t_{off} = 15$ μsec max. Specify flexible (Fig. A) or flag (Fig. B) terminals.

| $V_{FB}$ V | W-H Type | Net Ea., Lots of 1-9 | 10-99 | W-H Type | Net Ea., Lots of 1-9 | 10-99 |
|---|---|---|---|---|---|---|
| 100 | 2541B | $ 37.40 | $22.40 | 2542B | $ 35.70 | $21.40 |
| 200 | 2541D | 42.90 | 25.70 | 2542D | 41.00 | 24.60 |
| 300 | 2541F | 48.40 | 29.00 | 2542F | 46.20 | 27.70 |
| 400 | 2541H | 57.20 | 34.30 | 2542H | 54.60 | 32.80 |
| 500 | 2541K | 68.20 | 40.90 | 2542K | 65.10 | 39.10 |
| 600 | 2541M | 79.20 | 47.50 | 2542M | 75.60 | 45.40 |
| 700 | 2541P | 94.60 | 56.80 | 2542P | 90.30 | 54.20 |
| 800 | 2541S | 110.00 | 66.00 | 2542S | 105.00 | 68.00 |
| 900 | ........ | ........ | ........ | 2542V | 123.90 | 74.30 |
| 1000 | ........ | ........ | ........ | 2542Z | 141.90 | 86.90 |

**2543 Series (Fig. A or B)**—80 A; 125 A rms; $t_{off} = 40$ μsec max. Specify flexible (Fig. A) or flag (Fig. B) terminals.

| $V_{FB}$ V | W-H Type | Net Ea., Lots of 1-9 | 10-99 | $V_{FB}$ V | W-H Type | Net Ea., Lots of 1-9 | 10-99 |
|---|---|---|---|---|---|---|---|
| 100 | 2543B | $40.00 | $24.50 | 400 | 2543H | $62.40 | $37.40 |
| 200 | 2543D | 46.80 | 28.10 | 500 | 2543K | 74.40 | 44.60 |
| 300 | 2543F | 52.80 | 31.70 | 600 | 2543M | 86.40 | 51.80 |

**2611 Series (Fig. C)**—125 A, 200 A rms; $t_{OFF} = 20$ μsec max.

**2612 Series (Fig. C)**—125 A, 200 A rms; $t_{OFF} = 30$ μsec max.

| $V_{FB}$ V | W-H Type | Net Ea., Lots of 1-9 | 10-99 | W-H Type | Net Ea., Lots of 1-9 | 10-99 |
|---|---|---|---|---|---|---|
| 100 | 2611B | $ 56.50 | $ 34.00 | 2612B | $ 52.00 | $ 31.25 |
| 200 | 2611D | 60.50 | 36.50 | 2612D | 55.50 | 33.50 |
| 300 | 2611F | 72.00 | 43.25 | 2612F | 66.00 | 39.50 |
| 400 | 2611H | 84.00 | 50.50 | 2612H | 77.00 | 46.00 |
| 500 | 2611K | 103.00 | 61.00 | 2612K | 94.50 | 56.00 |
| 600 | 2611M | 124.00 | 74.50 | 2612M | 113.00 | 68.00 |
| 700 | 2611P | 151.00 | 91.00 | 2612P | 139.00 | 83.00 |
| 800 | 2611S | 178.00 | 107.00 | 2612S | 163.00 | 98.00 |
| 900 | 2611V | 205.00 | 123.00 | 2612V | 188.00 | 113.00 |
| 1000 | 2611Z | 229.00 | 137.00 | 2612Z | 210.00 | 126.00 |
| 1100 | ........ | ........ | ........ | 2612ZB | 235.00 | 141.00 |
| 1200 | ........ | ........ | ........ | 2612ZD | 262.00 | 157.00 |

## FAST SWITCHING THYRISTORS (CONT'D)

**2601 Series (Fig. C)** —175 A, 275 A rms; $t_{OFF} = 30$ μsec max.

**2602 Series (Fig. C)**—175 A, 275 A rms; $t_{OFF} = 40$ μsec max.

| $V_{FB}$ V | W-H Type | Net Ea., Lots of 1-9 | 10-99 | W-H Type | Net Ea., Lots of 1-9 | 10-99 |
|---|---|---|---|---|---|---|
| 100 | 2601B | $ 62.50 | $ 37.50 | 2602B | $ 57.00 | $ 34.00 |
| 200 | 2601D | 67.25 | 40.50 | 2602D | 62.00 | 37.00 |
| 300 | 2601F | 80.00 | 48.00 | 2602F | 74.00 | 44.50 |
| 400 | 2601H | 93.50 | 56.50 | 2602H | 86.00 | 51.50 |
| 500 | 2601K | 114.00 | 68.50 | 2602K | 105.00 | 63.00 |
| 600 | 2601M | 138.00 | 83.00 | 2602M | 127.00 | 76.00 |
| 700 | 2601P | 168.00 | 101.00 | 2602P | 154.00 | 92.00 |
| 800 | 2601S | 198.00 | 119.00 | 2602S | 182.00 | 109.00 |
| 900 | 2601V | 228.00 | 137.00 | 2602V | 209.00 | 125.00 |
| 1000 | 2601Z | 254.00 | 152.00 | 2602Z | 233.00 | 140.00 |
| 1100 | ........ | ........ | ........ | 2602ZB | 262.00 | 157.00 |
| 1200 | ........ | ........ | ........ | 2602ZD | 290.00 | 174.00 |

## HIGH TEMPERATURE THYRISTORS

**2515 Series (Fig. A or B)**—40 A; 63 A rms max.; 1200 A surge. Specify flexible (Fig. A) or flag (Fig. B) terminals.

**2N2023–2N2030 (Fig. A)**—80 A; 110 A rms; 1200 A surge.

| $V_{FB}$ V | W-H Type | Net Ea., Lots of 1-9 | 10-99 | W-H Type | Net Ea., Lots of 1-9 | 10-99 |
|---|---|---|---|---|---|---|
| 25 | ........ | ........ | ........ | 2N2023 | $22.00 | $13.25 |
| 50 | 2515A | $19.00 | $11.50 | 2N2024 | 28.50 | 17.25 |
| 100 | 2515B | 20.25 | 12.25 | 2N2025 | 32.50 | 19.50 |
| 150 | 2515C | 21.00 | 12.75 | 2N2026 | 35.00 | 21.00 |
| 200 | 2515D | 21.50 | 13.25 | 2N2027 | 37.00 | 22.25 |
| 250 | 2515E | 23.75 | 14.25 | 2N2028 | 39.00 | 23.50 |
| 300 | 2515F | 25.50 | 15.50 | 2N2029 | 41.50 | 25.00 |
| 400 | 2515H | 32.50 | 19.75 | 2N2030 | 48.00 | 29.00 |
| 500 | 2515K | 38.00 | 23.00 | ........ | ........ | ........ |
| 600 | 2515M | 44.50 | 27.00 | ........ | ........ | ........ |
| 700 | 2515P | 51.00 | 32.00 | ........ | ........ | ........ |
| 800 | 2515S | 63.00 | 38.00 | ........ | ........ | ........ |
| 900 | 2515V | 75.00 | 46.00 | ........ | ........ | ........ |
| 1000 | 2515Z | 88.00 | 54.00 | ........ | ........ | ........ |

**2505 Series (Fig. A or B)**—80 A; 125 A rms; 1600 A surge. Specify flexible (Fig. A) or flag (Fig. B) terminals.

| $V_{FB}$ V | W-H Type | Net Ea., Lots of 1-9 | 10-99 | $V_{FB}$ V | W-H Type | Net Ea., Lots of 1-9 | 10-99 |
|---|---|---|---|---|---|---|---|
| 50 | 2505A | $28.50 | $17.25 | 500 | 2505K | $ 53.00 | $32.00 |
| 100 | 2505B | 32.50 | 19.50 | 600 | 2505M | 63.00 | 38.00 |
| 150 | 2505C | 35.00 | 21.00 | 700 | 2505P | 78.00 | 47.00 |
| 200 | 2505D | 37.00 | 22.25 | 800 | 2505S | 94.00 | 57.00 |
| 250 | 2505E | 39.00 | 23.50 | 900 | 2505V | 113.00 | 69.00 |
| 300 | 2505F | 41.50 | 25.00 | 1000 | 2505Z | 136.00 | 84.00 |
| 400 | 2505H | 48.00 | 29.00 | | | | |

## LOW POWER THYRISTORS

**2N681–201ZD (Fig. E)**—20 A; 25 A rms max., 150 A surge.

| $V_{FB}$ V | W-H Type | Net Ea., Lots of 1-99 | 100-999 | $V_{FB}$ V | W-H Type | Net Ea., Lots of 1-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| 25 | 2N681 | $2.30 | $1.70 | 500 | 2N689 | $ 8.05 | $ 5.80 |
| 50 | 2N682 | 2.80 | 2.05 | 600 | 2N690 | 8.65 | 6.28 |
| 100 | 2N683 | 3.55 | 2.60 | 700 | 2N691 | 12.80 | 10.60 |
| 150 | 2N684 | 4.18 | 3.03 | 800 | 2N692 | 17.50 | 14.35 |
| 200 | 2N685 | 4.80 | 3.48 | 900 | 201V | 29.25 | 21.75 |
| 250 | 2N686 | 5.35 | 3.88 | 1000 | 201Z | 35.00 | 28.50 |
| 300 | 2N687 | 5.75 | 4.15 | 1100 | 201ZB | 42.00 | 32.00 |
| 400 | 2N688 | 6.72 | 4.85 | 1200 | 201ZD | 50.00 | 36.00 |

**2N1842–202ZH (Fig. E)**—10 A at 56° C; 16 A rms max., 125 A surge.

**2N1842A–203H (Fig. E)**—10 A at 90° C; 16 A rms max., 125 A surge.

| $V_{FB}$ V | W-H Type | Net Each, Lots of 1-99 | 100-999 | W-H Type | Net Each, Lots of 1-99 | 100-999 |
|---|---|---|---|---|---|---|
| 25 | 2N1842 | $ 2.15 | $ 1.55 | 2N1842A | $ 2.20 | $ 1.60 |
| 50 | 2N1843 | 2.52 | 1.85 | 2N1843A | 2.60 | 1.90 |
| 100 | 2N1844 | 3.18 | 2.30 | 2N1844A | 3.28 | 2.38 |
| 150 | 2N1845 | 3.73 | 2.72 | 2N1845A | 3.83 | 2.80 |
| 200 | 2N1846 | 4.35 | 3.63 | 2N1846A | 4.45 | 3.73 |
| 250 | 2N1847 | 5.00 | 3.70 | 2N1847A | 5.10 | 3.80 |
| 300 | 2N1848 | 5.40 | 3.88 | 2N1848A | 5.50 | 3.98 |
| 400 | 2N1849 | 6.43 | 4.64 | 2N1849A | 6.53 | 4.74 |
| 500 | 2N1850 | 7.45 | 5.40 | 2N1850A | 7.55 | 5.50 |
| 600 | 202M | 10.50 | 7.10 | 203M | 11.25 | 7.50 |
| 700 | 202P | 13.45 | 8.95 | 203P | 15.00 | 10.00 |
| 800 | 202S | 18.40 | 12.25 | 203S | 20.50 | 13.50 |
| 900 | 202V | 23.00 | 16.50 | 203V | 25.50 | 18.25 |
| 1000 | 202Z | 27.00 | 20.25 | 203Z | 30.00 | 22.00 |
| 1100 | 202ZB | 31.50 | 24.00 | 203ZB | 35.50 | 26.00 |
| 1200 | 202ZD | 37.50 | 27.00 | 203ZD | 41.00 | 30.00 |
| 1300 | 202ZF | 43.00 | 32.00 | 203ZF | 47.50 | 34.75 |
| 1400 | 202ZH | 49.00 | 37.00 | 203ZH | 54.00 | 39.50 |

SEE PRECEDING AND FOLLOWING PAGES FOR
ADDITIONAL ILLUSTRATIONS

## MEDIUM POWER THYRISTORS

**251 Series (Fig. A or B)**—40 A; 63 A rms; 1200 A surge. Specify flexible (Fig. A) or flag (Fig. B) terminals.

| $V_{FB}$ V | W-H Type | Net Ea., Lots of | | $V_{FB}$ V | W-H Type | Net Ea., Lots of | |
|---|---|---|---|---|---|---|---|
| | | 1-9 | 10-99 | | | 1-9 | 10-99 |
| 50 | 251A | $16.00 | $ 9.75 | 800 | 251S | $ 51.00 | $ 31.00 |
| 100 | 251B | 16.50 | 10.00 | 900 | 251V | 60.00 | 36.00 |
| 150 | 251C | 17.00 | 10.25 | 1000 | 251Z | 70.00 | 42.00 |
| 200 | 251D | 17.50 | 10.50 | 1100 | 251ZB | 83.00 | 50.00 |
| 250 | 251E | 19.00 | 11.50 | 1200 | 251ZD | 90.00 | 54.00 |
| 300 | 251F | 21.00 | 12.75 | 1300 | 251ZF | 105.00 | 64.00 |
| 400 | 251H | 26.00 | 15.75 | 1400 | 251ZH | 125.00 | 80.00 |
| 500 | 251K | 31.00 | 18.50 | 1500 | 251ZK | 150.00 | 95.00 |
| 600 | 251M | 36.00 | 22.00 | 1600 | 251ZM | 185.00 | 115.00 |
| 700 | 251P | 43.00 | 26.00 | | | | |

**2N4361–2N4368 (Fig. A)**—70 A; 110 A rms max ; 1600 A surge.

| $V_{FB}$ V | W-H Type | Net Ea., Lots of | | $V_{FB}$ V | W-H Type | Net Ea., Lots of | |
|---|---|---|---|---|---|---|---|
| | | 1-9 | 10-99 | | | 1-9 | 10-99 |
| 100 | 2N4361 | $22.00 | $13.25 | 800 | 2N4365 | $ 79.00 | $ 47.00 |
| 200 | 2N4362 | 26.00 | 15.75 | 1000 | 2N4366 | 111.00 | 67.00 |
| 400 | 2N4363 | 39.00 | 23.50 | 1200 | 2N4367 | 151.00 | 90.00 |
| 600 | 2N4364 | 55.00 | 31.50 | 1400 | 2N4368 | 194.00 | 117.50 |

**2N1792–2N1807 (Fig. B)**—80 A; 110 A rms max.; 1000 A surge.

| $V_{FB}$ V | W-H Type | Net Ea., Lots of | | $V_{FB}$ V | W-H Type | Net Ea., Lots of | |
|---|---|---|---|---|---|---|---|
| | | 1-9 | 10-99 | | | 1-9 | 10-99 |
| 50 | 2N1792 | $20.00 | $12.00 | 600 | 2N1800 | $ 52.50 | $31.50 |
| 100 | 2N1793 | 22.00 | 13.25 | 700 | 2N1801 | 65.00 | 39.00 |
| 150 | 2N1794 | 24.00 | 14.50 | 800 | 2N1802 | 79.00 | 47.00 |
| 200 | 2N1795 | 26.00 | 15.75 | 900 | 2N1803 | 91.00 | 55.00 |
| 250 | 2N1796 | 29.50 | 17.75 | 1000 | 2N1804 | 111.30 | 67.00 |
| 300 | 2N1797 | 32.50 | 19.50 | 500 | 2N1805 | 44.00 | 26.50 |
| 400 | 2N1798 | 39.00 | 23.50 | 600 | 2N1806 | 52.50 | 31.50 |
| 500 | 2N1799 | 44.00 | 26.50 | 700 | 2N1807 | 65.00 | 39.00 |

**2N1910–2N1916 (Fig. A)**—80 A; 110 A rms; 1000 A surge.

| $V_{FB}$ V | W-H Type | Net Ea., Lots of | | $V_{FB}$ V | W-H Type | Net Ea., Lots of | |
|---|---|---|---|---|---|---|---|
| | | 1-9 | 10-99 | | | 1-9 | 10-99 |
| 50 | 2N1910 | $20.00 | $12.00 | 250 | 2N1914 | $29.50 | $17.75 |
| 100 | 2N1911 | 22.00 | 13.25 | 300 | 2N1915 | 32.50 | 19.50 |
| 150 | 2N1912 | 24.00 | 14.50 | 400 | 2N1916 | 39.00 | 23.50 |
| 200 | 2N1913 | 26.00 | 15.75 | | | | |

**250 Series (Fig. A or B)**—80 A; 125 A rms max.; 1600 A surge. Specify flexible (Fig. A) or flag (Fig. B) terminals.

| $V_{FB}$ V | W-H Type | Net Ea., Lots of | | $V_{FB}$ V | W-H Type | Net Ea., Lots of | |
|---|---|---|---|---|---|---|---|
| | | 1-9 | 10-99 | | | 1-9 | 10-99 |
| 50 | 250A | $20.00 | $12.00 | 800 | 250S | $ 79.00 | $ 47.00 |
| 100 | 250B | 22.00 | 13.25 | 900 | 250V | 91.00 | 55.00 |
| 150 | 250C | 24.00 | 14.50 | 1000 | 250Z | 110.00 | 67.00 |
| 200 | 250D | 26.00 | 15.75 | 1100 | 250ZB | 130.00 | 90.00 |
| 250 | 250E | 29.50 | 17.75 | 1200 | 250ZD | 144.00 | 86.50 |
| 300 | 250F | 32.50 | 19.50 | 1300 | 250ZF | 162.00 | 97.25 |
| 400 | 250H | 39.00 | 23.50 | 1400 | 250ZH | 185.00 | 112.00 |
| 500 | 250K | 44.00 | 26.50 | 1500 | 250ZK | 210.00 | 130.00 |
| 600 | 250M | 52.50 | 31.50 | 1600 | 250ZM | 240.00 | 150.00 |
| 700 | 250P | 65.00 | 39.00 | | | | |

## HIGH POWER THYRISTORS

**263 Pow-R-Disc Series (Fig. F)**—125 A; 200 A rms; 1600 A surge.
**261 Series (Fig. C)**—125 A; 200 A rms; 3500 A surge.

| $V_{FB}$ V | W-H Type | Net Ea., Lots of | | W-H Type | Net Ea., Lots of | |
|---|---|---|---|---|---|---|
| | | 1-9 | 10-99 | | 1-9 | 10-99 |
| 50 | 263A | $ 18.60 | $ 11.00 | | | |
| 100 | 263B | 19.00 | 11.50 | 261B | $ 47.00 | $ 28.25 |
| 200 | 263D | 22.50 | 13.50 | 261D | 50.50 | 30.50 |
| 300 | 263F | 25.50 | 15.50 | 261F | 60.00 | 36.00 |
| 400 | 263H | 30.50 | 18.50 | 261H | 70.00 | 42.00 |
| 500 | 263K | 35.00 | 21.00 | 261K | 86.00 | 51.00 |
| 600 | 263M | 42.00 | 25.25 | 261M | 103.00 | 62.00 |
| 700 | 263P | 52.50 | 31.50 | 261P | 126.00 | 76.00 |
| 800 | 263S | 63.00 | 38.00 | 261S | 148.00 | 89.00 |
| 900 | 263V | 72.50 | 43.50 | 261V | 171.00 | 103.00 |
| 1000 | 263Z | 88.50 | 53.25 | 261Z | 191.00 | 114.00 |
| 1100 | 263ZB | 105.00 | 63.00 | 261ZB | 214.00 | 129.00 |
| 1200 | 263ZD | 121.00 | 72.75 | 261ZD | 238.00 | 142.00 |
| 1300 | 263ZF | 137.00 | 82.00 | 261ZF | 257.00 | 155.00 |
| 1400 | 263ZH | 149.00 | 88.00 | 261ZH | 277.00 | 166.00 |
| 1500 | 263ZK | 163.00 | 98.00 | 261ZK | 299.00 | 180.00 |
| 1600 | 263ZM | 180.00 | 108.00 | 261ZM | 320.00 | 193.00 |

## HIGH POWER THYRISTORS (CONTINUED)

**2N3884–2N3895 (Fig. C)** —175 A; 275 A rms; 5000 A surge.
**260 Series (Fig. C)**—Same as above.

| $V_{FB}$ V | W-H Type | Net Ea., Lots of | | W-H Type | Net Ea., Lots of | |
|---|---|---|---|---|---|---|
| | | 1-9 | 10-99 | | 1-9 | 10-99 |
| 50 | 2N3884 | $ 47.50 | $ 28.50 | | | |
| 100 | 2N3885 | 52.00 | 31.25 | 260B | $ 52.00 | $ 31.25 |
| 200 | 2N3886 | 56.00 | 33.75 | 260D | 56.00 | 33.75 |
| 300 | 2N3887 | 67.00 | 40.00 | 260F | 67.00 | 40.00 |
| 400 | 2N3888 | 78.00 | 47.00 | 260H | 78.00 | 47.00 |
| 500 | 2N3889 | 95.00 | 57.00 | 260K | 95.00 | 57.00 |
| 600 | 2N3890 | 115.00 | 69.00 | 260M | 115.00 | 69.00 |
| 700 | 2N3891 | 140.00 | 84.00 | 260P | 140.00 | 84.00 |
| 800 | 2N3892 | 165.00 | 99.00 | 260S | 165.00 | 99.00 |
| 900 | 2N3893 | 190.00 | 114.00 | 260V | 190.00 | 114.00 |
| 1000 | 2N3894 | 212.00 | 127.00 | 260Z | 212.00 | 127.00 |
| 1100 | | | | 260ZB | 238.00 | 143.00 |
| 1200 | 2N3895 | 264.00 | 158.00 | 260ZD | 264.00 | 158.00 |
| 1300 | | | | 260ZF | 286.00 | 172.00 |
| 1400 | | | | 260ZH | 308.00 | 185.00 |
| 1500 | | | | 260ZK | 332.00 | 200.00 |
| 1600 | | | | 260ZM | 356.00 | 214.00 |

**273 Series (Fig. F)**—200 A; 320 A rms; 4000 A surge.
**271 Series (Fig. H)**—250 A; 400 A rms; 5500 A surge.

| | | | | | | |
|---|---|---|---|---|---|---|
| 100 | 273B | $ 32.00 | $ 19.25 | 271B | $ 53.50 | $ 32.00 |
| 200 | 273D | 38.50 | 23.75 | 271D | 59.50 | 35.50 |
| 300 | 273F | 43.00 | 26.00 | 271F | 71.00 | 42.50 |
| 400 | 273H | 52.00 | 31.00 | 271H | 88.00 | 53.00 |
| 500 | 273K | 64.00 | 38.00 | 271K | 108.00 | 65.00 |
| 600 | 273M | 75.00 | 45.00 | 271M | 130.00 | 78.00 |
| 700 | 273P | 90.00 | 54.00 | 271P | 160.00 | 96.00 |
| 800 | 273S | 109.00 | 66.00 | 271S | 191.00 | 115.00 |
| 900 | 273V | 122.00 | 73.00 | 271V | 216.00 | 130.00 |
| 1000 | 273Z | 136.00 | 82.00 | 271Z | 241.00 | 145.00 |
| 1100 | 273ZB | 152.00 | 91.00 | 271ZB | 270.00 | 162.00 |
| 1200 | 273ZD | 168.00 | 101.00 | 271ZD | 297.00 | 178.00 |
| 1300 | 273ZF | 183.00 | 110.00 | 271ZF | 324.00 | 195.00 |
| 1400 | 273ZH | 197.00 | 118.00 | 271ZH | 355.00 | 213.00 |
| 1500 | 273ZK | 213.00 | 128.00 | 271ZK | 387.00 | 231.00 |
| 1600 | 273ZM | 228.00 | 137.00 | 271ZM | 423.00 | 254.00 |

**272 Pow-R-Disc Series (Fig. F)**—300 A; 470 A rms; 5500 A surge.
**276 Series (Fig. D)**—Same as above 272 Series.

| | | | | | | |
|---|---|---|---|---|---|---|
| 100 | 272B | $ 40.00 | $ 24.00 | 276B | $ 82.00 | $ 61.25 |
| 200 | 272D | 48.00 | 28.75 | 276D | 86.00 | 63.75 |
| 300 | 272F | 54.00 | 32.50 | 276F | 97.00 | 70.00 |
| 400 | 272H | 65.00 | 39.00 | 276H | 108.00 | 77.00 |
| 500 | 272K | 80.00 | 48.00 | 276K | 125.00 | 87.00 |
| 600 | 272M | 93.00 | 55.75 | 276M | 145.00 | 99.00 |
| 700 | 272P | 112.00 | 67.25 | 276P | 170.00 | 114.00 |
| 800 | 272S | 136.00 | 81.50 | 276S | 195.00 | 129.00 |
| 900 | 272V | 152.00 | 91.25 | 276V | 210.00 | 144.00 |
| 1000 | 272Z | 170.00 | 102.00 | 276Z | 242.00 | 157.00 |
| 1100 | 272ZB | 190.00 | 114.00 | 276ZB | 268.00 | 173.00 |
| 1200 | 272ZD | 210.00 | 126.00 | 276ZD | 294.00 | 188.00 |
| 1300 | 272ZF | 228.00 | 137.00 | 276ZF | 316.00 | 202.00 |
| 1400 | 272ZH | 246.00 | 148.00 | 276ZH | 338.00 | 215.00 |
| 1500 | 272ZK | 266.00 | 160.00 | 276ZK | 362.00 | 230.00 |
| 1600 | 272ZM | 285.00 | 171.00 | 276ZM | 386.00 | 244.00 |

**2248 Series (Fig. G)**—300 A; 470 A rms; 5000 A surge.
**270 Series (Fig. H)**—350 A; 550 A rms; 6500 A surge.

| $V_{FB}$ V | W-H Type | Net Ea., Lots of | | W-H Type | Net Ea., Lots of | |
|---|---|---|---|---|---|---|
| | | 1-9 | 10-99 | | 1-9 | 10-99 |
| 50 | 2248A | $ 63.00 | $ 44.00 | | | |
| 100 | 2248B | 67.00 | 46.25 | 270B | $ 55.00 | $ 33.00 |
| 200 | 2248D | 71.00 | 48.75 | 270D | 63.00 | 38.00 |
| 300 | 2248F | 82.00 | 55.00 | 270F | 75.00 | 45.00 |
| 400 | 2248H | 93.00 | 62.00 | 270H | 98.00 | 59.00 |
| 500 | 2248K | 110.00 | 72.00 | 270K | 120.00 | 72.00 |
| 600 | 2248M | 130.00 | 84.00 | 270M | 145.00 | 87.00 |
| 700 | 2248P | 155.00 | 99.00 | 270P | 178.00 | 107.00 |
| 800 | 2248S | 180.00 | 114.00 | 270S | 212.00 | 127.00 |
| 900 | 2248V | 205.00 | 129.00 | 270V | 240.00 | 144.00 |
| 1000 | 2248Z | 227.00 | 142.00 | 270Z | 268.00 | 161.00 |
| 1100 | 2248ZB | 253.00 | 158.00 | 270ZB | 300.00 | 180.00 |
| 1200 | 2248ZD | 279.00 | 173.00 | 270ZD | 330.00 | 198.00 |
| 1300 | 2248ZF | 301.00 | 187.00 | 270ZF | 360.00 | 216.00 |
| 1400 | 2248ZH | 323.00 | 200.00 | 270ZH | 395.00 | 237.00 |
| 1500 | 2248ZK | 347.00 | 215.00 | 270ZK | 430.00 | 258.00 |
| 1600 | 2248ZM | 371.00 | 229.00 | 270ZM | 470.00 | 282.00 |

**283 Pow-R-Disc Series (Fig. I)**—400 A; 625 A rms; 6500 A surge.
**282 Pow-R-Disc Series (Fig. I)**—550 A; 850 A rms; 7000 A surge.

| $V_{FB}$ V | W-H Type | Net Ea., Lots of | | W-H Type | Net Ea., Lots of | |
|---|---|---|---|---|---|---|
| | | 1-24 | 25-99 | | 1-9 | 10-99 |
| 100 | 283B | $ 86.00 | $ 51.75 | 282B | $ 95.00 | $ 57.00 |
| 200 | 283D | 92.00 | 55.25 | 282D | 101.00 | 61.00 |
| 300 | 283F | 100.00 | 60.00 | 282F | 110.00 | 66.00 |
| 400 | 283H | 112.00 | 67.25 | 282H | 123.00 | 74.00 |
| 500 | 283K | 124.00 | 74.50 | 282K | 138.00 | 83.00 |
| 600 | 283M | 144.00 | 86.50 | 282M | 158.00 | 95.00 |
| 700 | 283P | 170.00 | 102.00 | 282P | 184.00 | 110.00 |
| 800 | 283S | 180.00 | 114.00 | 282S | 198.00 | 119.00 |
| 900 | 283V | 216.00 | 130.00 | 282V | 238.00 | 143.00 |
| 1000 | 283Z | 240.00 | 144.00 | 282Z | 264.00 | 158.00 |
| 1100 | 283ZB | 264.00 | 158.00 | 282ZB | 290.00 | 174.00 |
| 1200 | 283ZD | 290.00 | 174.00 | 282ZD | 319.00 | 191.00 |
| 1300 | 283ZF | 316.00 | 189.00 | 282ZF | 348.00 | 209.00 |
| 1400 | 283ZH | 340.00 | 204.00 | 282ZH | 374.00 | 224.00 |
| 1500 | 283ZK | 364.00 | 218.00 | 282ZK | 400.00 | 240.00 |
| 1600 | 283ZM | 390.00 | 234.00 | 282ZM | 430.00 | 258.00 |

# Westinghouse Semiconductors

**SEE PRECEDING AND FOLLOWING PAGES FOR ILLUSTRATIONS**

## SILICON FAST SWITCHING RECTIFIERS

Temperature given at Tc.

**388 Series (Fig. J)**—1 A at 50° C ambient; 35 A surge; Tr = 120 ns.

| PRV V | W-H Type | Net Ea., Lots of | | PRV V | W-H Type | Net Ea., Lots of | |
|---|---|---|---|---|---|---|---|
| | | 1-99 | 100-999 | | | 1-99 | 100-999 |
| 50 | 388A | $0.65 | $0.42 | 300 | 388F | $0.85 | $0.54 |
| 100 | 388B | .70 | .45 | 400 | 388H | .90 | .66 |
| 150 | 388C | .73 | .47 | 500 | 388K | 1.15 | .74 |
| 200 | 388D | .75 | .48 | 600 | 388M | 1.25 | .80 |

**1N3879, R–R3020606 (Fig. L)**—6 A at 100° C; 75 A surge; trr = 200 ns.
**1N3889, R–R3020612 (Fig. L)**—12 A at 100° C; 150 A surge; trr = 200 ns.

| PRV V | W-H Type | Net Ea., Lots | | W-H Type | Net Ea., Lots | |
|---|---|---|---|---|---|---|
| | | 1-99 | 100-999 | | 1-99 | 100-999 |
| 50 | 1N3879, R | $ 3.00 | $ 2.00 | 1N3889, R | $ 3.75 | $ 2.50 |
| 100 | 1N3880, R* | 3.45 | 2.30 | 1N3890, R* | 4.35 | 2.90 |
| 200 | 1N3881, R* | 4.35 | 2.90 | 1N3891, R* | 5.55 | 3.70 |
| 300 | 1N3882, R | 5.25 | 3.50 | 1N3892, R | 6.75 | 4.50 |
| 400 | 1N3883, R* | 6.15 | 4.10 | 1N3893, R* | 7.95 | 5.30 |
| 600 | R3020606† | 18.60 | 12.40 | R3020612† | 21.20 | 14.00 |

*JAN type available. †For reverse polarity, increase fourth digit by **1** (R3030606).

**1N3899, R–R4020620 (Fig. M)**—20 A at 100° C; 225 A surge; trr = 200 ns.
**1N3909, R–1N3913, R (Fig. M)**—35 A at 100° C; 300 A surge; trr = 200 ns.

| PRV V | W-H Type | Net Ea., Lots of | | W-H Type | Net Ea., Lots of | |
|---|---|---|---|---|---|---|
| | | 1-99 | 100-999 | | 1-99 | 100-999 |
| 50 | 1N3899, R | $ 5.25 | $ 3.58 | 1N3909, R* | $ 6.00 | $ 4.00 |
| 100 | 1N3900, R | 6.15 | 4.10 | 1N3910, R* | 7.05 | 4.70 |
| 200 | 1N3901, R | 7.95 | 5.30 | 1N3911, R* | 9.15 | 6.10 |
| 300 | 1N3902, R | 9.75 | 6.50 | 1N3912, R | 11.25 | 7.50 |
| 400 | 1N3903, R | 11.55 | 7.70 | 1N3913, R | 13.35 | 8.90 |
| 600 | R4020620† | 22.50 | 18.45 | | | |

*JAN type available. †For reverse polarity, increase fourth digit by **1** (R4030620).

## SILICON HIGH POWER RECTIFIERS

**1N3288A, R–1N3297A, R (Fig. O)**—100 A at 130° C; 2300 A surge.
**1N4587, R–1N4596, R (Fig. O)**—150 A at 110° C; 3000 A surge.
**JAN1N3289, R; JAN1N3291, R; JAN1N3293, R** and **JAN1N3294, R** are also available; prices on request.

| PRV V | W-H Type | Net Ea., Lots of | | W-H Type | Net Ea., Lots of | |
|---|---|---|---|---|---|---|
| | | 1-9 | 10-99 | | 1-9 | 10-99 |
| 100 | 1N3288A, R | $13.00 | $ 8.00 | 1N4587, R | $14.50 | $ 8.70 |
| 200 | 1N3289A, R | 14.50 | 8.75 | 1N4588, R | 16.00 | 9.60 |
| 300 | 1N3290A, R | 15.50 | 9.50 | 1N4589, R | 17.00 | 10.20 |
| 400 | 1N3291A, R | 16.50 | 10.00 | 1N4590, R | 18.20 | 10.90 |
| 500 | 1N3292A, R | 17.50 | 10.50 | 1N4591, R | 19.40 | 11.60 |
| 600 | 1N3293A, R | 19.50 | 11.75 | 1N4592, R | 21.50 | 12.90 |
| 800 | 1N3294A, R | 24.00 | 14.50 | 1N4593, R | 25.00 | 15.00 |
| 1000 | 1N3295A, R | 28.50 | 17.25 | 1N4594, R | 31.50 | 18.90 |
| 1200 | 1N3296A, R | 32.50 | 19.50 | 1N4595, R | 36.00 | 21.60 |
| 1400 | 1N3297A, R | 37.00 | 25.00 | 1N4596, R | 41.00 | 25.20 |

**1N3260, R–1N3273, R (Fig. P)**—160 A at 125° C; 2000 A surge.
**1N3161, R–1N3174A, R (Fig. P)**—240 A at 125° C; 3000 A surge.

| PRV V | W-H Type | Net Ea., Lots of | | W-H Type | Net Ea., Lots of | |
|---|---|---|---|---|---|---|
| | | 1-9 | 10-99 | | 1-9 | 10-99 |
| 50 | 1N3260, R | $17.00 | $10.25 | 1N3161, R | $20.00 | $12.00 |
| 100 | 1N3261, R | 18.00 | 11.00 | 1N3162, R | 21.00 | 12.75 |
| 150 | 1N3262, R | 19.00 | 11.50 | 1N3163, R | 23.00 | 13.75 |
| 200 | 1N3263*, R | 20.50 | 12.50 | 1N3164*, R | 24.50 | 14.75 |
| 250 | 1N3264, R | 22.00 | 13.25 | 1N3165, R | 26.00 | 15.50 |
| 300 | 1N3265, R | 23.50 | 14.25 | 1N3166, R | 27.50 | 16.50 |
| 350 | 1N3266, R | 24.50 | 14.75 | 1N3167, R | 29.00 | 17.50 |
| 400 | 1N3267*, R | 26.00 | 15.75 | 1N3168*, R | 30.50 | 18.50 |
| 500 | 1N3268, R | 29.00 | 17.50 | 1N3169, R | 34.00 | 20.50 |
| 600 | 1N3269*, R | 32.50 | 19.50 | 1N3170*, R | 38.00 | 23.00 |
| 700 | 1N3270, R | 35.00 | 21.00 | 1N3171, R | 40.50 | 24.25 |
| 800 | 1N3271, R | 37.50 | 22.50 | 1N3172, R | 44.50 | 26.75 |
| 900 | 1N3272, R | 41.00 | 24.75 | 1N3173, R | 48.50 | 29.00 |
| 1000 | 1N3273, R | 45.50 | 27.50 | 1N3174, R | 52.50 | 31.50 |
| 1200 | 1N3274, R | 51.50 | 31.00 | | | |
| 1400 | 1N3275, R | 58.00 | 35.00 | | | |
| 1600 | 1N3276, R | 64.00 | 38.50 | | | |

*JAN type available.

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## SILICON HIGH POWER RECTIFIERS (CONTINUED)

**1N4044, R–1N4056, R (Fig. P)**—275 A at 125° C; 5000 A surge.
**R6000130 Series (Fig. P)**—300 A at 120° C; 5500 A surge.

| PRV V | W-H Type | Net Ea., Lots | | W-H Type | Net Ea., Lots | |
|---|---|---|---|---|---|---|
| | | 1-9 | 10-99 | | 1-9 | 10-99 |
| 50 | 1N4044, R | $17.00 | $10.25 | | | |
| 100 | 1N4045, R | 18.00 | 11.00 | R6000130* | $ 19.80 | $11.90 |
| 150 | 1N4046, R | 19.00 | 11.50 | | | |
| 200 | 1N4047, R | 20.50 | 12.50 | R6000230* | 22.50 | 13.50 |
| 250 | 1N4048, R | 22.00 | 13.25 | | | |
| 300 | 1N4049, R | 23.50 | 14.25 | R6000330* | 26.75 | 16.00 |
| 400 | 1N4050, R | 30.50 | 18.50 | R6000430* | 33.50 | 20.00 |
| 500 | 1N4051, R | 35.00 | 21.00 | R6000530* | 38.50 | 23.00 |
| 600 | 1N4052, R | 38.00 | 23.00 | R6000630* | 41.75 | 25.00 |
| 700 | 1N4053, R | 41.00 | 24.75 | R6000730* | 45.00 | 27.00 |
| 800 | 1N4054, R | 44.50 | 26.75 | R6000830* | 49.00 | 29.50 |
| 900 | 1N4055, R | 48.50 | 29.25 | R6000930* | 53.50 | 32.00 |
| 1000 | 1N4056, R | 52.50 | 31.50 | R6001030* | 57.75 | 34.75 |
| 1200 | | | | R6001230* | 68.00 | 40.89 |
| 1400 | | | | R6001430 | 83.00 | 49.80 |
| 1600 | | | | R6001630 | 105.00 | 63.00 |
| 1800 | | | | R6001830 | 125.00 | 75.00 |
| 2000 | | | | R6002030 | 145.00 | 87.00 |
| 2200 | | | | R6002230 | 168.00 | 100.80 |
| 2400 | | | | R6002430 | 198.00 | 118.80 |

*For reverse polarity, increase fourth digit by **1** (R6010030).

**R6200640 Series (Fig. R)**—400 A at 130° C; 5000 A surge.
**R6200647 Series**—470 A at 125° C; 5500 A surge.

| PRV V | W-H Type | Net Each, Lots | | W-H Type | Net Each, Lots | |
|---|---|---|---|---|---|---|
| | | 1-9 | 10-99 | | 1-9 | 10-99 |
| 600 | R6200640 | $ 34.50 | $20.75 | R6200647 | $ 38.00 | $22.75 |
| 800 | R6200840 | 40.00 | 24.00 | R6200847 | 44.00 | 26.50 |
| 1000 | R6201040 | 47.50 | 28.50 | R6201047 | 52.00 | 31.25 |
| 1200 | R6201240 | 55.00 | 33.00 | R6201247 | 60.50 | 36.25 |
| 1400 | R6201440 | 63.50 | 38.05 | R6201447 | 70.00 | 41.75 |
| 1600 | R6201640 | 75.00 | 45.00 | R6201647 | 82.50 | 49.50 |
| 1800 | R6201840 | 90.00 | 54.00 | R6201847 | 99.00 | 59.50 |
| 2000 | R6202040 | 115.00 | 69.00 | R6202047 | 126.00 | 76.00 |

## SILICON MEDIUM POWER RECTIFIERS

Suffix **R** indicates reverse polarity types available; same price.

**1N1612, R–1N4459, R (Fig. L)**—5 A at 150° C; 150 A surge.

| PRV V | W-H Type | Net Ea., Lots | | PRV V | W-H Type | Net Ea., Lots | |
|---|---|---|---|---|---|---|---|
| | | 1-99 | 100-999 | | | 1-99 | 100-999 |
| 50 | 1N1612, R | $1.07 | $0.72 | 600 | 1N1616, R* | $ 5.36 | $3.58 |
| 100 | 1N1613, R | 1.24 | .83 | 800 | 1N4458, R | 9.00 | 6.00 |
| 200 | 1N1614, R* | 1.90 | 1.27 | 1000 | 1N4459, R | 10.00 | 6.75 |
| 400 | 1N1615, R* | 3.71 | 2.48 | | | | |

*JAN type available.

**1N1341A, R–1N3990, R (Fig. L)**—6 A at 150° C; 150 A surge.

| PRV V | W-H Type | Net Ea., Lots | | PRV V | W-H Type | Net Ea., Lots | |
|---|---|---|---|---|---|---|---|
| | | 1-99 | 100-999 | | | 1-99 | 100-999 |
| 50 | 1N1341A, R | $1.13 | $0.75 | 500 | 1N1347A, R | $4.65 | $3.10 |
| 100 | 1N1342A, R | 1.28 | .85 | 600 | 1N1348A, R | 5.48 | 3.65 |
| 150 | 1N1343A, R | 1.64 | 1.09 | 700 | 1N3987, R | 7.65 | 5.15 |
| 200 | 1N1344A, R | 2.15 | 1.43 | 800 | 1N3988, R | 8.60 | 5.75 |
| 300 | 1N1345A, R | 3.05 | 2.04 | 900 | 1N3989, R | 9.30 | 6.20 |
| 400 | 1N1346A, R | 3.96 | 2.64 | 1000 | 1N3990, R | 9.75 | 6.50 |

**1N1341B, R–1N1348B, R (Fig. L)**—6 A at 150° C; 160 A surge.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 50 | 1N1341B, R | $1.20 | $0.80 | 300 | 1N1345B, R | $3.20 | $2.15 |
| 100 | 1N1342B, R | 1.35 | .90 | 400 | 1N1346B, R | 4.20 | 2.80 |
| 150 | 1N1343B, R | 1.90 | 1.35 | 500 | 1N1347B, R | 5.00 | 3.35 |
| 200 | 1N1344B, R | 2.25 | 1.50 | 600 | 1N1348B, R | 6.05 | 4.05 |

**1N1199A, R–1N5331, R (Fig. L)**—12 A at 150° C; 240 A surge.

| PRV V | W-H Type | Net Ea., Lots | | PRV V | W-H Type | Net Ea., Lots | |
|---|---|---|---|---|---|---|---|
| | | 1-99 | 100-999 | | | 1-99 | 100-999 |
| 50 | 1N1199A, R | $1.25 | $0.83 | 600 | 1N1206A, R* | $ 6.19 | $4.13 |
| 100 | 1N1200A, R | 1.41 | .94 | 700 | 1N3670A, R | 7.88 | 5.25 |
| 150 | 1N1201A, R | 1.82 | 1.21 | 800 | 1N3671A, R | 8.78 | 5.85 |
| 200 | 1N1202A, R* | 2.48 | 1.65 | 900 | 1N3672A, R | 9.45 | 6.30 |
| 300 | 1N1203A, R | 3.47 | 2.31 | 1000 | 1N3673A, R | 9.90 | 6.60 |
| 400 | 1N1204A, R* | 4.46 | 2.97 | 1200 | 1N5331, R | 10.50 | 7.99 |
| 500 | 1N1205A, R | 5.33 | 3.55 | | | | |

*JAN type available; meets MIL-S-19500/260A.

**1N1199B–1N1206B (Fig. L)**—12 A at 150° C; 250 A surge.

| PRV V | W-H Type | Net Ea., Lots | | PRV V | W-H Type | Net Ea., Lots | |
|---|---|---|---|---|---|---|---|
| | | 1-99 | 100-999 | | | 1-99 | 100-999 |
| 50 | 1N1199B, R | $1.30 | $0.90 | 300 | 1N1203B, R | $3.60 | $2.40 |
| 100 | 1N1200B, R | 1.50 | 1.00 | 400 | 1N1204B, R | 4.90 | 3.30 |
| 150 | 1N1201B, R | 1.90 | 1.30 | 500 | 1N1205B, R | 5.85 | 3.90 |
| 200 | 1N1202B, R | 2.60 | 1.70 | 600 | 1N1206B, R | 6.80 | 4.55 |

# Westinghouse Semiconductors

**SEE PRECEDING PAGE FOR ADDITIONAL ILLUSTRATIONS**

## SILICON MEDIUM POWER RECTIFIERS (CONT'D)

Suffix **R** indicates reverse polarity types available; same price.

**368 Series (Fig. L)**—15 A at 130° C; 240 A surge.

| PRV V | W-H Type | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-999 | PRV V | W-H Type | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-999 |
|---|---|---|---|---|---|---|---|
| 50 | 368A | $0.79 | $0.67 | 300 | 368F | $1.31 | $0.88 |
| 100 | 368B | .83 | .71 | 400 | 368H | 1.52 | .99 |
| 150 | 368C | .93 | .72 | 500 | 368K | 1.79 | 1.16 |
| 200 | 368D | 1.10 | .77 | 600 | 368M | 2.03 | 1.42 |

**1N3208–1N3214 (Fig. M)**—15 A at 150° C.
**1N3615, R–R3101216 (Fig. L)**—16 A at 150° C.

| PRV V | W-H Type | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-999 | W-H Type | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-999 |
|---|---|---|---|---|---|---|
| 50 | 1N3208 | $1.73 | $1.15 | 1N3615, R | $ 1.38 | $ 0.94 |
| 100 | 1N3209 | 1.77 | 1.18 | 1N3616, R | 1.54 | 1.05 |
| 150 | ........ | ........ | ........ | 1N3617, R | 1.98 | 1.38 |
| 200 | 1N3210 | 1.82 | 1.21 | 1N3618, R | 3.03 | 2.04 |
| 300 | 1N3211 | 2.50 | 1.60 | 1N3619, R | 4.40 | 3.03 |
| 400 | 1N3212 | 2.90 | 1.93 | 1N3620, R | 5.50 | 3.63 |
| 500 | 1N3213 | 3.53 | 2.35 | 1N3621, R | 6.33 | 4.13 |
| 600 | 1N3214 | 4.20 | 2.80 | 1N3622, R | 7.70 | 4.95 |
| 800 | ........ | ........ | ........ | 1N3623, R | 10.44 | 7.72 |
| 1000 | ........ | ........ | ........ | 1N3624, R | 14.78 | 10.95 |
| 1200 | ........ | ........ | ........ | R3101216* | 18.00 | 14.00 |

*For reverse polarity, specify R3111216; same price.

**1N1191A, R4101222 (Fig. M)**—22 A at 150° C; 500 A surge.
**1N248A, R–1N250C, R (Fig. M)**—20 A at 150° C; 350 A surge.

| PRV V | W-H Type | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 | PRV V | W-H Type | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|
| 50 | 1N1191A, R | $ 1.65 | $1.10 | 50 | 1N248A, R | $1.65 | $1.10 |
| 100 | 1N1192A, R | 1.73 | 1.15 | 50 | 1N248B, R | 1.65 | 1.10 |
| 150 | 1N1193A, R | 2.10 | 1.40 | 50 | 1N248C, R | 1.65 | 1.10 |
| 200 | 1N1194A, R | 2.48 | 1.65 | 100 | 1N249A, R | 1.73 | 1.15 |
| 300 | 1N1195A, R | 3.88 | 2.59 | 100 | 1N249B, R* | 1.73 | 1.15 |
| 400 | 1N1196A, R | 4.85 | 3.30 | 100 | 1N249C, R | 2.03 | 1.35 |
| 500 | 1N1197A, R | 6.15 | 3.96 | 200 | 1N250A, R | 2.48 | 1.65 |
| 600 | 1N1198A, R* | 6.65 | 4.45 | 200 | 1N250B, R* | 2.48 | 1.65 |
| 800 | R4100822† | 8.00 | 5.75 | 200 | 1N250C, R | 2.78 | 1.85 |
| 1000 | R4101022† | 10.25 | 6.55 | ...... | .............. | ...... | ...... |
| 1200 | R4101222† | 12.00 | 8.00 | ...... | .............. | ...... | ...... |

*JAN type available. †For reverse polarity, increase fourth digit by **1** (R4110822).

**1N2154, R–1N2160, R (Fig. M)**—25 A at 145° C.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 50 | 1N2154, R | $2.38 | $1.59 | 400 | 1N2158, R | $5.92 | $3.95 |
| 100 | 1N2155, R | 3.00 | 2.00 | 500 | 1N2159, R | 6.15 | 4.10 |
| 200 | 1N2156, R | 4.38 | 2.97 | 600 | 1N2160, R | 6.30 | 4.20 |
| 300 | 1N2157, R | 5.25 | 3.50 | | | | |

**1N1183, R–1N5332, R (Fig. M)**—35 A at 140° C; 500 A surge.

| PRV V | W-H Type | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 | PRV V | W-H Type | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|
| 50 | 1N1183, R | $2.14 | $1.43 | 600 | 1N1190, R* | $ 8.65 | $5.80 |
| 100 | 1N1184, R* | 2.47 | 1.65 | 700 | 1N3765, R | 9.10 | 6.15 |
| 150 | 1N1185, R | 3.10 | 2.07 | 800 | 1N3766, R | 9.75 | 6.50 |
| 200 | 1N1186, R* | 3.55 | 2.37 | 900 | 1N3767, R | 10,72 | 7.15 |
| 300 | 1N1187, R | 4.95 | 3.30 | 1000 | 1N3768, R | 11.62 | 7.72 |
| 400 | 1N1188, R* | 6.19 | 4.13 | 1200 | 1N5332, R | 13.00 | 8.40 |
| 500 | 1N1189, R | 7.42 | 4.95 | | | | |

**1N2128, R–1N2138, R (Fig. M)**—60 A at 115° C.

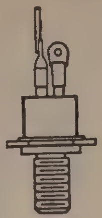
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 50 | 1N2128, R | $2.65 | $1.80 | 400 | 1N2135, R | $7.00 | $5.00 |
| 100 | 1N2129, R | 3.15 | 2.20 | 400 | 1N2135A JAN; | | |
| 150 | 1N2130, R | 3.60 | 2.70 | | AR JAN | 8.85 | 5.90 |
| 200 | 1N2131, R | 5.00 | 3.30 | 500 | 1N2137, R | 8.00 | 5.50 |
| 300 | 1N2133, R | 6.00 | 4.15 | 600 | 1N2138, R | 8.95 | 6.00 |

*JAN type available.

**1N1183A, R–R4101240 (Fig. M)**—40 A at 150° C; 800 A surge.
**R4100070–R4101270 (Fig. M)**—70 A at 100° C; 750 A surge.

| PRV V | W-H Type | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-999 | W-H Type | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-999 |
|---|---|---|---|---|---|---|
| 50 | 1N1183A, R | $ 2.14 | $1.43 | R4100070* | $ 2.85 | $ 2.20 |
| 100 | 1N1184A, R | 2.47 | 1.65 | R4100170* | 3.95 | 2.74 |
| 150 | 1N1185A, R | 3.10 | 2.07 | .............. | ........ | ........ |
| 200 | 1N1186A, R | 3.55 | 2.37 | 1N4136, R | 5.55 | 4.00 |
| 300 | 1N1187A, R | 4.95 | 3.30 | .............. | ........ | ........ |
| 400 | 1N1188A, R | 6.19 | 4.13 | 1N4137, R | 7.55 | 5.21 |
| 500 | 1N1189A, R | 7.42 | 4.95 | .............. | ........ | ........ |
| 600 | 1N1190A, R | 8.65 | 5.80 | 1N4138, R | 9.15 | 6.17 |
| 800 | R4100840* | 9.75 | 6.50 | R4100870* | 12.55 | 10.40 |
| 1000 | R4101040* | 11.62 | 7.72 | R4101070* | 15.05 | 11.45 |
| 1200 | R4101240* | 13.00 | 8.50 | R4101270* | 19.00 | 15.00 |

*For reverse polarity, increase fourth digit by **1** (R4110070).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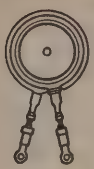
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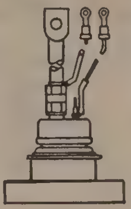
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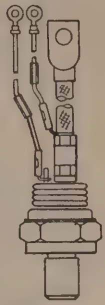
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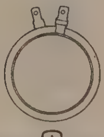
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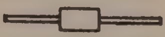
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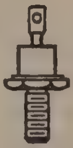
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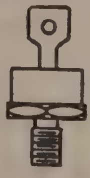
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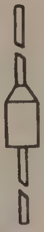
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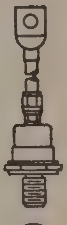
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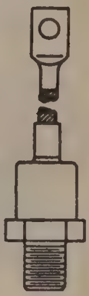
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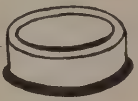

R

## SILICON LOW POWER RECTIFIERS

**1N4816–1N5054 (Fig. J)**—1.5 A at 40° C; 50 A surge.

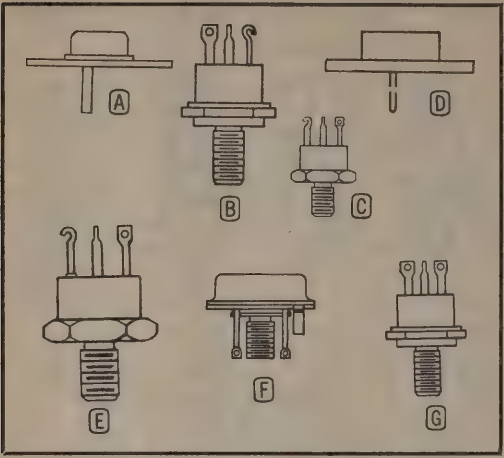
| PRV V | W-H Type | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-999 | PRV V | W-H Type | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-999 |
|---|---|---|---|---|---|---|---|
| 50 | 1N4816 | $0.27 | $0.23 | 500 | 1N4821 | $0.49 | $0.42 |
| 100 | 1N4817 | .31 | .27 | 600 | 1N4822 | .55 | .47 |
| 200 | 1N4818 | .37 | .31 | 700 | 1N5052 | .75 | .51 |
| 300 | 1N4819 | .43 | .35 | 800 | 1N5053 | .81 | .54 |
| 400 | 1N4820 | .45 | .38 | 1000 | 1N5054 | .90 | .62 |

**1N5391–1N5399 (Fig. J)**—Epoxy encapsulated. 1.5 A at 40° C ambient; 50 A surge.

**1N5400–1N5408 (Fig. N)**—Epoxy encapsulated. 3 A at 50° C ambient; 200 A surge.

| PRV V | W-H Type | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-999 | W-H Type | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-999 |
|---|---|---|---|---|---|---|
| 50 | 1N5391 | $0.27 | $0.23 | 1N5400 | $0.36 | $0.31 |
| 100 | 1N5392 | .31 | .27 | 1N5401 | .41 | .34 |
| 200 | 1N5393 | .37 | .31 | 1N5402 | .47 | .40 |
| 300 | 1N5394 | .43 | .35 | 1N5403 | .55 | .43 |
| 400 | 1N5395 | .45 | .38 | 1N5404 | .61 | .51 |
| 500 | 1N5396 | .49 | .42 | 1N5405 | .65 | .57 |
| 600 | 1N5397 | .55 | .47 | 1N5406 | .73 | .65 |
| 800 | 1N5398 | .81 | .54 | 1N5407 | 1.14 | 1.00 |
| 1000 | 1N5399 | .90 | .62 | 1N5408 | 1.50 | 1.25 |

# Westinghouse SILICON POWER TRANSISTORS



All ratings are maximum except as noted. Supplied with mounting hardware.

## FAST SWITCHING

$T_J = 65°$ C to $+200°$ C. $h_{FE} = 20$ min. except as otherwise noted. Last two digits indicate $I_C$: 04**02**, 2 A; 04**05**, 5A; 04**10**, 10 A, etc.

### 10 AMPS

**1714 Series (Fig. A)**—$V_{CE(sat)} = 0.60$ V (1714-0405-1605, 0.75 V). $f_T = 70$ MHz Typ. $P_D = 35$ W at $T_C = 25°$ C.

| $V_{CE}$ V | W-H Type | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-999 | W-H Type | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-999 |
|---|---|---|---|---|---|---|
| 40 | 1714-0402 | $ 5.80 | $ 4.40 | 1714-0405 | $ 6.50 | $ 4.90 |
| 60 | 1714-0602 | 6.60 | 5.00 | 1714-0605 | 7.40 | 5.60 |
| 80 | 1714-0802 | 7.40 | 5.60 | 1714-0805 | 8.20 | 6.20 |
| 100 | 1714-1002 | 8.20 | 6.20 | 1714-1005 | 9.10 | 6.90 |
| 120 | 1714-1202 | 9.10 | 6.90 | 1714-1205 | 10.00 | 7.60 |
| 140 | 1714-1402 | 10.00 | 7.60 | 1714-1405 | 11.30 | 8.60 |
| 160 | 1714-1602 | 11.40 | 8.65 | 1714-1605 | 12.60 | 9.50 |
| 180 | 1714-1802 | 12.40 | 9.40 | | | |

**1716 Series (Fig. B)**—$V_{CE(sat)} = 0.5$ V (1716-0405-1605, 0.6 V). $f_T = 70$ MHz typ. $P_D = 50$ W at $T_C = 100°$ C.

| $V_{CE}$ V | W-H Type | Net Ea., Lots of 1-24 | Net Ea., Lots of 25-99 | W-H Type | Net Ea., Lots of 1-24 | Net Ea., Lots of 25-99 |
|---|---|---|---|---|---|---|
| 40 | 1716-0402 | $18.50 | $13.70 | 1716-0405 | $22.25 | $16.40 |
| 60 | 1716-0602 | 22.25 | 16.40 | 1716-0605 | 26.00 | 19.20 |
| 80 | 1716-0802 | 26.00 | 19.20 | 1716-0805 | 29.75 | 21.90 |
| 100 | 1716-1002 | 29.75 | 21.90 | 1716-1005 | 34.75 | 25.60 |
| 120 | 1716-1202 | 34.75 | 25.60 | 1716-1205 | 39.00 | 28.80 |
| 140 | 1716-1402 | 39.00 | 28.80 | 1716-1405 | 44.75 | 32.80 |
| 160 | 1716-1602 | 44.75 | 32.80 | 1716-1605 | 50.25 | 36.80 |
| 180 | 1716-1802 | 50.25 | 36.80 | | | |

**1718 Series (Fig. C)**—Same as 1716 Series except $P_D = 33$ W at $T_C = 100°$ C.

| $V_{CE}$ V | W-H Type | Net Ea., Lots of 1-24 | Net Ea., Lots of 25-99 | W-H Type | Net Ea., Lots of 1-24 | Net Ea., Lots of 25-99 |
|---|---|---|---|---|---|---|
| 40 | 1718-0402 | $16.75 | $12.40 | 1718-0405 | $20.75 | $15.20 |
| 60 | 1718-0602 | 18.50 | 13.60 | 1718-0605 | 22.75 | 16.80 |
| 80 | 1718-0802 | 21.75 | 16.00 | 1718-0805 | 26.00 | 19.20 |
| 100 | 1718-1002 | 25.00 | 18.40 | 1718-1005 | 29.25 | 21.60 |
| 120 | 1718-1202 | 28.75 | 21.20 | 1718-1205 | 33.25 | 24.40 |
| 140 | 1718-1402 | 32.50 | 24.00 | 1718-1405 | 37.50 | 27.60 |
| 160 | 1718-1602 | 38.00 | 28.00 | 1718-1605 | 42.75 | 31.60 |
| 180 | 1718-1802 | 43.50 | 32.00 | | | |

### 20 AMPS

**1723 Series (Fig. D)**—$V_{CE(sat)} = 1.0$ V (1723-0410-1810, 1.25 V). $f_T = 50$ MHz typ. $P_D = 150$ W at $T_C = 25°$ C.

| $V_{CE}$ V | W-H Type | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-999 | W-H Type | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-999 |
|---|---|---|---|---|---|---|
| 40 | 1723-0405 | $ 7.85 | $ 5.95 | 1723-0410 | $ 8.55 | $ 6.50 |
| 60 | 1723-0605 | 8.85 | 6.70 | 1723-0610 | 9.85 | 7.55 |
| 80 | | | | 1723-0810 | 10.95 | 8.35 |
| 100 | 1723-1005 | 10.95 | 8.35 | 1723-1010 | 12.00 | 9.15 |
| 120 | 1723-1205 | 12.00 | 9.15 | 1723-1210 | 13.15 | 10.10 |
| 140 | 1723-1405 | 13.50 | 10.40 | 1723-1410 | 14.85 | 11.30 |
| 160 | 1723-1605 | 15.10 | 11.55 | 1723-1610 | 16.65 | 12.70 |
| 180 | 1723-1805 | 16.65 | 12.70 | 1723-1810 | 18.30 | 14.00 |

### 40 AMPS

**1763 Series (Fig. D)**—$V_{CE(sat)} = 1.0$ V (1763-0620-1620, 1.25 V). $f_T = 50$ MHz. $P_D = 85$ W at $T_C = 100°$ C.

| $V_{CE}$ V | W-H Type | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-999 | W-H Type | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-999 |
|---|---|---|---|---|---|---|
| 60 | 1763-0610 | $16.50 | $12.55 | 1763-0620 | $20.70 | $15.75 |
| 80 | 1763-0810 | 19.80 | 14.95 | 1763-0820 | 24.65 | 18.70 |
| 100 | 1763-1010 | 22.90 | 17.30 | 1763-1020 | 28.60 | 21.65 |
| 120 | 1763-1210 | 26.20 | 19.80 | 1763-1220 | 33.00 | 24.75 |
| 140 | 1763-1410 | 29.15 | 22.10 | 1763-1420 | 36.85 | 27.50 |
| 160 | 1763-1610 | 36.30 | 27.50 | 1763-1620 | 45.10 | 34.10 |
| 180 | 1763-1810 | 43.45 | 33.00 | | | |

Same as above except $V_{CE(sat)} = 1.50$ V.

| $V_{CE}$ V | W-H Type | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 | $V_{CE}$ V | W-H Type | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|
| 60 | 1763-0630 | $25.95 | $19.70 | 120 | 1763-1230 | $39.70 | $30.80 |
| 80 | 1763-0830 | 30.80 | 23.30 | 140 | 1763-1430 | 45.65 | 34.65 |
| 100 | 1763-1030 | 35.75 | 27.20 | | | | |

**1768 Series (Fig. E)**—Same as 1763 Series except $P_D = 100$ W at $T_C = 100°$ C.

| $V_{CE}$ V | W-H Type | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-499 | W-H Type | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-499 |
|---|---|---|---|---|---|---|
| 60 | 1768-0610 | $23.00 | $18.50 | 1768-0620 | $28.00 | $21.00 |
| 80 | 1768-0810 | 26.00 | 20.00 | 1768-0820 | 32.00 | 24.00 |
| 100 | 1768-1010 | 29.00 | 22.50 | 1768-1020 | 35.00 | 26.00 |
| 120 | 1768-1210 | 32.00 | 24.50 | 1768-1220 | 39.00 | 29.00 |
| 140 | 1768-1410 | 36.00 | 27.00 | 1768-1420 | 44.00 | 31.50 |
| 160 | 1768-1610 | 41.00 | 30.00 | 1768-1620 | 53.00 | 37.50 |
| 180 | 1768-1810 | 51.00 | 36.00 | | | |

| $V_{CE}$ V | W-H Type 1768- | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-499 | $V_{CE}$ V | W-H Type 1768- | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-499 |
|---|---|---|---|---|---|---|---|
| 60 | 0630 | $33.00 | $24.50 | 120 | 1230 | $46.00 | $34.00 |
| 80 | 0830 | 38.00 | 28.00 | 140 | 1430 | 52.00 | 38.00 |
| 100 | 1030 | 41.00 | 29.50 | | | | |

### 75 AMPS

**1776 Series (Fig. E)**—$h_{FE} = 15$ min. $V_{CE(sat)} = 1.5$ V. $f_T = 35$ MHz typ. $P_D = 150$ W at $T_C = 100°$ C.

| $V_{CE}$ V | W-H Type | Net Ea., Lots of 1-9 | Net Ea., Lots of 10-99 | W-H Type | Net Ea., Lots of 1-9 | Net Ea., Lots of 10-99 |
|---|---|---|---|---|---|---|
| 60 | 1776-0640 | $ 96.00 | $ 72.00 | 1776-0660 | $116.00 | $ 88.00 |
| 80 | 1776-0840 | 104.00 | 79.00 | 1776-0860 | 126.00 | 95.00 |
| 100 | 1776-1040 | 114.00 | 87.00 | 1776-1060 | 138.00 | 105.00 |
| 120 | 1776-1240 | 126.00 | 95.00 | 1776-1260 | 152.00 | 115.00 |
| 140 | 1776-1440 | 140.00 | 107.00 | 1776-1460 | 168.00 | 125.00 |
| 160 | 1776-1640 | 156.00 | 115.00 | 1776-1660 | 186.00 | 140.00 |
| 180 | 1776-1840 | 174.00 | 130.00 | | | |

## MEDIUM CURRENT

$T_J = -65°$ C to $+150°$ C except as otherwise noted.

**1571 Series (Fig. A)**—4 A; $V_{CE(sat)} = 1.0$ V. $f_T = 1.0$ MHs typ. $T_J$ to $+200°$ C. $P_D = 29$ W at $T_C = 25°$ C.

| | $h_{FE} = 25$; $I_C = 4$ A | | | $h_{FE} = 20$; $I_C = 3$ A | | |
|---|---|---|---|---|---|---|
| $V_{CE}$ V | W-H Type | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-999 | W-H Type | Net Ea., Lots of 1-99 | Net Ea., Lots of 100-999 |
| 40 | 1571-0425 | $0.80 | $0.70 | 1571-0420 | $0.76 | $0.66 |
| 60 | 2N3054 | .94 | .69 | 1571-0620 | .95 | .8[illegible] |
| 80 | 1571-0825 | 1.24 | .95 | 1571-0820 | 1.10 | .90 |
| 100 | 1571-1025 | 1.42 | 1.05 | 1571-1020 | 1.28 | .95 |
| 120 | 1571-1225 | 2.00 | 1.52 | 1571-1220 | 1.75 | 1.42 |
| 140 | 1571-1425 | 2.65 | 2.10 | 2N3441 | 2.48 | 1.80 |
| 160 | 1571-1625 | 3.15 | 2.47 | 1571-1620 | 2.65 | 2.00 |

**151 Series and 152 Series (Fig. F)**—Rated 6 A. $I_C = 1.5$ A; $h_{FE} = 11$ min. (152 Series, 18 min.) $f_T = 500$ kHz typ. $V_{EB} = 25$ V. $T_J = -65°$ C to $+150°$ C. $P_D = 100$ W at 80° C case.

**153 Series and 154 Series (Fig. G)**—Rated 7.5 amps. $I_C = 1.5$ A; $h_{FE} = 15$ min. (154 Series, 25 min.) $f_T = 500$ kHz typ. $T_J = -65°$ C to $+175°$ C. $P_D = 200$ W at 25° C case.

| $V_{CE}$ V | W-H Type Fig. F | W-H Type Fig. G | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 | W-H Type Fig. F | W-H Type Fig. G | Net Ea., Lots 1-99 | Net Ea., Lots 100-999 |
|---|---|---|---|---|---|---|---|---|
| 40 | 151-04 | 153-04 | $ 5.65 | $ 4.45 | 152-04 | 154-04 | $ 6.55 | $ 5.10 |
| 50 | 151-05 | 153-05 | 7.10 | 5.55 | | 154-05 | 8.05 | 6.55 |
| 60 | 151-06 | 153-06 | 8.50 | 6.65 | 152-06 | 154-06 | 9.60 | 7.50 |
| 70 | 151-07 | 153-07 | 9.95 | 7.75 | 152-07 | 154-07 | 11.15 | 8.70 |
| 80 | 151-08 | 153-08 | 11.40 | 8.80 | 152-08 | 154-08 | 12.70 | 9.90 |
| 90 | 151-09 | 153-09 | 12.85 | 10.00 | 152-09 | 154-09 | 14.25 | 11.10 |
| 100 | 151-10 | 153-10 | 14.40 | 11.20 | 152-10 | 154-10 | 15.85 | 12.35 |
| 120 | 151-12 | 153-12 | 16.25 | 12.50 | 152-12 | 154-12 | 18.70 | 14.40 |
| 140 | 151-14 | 153-14 | 18.30 | 14.10 | 152-14 | 154-14 | 21.00 | 16.20 |
| 160 | 151-16 | 153-16 | 20.60 | 15.80 | 152-16 | 154-16 | 23.70 | 18.30 |
| 180 | 151-18 | 153-18 | 23.20 | 17.90 | 152-18 | 154-18 | 26.70 | 20.35 |
| 200 | 151-20 | 153-20 | 26.20 | 20.10 | 152-20 | 154-20 | 28.90 | 22.10 |
| 220 | 151-22 | 153-22 | 29.60 | 22.70 | 152-22 | 154-22 | 32.70 | 24.90 |
| 240 | 151-24 | 153-24 | 34.20 | 25.85 | 152-24 | 154-24 | 37.20 | 28.40 |
| 260 | 151-26 | 153-26 | 38.90 | 29.40 | 152-26 | 154-26 | 42.35 | 32.30 |
| 280 | 151-28 | 153-28 | 44.10 | 33.50 | 152-28 | 154-28 | 48.20 | 36.80 |
| 300 | 151-30 | 153-30 | 50.00 | 38.00 | 152-30 | 154-30 | 54.60 | 41.70 |

MEDIUM CURRENT POWER TRANSISTORS
CONTINUED ON FOLLOWING PAGE

# Westinghouse SILICON POWER TRANSISTORS

SEE PRECEDING PAGE FOR
ADDITIONAL ILLUSTRATIONS

## MEDIUM CURRENT (CONT'D)

### 7.5 AMPS (FIG. F)

**2N1015–2N1015E**—$I_C = 2$ A; $h_{FE} = 10$ min. $f_T = 500$ kHz typ. $V_{EB} = 25$ V. $P_D = 150$ W at 45° C case.

**2N1016–2N1016E**—$I_C = 5$ A; $h_{FE} = 10$ min. $f_T = 500$ kHz typ. $V_{EB} = 25$ V. $P_D = 150$ W at 45° C case.

| $V_{CE}$ Volts | JEDEC No. | Net Ea., Lots of | | JEDEC No. | Net Ea., Lots of | |
|---|---|---|---|---|---|---|
| | | 1-99 | 100-999 | | 1-99 | 100-999 |
| 30 | 2N1015 | $15.00 | $11.50 | 2N1016 | $16.00 | $12.00 |
| 60 | 2N1015A | 19.00 | 14.25 | 2N1016A | 20.00 | 15.00 |
| 100 | 2N1015B | 24.00 | 18.00 | 2N1016B* | 26.00 | 19.50 |
| 150 | 2N1015C | 32.00 | 24.00 | 2N1016C* | 32.00 | 24.00 |
| 200 | 2N1015D | 45.00 | 33.75 | 2N1016D* | 50.00 | 37.50 |
| 250 | 2N1015E | 77.00 | 57.00 | 2N1016E | 89.00 | 66.50 |

*JAN type available; meets MIL-S-19500/102.

### 7.5 AMPS (FIG. G)

**2N3429–2N3433**—Same ratings as 2N1016 Series except: $T_J = 175°$ C max.; $P_D = 150$ W at 60° C case.

| $V_{CE}$ Volts | JEDEC No. | Net Ea., Lots of | | $V_{CE}$ Volts | JEDEC No. | Net Ea., Lots of | |
|---|---|---|---|---|---|---|---|
| | | 1-99 | 100-999 | | | 1-99 | 100-999 |
| 50 | 2N3429 | $29.10 | $21.70 | 200 | 2N3432 | $67.10 | $50.10 |
| 100 | 2N3430 | 38.10 | 28.40 | 250 | 2N3433 | 89.10 | 66.60 |
| 150 | 2N3431 | 51.10 | 37.80 | | | | |

### 10 AMPS HIGH GAIN (FIG. F)

**2N2226–2N2229**—$I_C = 10$ A; $h_{FE} = 100$ min. $f_T = 300$ kHz typ. $P_D = 150$ W at 75° C case.

**2N2230–2N2233**—Same ratings except $h_{FE} = 400$ minimum.

| $V_{CE}$ Volts | JEDEC No. | Net Ea., Lots of | | JEDEC No. | Net Ea., Lots of | |
|---|---|---|---|---|---|---|
| | | 1-24 | 25-99 | | 1-24 | 25-99 |
| 50 | 2N2226 | $44.10 | $29.10 | 2N2230 | $73.10 | $48.10 |
| 100 | 2N2227 | 61.10 | 41.10 | 2N2231 | 99.10 | 66.10 |
| 150 | 2N2228 | 83.10 | 55.10 | 2N2232 | 132.10 | 88.10 |
| 200 | 2N2229 | 112.10 | 75.10 | 2N2233 | 183.10 | 122.10 |

### 10 AMPS HIGH GAIN (FIG. H)

**2N3470–2N3473**—Same ratings as 2N2226–2N2229.

**2N3474–2N3477**—Same except $h_{FE} = 400$ minimum.

| $V_{CE}$ Volts | JEDEC No. | Net Ea., Lots of | | JEDEC No. | Net Ea., Lots of | |
|---|---|---|---|---|---|---|
| | | 1-24 | 25-99 | | 1-24 | 25-99 |
| 50 | 2N3470 | $ 44.10 | $29.10 | 2N3474 | $ 73.10 | $ 48.10 |
| 100 | 2N3471 | 61.10 | 41.10 | 2N3475 | 99.10 | 66.10 |
| 150 | 2N3472 | 83.10 | 55.10 | 2N3476 | 132.10 | 88.10 |
| 200 | 2N3473 | 112.10 | 75.10 | 2N3477 | 183.10 | 122.10 |

### 15 AMPS (FIG. I)

**1561 Series**—$h_{FE} = 20$ at $I_C = 3$ A. $V_{CE} = 4$ V.
**JEDEC No.**—$T_J$ to $+200°$ C. $P_D = 115$ W at $T_C = 25°$ C.

| $V_{CE}$ V | W-H or JEDEC No. | Net Ea., Lots | | $V_{CE}$ V | W-H or JEDEC No. | Net Ea., Lots | |
|---|---|---|---|---|---|---|---|
| | | 1-99 | 100-999 | | | 1-99 | 100-999 |
| 40 | 1561-0403 | $0.68 | $0.60 | 120 | 2N4347 | $2.97 | $2.16 |
| 60 | 2N3232 | .88 | .80 | 140 | 2N3442 | 4.54 | 3.30 |
| 80 | 1561-0803 | 1.08 | .92 | 160 | 2N3234 | 5.78 | 3.99 |

**1561 Series**—$h_{FE} = 20$ at $I_C = 4$A. $V_{CE} = 4$ V.
**JEDEC No.**—$f_T = 1$ MHz. $T_J$ to $+200°$ C. $P_D = 115$ W at $T_C = 25°$ C.

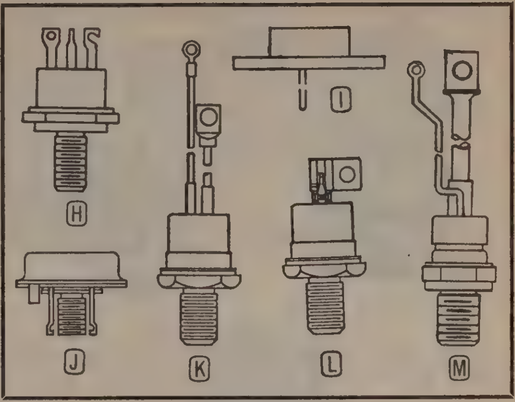
| $V_{CE}$ V | W-H or JEDEC No. | Net Ea., Lots | | $V_{CE}$ V | W-H or JEDEC No. | Net Ea., Lots | |
|---|---|---|---|---|---|---|---|
| | | 1-99 | 100-999 | | | 1-99 | 100-999 |
| 40 | 1561-0404 | $1.05 | $0.89 | 90 | 1561-1004 | $1.80 | $1.40 |
| 60 | 1561-0604 | 1.28 | 1.00 | 120 | 2N4348 | 4.13 | 3.00 |
| 60 | 2N3055 | 1.42 | 1.05 | 140 | 1561-1404 | 4.50 | 3.24 |
| 80 | 1561-0804 | 1.60 | 1.20 | 160 | 1561-1604 | 6.00 | 4.50 |

## HIGH CURRENT

### 20 AMPS (FIG. J)

**2N2739–2N2742**—$I_C = 10$ A; $h_{FE} = 10$ min. $f_T = 500$ kHz typ. $T_J = -65°$ C to $+175°$ C. $P_D = 200$ W at 75° C case.
**2N2745–2N2748**—Same ratings except: $I_C = 15$ A.
**2N2751–2N2754**—Same ratings except: $I_C = 20$ A.

| $V_{CE}$ Volts | JEDEC No. | Net Ea., Lots of | | $V_{CE}$ Volts | JEDEC No. | Net Ea., Lots of | |
|---|---|---|---|---|---|---|---|
| | | 1-24 | 25-99 | | | 1-24 | 25-99 |
| 50 | 2N2739 | $ 43.50 | $36.60 | 150 | 2N2747 | $ 94.50 | $ 78.30 |
| 100 | 2N2740 | 53.80 | 45.10 | 200 | 2N2748 | 120.60 | 100.80 |
| 150 | 2N2741 | 69.30 | 58.40 | 50 | 2N2751 | 63.00 | 53.10 |
| 200 | 2N2742 | 104.50 | 87.30 | 100 | 2N2752 | 81.70 | 68.40 |
| 50 | 2N2745 | 56.70 | 46.80 | 150 | 2N2753 | 103.50 | 88.20 |
| 100 | 2N2746 | 73.80 | 61.20 | 200 | 2N2754 | 132.30 | 111.60 |



## HIGH CURRENT (CONT'D)

### 20 AMPS (FIG. H)

**163 Series**—$I_C = 5$ A; $h_{FE} = 15$ min. $f_T = 500$ kHz typ. $T_J = -65°$ C to $+175°$ C. $P_D = 200$ W at 75° C case. $R_{THERMAL} = 0.5°$ C/W.
**164 Series**—Same ratings except: $h_{FE} = 25$ min.; $R_{SAT} = 0.20$ ohm.

| $V_{CE}$ V | W-H Type | Net Each, Lots of | | W-H Type | Net Each, Lots of | |
|---|---|---|---|---|---|---|
| | | 1-99 | 100-999 | | 1-99 | 100-999 |
| 40 | 163-04 | $14.60 | $11.35 | 164-04 | $19.50 | $14.15 |
| 50 | 163-05 | 16.90 | 12.60 | 164-05 | 20.60 | 14.85 |
| 60 | 163-06 | 18.60 | 13.40 | 164-06 | 21.60 | 15.60 |
| 70 | 163-07 | 19.60 | 14.15 | 164-07 | 22.60 | 16.30 |
| 80 | 163-08 | 20.60 | 14.85 | 164-08 | 23.60 | 17.00 |
| 90 | 163-09 | 21.60 | 15.56 | 164-09 | 24.60 | 17.75 |
| 100 | 163-10 | 22.60 | 16.30 | 164-10 | 25.60 | 18.45 |
| 120 | 163-12 | 25.60 | 18.45 | 164-12 | 28.60 | 20.60 |
| 140 | 163-14 | 28.60 | 20.60 | 164-14 | 31.60 | 22.75 |
| 160 | 163-16 | 31.60 | 22.75 | 164-16 | 34.60 | 24.90 |
| 180 | 163-18 | 34.60 | 24.90 | 164-18 | 37.60 | 27.10 |
| 200 | 163-20 | 37.60 | 27.10 | 164-20 | 40.60 | 29.30 |
| 220 | 163-22 | 40.85 | 29.55 | 164-22 | 43.85 | 31.65 |
| 240 | 163-24 | 44.40 | 32.20 | 164-24 | 47.35 | 34.20 |
| 260 | 163-26 | 48.25 | 35.10 | 164-26 | 51.15 | 36.95 |
| 280 | 163-28 | 52.45 | 38.25 | 164-28 | 55.25 | 39.90 |
| 300 | 163-30 | 57.00 | 41.70 | 164-30 | 59.70 | 43.10 |

### 30 AMPS (FIG. H)

**2N2759–2N2761**—$I_C = 10$ A; $h_{FE} = 10$ min. $f_T = 500$ kHz typ. $T_J = -65°$ C to $+175°$ C. $P_D = 200$ W at 75° C case.
**2N2763–2N2765**—Same ratings except: $I_C = 15$ A.
**2N2769–2N2772**—Same ratings except: $I_C = 20$ A.
**2N2775–2N2778**—Same ratings except: $I_C = 25$ A.

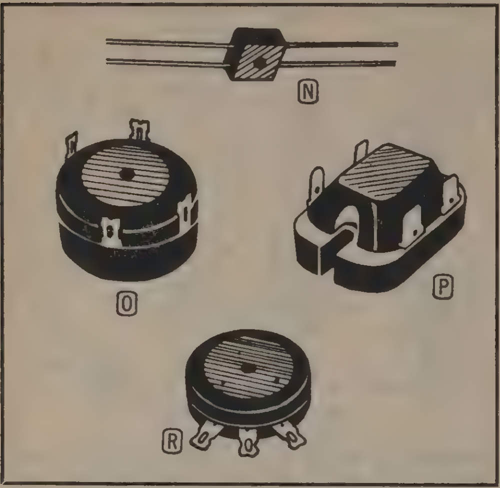
| $V_{CE}$ Volts | JEDEC No. | Net Ea., Lots of | | $V_{CE}$ Volts | JEDEC No. | Net Ea., Lots of | |
|---|---|---|---|---|---|---|---|
| | | 1-24 | 25-99 | | | 1-24 | 25-99 |
| 160 | 2N2759 | $ 85.50 | $ 72.00 | 160 | 2N2771 | $103.50 | $ 88.20 |
| 260 | 2N2761 | 142.20 | 117.00 | 200 | 2N2772 | 132.30 | 111.60 |
| 60 | 2N2763 | 56.70 | 46.80 | 60 | 2N2775 | 69.30 | 58.50 |
| 160 | 2N2765 | 94.50 | 78.30 | 100 | 2N2776 | 89.10 | 75.30 |
| 60 | 2N2769 | 63.00 | 53.10 | 160 | 2N2777 | 114.00 | 97.10 |
| 100 | 2N2770 | 81.70 | 68.40 | 200 | 2N2778 | 145.60 | 122.85 |

**2N1809–2N1814 and 2N2109–2N2114**—$I_C = 10$ A; $h_{FE} = 10$ minimum. $f_T = 500$ kHz typ. $T_J = -65°$ C to $+175°$ C. $P_D = 250$ W at 60° C case.
**2N1816–2N1820 and 2N2116–2N2120**—Same ratings except: $I_C = 15$ A.
**2N1823–2N1826 and 2N2123–2N2126**—Same ratings except: $I_C = 20$ A.
**2N1830–2N1833 and 2N2130–2N2133**—Same ratings except: $I_C = 25$ A.

| $V_{CE}$ Volts | JEDEC No. | | Net Each, Lots of | |
|---|---|---|---|---|
| | Fig. K | Fig. L | 1-24 | 25-99 |
| 50 | 2N1809 | 2N2109 | $ 76.00 | $ 63.00 |
| 100 | 2N1810 | 2N2110 | 115.00 | 76.00 |
| 150 | 2N1811 | 2N2111 | 126.10 | 94.00 |
| 200 | 2N1812 | 2N2112 | 172.00 | 114.00 |
| 250 | 2N1813 | 2N2113 | 211.00 | 147.00 |
| 300 | 2N1814 | 2N2114 | 260.00 | 178.00 |
| 50 | 2N1816 | 2N2116 | 101.00 | 84.00 |
| 100 | 2N1817 | 2N2117 | 129.75 | 102.00 |
| 150 | 2N1818 | 2N2118 | 140.00 | 117.10 |
| 200 | 2N1819 | 2N2119 | 232.00 | 156.00 |
| 250 | 2N1820 | 2N2120 | 286.00 | 191.00 |
| 50 | 2N1823 | 2N2123 | 135.00 | 111.00 |
| 100 | 2N1824 | 2N2124 | 143.10 | 119.10 |
| 150 | 2N1825 | 2N2125 | 157.50 | 131.50 |
| 200 | 2N1826 | 2N2126 | 304.00 | 207.00 |
| 50 | 2N1830 | 2N2130 | 149.00 | 126.00 |
| 100 | 2N1831 | 2N2131 | 159.70 | 132.80 |
| 150 | 2N1832 | 2N2132 | 174.10 | 142.10 |
| 200 | 2N1833 | 2N2133 | 404.00 | 275.00 |

HIGH CURRENT POWER TRANSISTORS
CONTINUED ON FOLLOWING PAGE

# Westinghouse Semiconductors



SEE PRECEDING PAGE FOR ADDITIONAL ILLUSTRATIONS

## HIGH CURRENT TRANSISTORS (CONT'D)

### 30 AMPS (FIG. I)

**1561 Series**—$h_{FE}=15.0$ at $I_C=8$ A. $V_{CE}=4$ V. $f_T=1$ MHz typ.

**JEDEC No.**—$T_J=-65°$ C to $+200°$ C. $P_D=150$ W at 25° C. $f_T=1$ MHz typ.

| $V_{CE}$ V | W-H or JEDEC No. | Net Ea., Lots 1-99 | 100-999 | $V_{CE}$ V | W-H or JEDEC No. | Net Ea., Lots 1-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| 40 | 1561-0408 | $1.52 | $1.10 | 100 | 1561-1008 | $5.40 | $3.95 |
| 60 | 1561-0608 | 2.00 | 1.40 | 120 | 1561-1208 | 6.40 | 4.60 |
| 60 | 1561-0808 | 3.17 | 2.03 | 140 | 2N3773 | 7.43 | 5.20 |
| 80 | 2N3238 | 3.17 | 2.03 | 160 | 2N3240 | 7.92 | 5.27 |

**1561 Series**—$h_{FE}=15.0$ at $I_C=10$ A. $V_{CE}=4$ V. $f_T=1$ MHz typ.

**JEDEC No.**—$f_T=1$ MHz typ. $P_D=150$ W at $T_C=25°$ C.

| $V_{CE}$ V | W-H or JEDEC No. | Net Ea., Lots 1-99 | 100-999 | $V_{CE}$ V | W-H or JEDEC No. | Net Ea., Lots 1-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| 40 | 1561-0410 | $2.54 | $2.16 | 100 | 1561-1010 | $ 6.00 | $4.50 |
| 60 | 1561-0610 | 2.70 | 2.22 | 120 | 1561-1210 | 7.00 | 5.25 |
| 60 | 2N3772 | 3.14 | 2.28 | 140 | 1561-1410 | 8.00 | 5.75 |
| 75 | 2N3237 | 3.28 | 2.88 | 160 | 1561-1610 | 10.00 | 7.50 |

**1561 Series**—$h_{FE}=15.0$ at $I_C=15$ A. $V_{CE}=4$ V. $f_T=1$ MHz typ.

**JEDEC No.**—$f_T=1$ MHz typ. $P_D=150$ W at $T_C=25°$ C.

| $V_{CE}$ V | W-H or JEDEC No. | Net Ea., Lots 1-99 | 100-999 | $V_{CE}$ V | W-H or JEDEC No. | Net Ea., Lots 1-99 | 100-999 |
|---|---|---|---|---|---|---|---|
| 40 | 2N3771 | $3.14 | $2.28 | 120 | 1561-1215 | $ 9.08 | $6.27 |
| 80 | 1561-0815 | 4.21 | 3.49 | 140 | 1561-1415 | 10.00 | 7.50 |
| 100 | 1561-1015 | 6.77 | 4.67 | 160 | 1561-1615 | 12.50 | 9.40 |

### 250 AMPS (FIG. M)

**1401 Series**—$h_{FE}=10$ min. $f_T=0.5$ MHz typ. $P_D=625$ W at $T_E=75°$ C.

| $V_{CE}$ V | $I_C=150$ A W-H Type | Net Ea., Lots of 1-24 | 25-99 | $I_C=200$ A W-H Type | Net Ea., Lots of 1-24 | 25-99 |
|---|---|---|---|---|---|---|
| 20 | ........ | ........ | ........ | 1401-0220 | $148.00 | $108.00 |
| 40 | 1401-0415 | $112.00 | $ 77.00 | 1401-0420 | 172.00 | 119.00 |
| 60 | 1401-0615 | 172.00 | 118.00 | 1401-0620 | 260.00 | 180.00 |
| 80 | 1401-0815 | 212.00 | 141.00 | 1401-0820 | 300.00 | 208.00 |
| 100 | 1401-1015 | 234.00 | 162.00 | 1401-1020 | 356.00 | 246.00 |
| 120 | 1401-1215 | 292.00 | 200.00 | ........ | ........ | ........ |
| 140 | 1401-1415 | 324.00 | 280.00 | ........ | ........ | ........ |

Same as above except $I_C=250$ A.

| $V_{CE}$ V | W-H Type 1401- | Net Ea., Lots of 1-24 | 25-99 | $V_{CE}$ V | W-H Type 1401- | Net Ea., Lots of 1-24 | 25-99 |
|---|---|---|---|---|---|---|---|
| 40 | 0425 | $203.00 | $141.00 | 80 | 0825 | $362.00 | $250.00 |
| 60 | 0625 | 305.00 | 209.00 | | | | |

## MOLDED RECTIFIER ASSEMBLIES

### SINGLE-PHASE FULL-WAVE BRIDGE

Rated at $T_{sink}=55°$ C.

| PRV V | 1.75 Amps (Fig. N) W-H Type | Net Ea., Lots 1-24 | 25-99 | 2 Amps (Fig. N*) W-H Type | Net Ea., Lots 1-24 | 25-99 |
|---|---|---|---|---|---|---|
| 50 | MP010ABA | $2.00 | $1.60 | MP011BBA | $2.60 | $2.08 |
| 100 | MP010ABB | 2.20 | 1.76 | MP011BBB | 2.86 | 2.29 |
| 200 | MP010ABD | 2.40 | 1.92 | MP011BBD | 3.12 | 2.50 |
| 300 | MP010ABF | 2.60 | 2.08 | MP011BBF | 3.38 | 2.70 |
| 400 | MP010ABH | 2.80 | 2.24 | MP011BBH | 3.64 | 2.91 |
| 500 | MP010ABK | 3.00 | 2.40 | MP011BBK | 3.90 | 3.12 |
| 600 | MP010ABM | 3.20 | 2.56 | MP011BBM | 4.16 | 3.33 |
| 700 | MP010ABP | 3.40 | 2.72 | MP011BBP | 4.42 | 3.54 |
| 800 | MP010ABS | 3.60 | 2.88 | MP011BBS | 4.68 | 3.74 |
| 900 | MP010ABV | 3.80 | 3.04 | MP011BBV | 4.94 | 3.95 |
| 1000 | MP010ABZ | 4.00 | 3.20 | MP011BBZ | 5.20 | 4.16 |

*.56" sq. x .50" h.; no center hole.

| PRV V | 4 Amps (Fig. O) W-H Type | Net Ea., Lots 1-24 | 25-99 | 6 Amps (Fig. O) W-H Type | Net Ea., Lots 1-24 | 25-99 |
|---|---|---|---|---|---|---|
| 50 | MP012FBA | $3.00 | $2.40 | MP012HBA | $3.40 | $2.72 |
| 100 | MP012FBB | 3.30 | 2.64 | MP012HBB | 3.74 | 2.99 |
| 200 | MP012FBD | 3.60 | 2.88 | MP012HBD | 4.08 | 3.26 |
| 300 | MP012FBF | 3.90 | 3.12 | MP012HBF | 4.42 | 3.54 |
| 400 | MP012FBH | 4.20 | 3.36 | MP012HBH | 4.76 | 3.81 |
| 500 | MP012FBK | 4.50 | 3.60 | MP012HBK | 5.10 | 4.08 |
| 600 | MP012FBM | 4.80 | 3.84 | MP012HBM | 5.44 | 4.35 |
| 700 | MP012FBP | 5.10 | 4.08 | MP012HBP | 5.78 | 4.62 |
| 800 | MP012FBS | 5.40 | 4.32 | MP012HBS | 6.12 | 4.90 |
| 900 | MP012FBV | 5.70 | 4.56 | MP012HBV | 6.46 | 5.17 |
| 1000 | MP012FBZ | 6.00 | 4.80 | MP012HBZ | 6.80 | 5.44 |

Rated 10 amps; Fig. O.

| PRV V | W-H Type MP- | Net Ea., Lots 1-24 | 25-99 | PRV V | W-H Type MP- | Net Ea., Lots 1-24 | 25-99 |
|---|---|---|---|---|---|---|---|
| 50 | 012JBA | $4.40 | $3.52 | 600 | 012JBM | $7.04 | $5.63 |
| 100 | 012JBB | 4.84 | 3.87 | 700 | 012JBP | 7.48 | 5.98 |
| 200 | 012JBD | 5.28 | 4.22 | 800 | 012JBS | 7.92 | 6.34 |
| 300 | 012JBF | 5.72 | 4.58 | 900 | 012JBV | 8.36 | 6.69 |
| 400 | 012JBH | 6.16 | 4.93 | 1000 | 012JBZ | 8.80 | 7.04 |
| 500 | 012JBK | 6.60 | 5.28 | | | | |

| PRV V | 15 Amps (Fig. P) W-H Type | Net Ea., Lots 1-24 | 25-99 | 20 Amps (Fig. P) W-H Type | Net Ea., Lots 1-24 | 25-99 |
|---|---|---|---|---|---|---|
| 50 | MP013MBA | $ 6.00 | $4.80 | MP013RBA | $ 8.00 | $ 6.40 |
| 100 | MP013MBB | 6.60 | 5.28 | MP013RBB | 8.80 | 7.04 |
| 200 | MP013MBD | 7.20 | 5.76 | MP013RBD | 9.60 | 7.68 |
| 300 | MP013MBF | 7.80 | 6.24 | MP013RBF | 10.40 | 8.32 |
| 400 | MP013MBH | 8.40 | 6.72 | MP013RBH | 11.20 | 8.96 |
| 500 | MP013MBK | 9.00 | 7.20 | MP013RBK | 12.00 | 9.60 |
| 600 | MP013MBM | 9.60 | 7.68 | MP013RBM | 12.80 | 10.24 |
| 700 | MP013MBP | 10.20 | 8.16 | MP013RBP | 13.60 | 10.88 |
| 800 | MP013MBS | 10.80 | 8.64 | MP013RPS | 14.40 | 11.52 |
| 900 | MP013MBV | 11.40 | 9.12 | MP013RPV | 15.20 | 12.16 |
| 1000 | MP013MBZ | 12.00 | 9.60 | MP013RPZ | 16.00 | 12.80 |

Suffix **HCB** types are 3 amp doublers; suffix **CDB** are 6 amp center tap.

| PRV V | 3 Amp (Fig. R) W-H Type | 6 Amp (Fig. R) W-H Type | Net Each, Lots of 1-24 | 25-99 |
|---|---|---|---|---|
| 50 | MP014HCA | MP014CDA | $2.60 | $2.08 |
| 100 | MP014HCB | MP014CDB | 2.86 | 2.29 |
| 200 | MP014HCD | MP014CDD | 3.12 | 2.50 |
| 300 | MP014HCF | MP014CDF | 3.38 | 2.70 |
| 400 | MP014HCH | MP014CDH | 3.64 | 2.91 |
| 500 | MP014HCK | MP014CDK | 3.90 | 3.12 |
| 600 | MP014HCM | MP014CDM | 4.16 | 3.33 |
| 700 | MP014HCP | MP014CDP | 4.42 | 3.54 |
| 800 | MP014HCS | MP014CDS | 4.68 | 3.74 |
| 900 | MP014HCV | MP014CDV | 4.94 | 3.95 |
| 1000 | MP014HCZ | MP014CDZ | 5.20 | 4.16 |

GOLD-LINE RECTIFIER ASSEMBLIES 25 TO 840 AMPS

AND 200 TO 1000 VOLTS PRV ALSO AVAILABLE

ON REQUEST

# IC BOARDS AND CARD SYSTEM, RESISTORS

## ERIE INTEGRID® IC BOARDS AND CARD SYSTEM

### INTEGRID CIRCUIT BOARDS

Standard 22-position, double readout boards have edge tabs to fit standard PC edge connectors. Modular design permits use in multiples. Ideal for counters, shift registers, adders and other digital and linear systems. Made of G-10 glass epoxy, 1/16″ thick, 4″ x 4″. Solder-plated circuitry has copper ground plane and gold contacts. Standard .156″ connector spacing. 8-pin and 10-pin units have 12 modules; all others, 8 modules.

| Erie No. | Description | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|
| 4206-201 | 14-pin dual inline, pwr. on | $10.00 | $9.00 | $7.50 | $6.50 |
| 4206-202 | 8-pin TO-5, power on | 10.00 | 9.00 | 7.50 | 6.50 |
| 4206-205 | 14-pin dual inline, pwr. off | 10.00 | 9.00 | 7.50 | 6.50 |
| 4206-206 | 8-pin TO-5, power off | 10.00 | 9.00 | 7.50 | 6.50 |
| 4206-207 | 10-pin TO-5, power off | 10.00 | 9.00 | 7.50 | 6.50 |
| 4206-208 | 16-pin dual inline, pwr. off | 10.00 | 9.00 | 7.50 | 6.50 |

### "MIX AND MATCH" INTEGRID CARD SYSTEM

Interchangeable modular elements increase versatility in breadboarding and prototypes. Mix various IC packages and link them with discrete components. Use only the IC cards, component grids and packs needed, insert them in the standard 4½″ frame rail and crimp into place with a tab element for direct insertion into standard PC connector. Cards feature a copper ground plane on the component side to minimize crosstalk.

### INTEGRID IC CARDS

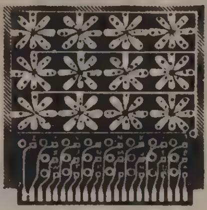
Each card has positions for 3 standard IC's. All accept terminals with .062″ dia. barrel and .125″ dia. standoff shoulder. IC holes .031″; all others .040″ but may be enlarged to accept .062″ max. barrel dia.

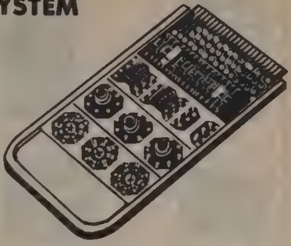
### STRIP PACK

Provides space for 17 (½-watt) resistors or equivalent. Extra holes may be drilled per customer specifications.

### ECONO-GRID®

Provides 7 rows of ⅛″ dia. pads for a total of 140 holes. All holes .046″ dia., but may be enlarged to accept terminals with .062″ max. barrel; standoff shoulder .125″ max. dia.


Integrid Board


Integrid Card System

### TAB ELEMENTS

Double readout, 22-position tabs 1/16″ thick of G-10 epoxy glass and 2-oz. copper. Contact fingers, .055″-.071″ thick, are ±.00025″ nickel plated and ±.00005″ gold plated min.. Holes are plated through; tabs meet IPC tolerances.

### INTEGRID COMPONENT PRICING

| Erie No. | Description | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|
| 4217-201 | 14-pin dual inline | $2.50 | $2.25 | $2.00 | $1.80 |
| 4217-202 | 8-pin TO-5 | 2.50 | 2.25 | 2.00 | 1.80 |
| 4217-203 | 10-pin TO-5 | 2.50 | 2.25 | 2.00 | 1.80 |
| 4217-204 | 16-pin dual inline | 2.50 | 2.25 | 2.00 | 1.80 |
| 4217-205 | Connector element | 5.50 | 4.95 | 4.45 | 4.00 |
| 4217-207 | Strip pack | .95 | .85 | .75 | .65 |
| 4217-208 | Econo-grid | .95 | .85 | .75 | .65 |
| 4217-209 | Alumin. frame rail | 1.75 | 1.60 | 1.45 | 1.30 |

### INTEGRID KITS

**Erie No. 4217-001**—Includes 1 each: frame rail, econo-grid, strip pack and connector element; plus, 2 each 4217-201 and 4217-202 IC socket strips. Net Each Kit.............. **$21.95**

**Erie No. 4217-002**—Same, except IC socket strips (2 each) are 4217-203 and 4217-204. Net Each Kit................ **$21.95**

## ALLEN-BRADLEY METAL GRID THIN FILM PRECISION RESISTOR NETWORKS

Networks consist of integrated films of chromium cobalt vacuum-deposited on specially selected substrates resulting in networks having precision tolerance and stability. Interconnections within network are a part of the deposited film, insuring circuit integrity and reliability. Excellent tracking characteristics are enhanced by depositing all resistors at one time on the selected glass substrate. Multilayer packaging techniques assure environmental protection. Networks are used in precision attenuators, voltage dividers, filter networks, measurement bridges, digital-to-analog converters, voice coding circuits and many other electronic circuits requiring resistors with close tolerances and low temperature coefficients.

**Type FN111**—10-bit binary array for use with Fairchild μA722 integrated circuit.

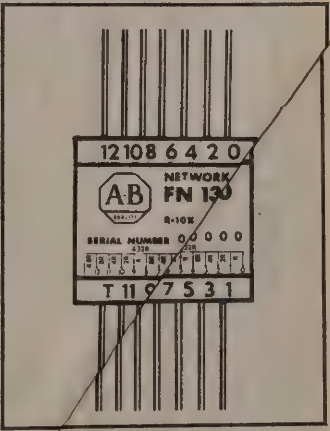
**Type FN112**—3-place BCD array for use with Fairchild μA722 integrated circuit.

**Types FN114** (12-bit), **FN123** (10-bit), **FN125** (10-bit), **FN131** (10-bit), **FN132** (13-bit) and **FN160** (10-bit)—R/2R Voltage ladders. Operate from −55° C to +125° C. Full scale accuracy, ±½ LSB.

**Types FN129** (12-bit) and **FN130** (12-bit)—1-2-4-8-BCD code ladder networks. Operate from −55° C to +125° C. Full scale accuracy, ±½ LSB.

**Type FN161**—14-bit binary code, ladder network. Operates from −55° C to +125° C. Full scale accuracy, ±½ LSB.

| A-B Number | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 |
|---|---|---|---|---|
| FN111 | $45.00 | $30.00 | $22.25 | $20.00 |
| FN112 | 41.50 | 27.75 | 20.50 | 18.50 |
| FN114 | 60.00 | 44.00 | 32.50 | 29.50 |
| FN123 | 49.25 | 33.00 | 24.25 | 22.00 |
| FN125 | 49.25 | 33.00 | 24.25 | 22.00 |
| FN129 | 99.25 | 66.25 | 48.50 | 44.25 |
| FN130 | $ 50.00 | $33.25 | $24.50 | $22.50 |
| FN131 | 38.00 | 25.50 | 18.75 | 17.00 |
| FN132 | 104.50 | 69.75 | 51.25 | 46.50 |
| FN160 | 38.00 | 25.50 | 18.75 | 17.00 |
| FN161 | 79.50 | 53.00 | 39.00 | 35.50 |



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# astrodyne, inc. HEAT TRANSFER AND DISSIPATION DEVICES

electrical/electronic

2501

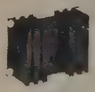
2502

2506

2507

2513

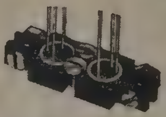
2515


2517

2201

2522

2520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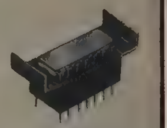
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## 2500 SERIES NATURAL CONVECTION HEAT SINKS

Patented "T" fin construction provides unusually large surface areas; permits as much heat dissipation as conventional units twice the size. **Model 2500 Series** are suited for applications requiring maximum dissipation in the smallest area. Designed for use when forced air cooling is not desired or possible; and, when ducted cooling is not available. **Model 2507** is designed for use in systems requiring efficient operation of **high power** components with free convection cooling. Wide mounting surface accepts all larger semiconductor power devices; permits ready access for wiring, monitoring or replacement.

### INDIVIDUAL FUNCTIONAL HEAT SINKS

| Astrodyne Type | Width In. | Depth In. | Lbs./In. of Lgth. | Area Sq. In. * | Astrodyne Type | Width In. | Depth In. | Lbs./In. of Lgth. | Area Sq. In. * |
|---|---|---|---|---|---|---|---|---|---|
| 2501 | 4 | 11/16 | .10 | 20.7 | 2511 | 4 3/4 | 2 1/2 | .18 | 47.4 |
| 2502 | 4 | 1 9/32 | .13 | 33.3 | 2512 | 2 3/4 | 11/16 | .04 | 12.9 |
| 2503 | 5 1/8 | 1 1/4 | .19 | 42.3 | 2513 | 5 1/8 | 1 1/4 | .16 | 33.2 |
| 2504 | 4 | 11/16 | .08 | 18.3 | 2514 | 5 1/8 | 1 1/4 | .15 | 33.2 |
| 2505 | 4 | 1 1/4 | .12 | 28.6 | 2515 | 4 | 1 1/4 | .12 | 24.9 |
| 2506 | 5 1/8 | 1 1/4 | .13 | 39.1 | 2516 | 2 7/8 | 1 1/4 | .10 | 17.8 |
| 2507 | 4 | 4 | .39 | 60.0 | 2517 | 4 3/4 | 1 1/4 | .14 | 36.3 |
| 2508 | 4 3/4 | 7/16 | .08 | 15.6 | 2518 | 6 1/4 | 2 | .27 | 54.6 |
| 2509 | 4 3/4 | 11/16 | .11 | 22.8 | 2519 | 3 5/8 | 1 1/8 | .11 | 20.3 |
| 2510 | 2 7/8 | 11/16 | .06 | 10.9 | | | | | |

*Surface area per inch of length.

### INTERLOCKING MODULAR HEAT SINKS

Interlocking modular heat sink components permit custom fabrication of heat sinks in many different physical configurations. Individual **Model 2520** sections may be interconnected either in a straight line by means of a **Model 2521** "H" extrusion, or at right angles with a **Model 2522** corner extrusion. Any number of heat sink sections may be interconnected in this manner Thermal resistance is approx. 1.1° C/watt at 40 watts in free air for 6" unit.

### PRICES FOR 2500 SERIES

| Astrodyne Part Number | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|
| 2501-030-B31B | $3.41 | $2.90 | $2.49 | $2.14 | $1.86 | $1.64 |
| 2502-030-C31B | 4.76 | 4.05 | 3.48 | 2.99 | 2.59 | 2.29 |
| 2503-030-C31B | 5.84 | 4.97 | 4.26 | 3.66 | 3.18 | 2.80 |
| 2504-030-A00B | 1.56 | 1.33 | 1.13 | .98 | .86 | .74 |
| 2504-030-A30B | 1.88 | 1.60 | 1.36 | 1.18 | 1.03 | .89 |
| 2505-030-A00B | 1.92 | 1.63 | 1.39 | 1.20 | 1.06 | .91 |
| 2505-030-A30B | 2.24 | 1.90 | 1.79 | 1.49 | 1.34 | 1.23 |
| 2506-030-A00B | 2.96 | 2.52 | 2.14 | 1.85 | 1.63 | 1.41 |
| 2506-030-A30B | 3.28 | 2.79 | 2.37 | 2.05 | 1.80 | 1.56 |
| 2507-040-A00B | 6.60 | 5.60 | 4.79 | 4.13 | 3.63 | 3.13 |
| 2508-030-A01B | 1.64 | 1.41 | 1.22 | .91 | .89 | .80 |
| 2509-030-A01B | 1.75 | 1.50 | 1.30 | 1.10 | .95 | .85 |
| 2510-030-A00B | 1.16 | .99 | .84 | .73 | .64 | .55 |
| 2510-030-A30B | 1.48 | 1.26 | 1.07 | .93 | .81 | .70 |
| 2511-030-A01B | 2.73 | 2.34 | 2.02 | 1.71 | 1.48 | 1.33 |
| 2512-030-A61B | 1.96 | 1.68 | 1.45 | 1.23 | 1.06 | .95 |
| 2514-030-A00B | 2.40 | 2.04 | 1.74 | 1.50 | 1.32 | 1.14 |
| 2515-030-A00B | 1.88 | 1.60 | 1.36 | 1.18 | 1.03 | .89 |
| 2515-030-A30B | 2.20 | 1.87 | 1.59 | 1.38 | 1.20 | 1.04 |
| 2516-030-A00B | 1.41 | 1.19 | 1.02 | .88 | .77 | .67 |
| 2517-030-A01B | 1.99 | 1.71 | 1.68 | 1.25 | 1.08 | .97 |
| 2517-030-A31B | 2.31 | 1.98 | 1.91 | 1.45 | 1.25 | 1.12 |
| 2518-030-A00B | 3.88 | 3.30 | 2.82 | 2.44 | 2.13 | 1.84 |
| 2520-030-A00B | 2.68 | 2.28 | 1.94 | 1.68 | 1.47 | 1.28 |
| 2521-030-A000 | .49 | .42 | .36 | .31 | .27 | .24 |
| 2522-030-A00B | 1.12 | .95 | .81 | .70 | .62 | .53 |
| 2524-030-A01B | 2.07 | 1.77 | 1.53 | 1.30 | 1.12 | 1.00 |
| 2524-030-A31B | 2.39 | 2.04 | 1.76 | 1.50 | 1.29 | 1.15 |
| 2534-030-A00B | 1.00 | .85 | .73 | .63 | .55 | .48 |
| 2536-030-A00B | 1.32 | 1.12 | .96 | .83 | .73 | .63 |
| 2538-030-A01B | 1.79 | 1.53 | 1.32 | 1.12 | .97 | .87 |
| 2538-030-A31B | 2.11 | 1.80 | 1.55 | 1.32 | 1.14 | 1.02 |
| 2539-030-A00B | 2.10 | 1.80 | 1.56 | 1.32 | 1.14 | 1.02 |
| 2542-040-A00B | 2.56 | 2.19 | 1.90 | 1.61 | 1.39 | 1.24 |

In the above table, numbers designated with suffix **-A30B** are predrilled for TO-3; suffix **-A61B** are pre-drilled for TO-66. All other numbers are normally supplied undrilled. No. 2507-**040**-A00B is 4" long. All other numbers, as listed, are furnished in 3" lengths with black anodized finish except no. 2521-030-**A000** unanodized. Special lengths, finishes and mtg. hole patterns available.

### 3-FOOT LONG EXTRUSIONS

Three-foot extrusions of all 2500 Series models are available. To order, specify the desired Type No. (e.g., **2501**- etc.) and add suffix **-360-A000**. Unanodized extrusions furnished. **Prices on request.**

## LOW POWER TRANSISTOR HEAT SINKS

### GEAR TYPE HEAT SINKS

Reduction in space and weight, as provided by the **Model 2201** miniature heat sinks, permits improved design of component cards for computers and other printed circuit applications. Large heat transfer area, afforded by the beveled edge design, increases transistor performance. Extra heavy body assures strong clamping action and induces a large temperature drop within the heat sink itself.

| Astrodyne Part No. | Dimensions, Inches O.D. | I.D. | Length | Temp. Rise per Watt* | For Trans. Case |
|---|---|---|---|---|---|
| 2201—Red | .500 | .318 | .250 | 32° C | TO-5 |
| 2201—Blue | .500 | .187 | .300 | 32° C | TO-18 |
| 2201—Green | .500 | .177 | .250 | 32° C | TO-24 |
| 2201—Gold | .500 | .197 | .500 | 32° C | TO-1 |

*For natural convection at 25° C ambient.

| Astrodyne Part Number | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|
| 2201—Red | 36c | 31c | 26c | 21c | 18c | 15c |
| 2201—Blue | 38c | 32c | 27c | 22c | 19c | 16c |
| 2201—Green | 43c | 36c | 29c | 25c | 21c | 18c |
| 2201—Gold | 64c | 53c | 43c | 36c | 31c | 27c |

### CONDUCTION HEAT SINKS

**Models 2801 and 2802** are specifically designed to dissipate heat from transistors by conduction. Maximum surface contact with chassis or other metallic mounting area assures effective heat transfer. **Model 2801** accommodates a single transistor, **Model 2802** accommodates two transistors.

| Astrodyne Part No. | Dimensions, Inches Height | Width | Length | Temp. Diff. per Watt* | Wt., Oz.† | For Trans. Case |
|---|---|---|---|---|---|---|
| 2801 | .250 | .500 | .870 | 2° C | .090 | TO-5, TO-9 |
| 2802 | .250 | .500 | 1.500 | 2° C | .140 | TO-5, TO-9 |

*Temperature difference between transistor case and chassis per transistor at 25° C ambient. †Less clamping screw.

### 2800 SERIES PRICING

Complete with hardware.

| Astrodyne Part Number | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|
| 2801 | $0.78 | $0.68 | $0.59 | $0.51 | $0.43 | $0.37 |
| 2802 | 1.28 | 1.12 | .96 | .83 | .70 | .61 |

### DIP HEAT SINKS

**Series 2906A** DIP heat sinks are designed for use with all standard dual-in-line IC packages. Provide low-cost, easy-to-use means of insuring optimal performance from DIP circuits. Temperature rise is less than 40° C at .3 watt; less than 50° C at .8 watt under natural convection conditions. Aluminum heat sinks have a hard-coat finish and are held between the socket and DIP by DIP pins as shown; three small projections on underside of heat sink insure a very snug fit. Models which accept DIPs up to 42 pins are available. No mounting hardware required.

| Astrodyne Part No. | Dimensions, Inches Height | Width | Length | Temp. Rise per Watt* |
|---|---|---|---|---|
| 2906A-14-1 | .188 | .44 | 1.062 | 53° C |
| 2906A-14-2 | .319 | .44 | .900 | 53° C |
| 2906A-16-1 | .188 | .44 | 1.062 | 53° C |
| 2906A-16-2 | .269 | .44 | .900 | 53° C |

*Temperature rise above ambient.

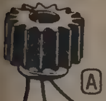
| Astrodyne Part Number | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|
| 2906A-14-1 | $0.50 | $0.40 | $0.33 | $0.28 | $0.24 | $0.21 |
| 2906A-14-2 | .50 | .40 | .33 | .28 | .24 | .21 |
| 2906A-16-1 | .50 | .40 | .33 | .28 | .24 | .21 |
| 2906A-16-2 | .50 | .40 | .33 | .28 | .24 | .21 |

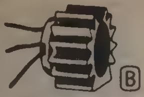
### THERMAL COMPOUNDS

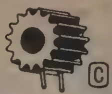
| Astrodyne Part No. | Description | Net Each |
|---|---|---|
| 166 | Potting compound, 4 oz. kit | $4.25 |
| 312 | Thermal bond, 5 oz. kit | 4.65 |

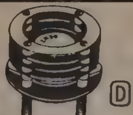
**MOUNTING HARDWARE AND INSULATING GROMMETS AVAILABLE FOR ALL HEAT SINK MODELS ON REQUEST**

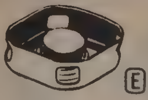
# Birtcher TRANSISTOR/DIODE HEAT RADIATORS, TRANSISTOR CLIPS

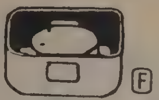


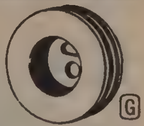












In basic part number **AL** indicates aluminum alloy material. **Finish—Basic Part Number only,** no suffix = Black anodize; **-1G** = Gold anodize; **-2R** = Red anodize; **-3B** = Blue anodize; **-4A** = Gray anodize; **-5GR** = Green anodize; **-6OR** = Burnt orange anodize; **-1GR** = Green anodize. **No finish** – Add "**-NF**" after Basic Part Number (core diameter unchanged). Same prices as shown.

### SERIES 3AL-635, -669, -675, -697, -711, -716 (FIG. A)

For: TO-1, -5, -7, -9, -11, -12, -16, -18, -24, -25, -28, -29, -33, -39, -40, -42, -43, -44, -45.

| Birtcher Number | I.D. ±.005 | O.D. ±1/64 | H. ±.015 | Birtcher Number | I.D. ±.005 | O.D. ±1/64 | H. ±.015 |
|---|---|---|---|---|---|---|---|
| 3AL-635 | .294″ | ½″ | .250″ | 3AL-675-4A | .335″ | ⅝″ | .375″ |
| 3AL-635-1G | .271″ | ½″ | .250″ | 3AL-675-5GR | .322″ | ⅝″ | .375″ |
| 3AL-635-2R | .318″ | ½″ | .250″ | 3AL-675-6OR | .318″ | ⅝″ | .375″ |
| 3AL-635-3B | .245″ | ½″ | .250″ | 3AL-697-2R | .318″ | ½″ | .375″ |
| 3AL-635-4A | .314″ | ½″ | .250″ | 3AL-711 | .294″ | ½″ | .187″ |
| 3AL-635-5GR | .177″ | ½″ | .250″ | 3AL-711-4A | .314″ | ½″ | .187″ |
| 3AL-635-6OR | .281″ | ½″ | .250″ | 3AL-716 | .330″ | ⅝″ | .250″ |
| 3AL-669-1GR | .307″ | ½″ | .225″ | 3AL-716-1G | .353″ | ⅝″ | .250″ |
| 3AL-669-2R | .318″ | ½″ | .225″ | 3AL-716-2R | .370″ | ⅝″ | .250″ |
| 3AL-669-3B | .177″ | ½″ | .225″ | 3AL-716-3B | .397″ | ⅝″ | .250″ |
| 3AL-675 | .330″ | ⅝″ | .375″ | 3AL-716-4A | .335″ | ⅝″ | .250″ |
| 3AL-675-1G | .353″ | ⅝″ | .375″ | 3AL-716-5GR | .322″ | ⅝″ | .250″ |
| 3AL-675-2R | .370″ | ⅝″ | .375″ | 3AL-716-6OR | .318″ | ⅝″ | .250″ |
| 3AL-675-3B | .397″ | ⅝″ | .375″ | | | | |

| Birtcher Number 3AL- | Set-up Code* | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| 635, -2R & -4A | 0 | $0.34 | $0.28 | $0.22 | $0.18 | $0.14 | $0.12 |
| 635-3B | 1 | .49 | .39 | .31 | .25 | .20 | .17 |
| 635-6OR | 2 | .49 | .39 | .31 | .25 | .20 | .17 |
| 635-1G | 1 | .51 | .41 | .33 | .26 | .21 | .18 |
| 635-5GR | 2 | .51 | .41 | .33 | .26 | .21 | .18 |
| 669-1GR | 2 | .47 | .38 | .30 | .24 | .195 | .165 |
| 669-2R | 0 | .41 | .32 | .26 | .21 | .165 | .14 |
| 669-3B | 2 | .51 | .41 | .33 | .26 | .21 | .18 |
| 675 series | 2 | .45 | .36 | .29 | .23 | .185 | .155 |
| 697-2R | 2 | .36 | .30 | .24 | .19 | .15 | .125 |
| 711, 716 series | 2 | .43 | .34 | .27 | .22 | .175 | .15 |

### SERIES 3AL-680, -681, -682, -683, -691, -702, -705 (FIG. B)

TO numbers are the same, except add TO-38 and TO-8 to number.

| Birtcher No. 3AL- | I.D. ± .005 | Birtcher No. 3AL- | I.D. ± .005 | Birtcher No. 3AL- | I.D. ± .005 | Birtcher No. 3AL- | I.D. ± .005 |
|---|---|---|---|---|---|---|---|
| 691 | .340″ | 680-3B | .245″ | 681-3B | .397″ | 683 | .330″ |
| 702 | .188″ | 680-4A | .314″ | 682 | .294″ | 683-1G | .353″ |
| 705 | .480″* | 680-5GR | .177″ | 682-1G | .271″ | 683-2R | .370″ |
| 680 | .294″ | 681 | .330″ | 682-2R | .318″ | 683-3B | .397″ |
| 680-1G | .271″ | 681-1G | .353″ | 682-3B | .245″ | | |
| 680-2R | .318″ | 681-2R | .370″ | 682-4A | .314″ | | |

*Has .614″ dia. x .08″ counterbore.

| Birtcher No. 3AL- | Size, In. W. x D. x H. | Set-up Code* | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-499 |
|---|---|---|---|---|---|---|---|
| 691 | 47/64 x ⅜ x 23/32 | 3 | $1.13 | $0.90 | $0.72 | $0.58 | $0.46 |
| 702 | .602x ¼ x.594 | 3 | 1.10 | .88 | .70 | .56 | .45 |
| 705 | 1 x.312x 61/64 | 2 | 1.36 | 1.09 | .87 | .70 | .56 |
| 680 thru-5GR | .602x ¼ x.594 | 2 | .53 | .42 | .34 | .27 | .22 |
| 681 thru-3B | .726x ⅜ x.711 | 2 | .72 | .57 | .46 | .37 | .295 |
| 682 thru-4A | .602x ¼ x.594 | 2 | .61 | .50 | .40 | .32 | .255 |
| 683 thru-3B | .726x ⅜ x.711 | 2 | .72 | .57 | .46 | .37 | .295 |

### SERIES 3AL-685 AND MODELS 3B-663, -693; 3AL-672, -674, -692, -704

**Series 3AL-685**—Two gold plated pins, .032″ dia. x .155″ lg.; spaced, .003″; O.D., .500″; depth, .500″; hex socket set screw, 8-32 x .125″ lg. tapped thru. **Model 3B-663, 3B-693**—Transistor Base Plate: 1″ I.D. x 1⁷⁄₁₆″ O.D. Height (with base) ¾″ plus ⁹⁄₁₆″ lg. studs threaded 6-32. **Models 3AL-672, 3AL-704**—Outside dim. 1.845″ x 1.400″ x .625″. Pin Hole Dia.: 3AL-672, .156″; 3AL-704, .250″. **Model 3AL-674**—Inside dimensions: 1¼″ sq. x ⁹⁄₁₆″ h. **Model 3AL-692**—1.000″ O.D. x .500″ I.D. x .406″ h.

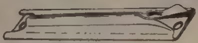
| Birtcher Number | Fig. | For TO- | Set-up Code* | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|---|
| 3AL-685* | C | 26, 31 | 3 | $ 4.00 | $3.21 | $2.57 | $2.06 | $1.65 | $1.40 |
| 3B-663§ | D | 3 | 4 | 10.00 | 8.05 | 6.45 | 5.15 | 4.12 | 3.50 |
| 3B-693§ | D | 3 | 4 | # | # | # | # | # | # |
| 3AL-672* | E | 3 | 0 | 1.36 | 1.09 | .87 | .70 | .56 | .48 |
| 3AL-704* | E | 3 | 2 | 1.50 | 1.22 | .96 | .77 | .62 | .53 |
| 3AL-674* | F | † | 3 | 1.36 | 1.09 | .87 | .70 | .50 | .48 |
| 3AL-692* | G | ‡ | 3 | 3.22 | 2.60 | 2.04 | 1.66 | 1.33 | 1.13 |

*Black anodize only. †For Transitron ST400 thru ST403 and equivalent. ‡For Texas Instruments 2N1047 thru 2N1050 and equivalent. §Copper material, black matte finish. #Factory quote.

### ★SET-UP CHARGES

| Code | Set-up Charge | Code | Set-up Charge |
|---|---|---|---|
| 0 | None | 3 | $ 7.50 under 250 pieces |
| 1 | $4.50 under 100 pieces | 4 | 10.00 under 250 pieces |
| 2 | 5.00 under 250 pieces | 5 | 15.00 under 500 pieces |

## PCB-TAINERS®



Series 15, 16, 17 and 18

Low cost, one-piece spring clip retainers for PC boards. Provides positive retention under severe shock and vibration. Simplifies the production and assembly. Easy to install, easy to use. Saves time, trouble and expense. **Material:** Beryllium copper as per QQ-C-533. **Mounting Holes:** Three holes for all PCB-tainers 6″ and over, center hole eliminated on all sizes under 6″; spacing between end holes, length less .250″ except type 35-6, length less .50″ and type 35-5, .875″. **Finish:** Available in none, ebanol, cadmium plate, silver plate, copper plate and gold plate finish. Prices shown are for no finish (suffix **-1**; e.g., 154B-4-1) and cadmium plated (suffix -3). Write for complete information and prices on other finishes, board thicknesses and materials.

### SERIES 15B, 16B, 17B AND 18B

15B and 17B are for ¹⁄₁₆″ PC boards, 16B and 18B for ³⁄₃₂″ boards. Material thickness, .010″. Weight, .0562 oz. per inch. Mounting holes, .190″ dia. for type 15 and 16, .098″ dia. for others.

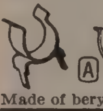
| Birtcher No. 15B, 16B, 17B, 18B | Lg., In. | Set-up Code* | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-499 | 500-999 | 1000-2999 |
|---|---|---|---|---|---|---|---|---|---|
| -4-1,-3 | 2 | 0 | $0.83 | $0.67 | $0.54 | $0.43 | $0.34 | $0.29 | $0.255 |
| -5-1,-3 | 2½ | 0 | .89 | .71 | .57 | .46 | .37 | .32 | .275 |
| -6-1,-3 | 3 | 0 | .96 | .77 | .62 | .49 | .395 | .335 | .29 |
| -7-1,-3 | 3½ | 0 | 1.01 | .81 | .65 | .52 | .41 | .35 | .31 |
| -8-1,-3 | 4 | 0 | 1.10 | .88 | .70 | .56 | .45 | .38 | .33 |
| -9-1,-3 | 4½ | 0 | 1.16 | .93 | .75 | .60 | .48 | .41 | .36 |
| -10-1,-3 | 5 | 0 | 1.26 | 1.01 | .81 | .65 | .52 | .44 | .39 |
| -11-1,-3 | 5½ | 0 | 1.36 | 1.09 | .87 | .70 | .56 | .48 | .42 |
| -12-1,-3 | 6 | 0 | 1.45 | 1.16 | .93 | .75 | .60 | .51 | .45 |
| -13-1,-3 | 6½ | 2 | 1.50 | 1.22 | .96 | .77 | .62 | .53 | .47 |
| -14-1,-3 | 7 | 2 | 1.61 | 1.29 | 1.02 | .82 | .66 | .56 | .49 |
| -15-1,-3 | 7½ | 2 | 1.69 | 1.35 | 1.08 | .86 | .69 | .59 | .52 |
| -16-1,-3 | 8 | 2 | 1.79 | 1.43 | 1.14 | .91 | .73 | .62 | .54 |
| -17-1,-3 | 8½ | 2 | 1.86 | 1.49 | 1.19 | .95 | .76 | .65 | .57 |
| -18-1,-3 | 9 | 2 | 1.94 | 1.55 | 1.24 | .99 | .79 | .67 | .59 |
| -19-1,-3 | 9½ | 2 | 2.00 | 1.60 | 1.28 | 1.02 | .82 | .70 | .62 |
| -20-1,-3 | 10 | 2 | 2.20 | 1.76 | 1.41 | 1.13 | .91 | .77 | .68 |

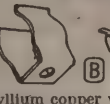
### SERIES 35 MINIATURE PCB-TAINERS

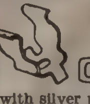
Permits high density packaging. -7B .25″ w., others .33″ w., board inserted. Provides positive retention, electrical contact and heat dissipation. Type 35-7B for ¹⁄₃₂″ and ¹⁄₁₆″ PC boards, all others for ¹⁄₃₂″, ¹⁄₁₆″ and ³⁄₃₂″ boards; replace x in the basic part no. by **1** for ¹⁄₃₂″, **2** for ¹⁄₁₆″ and **3** for ³⁄₃₂″ PC boards. Material thickness, .005″ for type 35-7, all others .008″. Weight, .015 oz. per inch for 35-7, and .033 oz. per inch for all others.

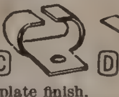
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 35-1B-x, 35-6B-x | | | | | | | | | |
| -4-1,-3 | 2 | 0 | $0.78 | $0.62 | $0.50 | $0.40 | $0.32 | $0.27 | $0.235 |
| -5-1,-3 | 2½ | 0 | .81 | .65 | .52 | .42 | .33 | .28 | .245 |
| -6-3 | 3 | 0 | .86 | .69 | .55 | .44 | .35 | .30 | .26 |
| -7-3 | 3½ | 0 | .89 | .71 | .57 | .46 | .37 | .32 | .275 |
| -8-3 | 4 | 0 | 1.01 | .81 | .65 | .52 | .41 | .35 | .31 |
| -9-3 | 4½ | 0 | 1.10 | .88 | .70 | .56 | .45 | .38 | .33 |
| -10-3 | 5 | 0 | 1.20 | .96 | .77 | .62 | .50 | .42 | .37 |
| -11-3 | 5½ | 0 | 1.26 | 1.01 | .81 | .65 | .52 | .44 | .39 |
| -12-3 | 6 | 0 | 1.45 | 1.16 | .93 | .75 | .60 | .51 | .45 |
| 35-7B-x | | | | | | | | | |
| -2-1,-3 | 1 | 1 | $0.66 | $0.52 | $0.42 | $0.34 | $0.27 | $0.23 | $0.20 |
| -3-1,-3 | 1½ | 1 | .70 | .56 | .45 | .36 | .29 | .245 | .215 |
| -4-1,-3 | 2 | 1 | .74 | .59 | .47 | .38 | .30 | .255 | .225 |
| -5-1,-3 | 2½ | 1 | .78 | .62 | .50 | .40 | .32 | .27 | .235 |
| -6-1,-3 | 3 | 1 | .81 | .65 | .52 | .42 | .33 | .28 | .245 |
| -7-1,-3 | 3½ | 1 | .83 | .67 | .54 | .43 | .34 | .29 | .255 |
| -8-1,-3 | 4 | 1 | .94 | .75 | .61 | .48 | .39 | .33 | .285 |
| -9-1,-3 | 4½ | 1 | .94 | .75 | .61 | .48 | .39 | .33 | .285 |
| -10-1,-3 | 5 | 1 | 1.06 | .85 | .68 | .54 | .43 | .37 | .32 |
| -11-1,-3 | 5½ | 1 | 1.13 | .90 | .72 | .58 | .46 | .39 | .34 |
| -12-1,-3 | 6 | 1 | 1.16 | .93 | .75 | .60 | .48 | .41 | .36 |

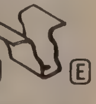
## TRANSISTOR CLIPS











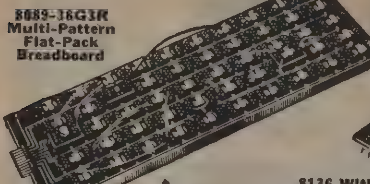
Made of beryllium copper with silver plate finish.

| Birtcher No. | Fig. | Comp. Dia. Nom. | Set-up Code* | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|---|
| 3B557 | A | .375 | 4 | $1.01 | $0.81 | $0.65 | $0.52 | $0.41 | $0.35 |
| 3B558 | * | .375 | 4 | 1.86 | 1.49 | 1.19 | .95 | .76 | .65 |
| 3B573 | B | 5/16 | 3 | .32 | .26 | .21 | .17 | .135 | .115 |
| 3B597 | C | 5/16 | 3 | .32 | .26 | .21 | .17 | .135 | .115 |
| 3B599 | D | † | 3 | # | # | # | # | # | # |
| 3B605 | B | .250 | 3 | .32 | .26 | .21 | .17 | .135 | .115 |
| 3B624 | B | .230 | 3 | .32 | .26 | .21 | .17 | .135 | .115 |
| 3B632 | E | .210 | # | # | # | # | # | # | # |
| 3B652 | B | .170 | 0 | .27 | .21 | .17 | .14 | .105 | .09 |

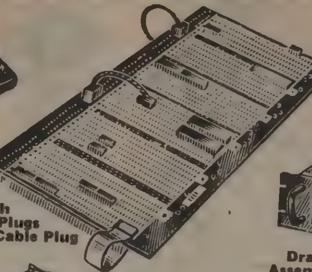
*Same as A, double clips ⁵⁄₃₂″ apart. †.365″ x .174″. #Factory quote.

**LARGER QUANTITIES AVAILABLE ON REQUEST.**

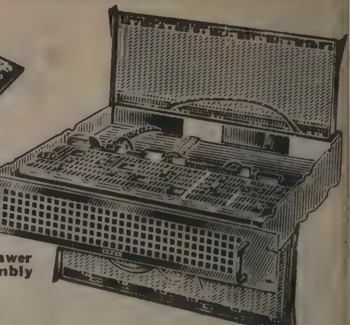
# AUGAT INTEGRATED CIRCUIT SOCKETS, BREADBOARDS AND PANELS



8089-36G3R Multi-Pattern Flat-Pack Breadboard

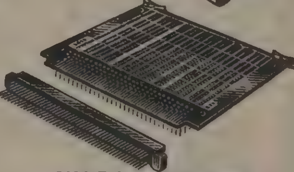


8136 With Interfacing Plugs and Flat Cable Plug



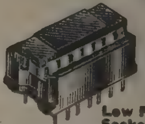
Drawer Assembly

R-Series Racks and Enclosures Assembly



8136-R Series Pkg. Panel with Mating Edge Connector

8092-1G1 thru -1G7 TO-5 Test Socket



Low Profile Pkg. Socket for DIP's

## BREADBOARD SOCKETS
### FOR FLAT-PACK INTEGRATED CIRCUITS

**Types 8076-1G3 and -1G7:** Single breadboard units for individual use or stacking on 8089 or 8100 50-station panels. Accept flat-packs with up to 14 leads on .050" centers. Size, 1.420" w. x 1.020" h. **Type 8076-10G1:** Mounting socket for use as platform for mounting other discrete components or as a base socket. **Type 8089-36G3R:** 50-station panel for life tests and breadboarding of flat-pack IC's. Snap-action covers for flat-packs, each with up to 14 leads spaced .050". Has takeoff positions to accept 10-pin connector. Jumpers available for interconnections (see next page). Size, 17⅜" w. x 6⅛" h.

| Augat No. | For Flat-Pack Case Size* | Net Each, Lots of 1-99 | 100-499 | 500-999 | 1000-4999 |
|---|---|---|---|---|---|
| 8076-1G3 | ¼" x ¼" | $4.10 | $3.38 | $2.77 | $2.36 |
| 8076-1G7 | ¼" x ⅜" | 4.10 | 3.38 | 2.77 | 2.36 |
| 8076-10G1 | .............. | 2.24 | 1.96 | 1.71 | 1.51 |

| Augat No. | For Flat-Pack Case Size* | Net Each, Lots of 1-4 | 5-9 |
|---|---|---|---|
| 8089-36G3R | ¼" x ¼" | $216.00 | $201.00 |

*With end-to-end lead lgth. of .500" min. and .750" max.

## INTERFACING PLUGS

For input/output connections, interfacing, and testing terminals on same dimension as IC pattern. Strain relief cover design permits top, side, or bottom entry of wires. Polysulfone insulation; phosphor bronze, gold over nickel plated pins; stainless steel screws. Pin diameter .018" for 8136 Series panels. Available in 16-pin style as 1P16; listed items are 14-pin style. Size, 1P14, .450" w. x .750" d. x 7/16" h.; 1P16, .450" w. x .850" d. x 7/16" h. Molded plug assemblies supplied with #26 AWG stranded copper wire, Teflon® insulated. Standard wire lengths 12", 24", and 36"; other lengths available. Unassembled plug only available as 1P14-1 with solder pocket terminals and 1P14-3 with crimp terminals. **Prices on request.** ®Reg. DuPont TM.

### PLUG ASSEMBLIES—CRIMP CONTACT

| Single-Ended |  | Double-Ended |  |
|---|---|---|---|
| Augat No. | Cable Lgth. | Augat No. | Cable Lgth. |
| 1P14-3T12-1 | 12" | 1P14-3T12-2 | 12" |
| 1P14-3T24-1 | 24" | 1P14-3T24-2 | 24" |
| 1P14-3T36-1 | 36" | 1P14-3T36-2 | 36" |

## ADAPTER PLUGS

Used for interposing discrete components and for modular construction with PC boards and substrates. Terminals are on same dimension as IC pattern. Base is glass-filled nylon; pins are phosphor bronze, gold over nickel plated. Contact pins are .166" x .025" diameter; terminal pins are .166" x .018" diameter.

| Augat No. 8136- | Pins/Pattern | Wafer Size, In. W. x D. x H. | IC Patterns | Net Each, Lots of 1-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|
| 29G1 | 14 | .450 x .750 x ⅛ | 1 | $1.54 | $1.21 | $1.07 |
| 30G1 | 14 | .950 x .750 x ⅛ | 2 | 2.62 | 2.06 | 1.82 |
| 30G3 | 14 | .950 x .750 x ⅛ | * | 1.57 | 1.23 | 1.09 |
| 29G2 | 16 | .450 x .850 x ⅛ | 1 | 1.72 | 1.35 | 1.19 |
| 30G2 | 16 | .950 x .850 x ⅛ | 2 | 2.95 | 2.32 | 2.05 |
| 30G4 | 16 | .950 x .850 x ⅛ | * | 1.74 | 1.37 | 1.21 |

*Two patterns with center 2 rows removed.

## 26-PIN PLUG AND HEADER ASSEMBLY

Self-stripping "U" contact connection on round multiconductor cable. Plug (Augat No. 4P26-1) is glass-filled nylon with phosphor bronze, gold over nickel plated contacts. Cable (Augat No. 14010-2P8) comes in 100-ft. rolls; 28-gauge stranded 26-conductor copper wire with P.V.C. insulation. Header assembly (Augat No. 5P26-1) is glass filled nylon with phosphor bronze, gold over nickel plated terminals. Size: plug, .245" w. x 1.500" d. x .490" h.; header assembly, .240" w. x 1.900" d. x .125" h. Mounting centers, 1.600". **Prices on request.**

## TO-5 TRANSISTOR AND IC TEST SOCKETS

Teflon-insulated test sockets featuring easy-to-insert chamfered lead holes, raised boss, and fast push-fit mounting to assure low installation cost. Beryllium copper contacts and brass terminal sleeves are gold over silver plated. Low contact resistance (.015 ohm max.) after 50,000 insertions. Smooth-wiping leaf contacts. Rated 2 amps. Rear guide sleeves prevent lead shorting. Accommodate lead lengths ½" min. and diameters of .015"–.032".

| Augat Number |  | No. of Contacts | Mtg. Hole Dia.* | Net Each, Lots of |  |  |  |
|---|---|---|---|---|---|---|---|
| For Leads Up to 1½" lg. | For Leads Up to 11/16" lg. |  |  | 1-99 | 100-499 | 500-999 | 1000-4999 |
| 8092-1G1 | 8092-1G8 | 3 | .437" | $1.20 | $1.05 | $0.92 | $0.80 |
| 8092-1G2 | 8092-1G9 | 4 | .437" | 1.44 | 1.26 | 1.10 | .95 |
| 8092-1G3 | 8092-1G10 | 6 | .687" | 2.18 | 1.90 | 1.66 | 1.44 |
| 8092-1G4 | 8092-1G11† | 6 | .687" | 2.18 | 1.90 | 1.66 | 1.44 |
| 8092-1G5 | 8092-1G12 | 8 | .687" | 2.80 | 2.45 | 2.14 | 1.86 |
| 8092-1G6 | 8092-1G13 | 10 | .687" | 3.33 | 2.91 | 2.54 | 2.21 |
| 8092-1G7 | 8092-1G14 | 12 | .750" | 4.02 | 3.51 | 3.06 | 2.66 |

*Tolerance, ±.001"; break leading edge with .015" x 82° countersink. †RO-52 outline.

## TO-5 AND TO-18 TRANSISTOR SOCKETS

Have beryllium-copper, closed-entry contacts and brass contact-sleeve terminals. Metal parts are gold over nickel plated. Printed circuit or panel push-fit type mountings, as indicated.

| Augat No. | No. Contacts | Fits Case | Insulator | Net Each, Lots of 1-99 | 100-499 | 500-999 | 1000-4999 |
|---|---|---|---|---|---|---|---|
| 8058-1G23* | 3 | TO-5 | Teflon | 61c | 53c | 46c | 40c |
| 8058-1G24* | 4 | TO-5 | Teflon | 75c | 66c | 57c | 50c |
| 8058-1G25† | 3 | TO-5 | Teflon | 61c | 53c | 46c | 40c |
| 8058-1G29‡ | 3 | TO-5 | Teflon | 61c | 53c | 46c | 40c |
| 8060-1G3* | 8 | TO-18 | Teflon | 64c | 56c | 49c | 42c |
| 8060-1G4* | 4 | TO-18 | Teflon | 79c | 69c | 60c | 52c |
| 8060-1G7* | 8 | TO-18 | Teflon | 64c | 56c | 49c | 42c |
| 8060-1G9† | 3 | TO-18 | Teflon | 61c | 53c | 46c | 40c |
| 8069-1G1§ | 3 | TO-5 | Glass epoxy | 59c | 52c | 45c | 39c |
| 8069-1G2§ | 4 | TO-5 | Glass epxoy | 75c | 66c | 57c | 50c |

*PC type. †Push-fit type with turret contacts. ‡Push-fit type with solder-pocket contacts. §Slim-Line PC type.

## FLAT CABLE PLUG

Designed for use with 8136 Series packaging panels; plugs directly into IC pattern without soldering. Used for interfacing, input/output connections, and testing. May also be used for cable termination into PC board. Wire is 28-gauge stranded 14-conductor flat cable; impedance, 100 ohms; capacitance, 14 pF/ft. Insulator is glass-filled nylon, contacts are beryllium copper, gold over nickel plated; temperature range, −20° C to +105° C; current rating, 1 amp. Size (assembled), .435" w. x .760" d. x .210" h. Assembly tool, assembly fixture, and complete cable assemblies available on request.

**Augat No. 2P14-1 14-Pin Male Plug**—Net Each, Lots 1-99 **$1.23** Net Ea., Lots 100-499...... **$1.08**; Lots 500-999...... **$0.935**

**Augat No. 14010-1P8 14-Conductor Flat Cable**—In 100-ft. rolls. Net Each, Lots 1-4 . . **$19.10**; 5-9 . . **$17.25**; 10-49 . . **$13.40**

## 25-PIN CONTACT STRIP

Accepts flat dual inline IC leads or round leads to .025" dia. Strips may be mounted side by side or end to end for any required pattern; ends may be cut off for continuous spacing on .100" centers for more than 25 contacts on one row. Available with wire wrap (AG1F) or PC (AG1D) termination; alignment spacer provided with wire wrap termination sockets. Body is diallyl phthalate; wire wrap contacts are gold over nickel plated; PC contacts are spring temper beryllium copper over nickel plated. Size, .200" w. x 2.560" d. x .285" h.

| Augat No. | Net Each, Lots of 1-99 | 100-499 | 500-999 | 1M-4999 | Augat No. | Net Each, Lots of 1-99 | 100-499 | 500-999 | 1M-4999 |
|---|---|---|---|---|---|---|---|---|---|
| 325-AG1F | $3.77 | $3.30 | $2.86 | $2.50 | 325-AG1D | $3.29 | $2.88 | $2.50 | $2.28 |

# AUGAT INTEGRATED CIRCUIT SOCKETS, PANELS, RACK AND DRAWER ASSEMBLIES

## HIGH-DENSITY PACKAGING PANELS FOR DUAL INLINE PLUG-IN IC'S

Double-sided breadboard panels accept plug-in IC packages with flat or round leads, 300-mil row spacing and 100-mil lead spacing. Large contoured, closed-entry contacts. Power and ground planes at each pattern (power plane on bottom): Types DG1, FG1, RG2, RG4, PG3 and PG13 have two dummy pins for power and ground; types RG1 and PG1 have Pin 7 power and Pin 14 ground; types RG3 and PG5 have Pin 8 power and Pin 16 ground. Types DG1, FG1, RG1, RG2, RG3 and RG4 are 60-pattern panels; type UG1 is a universal type for any combination of 14, 16, 24 and 36 dual-in-line IC's, available in any multiple of 9 rows up to 54 rows as indicated by the last part of the Augat Number; PG types are available as panels in any multiple of 30 patterns up to 180 patterns, as indicated by last part of Augat Number. To extend flexibility of Series 8136 panels, socket/terminals may be purchased separately; prices on request.

| Augat No. 8136- | IC Leads | Size, Inches W. x D. x H. | Mtg. Ctrs., Inches | Net Ea. 1-4* |
|---|---|---|---|---|
| **DG1** | 14 | 5.850 x 7.000 x .703 | 5.200 x 5.312 | $125.00 |
| **FG1** | 16 | 5.850 x 7.600 x .703 | 5.800 x 5.312 | 136.00 |
| **RG1** | 14 | 7.353 x 7.000 x .703 | 5.000 x 6.600 | 131.00 |
| **RG2** | 14* | 7.353 x 7.000 x .703 | 5.000 x 6.600 | 139.00 |
| **RG3** | 16 | 7.353 x 7.000 x .703 | 5.500 x 6.600 | 144.00 |
| **RG4** | 16* | 7.353 x 7.000 x .703 | 5.500 x 6.600 | 150.50 |
| **UG1-9** | ...... | 2.675 x 6.875 x .703 | 6.500 x 2.300 | 63.00 |
| **UG1-18** | ...... | 5.375 x 6.875 x .703 | 6.500 x 5.000 | 123.00 |
| **UG1-27** | ...... | 8.075 x 6.875 x .703 | 6.500 x 7.700 | 184.00 |
| **UG1-36** | ...... | 10.775 x 6.875 x .703 | 6.500 x 10.400 | 244.00 |
| **UG1-45** | ...... | 13.475 x 6.875 x .703 | 6.500 x 13.100 | 305.00 |
| **UG1-54** | ...... | 16.200 x 6.875 x .703 | 6.500 x 15.800 | 365.00 |
| **PG1-30** | 14 | 2.675 x 6.875 x .703 | 6.500 x 2.300 | 58.50 |
| **PG1-60** | 14 | 5.375 x 6.875 x .703 | 6.500 x 5.000 | 113.50 |
| **PG1-90** | 14 | 8.075 x 6.875 x .703 | 6.500 x 7.700 | 169.00 |
| **PG1-120** | 14 | 10.775 x 6.875 x .703 | 6.500 x 10.400 | 224.00 |
| **PG1-150** | 14 | 13.475 x 6.875 x .703 | 6.500 x 13.100 | 280.00 |
| **PG1-180** | 14 | 16.175 x 6.875 x .703 | 6.500 x 15.800 | 334.00 |
| **PG3-30** | 14 | 2.675 x 6.875 x .703 | 6.500 x 2.300 | 62.50 |
| **PG3-60** | 14 | 5.375 x 6.875 x .703 | 6.500 x 5.000 | 121.50 |
| **PG3-90** | 14 | 8.075 x 6.875 x .703 | 6.500 x 7.700 | 180.00 |
| **PG3-120** | 14 | 10.775 x 6.875 x .703 | 6.500 x 10.400 | 239.00 |
| **PG3-150** | 14 | 13.475 x 6.875 x .703 | 6.500 x 13.100 | 298.00 |
| **PG3-180** | 14 | 16.175 x 6.875 x .703 | 6.500 x 15.800 | 358.00 |
| **PG5-30** | 16 | 2.675 x 6.875 x .703 | 6.500 x 2.300 | 64.00 |
| **PG5-60** | 16 | 5.375 x 6.875 x .703 | 6.500 x 5.000 | 125.00 |
| **PG5-90** | 16 | 8.075 x 6.875 x .703 | 6.500 x 7.700 | 185.50 |
| **PG5-120** | 16 | 10.775 x 6.875 x .703 | 6.500 x 10.400 | 246.50 |
| **PG5-150** | 16 | 13.475 x 6.875 x .703 | 6.500 x 13.100 | 307.00 |
| **PG5-180** | 16 | 16.175 x 6.875 x .703 | 6.500 x 15.800 | 368.00 |
| **PG13-30** | 16 | 2.675 x 7.475 x .703 | 7.100 x 2.300 | 70.50 |
| **PG13-60** | 16 | 5.375 x 7.475 x .703 | 7.100 x 5.000 | 135.00 |
| **PG13-90** | 16 | 8.075 x 7.475 x .703 | 7.100 x 7.700 | 199.00 |
| **PG13-120** | 16 | 10.775 x 7.475 x .703 | 7.100 x 10.400 | 266.00 |
| **PG13-150** | 16 | 13.475 x 7.475 x .703 | 7.100 x 13.100 | 331.00 |
| **PG13-180** | 16 | 16.175 x 7.475 x .703 | 7.100 x 15.800 | 397.00 |

*Additional pins for VCC and ground connections. ***Larger quantity prices available on request.***

**Augat No. 14005-1P1 Edge Connector**—For 8136-R Series panels; 60 dual-contact, 120-termination.
Net Each, Lots of 1–4........**$13.20**; 5–9........**$11.80**

## PACKAGING SOCKETS FOR TO-5 IC's

Teflon*-insulated sockets for use with TO-5 type integrated circuits. Closed-entry contacts are beryllium copper, gold over nickel-plated. Chamfered lead holes for easy insertion. All push-fit mount in .366″–.369″ dia. hole. Terminal sleeves, gold over nickel-plated brass.

*Reg. DuPont trademark.

| Augat No. | No. Contacts | Type Terminals | Pin Circle Dia. | Net Each, Lots of 1-99 | 100-499 | 500-999 | 1000-4999 |
|---|---|---|---|---|---|---|---|
| **8058-1G42** | 6 | PC | .200″ | $1.04 | $0.91 | $0.79 | $0.69 |
| **8058-1G49** | 8 | PC | .200″ | 1.34 | 1.18 | 1.02 | .89 |
| **8058-1G37** | 8 | Turret | .200″ | 1.34 | 1.18 | 1.02 | .89 |
| **8058-1G19** | 8 | Solder | .200″ | 1.34 | 1.18 | 1.02 | .89 |
| **8058-1G32** | 8 | PC | .200″ | 1.34 | 1.18 | 1.02 | .89 |
| **8058-1G46** | 8 | Solder | .230″ | 1.34 | 1.18 | 1.02 | .89 |
| **8058-1G45** | 8 | PC | .230″ | 1.34 | 1.18 | 1.02 | .89 |
| **8058-1G34** | 10 | PC | .230″ | 1.65 | 1.44 | 1.26 | 1.09 |
| **8058-1G22** | 10 | Solder | .230″ | 1.65 | 1.44 | 1.26 | 1.09 |
| **8058-1G31** | 10 | PC | .230″ | 1.65 | 1.44 | 1.26 | 1.09 |
| **8058-1G51** | 12 | PC | .280″ | 1.94 | 1.69 | 1.48 | 1.28 |

## ACCESSORIES

**Augat 8076-12AS-1 Assortment of 140 PC Jumpers**—Includes 2″, 4″ and 6″ lengths in seven solid colors.
Net Each, Lots of: 1–4..............................**$60.00**
Lots of: 5–9...**$52.50**; 10–24...**$45.50**; 25–49... **40.00**

**Augat T114-2 Extracter Tool**—Assists in removal of IC's from breadboards and panels. Net Each........................**50c**

## DUAL INLINE IC SOCKETS

For testing and packaging of 14-, 16-, 24-, and 36-pin integrated circuits. Accept packages with round or flat leads, 300-mil (500-mil for Series 324 type AG1; 600-mil for Series 324 type AG2 and Series 336) spacing between rows and 100-mil spacing between leads. Series 314 and 316 types AG1 and AG3 are high-profile types; Series 314 and 316 types AG5 and AG6 are low-profile types. Contoured entry holes guide IC leads into socket; suffix **R** indicates inner guide rails. Body is molded diallyl phthalate except (‡) phenolic; contacts are gold over nickel plate except (§) tin plate. Series 314 and 316 are sold in multiples of 5 only.

### 14-Pin Types

| Augat No. | Terminals | Max. Width | Net Each, Lots of 1-99 | 100-499 | 500-999 | 1000-4999 |
|---|---|---|---|---|---|---|
| **314-AG5A-R** | Socket Pocket | .800″ | $0.70 | $0.61 | $0.53 | $0.47 |
| **314-AG6A-R** | | 1.190″* | .81 | .71 | .62 | .55 |
| **314-AG5D-R** | PC | .800″ | .70 | .61 | .53 | .47 |
| **314-AG5D-2R‡** | PC§ | .800″ | .45 | .40 | .35 | .31 |
| **314-AG5D-3R‡** | PC | .800″ | .61 | .53 | .46 | .41 |
| **314-AG6D-R** | PC | 1.190″* | .81 | .71 | .62 | .55 |
| **314-AG6D-2R‡** | PC§ | 1.190″* | .57 | .50 | .44 | .39 |
| **314-AG6D-3R‡** | PC | 1.190″* | .72 | .63 | .55 | .49 |
| **314-AG5F-R** | Wire-Wrap# | .800″ | 1.10 | .96 | .84 | .73 |
| **314-AG5F-2R‡§** | | .800″ | .73 | .64 | .56 | .49 |
| **314-AG5F-3R‡** | | .800″ | .99 | .87 | .75 | .65 |
| **314-AG6F-R** | | 1.190″† | 1.37 | 1.20 | 1.04 | .91 |
| **314-AG6F-2R‡§** | | 1.190″† | 1.01 | .88 | .77 | .67 |
| **314-AG6F-3R‡** | | 1.190″† | 1.28 | 1.12 | .97 | .85 |
| **16-Pin Types** | | | | | | |
| **316-AG5A-R** | Solder Pocket | .900″ | $0.93 | $0.81 | $0.71 | $0.63 |
| **316-AG6A-R** | | 1.290″* | 1.06 | .93 | .81 | .71 |
| **316-AG5D-R** | PC | .900″ | .93 | .81 | .71 | .63 |
| **316-AG5D-2R‡** | PC§ | .900″ | .54 | .47 | .41 | .36 |
| **316-AG5D-3R‡** | PC | .900″ | .71 | .62 | .54 | .47 |
| **316-AG6D-R** | PC | 1.290″* | 1.06 | .93 | .81 | .71 |
| **316-AG6D-2R‡** | PC§ | 1.290″* | .67 | .58 | .51 | .44 |
| **316-AG6D-3R‡** | PC | 1.290″* | .83 | .73 | .64 | .55 |
| **316-AG5F-R** | Wire-Wrap | .900″ | 1.35 | 1.18 | 1.03 | .90 |
| **316-AG5F-2R‡§** | | .900″ | .83 | .72 | .63 | .55 |
| **316-AG5F-3R‡** | | .900″ | 1.10 | .96 | .84 | .73 |
| **316-AG6F-R** | | 1.290″† | 1.65 | 1.44 | 1.25 | 1.09 |
| **316-AG6F-2R‡§** | | 1.290″† | 1.12 | .98 | .85 | .74 |
| **316-AG6F-3R‡** | | 1.290″† | 1.39 | 1.22 | 1.06 | .92 |
| **24-Pin Types** | | | | | | |
| **324-AG1A** | Solder Pocket | 1.300″ | $2.30 | $2.02 | $1.76 | $1.56 |
| **324-AG1D** | PC | 1.300″ | 2.30 | 2.02 | 1.76 | 1.56 |
| **324-AG2D** | PC | 1.250″ | 2.05 | 1.79 | 1.56 | 1.36 |
| **324-AG1F** | Wire-Wrap | 1.300″ | 3.35 | 2.93 | 2.54 | 2.22 |
| **324-AG2F** | | 1.250″ | 2.64 | 2.30 | 2.00 | 1.74 |
| **36-Pin Types** | | | | | | |
| **336-AG2D** | PC | 1.897″ | $2.28 | $1.99 | $1.74 | $1.51 |
| **336-AG2F** | Wire-Wrap | 1.897″ | 3.18 | 2.78 | 2.42 | 2.10 |

*With stainless steel mtg. saddle: .900″ center, 14-pin types; 1.0″ centers, 16-pin. †With glass epoxy mtg. saddle: .900″ center, 14-pin types; 1.0″ centers, 16-pin. #Gardner-Denver Co. TM.

## ENCLOSURES AND RACK ASSEMBLIES

Panel rack pivots for back panel accessibility. Specified in four ways permits application in a standard 19″ rack. Designed for 13 standard R Series panels. Back panel easily removed for automatic wire wrapping. **Model 8170-EG1:** Enclosure only. **Model 8160-EG10:** Back panel only. **Model 8170-RG1:** Panel rack with back panel and mounting ears on side plates. **Model 8170-RG2:** Panel rack with back panel and side plates for enclosure mounting. **Model 8170-RG3:** Same as Model 8170-RG1 except without back panel. **Model 8170-RG4:** Same as Model 8170-RG2 except without back panel. **Size:** Enclosure, 17″ w. x 18.25″ d. x 8.75″ h.; panel rack, 16.625″ w. x 8.5″ d. x 8.687″ h.; back panel, 16.4″ w. x .125″ d. x 8.25″ h.

| Augat No. | Net Each, Lots of 1-4 | 5-9 | 10-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|
| **8170-EG1** | $133.50 | $119.50 | $111.00 | $103.50 | $ 88.50 |
| **8160-EG10** | 226.00 | 202.00 | 187.50 | 175.00 | 149.00 |
| **8170-RG1** | 266.50 | 238.00 | 221.00 | 206.00 | 176.00 |
| **8170-RG2** | 266.50 | 238.00 | 221.00 | 206.00 | 176.00 |
| **8170-RG3** | 40.50 | 36.00 | 33.50 | 31.00 | 26.50 |
| **8170-RG4** | 40.50 | 36.00 | 33.50 | 31.00 | 26.50 |

## DRAWER ASSEMBLIES

Pack up to 720 DIP's in one drawer assembly. Four panel frames are hinged from either side for accessibility or fast removal. Top and bottom covers furnished providing protection and duct effect for blowers. Aluminum, gold iridite all frame members and front plate is of painted aluminum. **Size:** 17″ w. x 20.7″ d. x 3.5″ h. **Model 8170-DG1:** Drawer assembly with fan cut-out rear plate and perforated front plate. **Model 8170-DG2:** Drawer assembly with rear blank plate and front blank plate. **Model 8170-14G1:** Panel frame accepts standard 180 pattern IC packaging panels.

| Augat No. | Net Each, Lots of 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | 100 Up |
|---|---|---|---|---|---|---|
| **8170-DG1** | $51.00 | $46.00 | $42.50 | $39.50 | $34.00 | $32.00 |
| **8170-DG2** | 51.00 | 46.00 | 42.50 | 39.50 | 34.00 | 32.00 |
| **8170-14G1** | 23.00 | 21.00 | 19.50 | 18.00 | 15.50 | 14.50 |

CAMBRIDGE THERMIONIC CORPORATION
CAMBION®

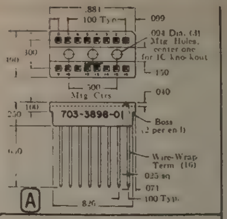
# Integrated Circuit Accessories
## Sockets, Holders, Boards

### DUAL IN-LINE IC SOCKETS

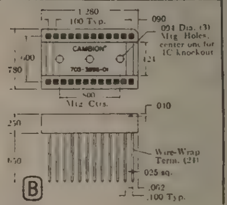
For 14, 16, 18, 24 and 36 pin dual in-line integrated circuits with either Wire-Wrap* or solder-tab terminations. One-piece molded diallyl insulators withstand high temperatures and provide excellent mechanical stability (Nos. -3777 are one-piece molded glass-filled nylon with anti-moisture bosses). Phosphor bronze contacts accept flat or round pins up to .024" dia. Standard terminal plating is **-03** gold for all Wire-Wrap and -3777 solder tab sockets; **-04** electro-tin for all solder-tab sockets. Sockets can be supplied with electro-tin plating on Wire-Wrap pins or with gold plating on solder-tab pins; prices on request. May be permanently mounted individually (rivet or screw) or press-mounted in PC boards or panels for production or breadboarding.

*Reg. Gardner-Denver Co. TM.

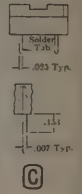
| Cambion Part Number | Fig. | No. Contacts | Terminals | Inches | | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | "D" Lgth. | Grid | 1-9 | 10-49 | 50-99 | 100-249 |
| **703-3777-01-03-12** | A, C | 14 | Solder tab | .784 | .100 x | **$1.12** | **$1.01** | **$0.90** | **$0.67** |
| **703-3777-01-04-12** | A, C | 14 | Solder tab | .784 | .300 | **.83** | **.75** | **.66** | **.50** |
| **703-3788-01-04-16** | A, C | 14 | Solder tab | .784 | | **1.13** | **1.02** | **.90** | **.68** |
| **703-3897-01-03-16** | A | 14 | Wire-Wrap | .784 | | **1.16** | **1.04** | **.93** | **.70** |
| **703-3898-01-03-16** | A | 16 | Wire-Wrap | .884 | | **1.29** | **1.16** | **1.03** | **.77** |
| **703-3789-01-04-16** | A, C | 16 | Solder tab | .884 | | **1.23** | **1.11** | **.98** | **.74** |
| **703-3787-01-04-16** | A. C | 18 | Solder tab | .934 | | **1.27** | **1.14** | **1.02** | **.76** |
| **703-3895-01-03-16** | A | 18 | Wire-Wrap | .934 | | **1.54** | **1.39** | **1.23** | **.92** |
| **703-3790-01-04-16** | B, C | 24 | Solder tab | 1.280 | .100 x | **2.06** | **1.85** | **1.65** | **1.24** |
| **703-3896-01-03-16** | B | 24 | Wire-Wrap | 1.280 | .600 | **2.32** | **2.09** | **1.86** | **1.39** |
| **703-3791-01-04-16** | B, C | 36 | Solder tab | 1.880 | | **2.69** | **2.42** | **2.15** | **1.61** |
| **703-3893-01-03-16** | B | 36 | Wire-Wrap | 1.880 | | **2.93** | **2.64** | **2.34** | **1.76** |



A

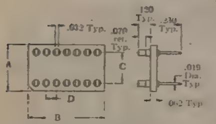


B



C

### COMPONENT SOCKET ADAPTERS



Component adapters plug into standard 14, 16, 24 or 36 pin dual in-line sockets as well as CAMBION's Integrated Socket strip. Larger width sizes for wider components straddle two sockets or socket strips. Terminal pairs are on .100" or .200" grid centers for varying component sizes; slotted for ease of parts mounting. Terminal is brass, QQB-626C copper alloy 360, half-hard, with .000050" hard gold plating over gold flash per MIL-G-45204 over .0002" copper plate. Board material is .062" type GEE glass epoxy per MIL-P-18177.

| Cambion Part Number 702- | Dimensions, Inches | | | | * | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Board | | Terminal Centers | | | | | | |
| | A | B | C | D | | 1-9 | 10-49 | 50-99 | 100-249 |
| **3723-01-03-00** | .450 | .750 | .300 | .200 | 8 | **$0.71** | **$0.64** | **$0.57** | **$0.43** |
| **3724-01-03-00** | .950 | .750 | .800 | .200 | 8 | **.71** | **.64** | **.57** | **.43** |
| **3725-01-03-00** | .450 | .750 | .300 | .100 | 14 | **1.07** | **.96** | **.86** | **.64** |
| **3726-01-03-00** | .950 | .750 | .800 | .100 | 14 | **1.07** | **.96** | **.86** | **.64** |
| **3728-01-03-00** | .450 | .850 | .300 | .100 | 16 | **1.29** | **1.16** | **1.03** | **.77** |
| **3730-01-03-00** | .950 | .850 | .800 | .100 | 16 | **1.29** | **1.16** | **1.03** | **.77** |
| **3732-01-03-00** | .750 | 1.235 | .600 | .200 | 12 | **.95** | **.86** | **.76** | **.57** |
| **3734-01-03-00** | .750 | 1.835 | .600 | .200 | 18 | **1.53** | **1.38** | **1.22** | **.92** |

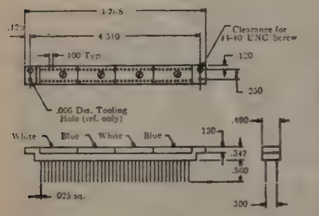
*No. of terminals.

### FLAT PACK HOLDERS

Specifically designed for ¼" x ¼" integrated circuits. Individual spring contacts assure uniform pressure on each flat pack lead. Size, 1.200" lg. x .776" w. x .625" h. with spring clip, less pins.

| Cambion Part Number | Contact Type | Net Each, Lots of | |
|---|---|---|---|
| | | 1-9 | 10-49 |
| **703-3773-01-0316** | .025" dia. pin-plug | **$2.81** | **$2.53** |
| **703-3774-01-0316** | .025" sq. Wire-Wrap | **3.65** | [illegible] |

### 80 PIN DUAL IN-LINE SOCKET STRIP



Molded diallyl body .025" sq., Wire-Wrap posts and spring contacts, electro-tin plated. Mounts all dual in-line devices without a PC board. Flanges at the ends provide for independent mounting or into CAMBION mounting frame or relay rack drawers. Pins are replaced by removing the screw down covers. Socket strips accept five 14 pin DIPs, four or five 16 pin DIPs. Wider MSI or LSI DIPs can be mounted by bridging between two properly spaced strips.

**Cambion Part No. 703-1000-01-04-00**—
Net Each, 1–9.............**$4.15**; 10–49.............**$3.75**
Net Each, 50–99..........**3.30**; 100–249..........**2.49**

**Cambion Part No. 706-6050-01-00-00 Mounting Frame**—Holds 21 socket strips (approx. 100 ICs). Size, 5" x 11" approximate.
Net Each, 1–4.............**$20.90**; 5–9.............**$18.80**

CAMBION drawer for 19" relay rack 1¾" h. or 3½" h.; holds approx. 600 ICs. Information on request: 706-6000 Series.

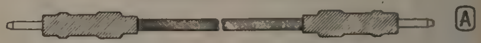
### PRECUT AND STRIPPED WIRE KIT

For wire-wrapping. Solid copper 30 AWG white insulated Kynar* wire, silver plated, ends stripped to tolerance. Kit contains 13 pkgs. of varied lengths from 1" thru 9". Per pkg.: 1" thru 4.5", 100 pcs.; 5" thru 9", 50 pcs. Also available 1.0" thru 25.0" lengths in black, red and white insulation on request.

*Reg. Pennwalt Chemicals Corp. TM.

**Cambion Part No. 718-1010-01-01-19**—Net per Kit....**$41.30**

### IC PATCH CORD KIT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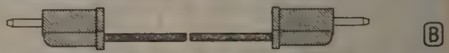

B

Contains 100 pieces (48 pcs., Fig. A; 52 pcs., Fig. B) pin patch cords .040" dia. Red, blue and black in 2", 4", 6" and 8" lgths. Ideal for breadboarding requirements.
**Cambion Part No. 446-3892-01**—Net per Kit.........**$55.00**

### 70 PIN CARD CONNECTOR

| Cambion Part No. | Terminals | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-4 | 5-9 | 10-24 |
| **706-7029-01** | Solder lug | **$6.45** | **$5.80** | **$5.50** |
| **706-7015-01*** | Wire-Wrap | **7.50** | **6.75** | **6.40** |

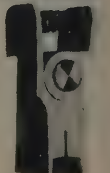
*For use with CAMBION Power Planes.

### PATCHABLE BREADBOARDS FOR IN-LINE IC'S

Three sizes, accommodate 16, 32 or 64 standard 14 and 16 lead in-line ICs. Designed with sturdy patented CAMBION "cage jacks" for long-life design in breadboarding over thousands of insertions, removals and patchings. Other styles available on request.

| Cambion Part Number | No. of ICs/ Board | Board Size, Inches | Type IC | Net Ea., Lots of | |
|---|---|---|---|---|---|
| | | | | 1-4 | 5-9 |
| **705-0164-01** | 64 | 8.0 x 9.5 | 14 pin | **$289.90** | **$275.40** |
| **705-0264-01** | 32 | 8.0 x 5.0 | 14 pin | **158.80** | **150.90** |
| **705-0364-01** | 16 | 4.5 x 5.0 | 14 pin | **90.90** | **86.40** |
| **705-0169-01** | 64 | 12.1 x 11.45 | 16 pin | **359.80** | **341.80** |
| **705-0269-01** | 32 | 6.5 x 11.45 | 16 pin | **176.90** | **168.10** |
| **705-0369-01** | 16 | 6.5 x 6.25 | 16 pin | [illegible] | **97.50** |

### IC INSERTION-EXTRACTION TOOL



Handy tool properly positions integrated circuits for insertion or extraction by securely gripping the IC between the leads and under the body. Practically any IC with 14 or 16 leads aligned on 0.300" centers can easily be inserted or extracted regardless of tight packaging and without damage to the fragile IC leads. Basic material of insertion-extraction tool is plastic.

**Cambion Part No. 706-3739-01**—
Net Each, 1–4.......**$2.00**; 5–9.......**$1.80**
Net Each, 10 Up.............................**1.70**

**SEE FOLLOWING PAGE FOR CARD FILES—**
**HIGH DENSITY WIRE-WRAP CAMBI-CARDS®**
**AND DIGITAL LOGIC CARDS**

CAMBRIDGE THERMIONIC CORPORATION
CAMBION®

# Integrated Circuit Accessories Card Files, Logic & Cambi-Cards

## 13 POSITION CARD FILE

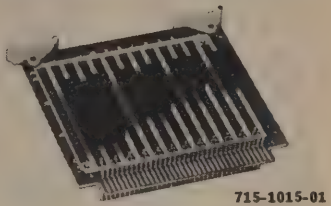
Designed to provide maximum flexibility in a choice of logic accessories. Thirteen position card file has 1¼" card spacing. Complete with 13 Wire-Wrap connectors, voltage and ground power planes. Other styles and sizes available. Complete listing on request.

| Cambion Part No. | For Card Size, In. | Net Each, Lots 1-4 | Net Each, Lots 5-9 | Cambion Part No. | For Card Size, In. | Net Each, Lots 1-4 | Net Each, Lots 5-9 |
|---|---|---|---|---|---|---|---|
| 706-9002-02 | 4.5 x 9.25 | $199.40 | $179.50 | 706-9005-02 | 4.5 x 4.5 | $196.40 | $176.80 |

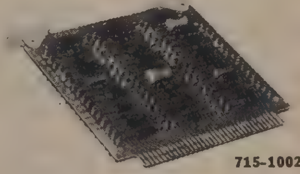
## HIGH DENSITY WIRE-WRAP* CAMBI-CARDS®

Printed circuit boards designed to accept dual in-line IC sockets, in-line integrated circuits and discrete components in a tightly arranged package for Wire-Wrap interconnections. Each socket position on **715 Series** (on every other row on **714 Series**) has two auxiliary pins to permit connecting each IC to power and ground planes. Cards with sockets affixed; with sockets and spaces for discretes; for all discretes; copper-clad and blank cards; card extenders and general purpose cards without sockets but with grid patterns permitting mixing any combination of in-line ICs in any mounting pattern. All cards have edge connectors which plug into standard CAMBION card files, available with or without mating power planes. Board material—.062" thick, double clad copper, epoxy glass cloth type FL-GE per MIL-P-13949. Pin plating, gold over phosphor bronze material.

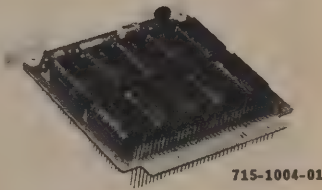
*Registered Gardner-Denver Co. TM



715-1015-01



715-1002-01



715-1004-01

714-1011-01

### 715 SERIES—70 PIN INPUT/OUTPUT CONNECTORS

All cards 4.5" wide.

| Cambion Part No. | Card Lgth. In. | No. of Sockets per Card | No. of Pins/ Socket | Net Each, Lots of 1-4 | 5-9 | 10-24 |
|---|---|---|---|---|---|---|
| 715-1000-01 | 4.5 | Card extender | ....... | $ 37.80 | $34.00 | $30.20 |
| 715-1001-01 | 4.5 | Blank comp. card | ....... | 27.90 | 25.10 | 22.30 |
| 715-1002-01 | 4.5 | Discretes only | ....... | 39.00 | 35.10 | 31.20 |
| 715-1004-01 | 4.5 | 10 plus discretes | 24 | 62.20 | 56.00 | 49.80 |
| 715-1005-01 | 4.5 | 16 plus discretes | 16 | 62.30 | 56.10 | 49.80 |
| 715-1006-01 | 4.5 | 16 plus discretes | 14 | 60.10 | 54.10 | 48.10 |
| 715-1009-01 | 4.5 | 10 | 24 | 60.10 | 54.10 | 48.10 |
| 715-1011-01 | 4.5 | 24 | 16 | 62.30 | 56.10 | 49.80 |
| 715-1013-01 | 4.5 | 24 | 14 | 60.10 | 54.10 | 48.10 |
| 715-1015-01 | 4.5 | Gen'l purpose (w/o sockets) | ....... | 29.70 | 26.70 | 23.80 |
| 715-1016-01 | 4.5 | Copper clad card | ....... | 21.20 | 19.10 | 17.00 |
| 715-1100-01 | 9.25 | Card extender | ....... | 37.80 | 34.00 | 30.20 |
| 715-1101-01 | 9.25 | Blank comp. card | ....... | 32.30 | 29.10 | 25.80 |
| 715-1102-01 | 9.25 | Discretes only | ....... | 44.50 | 40.10 | 35.60 |
| 715-1104-01 | 9.25 | 25 plus discretes | 24 | 107.90 | 97.10 | 86.30 |
| 715-1105-01 | 9.25 | 56 plus discretes | 16 | 110.20 | 99.20 | 88.20 |
| 715-1106-01 | 9.25 | 56 plus discretes | 14 | 105.80 | 95.20 | 84.60 |
| 715-1109-01 | 9.25 | 25 | 24 | 105.80 | 95.20 | 84.60 |
| 715-1111-01 | 9.25 | 64 | 16 | 110.20 | 99.20 | 88.20 |
| 715-1113-01 | 9.25 | 64 | 14 | 105.80 | 95.20 | 84.60 |
| 715-1115-01 | 9.25 | Gen'l purpose (w/o sockets) | ....... | 39.20 | 35.30 | 31.40 |
| 715-1116-01 | 9.25 | Copper clad card | ....... | 24.40 | 22.00 | 19.50 |

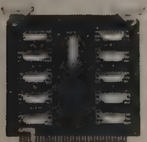
### 714 SERIES—140 PIN INPUT/OUTPUT

All cards 9.75" wide.

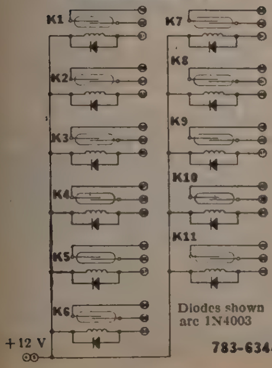
| Cambion Part No. | Card Lgth. In. | No. of Sockets per Card | No. of Pins/ Socket | Net Each, Lots of 1-4 | 5-9 | 10-24 |
|---|---|---|---|---|---|---|
| 714-1011-01 | 4.5 | 54 | 16 | $125.70 | $113.10 | $100.60 |
| 714-1013-01 | 4.5 | 54 | 14 | 121.30 | 109.20 | 97.00 |
| 714-1015-01 | 4.5 | Gen'l purpose (w/o sockets) | ....... | 42.30 | 38.10 | 33.80 |
| 714-1016-01 | 4.5 | Copper clad card | ....... | 26.50 | 23.90 | 21.20 |
| 714-1111-01 | 9.25 | 126 | 16 | 216.60 | 194.90 | 173.30 |
| 714-1113-01 | 9.25 | 126 | 14 | 187.00 | 168.30 | 149.60 |
| 714-1115-01 | 9.25 | Gen'l purpose (w/o sockets) | ....... | 47.70 | 42.90 | 38.20 |
| 714-1116-01 | 9.25 | Copper clad board | ....... | 29.70 | 26.70 | 23.80 |

## DIGITAL LOGIC

CAMBION offers a complete range of logic function cards, all of which may be used with above standard, 4½" h., "714" and "715" Series Wire-Wrap cards designed for general purpose use. Listed below are some Interface and Timing devices which may be added to and complement CAMBION's whole system of integrated packaging. Additional logic function cards (over 300 different designs available) catalog or technical data sheets are available on request. All cards are 4.5" x 4.5" and mate with CAMBION's 70 pin edge connector, which plugs into a wide range of standard CAMBION card files, power planes, etc.



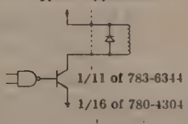
**783-6344**
**12 V SPST**
**Reed Relay**
**Logic Card**

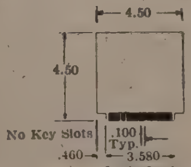


Diodes shown are 1N4003

**783-6344 (12 V) SPST Relay**

Typical Application





**Logic Card**
1/16" th. Glass Epoxy Board
70-pin Connector

### TIMING DEVICES

| Cambion Part Number | Description | Net Each, Lots 1-9 |
|---|---|---|
| 783-5959-01-00 | Crystal oscillator | $95.00 |
| 780-5909-01-00 | Free running multivibrator | 56.00 |
| 780-6104-01-00 | Monostables | 99.50 |

### DRIVERS

| | | |
|---|---|---|
| 780-4304-01-00 | Relay/lamp drivers | $ 63.00 |
| 780-6404-01-00 | High current drivers | 148.00 |

### SOLID STATE SWITCHES

| | | |
|---|---|---|
| 783-5724-01-00 | 115 VAC to 5 VDC | $108.00 |
| 783-5729-01-00 | 5 VDC to 115 VAC | 115.00 |

### RELAYS

| | | |
|---|---|---|
| 783-6344-01-00 | SPST relays 12 V | $95.00 |
| 783-6349-01-00 | SPST relays 24 V | 95.00 |

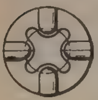
### INTERFACE

| | | |
|---|---|---|
| 780-5159-01-00 | Cable card | $39.00 |
| 780-5134-01-00 | Solder terminal cards | 29.00 |

# TEKNA

## TEK-PAD TRANSISTOR AND IC MOUNTING PADS

Tek-Pads and Tek-Caps insulate, ventilate, provide shock and vibration resistance, protect from excessive heat and solder, and permit washout space. Several items give room for test probing from the top side of the board, allowing for easy replacement of defective units. Tek-Pad spreaders relieve the bending stress of leads. Press-fit DIP Tek-Pads allow preassembly of pads prior to insertion of unit by automatic equipment. **Materials:** Nylon per MIL-P-20693. **Tolerances:** ±.005″ or less. **Colors:** Specify white or black; other colors available on special order. **Federal Supply Code:** #24227.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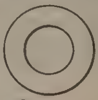
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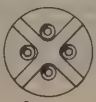
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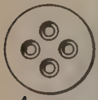
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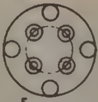
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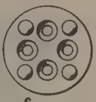
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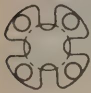
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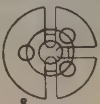
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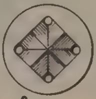
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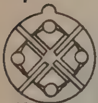
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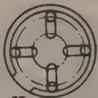
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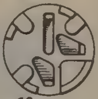
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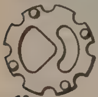
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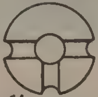
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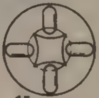
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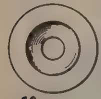
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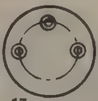
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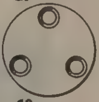
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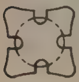
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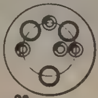
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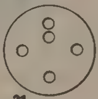
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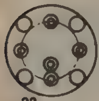
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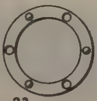
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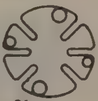
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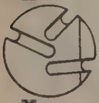
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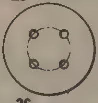
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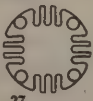
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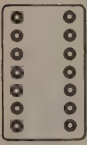
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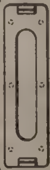
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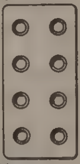
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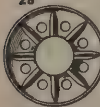
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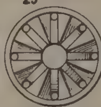
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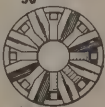
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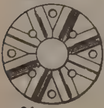
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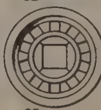
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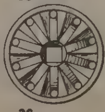

36

### MOUNTING PADS FOR TO-18 CASE

| Tekna No. | Fig. | Max. No. of Leads | Size, In. |  | Spacing of Leads, In. |  | Net per 100 | Net per 1000, Lots of |  |  |
|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  | O.D. | Thickness | Entry | Exit |  | 1,000-5,000 | 6,000-10,000 | 11,000-25,000 |
| 1000 | 1 | 4 | .200 | .030 | .100 | .100 | $3.00 | $18.00 | $16.00 | $14.00 |
| 1001 | 1 | 4 | .270 | .045 | .100 | .100 | 3.00 | 18.00 | 16.00 | 14.00 |
| 1002 | 2 | 4 | .225 | .080 | .100 | .100 | 3.00 | 18.00 | 16.00 | 14.00 |
| 1003 | 3 | 4 | .225 | .020 | .100 | .100 | 3.00 | 18.00 | 16.00 | 14.00 |
| 1004 | 4 | 4 | .250 | .021 | .100 | .100 | 3.00 | 18.00 | 16.00 | 14.00 |
| 1005 | 4 | 4 | .200 | .061 | .100 | .100 | 3.00 | 18.00 | 16.00 | 14.00 |
| 1006 | 5 | 4 | .200 | .095 | .100 | .100 | 3.00 | 18.00 | 16.00 | 14.00 |
| 1007 | 4 | 4 | .250 | .125 | .100 | .100 | 3.00 | 18.00 | 16.00 | 14.00 |
| 1008 | 6 | 4 | .225 | .187 | .100 | .100 | 3.00 | 18.00 | 16.00 | 14.00 |
| 1009 | 7 | 4 | .200 | .090 | .100 | .100 | 3.00 | 18.00 | 16.00 | 14.00 |

### SPREADER PADS FOR TO-18 CASE

|  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|
| 1010 | 8 | 3 | .345 | .120 | .100 | .200 | $4.00 | $21.00 | $19.00 | $16.00 |
| 2001 | 9 | 4 | .225 | .085 | .100 | .150 | 4.00 | 21.00 | 19.00 | 16.00 |
| 2002 | 10 | 4 | .310 | .150 | .100 | .200 | 4.00 | 21.00 | 19.00 | 16.00 |
| 2003 | 11 | 4 | .265 | .115 | .100 | .200 | 4.00 | 21.00 | 19.00 | 16.00 |
| 2004 | 12 | 3 | .280 | .215 | .100 | .200 | 4.00 | 21.00 | 19.00 | 16.00 |
| 2005 | 13 | 4 | .200 | .125 | .100 | .100 | 4.00 | 21.00 | 19.00 | 16.00 |
| 2007 | 14 | 3 | .250 | .150 | .100 | .200 | 4.00 | 21.00 | 19.00 | 16.00 |

### MOUNTING PADS FOR TO-5 CASE

|  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|
| 3001 | 15 | 4 | .345 | .075 | .200 | .200 | $4.00 | $21.00 | $19.00 | $16.00 |
| 3002 | 2 | 4 | .365 | .080 | .215 | .215 | 4.00 | 21.00 | 19.00 | 16.00 |
| 3003 | 2 | 12 | .365 | .080 | .200 | .200 | 4.00 | 21.00 | 19.00 | 16.00 |
| 3004 | 16 | 1 | .312 | .100 | § | § | 4.00 | 21.00 | 19.00 | 16.00 |
| 3005 | 17 | 3 | .350 | .038 | .200 | .200 | 4.00 | 21.00 | 19.00 | 16.00 |
| 3006 | 18 | 4 | .281 | .021 | .200 | .200 | 4.00 | 21.00 | 19.00 | 16.00 |
| 3008 | 17 | 3 | .350 | .075 | .200 | .200 | 4.00 | 21.00 | 19.00 | 16.00 |
| 3009 | 19 | 4 | .312 | .060 | .200 | .200 | 4.00 | 21.00 | 19.00 | 16.00 |
| 3010 | 20 | 4 | .340 | .100 | .200 | .200 | 4.00 | 21.00 | 19.00 | 16.00 |
| 3011 | 7 | 4 | .350 | .120 | .200 | .200 | 4.00 | 21.00 | 19.00 | 16.00 |
| 3012 | 21 | 5 | .350 | .036 | .200 | .200 | 4.00 | 21.00 | 19.00 | 16.00 |
| 3013 | 22 | 5 | .350 | .120 | .200 | .200 | 4.00 | 21.00 | 19.00 | 16.00 |
| 3014 | 23 | 12 | .330 | .100 | .200 | .350 | 4.00 | 21.00 | 19.00 | 16.00 |
| 3015 | 24 | 6 | .350 | .120 | .200 | .200 | 4.00 | 21.00 | 19.00 | 16.00 |

§.078″ center hole.

### SPREADER PADS FOR TO-5 CASE

|  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|
| 1010 | 8 | 3 | .345 | .120 | .100 | .200 | $4.00 | $21.00 | $19.00 | $16.00 |
| 2002 | 10 | 4 | .310 | .150 | .100 | .200 | 4.00 | 21.00 | 19.00 | 16.00 |
| 2004 | 12 | 3 | .280 | .215 | .100 | .200 | 4.00 | 21.00 | 19.00 | 16.00 |

### MOUNTING PADS FOR TO-98 CASE

|  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|
| 2004* | 12 | 3 | .280 | .215 | .050‡ | .200 | $4.00 | $21.00 | $19.00 | $16.00 |
| 2005† | 13 | 3 | .200 | .125 | .050‡ | .050‡ | 4.00 | 21.00 | 19.00 | 16.00 |
| 2006 | 25 | 3 | .200 | .200 | .050‡ | .200 | 4.00 | 21.00 | 19.00 | 16.00 |
| 2007* | 14 | 3 | .250 | .150 | .050‡ | .200 | 4.00 | 21.00 | 19.00 | 16.00 |

*Spreader pad. †Also for TO-99 case. ‡Three in line.

### MOUNTING PADS FOR TO-8 CASE

|  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|
| 5001 | 26 | 4 | .600 | .062 | .281 | .281 | $6.00 | $32.00 | $29.00 | $26.00 |
| 5002 | 27 | 12 | .500 | .187 | .300 | .300 | 6.00 | 32.00 | 29.00 | 26.00 |

### MOUNTING PADS FOR TO-116 DIP (14 AND 16 LEADS)

| Tekna No. | Fig. | Max. No. of Leads | Size, In. |  |  | Entry/Exit | Net per 100 | Net per 1000, Lots of |  |  |
|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  | Width | Lgth. | Thickness |  |  | 1,000-5,000 | 6,000-10,000 | 11,000-25,000 |
| 4160 | 28 | 14 | .450 | .750 | .060 | .100 | $6.00 | $32.00 | $29.00 | $26.00 |
| 4180 | 28 | 14 | .450 | .750 | .080 | .100 | 6.00 | 32.00 | 29.00 | 26.00 |
| 4200 | 28 | 14 | .450 | .750 | .100 | .100 | 6.00 | 32.00 | 29.00 | 26.00 |
| 4360 | 28 | 16 | .450 | .850 | .060 | .100 | 6.00 | 32.00 | 29.00 | 26.00 |
| 4380 | 28 | 16 | .450 | .850 | .080 | .100 | 6.00 | 32.00 | 29.00 | 26.00 |
| 4400 | 28 | 16 | .450 | .850 | .100 | .100 | 6.00 | 32.00 | 29.00 | 26.00 |
| 4500 | 29 | 14 | .230 | .820 | .050 | .100 | 6.00 | 32.00 | 29.00 | 26.00 |
| 4600 | 29 | 16 | .230 | .875 | .050 | .100 | 6.00 | 32.00 | 29.00 | 26.00 |

### RELAY MOUNTING PAD

|  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|
| 4013 | 30 | 8 | .400 | .800 | .080 | .200 | $6.00 | $32.00 | $29.00 | $26.00 |

### MOUNTING PADS FOR TO-99, TO-100, TO-101 INTEGRATED CIRCUITS

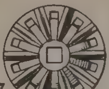
| Tekna No. | Fig. | Max. No. of Leads | Size, In. |  | Spacing of Leads, In. |  | Net per 100 | Net per 1000, Lots of |  |  |
|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  | O.D. | Thickness | Entry | Exit |  | 1,000-5,000 | 6,000-10,000 | 11,000-25,000 |
| 3003 | 2 | 8/10/12 | .365 | .080 | .200/.230 | .200/.230 | $4.00 | $21.00 | $19.00 | $16.00 |
| 3014 | 23 | 8/10/12 | .330 | .100 | .200/.230 | .350 | 4.00 | 21.00 | 19.00 | 16.00 |
| 4001 | 31 | 8 | .375 | .085 | .200/.230 | .200/.230 | 4.50 | 23.00 | 21.00 | 18.00 |
| 4002 | 32 | 8 | .500 | .130 | .200/.230 | .400 | 6.00 | 32.00 | 29.00 | 26.00 |
| 4003 | 33 | 8 | .500 | .250 | .200/.230 | .400 | 6.00 | 32.00 | 29.00 | 26.00 |
| 4004 | 34 | 8 | .500 | .250 | .200/.230 | .281/.400 | 6.00 | 32.00 | 29.00 | 26.00 |
| 4005 | 35 | 10 | .375 | .075 | .200/.230 | .200/.230 | 4.50 | 23.00 | 21.00 | 18.00 |
| 4006 | 36 | 10 | .500 | .130 | .200/.230 | .400 | 6.00 | 32.00 | 29.00 | 26.00 |
| 4007 | 37 | 10 | .500 | .250 | .200/.230 | .400 | 6.00 | 32.00 | 29.00 | 26.00 |
| 4008 | 38 | 12 | .375 | .075 | .200/.230 | .200/.230 | 4.50 | 23.00 | 21.00 | 18.00 |
| 4009 | 39 | 12 | .500 | .130 | .200/.230 | .400 | 6.00 | 32.00 | 29.00 | 26.00 |
| 4010 | 40 | 12 | .500 | .250 | .200/.230 | .400 | 6.00 | 32.00 | 29.00 | 26.00 |

# TEKNA TRANSISTOR CAPS AND COMPONENT HARDWARE

## TEK-CAP TRANSISTOR INSULATION CAPS

Protect transistor case and serve as mounting pad.

| Tekna No. | Fig. | Description | Net per 100 | Net per 1000, Lots of 1,000-5,000 | 6,000-10,000 | 11,000-25,000 |
|---|---|---|---|---|---|---|
| 7004 | A | For TO-3; holds flat against board | $16.00 | $145.00 | ........ | ........ |
| 7007 | B | For TO-5; holds .050″ above board | 6.00 | 32.00 | $29.00 | $26.00 |
| 7008 | B | For TO-18; holds .050″ above board | 6.00 | 32.00 | 29.00 | 26.00 |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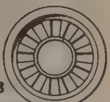
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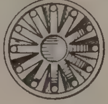
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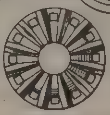
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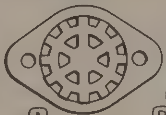
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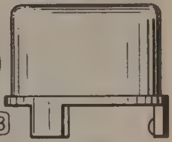
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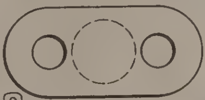
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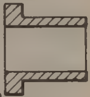
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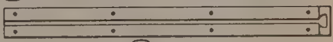

E

## CAPACITOR PADS

Suspend capacitors for cleaning space.

| Tekna No. | Fig. | Description | Net per 100 | Net per 1000, Lots of 1,000-5,000 | 6,000-10,000 | 11,000-25,000 |
|---|---|---|---|---|---|---|
| 8100 | C | Leads spaced .100″ | $3.00 | $18.00 | $16.00 | $14.00 |
| 8150 | C | Leads spaced .150″ | 3.00 | 18.00 | 16.00 | 14.00 |
| 8200 | C | Leads spaced .200″ | 3.00 | 18.00 | 16.00 | 14.00 |

## BUSHINGS/SPACERS

Insulates screws, rivets, wires, posts; and spaces boards.

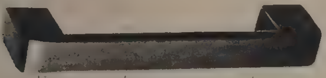
| Tekna No. | Fig. | Description | Net per 100 | Net per 1000, Lots of 1,000-5,000 | 6,000-10,000 | 11,000-25,000 |
|---|---|---|---|---|---|---|
| 7115 | D | .125″ I.D.; fits .172″ hole; .115″ long | $2.00 | $ 9.00 | $8.50 | $8.00 |
| 7175 | D | .125″ I.D.; fits .172″ hole; .175″ long | 2.00 | 9.00 | 8.50 | 8.00 |

## DELRIN® CARD GUIDES

| Tekna No. | Fig. | Description | Net per 100 | Net per 1000, Lots of 1,000-5,000 | 6,000-10,000 | 11,000-25,000 |
|---|---|---|---|---|---|---|
| 9100 | E | 10.25″ long, .531″ wide, .188″ high | $30.00 | ........ | ........ | ........ |
| 9200 | E | 6.00″ long, .531″ wide, .188″ high | 20.00 | ........ | ........ | ........ |

®Registered DuPont trademark.

## HANDLES/PULLS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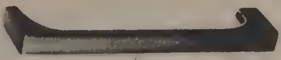
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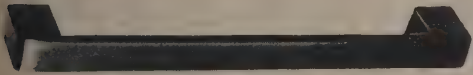
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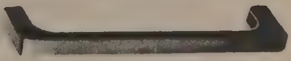

575

Can be used horizontally or vertically on doors, drawers, panels, rack or portable items. Diecast zinc (Zamak #3) with satin-brushed, chrome-plated finish (bright chrome also available on Nos. 572 and 575).

| Tekna No. | Overall Length | Total Height | Inside Depth | Inside Width | Post Dimensions | Screw Spacing | Thread | Thread Depth | Net Each: Carton of 12 | Carton of 24 | Case of 165 | Case of 400 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 505 | 4 7/8″ | 1 1/16″ | 7/8″ | 3 1/2″ | 11/16″ x 9/16″ | 4″ | 10-32 | 5/8″ | $2.00 | $1.90 | $1.20 | ....... |
| 525 | 7 5/8″ | 1 1/16″ | 7/8″ | 6 1/4″ | 11/16″ x 9/16″ | 6 5/8″ x 7 1/4″ | 10-32 | 5/8″ | 2.20 | 2.10 | 2.40 | ....... |
| 572 | 4 5/16″ | 1″ | 3/4″ | 3 5/8″ | 5/16″ x 9/32″ | 4″ | 8-32 | 7/16″ | ....... | 1.00 | ....... | $0.85 |
| 575 | 4 1/16″ | 15/16″ | 11/16″ | 3 3/8″ | 11/32″ x 5/16″ | 3 3/4″ | 8-32 | 7/16″ | ....... | .90 | ....... | .80 |

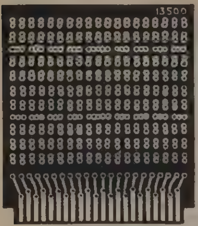
## TEK-KIT ASSORTMENT

- **OVER 50 DIFFERENT ITEMS—MOUNTING PADS AND CAPS, BUSHINGS/SPACERS, DIODE SLEEVES**
- **5750 TOTAL PIECES, ALL IN MARKED CONTAINERS FOR EASY SELECTION**

Contains 5750 pieces, over 50 different items, at one-third the cost of individual Tek-Pads and other hardware. Ideal for engineering, model work, and special circuit board assemblies of small quantities. Assortment includes mounting pads and insulating caps for TO-18 case, TO-18 spreaders, TO-5, TO-5 spreaders, TO-8, TO-98 (3-in-line), TO-99, TO-99 spreaders, TO-100, TO-100 spreaders, TO-101, and TO-101 spreaders; plus TO-3 caps, pads and bushings; TO-5 combination caps and pads; TO-18 combination caps and pads; capacitor mounting pads; diode/resistor sleeves; 14 and 16-lead DIP mounting pads; bushings/spacers.

**Tekna No. 900 Tek-Kit Assortment**—Complete with cabinet. Net Each.............................................**$99.00**

# Circuit Cards, Extractors



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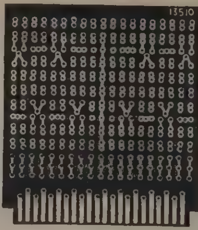


B

## CARDS FOR DUAL IN-LINE PLUG-INS

Two-sided cards of 1/16″ G-10 glass epoxy for mounting as many as 9 plug-in IC's with either 14 or 16 leads. Also furnished with Winchester connectors. Size: 2.976″ x 3.273″, type 13542; 3.00″ x 3.187″, type 13543.
**Triad No. 13542 or 13543**—Net Each, Lots of 10–24 . . . . . **$6.84**
Net Each, Lots of: 25–49 . . . . . . . . **$6.16**; 50–99 . . . . . . . . **5.73**

## CARDS FOR TO-5'S AND FLAT PACKS

Accommodates as many as 16 type TO-5 8-pin cases. Size, 3″ x 4.86″.
**Triad No. 13544**—Net Each, Lots of 10–24 . . . . . . . . . . . **$15.89**
Boards have six 8-pin TO-5 pads on one side and six 14-pin flat pack pads on other. Each side has different connector pattern.
**Triad No. 13545 or 13546**—Net Each, Lots of 10–24 . . . . . **$6.84**

## UNIVERSAL PLATED CIRCUIT CARDS

### TYPE 13500 UNIVERSAL CIRCUIT CARD (FIG. A)

Has 233 mounting pads with one or more holes each, front and back, for a total of 444 holes. Hole placement permits insertion of components directly into board. Land pattern is compatible with standard 0.1″ grid design. Has 22 contact fingers to fit any standard plug-in, right-angle or swage-type connector with .156″ spacing. Card may be sheared or sawed to adapt to any circuit. Base is 1/16″ paper epoxy (Type 13500-1) or glass epoxy (Type 13500-2) with gold plated finish. Size, 4″ x 4½″; hole size, .052″.

### TYPE 13510 UNIVERSAL CIRCUIT CARD (FIG. B)

Advanced design card has specific transistor locating holes, ground bus down the center, and convenient location for pad rows. Has 190 mounting pads of one or more holes each, front and back, 421 holes total, with 22 fingers for any connector with .156″ spacing, plus 22 pairs of pads for Elco type connectors. Base is 1/16″ paper epoxy (Type 13510-1) or glass epoxy (Type 13510-2); gold plated. Size, 4″ x 4½″; hole size, .052″.

### TYPE 13511 UNIVERSAL CIRCUIT CARD

Similar to Type 13510, with over 300 mounting pads, 650 holes per card; 22 fingers on each end for connectors with .156″ spacing, plus 22 pairs of pads for Elco type connectors. Transistor locating holes, ground bus down center. Size, 4″ x 7″. Made of 1/16″ paper base epoxy, gold plated. Hole size, .052″.

### TYPE 13600 EXTENDER CARDS

For extending fingers of circuit cards to permit access to boards mounted in racks or panels. Frees both sides of circuit for maintenance and testing during operation. Wire harness ends may be soldered to card for plug-in use. Size, 5″ x 8″ with 43 extension strips on each side of board except Model 13605, 2.976″ x 3.273″ with 18 extender strips each side and Model 13610, 3″ x 4.86″ with 25 extender strips either side. Base is 1/16″ paper epoxy (Type 13600-1) or glass epoxy (Type 13600-2). Standard .156″ spacing for most printed circuit connectors.

| Triad No. | Description | Epoxy Base | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 10-24 | 25-49 | 50-99 |
| 13500-1 | Circuit card | Paper | $ 6.39 | $ 5.75 | $5.35 |
| 13500-2 | Circuit card | Glass | 6.84 | 6.16 | 5.73 |
| 13510-1 | Circuit card | Paper | 6.39 | 5.75 | 5.35 |
| 13510-2 | Circuit card | Glass | 6.84 | 6.16 | 5.73 |
| 13511 | Circuit card | Paper | 11.39 | 10.25 | 9.53 |
| 13600-1 | Extender card | Paper | 9.59 | 8.63 | 8.03 |
| 13600-2 | Extender card | Glass | 11.12 | 10.01 | 9.31 |
| 13605 | Extender card | Glass | 6.21 | 5.59 | 5.19 |
| 13610 | Extender card | Glass | 6.65 | 5.99 | 5.57 |

## TERMINAL CARDS AND BOARDS

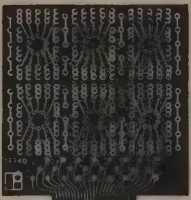
### SERIES 13750 PLUG-IN TERMINAL CARDS

For use in prototype printed circuitry and design testing. Each card has over 300 terminal holes in seven rows of ½″ spacing on each side. Permits mounting of almost unlimited number of components on either or both sides of card. Made of 1/16″ paper base epoxy, 4″ x 4½″, with 22 gold plated fingers spaced .156″ for use with most printed circuit connectors. Type 13750 has .093″ holes. Type 13751 has .063″ holes.

### SERIES 13800 PRE-PUNCHED TERMINAL BOARDS

Overall grid of pre-punched holes on 4″ x 7″ card for breadboard and production applications. Ideal for subminiature circuits using transistors and small diodes. Boards have 646 holes (19 x 34) on 0.2″ centers to accommodate a variety of standard turned and push-in terminals. Paper base epoxy, 1/16″ thick. May be broken along holes or sawed to desired size. Type 13800 has .062″ holes, Type 13801 has .093″ holes.

| Triad No. | Description | Hole Size | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|
| | | | 1-9 | 10-24 | 25-49 | 50-99 |
| 13750 | Plug-in card | .093″ | $3.92 | $3.53 | $3.18 | $2.96 |
| 13751 | Plug-in card | .063″ | 3.92 | 3.53 | 3.18 | 2.96 |
| 13801 | Term. board | .093″ | 1.40 | 1.26 | 1.13 | 1.05 |



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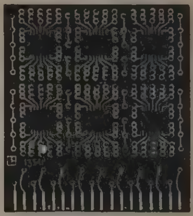


D

## INTEGRATED CIRCUIT CARDS

For quick, easy assembly of prototypes and short runs using TO-5's and flat packs Up to six TO-5's, six flat packs or combinations of both can be mounted. The same card can be used directly from prototype to production. Two-sided cards of 1/16″ G-10 glass epoxy, gold plated, have flat pack mounting tabs on one side and TO-5 pads on the other. Connector strips and TO-5 pads have .032″ hole size; interconnection pads have .040″ hole. Boards are identical except for connector pattern.
**Triad No. 13540 (Fig. C)**—Mates with Winchester PC25D62D24-1, a 25-contact double-side readout connector with contacts on .050″ centers. Size, 3.00″ x 3.187″.
**Triad No. 13541 (Fig. D)**—Mates with Winchester 8B36S, an 18-contact double-side readout connector with bifurcated contacts on .156″ centers. Size, 2.976″ x 3.273″.
**Either Number**—Net Each, Lots of: 10–24 . . . . . . . . . . . . **$6.84**
Net Each, Lots of: 25–49 . . . . . . **$6.16**; 50–99 . . . . . . **5.73**

## PLATED CIRCUIT CARDS WITH WINCHESTER CONNECTORS

Standard Triad circuit cards with proper Winchester connector for easy assembly of prototypes and short runs. Winchester 8BD18S, 8BD22S connectors are molded phenolic MFG per MIL-M-14, with bifurcated contacts and double-acting spring grip for constant and non-damaging contact. Individual contact identification on front and rear. Universal circuit cards 13500, 13510 and 13511, and terminal cards 13750 and 13751, include 8BD22S connector. Integrated circuit cards 13541 and 13542 take 8BD18S; types 13540, 13543, 13544, 13545, 13610 have PC25D62D24-1 connector* with straight contact tabs for lead insertion through holes; short path contacts for low resistance between board and back plane.

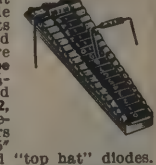
| Triad No. | With Connector | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
| CO-13500-1 | 8BD22S | $10.17 | $ 9.15 | $ 8.24 | $ 7.66 | $ 7.20 |
| CO-13500-2 | 8BD22S | 10.65 | 9.59 | 8.63 | 8.03 | 7.55 |
| CO-13510-1 | 8BD22S | 10.17 | 9.15 | 8.24 | 7.66 | 7.20 |
| CO-13510-2 | 8BD22S | 10.65 | 9.59 | 8.63 | 8.03 | 7.55 |
| CO-13511-A | 1-8BD22S | 15.70 | 14.13 | 12.72 | 11.83 | 11.12 |
| CO-13511-B | 2-8BD22S | 18.77 | 16.89 | 15.20 | 14.14 | 13.29 |
| CO-13540 | * | 15.85 | 14.27 | 12.84 | 11.94 | 11.22 |
| CO-13541 | 8BD18S | 10.25 | 9.23 | 8.31 | 7.73 | 7.27 |
| CO-13542 | 8BD18S | 10.25 | 9.23 | 8.31 | 7.73 | 7.27 |
| CO-13543 | * | 13.60 | 12.24 | 11.02 | 10.25 | 9.64 |
| CO-13544 | * | 26.00 | 23.40 | 21.06 | 19.59 | 18.41 |
| CO-13545 | * | 15.85 | 14.27 | 12.84 | 11.94 | 11.22 |
| CO-13546 | 8BD18S | 10.25 | 9.23 | 8.31 | 7.73 | 7.27 |
| CO-13605A | 1-8BD18S | 9.44 | 8.49 | 7.64 | 7.11 | 6.68 |
| CO-13605B | 2-8BD18S | 12.00 | 10.80 | 9.72 | 9.04 | 8.49 |
| CO-13610A | * | 15.20 | 13.68 | 12.31 | 11.45 | 10.76 |
| CO-13610B | * | 23.00 | 20.70 | 18.63 | 17.33 | 16.29 |
| CO-13750 | 8BD22S | 6.65 | 6.00 | 5.40 | 5.00 | 4.70 |
| CO-13751 | 8BD22S | 6.65 | 6.00 | 5.40 | 5.00 | 4.70 |

## CIRCUIT CARD EXTRACTORS

Pull out circuit cards quickly and easily, without damage to components. **Type CE-4:** Steel type adjusts for cards 4–6″ wide, grabs edges securely as lever is pressed; 6½″ x 4⅜″. **Type CE-1:** For limited space use; plastic, 4¼″ x 2½″. Becomes part of card until released. Cam action, 60-lb. pull. **Type CE-5:** For integrated circuit cards and modules 1–4″ wide; size, 4¼″ x 4½″.

| Triad No. | Description | Net Each, Lots of | | | |
|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50-99 |
| CE-4 | For 4″ to 6″ cards | $11.88 | $10.69 | $9.62 | $8.95 |
| CE-1 | Limited space type | 11.40 | 10.26 | 9.23 | 8.58 |
| CE-5 | Integrated circ. type | 11.67 | 10.50 | 9.45 | 8.79 |

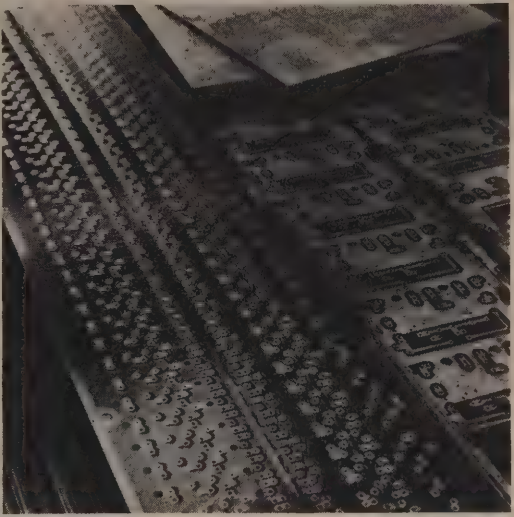
## LEAD BENDING GAUGES



Simple, precise gauges can be used to form up to 1200 leads per hour, easily and without damage to components. Four models provide fast, accurate forming for most components used in printed circuits. Each has 40 numbered positions for various lead formations; leads are bent rapidly with gentle finger pressure. **Type MK-1**, with .375″ to 1.50″ centers is for ¼-watt resistors, plus diodes, disc capacitors and other components of similar size. **Type MK-2**, with .50″ to 1.50″ centers, is for ½-watt resistors. **Type MK-3**, with .75″ to 2.50″ centers is for 1-watt resistors. **Type MK-4**, with .875″ to 2.50″ centers, is for 2-watt resistors and "top hat" diodes. Proper lead spacing can be assured by aligning the gauge between holes or terminals to be used, noting the slot number that corresponds to the required size. Can also be used to form jumper wires.

| Triad Type | For Resistor Size | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 10-24 | 25-49 | 50-99 |
| MK-1 | ¼-watt | $2.92 | $2.73 | $2.44 |
| MK-2 | ½-watt | 2.92 | 2.73 | 2.44 |
| MK-3 | 1-watt | 3.67 | 3.30 | 3.07 |
| MK-4 | 2-watt | 3.67 | 3.30 | 3.07 |

# Westinghouse MICARTA® COPPER-CLAD MATERIALS



Comprehensive line of copper-clad Micarta for printed circuit manufacture available in two types: Rigid copper-clad laminate sheet for conventional printed circuits and thin, rigid copper-clad sheet and pre-preg sheets specifically for building multi-layer printed circuits. Offer a broad range of properties and combinations of properties to fill many kinds of production and end-use requirements. **Measle Resistance:** Types 65M27S, 65M28S and multi-layer are measle resistant even after storage under humid conditions. Have greater retention of flex and copper bond strength at elevated temperatures. **Punchability:** Strength and resiliency of Micarta combined with the adhesive strength and malleability of the pure copper foil, permits easier punching, sawing or drilling without peeling, tearing, lifting or haloing. **High Bond Strength:** Resist pad lifting during circuit fabrication and assembly or during final product use. **High Solder Resistance:** Copper-clad materials can be solder floated without blistering or distortion so that soldering operations can be more efficient. **Stability:** Resist heat, cold, moisture, acids, alkalies, solvents and oils. **Sheet Size:** 36″ x 48″ only; except 65M27-UT available in 36″ x 36″ and 36″ x 43″. Other sheet sizes available on special order. To minimize warpage, material should be stored flat and not on edge.

| W-H Grade Number | Typical Use |
|---|---|
| **65M02** | TV and similar circuits produced by automatic processes that require very flat, strong boards |
| **65M03** | Radio and TV circuits |
| **65M05** | Radio and TV circuits; flame-retardant where good electrical and punching is required |
| **65M25S** | Computer and electronic circuits where weight, space saving are important |
| **65M24** | Commercial computer cards |
| **65M27S, 28S** | Computer circuits where good drill wear is important |
| **65M27-UT** | Multi-layer miniaturized circuits |
| **HT-11907** | Multi-layer miniaturized circuits, pre-preg |

## GRADE SELECTION TABLE

| W-H Grade Number | NEMA Grade | Thk. Range, Inches | Composition | Color | Major Application Requirements |
|---|---|---|---|---|---|
| **65M02** | XXXPC | .031–.250 | Paper-phenolic | Dk. brown | Warp-free, high impact strength, adhesion, insulation resistance |
| **65M03** | XXXPC | .031–.250 | | Tan | Exceptional stability; insulation resistance exceeding NEMA standards; good shearing and punching characteristics |
| **65M05** | FR-2 | .031–.250 | | Tan | High insulation resistance, flame retardant, cold punching |
| **65M24** | FR-3 | .031–.250 | Paper-epoxy | Ivory | Excellent dimensional stability; high mechanical strength; high peel, dielectric strength; self-extinguishing; low water absorp. |
| **65M25S*** | FR-4 | .031–.250 | Glass-epoxy | Tan | High solder resistance without close temperature control; self-extinguishing; good punching of small holes at room temp. |
| **65M27S†** | G-10 | .031–.250 | Glass-epoxy | Green | High strength at room temperature; excellent electrical properties under humid conditions; measle resistant |
| **65M28S*** | FR-4 | .031–.250 | Glass-epoxy | Green | High strength at room temperature; humidity resistant, flame retardant; measle resistant |
| **65M27-UT** | G-10 | .004–.031‡ | Glass-epoxy | Lt. green | High solder resistance under humid conditions; close thickness control for capacitance tolerance between layers of circuitry |
| **HT-11907** | G-10 | .004‡§ | Glass-epoxy, pre-preg. | Natural | |

*MIL spec. type and number MIL-P-13949D-GF. †MIL-P-13949D-GE. ‡Base laminate thickness only; available in both G-10 and FR-4. §Molds to this thickness per layer.

## MECHANICAL AND ELECTRICAL PROPERTIES

Following data is based on 1/16″ specimens. All specimens were conditioned in standard laboratory atmosphere. Values are typical. Only NEMA or specified MIL spec property values are guaranteed.

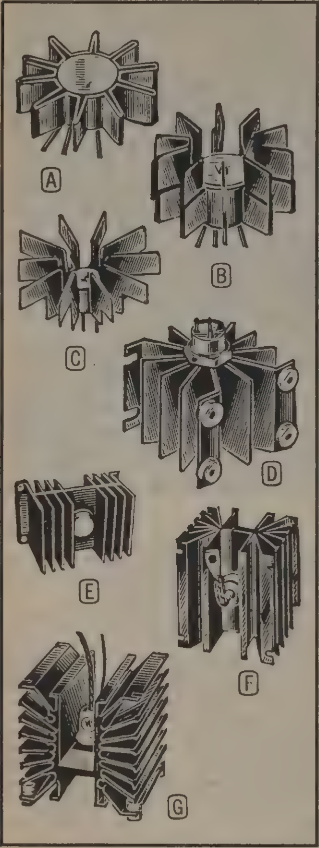
| Property | Condition | Test Method | Westinghouse Grade Number | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 65M02 | 65M03 | 65M05 | 65M24 | 65M25S | 65M27S | 65M28S | 65M27-UT* |
| Peel strength, after solder float (lb./in. of width) | 1 oz. copper<br>2 oz. copper | NEMA-LI-1-10.12 | 8<br>9 | 8<br>9 | 8<br>9 | 10<br>12 | 10<br>12 | 10<br>12 | 10<br>12 | 8<br>10 |
| Solder float, sec at 500° F | | NEMA-LI-1-10.11 | 15 | 15 | 25 | 20 | 90 | 90 | 90 | 60 |
| Flexural strength, flatwise, LW, psi (ultimate) | | ASTM D229 | 23,000 | 22,000 | 20,000 | 30,000 | 76,000 | 75,000 | 75,000 | ........ |
| Impact, Izod, edgewise, LW, E-48/50—ft.-lb./in. (notch) | | ASTM D229 | 0.55 | 0.45 | ........ | 0.60 | 10.0 | 10.0 | 10.0 | ........ |
| Tensile strength, LW, psi (ultimate) | | ASTM D229 | 14,500 | 14,000 | ........ | 18,000 | ........ | ........ | ........ | ........ |
| Compressive strength, flatwise, psi, (ultimate) | | ASTM D229 | 28,000 | 25,000 | ........ | 31,000 | ........ | ........ | ........ | ........ |
| Water absorption (%) | E-1/105, D1-24-23 | ASTM D229 | 0.50 | 0.50 | 0.43 | 0.35 | 0.15 | 0.08 | 0.08 | 0.40 |
| Hardness, Rockwell "M" | | ASTM D229 | 105 | 100 | 100 | 105 | 115 | 115 | 115 | ........ |
| Dissipation factor (1 MHz) | C-24/23/50<br>D-24/23<br>D-48/50 | ASTM D229 | .029<br>.020<br>.035 | .032<br>.033<br>.040 | ........<br>.035<br>.088 | .034<br>.035<br>.035 | .018<br>.020<br>........ | .018<br>.020<br>........ | .018<br>.020<br>........ | ........<br>.028<br>........ |
| Dielectric constant (1 MHz) | C-24/23/50<br>D-24/23<br>D-48/50 | ASTM D229 | 4.0<br>4.0<br>4.7 | 4.1<br>4.2<br>4.8 | ........<br>4.6<br>4.8 | 4.2<br>4.3<br>4.5 | 5.0<br>5.0<br>........ | 5.0<br>5.0<br>........ | 5.0<br>5.0<br>........ | ........<br>5.4<br>........ |
| Dielectric breakdown, flash-over values, kV, parallel to laminations, step by step, taper pins, T at 23° C in oil | C-24/23/50<br>D-48/50 | ASTM D229 | 85<br>50 | 85<br>50 | ........<br>60 | 60<br>60 | 60<br>60 | 60<br>60 | 60<br>60 | 40<br>........ |
| Insulation resistance (megohms, fig. 3-257) | C-96/35/90 | ASTM D299 | $5x10^5$ | $5x10^5$ | $5x10^5$ | $1x10^5$ | $1x10^6$ | $1x10^6$ | $1x10^6$ | ........ |
| Volume resistivity (megohm-cm) | C-T-96/35/90 | ASTM D229 | $5x10^6$ | $5x10^6$ | $5x10^6$ | $5x10^7$ | $5x10^7$ | $5x10^7$ | $5x10^7$ | $5x10^7$† |
| Surface resistance (megs) | C-T-96/35/90 | ASTM D229 | $5x10^4$ | $5x10^4$ | $5x10^4$ | $5x10^4$ | $1x10^5$ | $1x10^6$ | $1x10^6$ | $3x10^5$† |
| Arc resistance (sec) | | ASTM D495 | ........ | ........ | 100 | 100 | 100 | 125 | 125 | ........ |
| Flammability (sec) | | ASTM D229‡ | ........ | ........ | 1 | 5 | 2 | ........ | 6 | ........ |

*Also available in FR-4; values given are average test. †C-96/35/90 condition. ‡Method 1.

**Grade HT-11907 Pre-preg Binder Sheet—G-10**—All are average test values. Resin content 55% per SPI Pre-preg 1. Flow 25% at 200 psi, 300° F per SPI Pre-preg 2. Gel time 3.0 minutes at 300° F per Pre-preg 3. Volatile content 1.0 at 250° F, 10 minutes per SPI Pre-preg 1. Desired variations of above properties are available upon request.

**FOR CURRENT PRICING AND QUANTITY, CALL CRAMER**

# DELTA WAKEFIELD ENGINEERING INC. DIVISION Semiconductor Coolers



## THERMAL JOINT COMPOUND

Used between semiconductor and heat-sink; or for thermoelectric modules.

| Wake-field No. | Size | Net Each, Lots of 1-3 | 4-9 | 10-24 |
|---|---|---|---|---|
| 120-2 | 2 oz. | $ 1.62 | $ 1.40 | $ 1.30 |
| 120-5 | 5 oz. | 13.00* | 11.00* | 10.50* |
| 120-8 | 8 oz. | 4.05 | 3.50 | 3.35 |
| 120-80 | 5 lb. | 22.50 | 19.50 | 19.00 |

*Four tubes per package.

## VERTICAL MOUNTING ADAPTERS

Meet MIL-STD-202. Cond. B for vibration. Two required per sink. For insulation, use Teflon insulator 103, below.

**No. 111**—For 401 or 403.
Net Each, 1–99....**19c**; 100–499....**17c**
**No. 113**—For 421 or 423.
Net Each, 1–99....**28c**; 100–499....**25c**

## TEFLON® INSULATORS

Type 105 accepts #10 mtg. hardware; all others, 6-32. ®DuPont TM

| Type No. | For Sink Model Number | No. Req'd | Hypot kV* |
|---|---|---|---|
| **101** | 501 | 3 | 0.5 |
| | 502, 503, 504, 505 | 4 | |
| **103** | 301 | 2 | 1.5 |
| | 401 | 3 | |
| | 302, 303, 403, 413, 421, 423, 431, 433, 621, 623, 641 | 4 | 1.5 |
| **105** | 441, 451, 465, 476, 486, 489 | 4 | 5.0 |
| **107** | Same as 103 | | 5.0 |

*At 60 Hz.

| Wakefield Number | Net per 100 1-9 | 10-49 | 50-99 |
|---|---|---|---|
| 101 | $ 1.78 | $ 1.58 | $ 1.38 |
| 103 | 6.03 | 5.36 | 4.69 |
| 105 | 24.00 | 18.50 | 17.30 |
| 107 | 24.08 | 21.40 | 18.73 |

## SERIES 200 FEATHERWEIGHT DISSIPATORS

Unique fin design permits horizontal or vertical orientation with excellent natural convection performance in either position. In forced convection applications, the axis of the semiconductor may be oriented either perpendicular or parallel to the direction of air flow. Max. contact thermal impedance for the semiconductor case to the dissipator I.D. is 5° C/W for 201, 202, 203 and 222, 3° C/W for 204, 205, 207, 209 and 224, 2° C/W for 211, 213 and 215. Delta-T No. 120 thermal joint compound will reduce impedance by a factor of 8. Beryllium copper per MIL-C-81021 with black ebonol C finish per MIL-F-495; also available with no finish, prices on request.

**Wakefield Model 160 Installation Tool**—For 201, 202, 203, 204, 205, 207, 209, 222 and 224. Net Each........................**$1.50**
**Wakefield Model 161 Installation Tool**—For 211, 213 and 215. Net Each......**1.50**

| Wakefield Number | Fig. | Fits Case Dia., In. | Fits JEDEC Case Styles | Size, Inches I.D. | O.D. | H | Net per Pkg. of 100 1-4 | 5-9 | 10-49 |
|---|---|---|---|---|---|---|---|---|---|
| **201-CB*** | A | .161/.240 | TO-18, 24, 28, 40, 44 | .150 | .640 | .187 | **$14.60** | **$12.55** | **$12.30** |
| **202-CB** | A | | | .150 | .490 | .187 | **12.85** | **11.10** | **10.90** |
| **203-CB*** | B | | | .150 | .640 | .375 | **21.00** | **17.95** | **17.60** |
| **204-CB** | A | .275/.370 | TO-5, 9, 11, 12, 16, 26, 29, 33, 39, 42, 43, 45 | .255 | .550 | .187 | **12.85** | **11.10** | **10.90** |
| **205-CB*** | A | | | .255 | .720 | .187 | **14.60** | **12.55** | **12.30** |
| **207-CB*** | B | | | .255 | .720 | .375 | **21.00** | **17.95** | **17.60** |
| **209-CB*** | C | | | .255 | 1.280 | .720 | **23.10** | **19.90** | **19.60** |
| **211-CB*** | A | .440/.544 | TO-8, 38, 48, | .420 | .830 | .187 | **21.00** | **18.20** | **17.50** |
| **213-CB*** | B | | | .420 | .830 | .375 | **22.60** | **19.50** | **19.10** |
| **215-CB*** | C | | | .420 | 1.400 | .830 | **22.60** | **19.50** | **19.10** |
| **222-CB** | A | .165/.240 | 2—TO-18, 24, 28 | .150 | .640 | .380 | **20.40** | **17.55** | **17.20** |
| **224-CB** | A | .275/.370 | 2—TO-5, 9, 11, 12, 16, 29, 33, 39, 42, 43, 45 | .255 | .720 | .440 | **22.60** | **19.50** | **19.10** |

*Also available in aluminum alloy 6061T6 with or without finish; prices on request.

## SERIES 300 SEMICONDUCTOR COOLERS (FIG. D)

Accommodate stud-mounted, press-fitted rectifiers and transistors up to 1¹⁄₁₆″ hex case. Semiconductor mounting surface and one mounting foot are free of anodize to assure excellent thermal and electrical performance. Ideal for stacking arrangement; electrical isolation provided by Type 103 insulators or Type 104 expansion nuts (not supplied). Temperature Rise at 23 Watts: Type 301, 100° C; 302, 72° C; 303, 52° C. Full curves on request. Aluminum alloy 6063-T5 per QQ-A-200; black anodize finish per MIL-A-8625 Type II. Size 2″ sq. x ¾″ h., 301; 1½″ h., 302 and 3″ h., 303. Part No. letter suffix indicates mounting hole type; see *Ordering Information on following page.

| Wakefield Number* | Net Each, Lots of 1-24 | 25-49 | 50-99 | Wakefield Number* | Net Each, Lots of 1-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|---|---|
| **301K** | **$1.10** | **$1.00** | **$0.98** | **302R** | **$1.80** | **$1.65** | **$1.60** |
| **301L, M, N** | **1.43** | **1.32** | **1.28** | **302RR** | **1.90** | **1.78** | **1.70** |
| **301R** | **1.43** | **1.32** | **1.28** | **303K** | **2.30** | **2.15** | **2.05** |
| **301RR** | **1.54** | **1.43** | **1.37** | **303L, M, N†** | **2.60** | **2.45** | **2.35** |
| **302K** | **1.46** | **1.36** | **1.30** | **303R** | **2.60** | **2.45** | **2.35** |
| **302L, M, N†** | **1.80** | **1.65** | **1.60** | **303RR** | **2.75** | **2.55** | **2.45** |

*For square slots to accept insulators add suffix **S** to number and **5c** to price for 301; **8c** for 302 and 303. †Add **12c** per piece for LL, MM, or NN (tapped both ends) any qty.

## SERIES 400 NATURAL CONVECTION HEAT SINKS (FIG. E)

Aluminum alloy 6063T5 per QQ-A-200; black anodize finish per MIL-A-8625, Type II. All Series 400 are available with square slots for mounting Type 104 or 106 insulators. To order, add suffix **S** to number and **5c** to price, 401 thru 423; add **8c** to price, all others. Part No. letter suffix indicates mounting hole type; see *Ordering Information on following page.

**401:** Unexcelled for natural convection where space is critical. Thermal resistance below 0.5° C/W at moderate air flow. Size, 1.5″ x 4.812″. **403:** Thermal resistance 1.8° C/W at medium power levels; adequate cooling in all but the most stringent applications. Size, 3.0″ x 4.812″.

| Wakefield Number | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | Wakefield Number | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|---|---|---|
| **401-A, K** | **$1.30** | **$1.06** | **$0.90** | **$0.76** | **403-A, K** | **$1.95** | **$1.58** | **$1.34** | **$1.14** |
| **401-B, D1, V** | **1.50** | **1.22** | **1.04** | **.87** | **403-B, D1, V** | **2.15** | **1.75** | **1.48** | **1.25** |
| **401-(*)** | **1.75** | **1.43** | **1.22** | **1.02** | **403-(*)** | **2.40** | **1.95** | **1.66** | **1.40** |

**423:** Thermal resistance 0.8° C/W at higher power levels. Designed for applications involving larger Triacs, SCR's and diodes; may be mounted vertically or horizontally. Size, 5.5″ x 4.812″.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **423-A, K** | **$4.13** | **$3.50** | **$3.07** | **$2.75** | **423-D1** | **$4.45** | **$3.78** | **$3.18** | **$2.85** |
| **423-B, V** | **4.45** | **3.78** | **3.18** | **2.85** | **423-(*)** | **4.67** | **3.96** | **3.35** | **3.00** |

*All other standard configurations; see *Ordering Information on following page.

**413:** Thermal resistance 1.4° C/W natural convection; 0.3° C/W moderate air flow. Size, 3.0″ x 4.75″. **421:** Same except 1.3° C/W natural convection.

| Wakefield Number | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | Wakefield Number | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|---|---|---|---|
| **413-A, K** | **$2.50** | **$2.27** | **$1.91** | **$1.69** | **421-A, K** | **$2.57** | **$2.35** | **$1.98** | **$1.74** |
| **413-B, D1, V** | **2.55** | **2.42** | **2.04** | **1.80** | **421-B, D1, V** | **2.73** | **2.50** | **2.10** | **1.86** |
| **413-(*)** | **2.88** | **2.63** | **2.22** | **1.95** | **421-(*)** | **2.97** | **2.70** | **2.28** | **2.02** |

**441 and 451 (Fig. F):** Designed for vertical mounting; taking better advantage of natural convection. Thermal resistance 0.55° C/W at high power levels; 0.18° C/W with moderate forced convection. Size, 4.75″ x 5.5″.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **441-K** | **$6.50** | **$5.70** | **$5.70** | **$5.10** | **451-K** | **$6.60** | **$5.80** | **$5.80** | **$5.20** |
| **441-(*)** | **7.10** | **6.25** | **6.25** | **5.60** | **451-(*)** | **7.20** | **6.35** | **6.35** | **5.70** |

*All other standard configurations; see *Ordering Information on following page.

**465 (Fig. G):** Designed for 1¹⁄₁₆″ hex high power rectifiers and SCR's. Provides maximum cooling for minimum space requirements. Size, 4″ sq. **476 (Fig. G):** For 1¼″ hex SCR's and rectifiers. Optimum fin efficiency with unique radial fin designs. Size, 5″ sq. **486 and 489 (Fig. G):** For mounting 1¾″ hex SCR's; utilize the decreased conduction path length between semiconductors and fin area for maximum cooling of these large devices. Size, 6″ x 6.25″, except 489, 9″ x 6.25″.

| Wakefield Number | Net Ea., Lots 1-4 | 5-9 | Wakefield Number | Net Ea., Lots 1-4 | 5-9 | Wakefield Number | Net Ea., Lots 1-4 | 5-9 |
|---|---|---|---|---|---|---|---|---|
| **465-K** | **$6.60** | **$5.85** | **476-H, J, W** | **$ 8.35** | **$ 7.50** | **489-K** | **$18.90** | **$16.90** |
| **465-G, H, J** | **7.00** | **6.25** | **486-K** | **13.40** | **12.00** | **489-W, Y, Z** | **22.70** | **20.25** |
| **476-K** | **7.20** | **6.45** | **486-W, Y, Z** | **14.50** | **13.00** | | | |

DELTA

DIVISION

# WAKEFIELD ENGINEERING INC. Semiconductor Coolers

## SERIES 490 KING SIZE HEAT SINKS (FIG. H)

Natural convection sinks for multi-cell high power rectifiers. Model 490-12.0, under natural convection conditions, will permit a case temperature rise of a 3½″ sq. rectifier of only 110° C at 600 W dissipation. Full curves for all types available on request. Aluminum alloy 6063T5 per QQ-A-200; black anodize finish per MIL-A-8625 Type II except for the semiconductor mounting surface where the electrical stud and high current busswork connections are made. Four mounting lugs on each end with std. ⅜″ dia. bolts, nuts and washers; or, use Type 109 mounting brackets (glass fiber reinforced plastic angles) for wall mounting or insulating (two required per sink), not supplied. Size, 6.75″ w. x 9.25″ d. x 3.5″ h., 490-3.5; 6″ h., 490-6.0; 12″ h., 490-12.0. All have 3½″ semiconductor mounting area. For square slots add **8c** per part. Part No. letter suffix indicates mounting hole type; see *Ordering Information below.

| Wakefield Number | Net Each, Lots of | | Wakefield Number | Net Each, Lots of | |
|---|---|---|---|---|---|
| | 1-4 | 5-9 | | 1-4 | 5-9 |
| **490-3.5-K** | **$10.70** | **$ 9.65** | **490-6.0-W, Y, Z** | **$17.50** | **$15.70** |
| **490-3.5-A1, B1, C1** | **11.20** | **10.00** | **490-12.0-K** | **30.00** | **28.20** |
| **490-3.5-W, Y, Z** | **11.30** | **10.20** | **490-12.0-A1, B1, C1** | **31.50** | **28.20** |
| **490-6.0-K** | **17.00** | **15.20** | **490-12.0-W, Y, Z** | **30.50** | **28.80** |
| **490-6.0-A1, B1, C1** | **17.30** | **15.50** | | | |

**Wakefield No. 109 Mounting Bracket**—Used with Series 490 heat sinks. Insulation strength, 5000 volts. Size, 7.50″ w. x 1.5″ d. x 1.5″ h. Mtg. centers spaced 6″. Net Each, Lots of: 1–99.................... **$1.10** 100–499.................... **$0.95**

## SERIES 500 COPPERCOOL FORCED CONVECTION COOLERS

For critical designs requiring maximum performance under medium air pressure. Take semiconductors of any mounting style. Hose adapters and top covers available; prices on request. **501** (**Fig. I**): Thermal resistance 0.5° C/watt at 32 CFM; 1¾″ w. x 2¼″ d. x 1¾″ h. **502:** Similar to (Fig. I) except has set of fins on each side of semiconductor. Thermal resistance 0.3° C/watt at 26 CFM; 3½″ w. x 1¾″ d. x 1¾″ h. **503:** Larger version of 502. Thermal resistance 0.3° C/watt at 15 CFM; 3½″ w. x 3½″ d. x 1¾″ h. **504** (**Fig. J**): Thermal resistance 0.3° C/watt at 40 CFM; 1¾″ sq. x 1¾″ h. **505:** Same as 504, but fins extend full width of mounting surface. Thermal resistance 0.3° C/watt at 21 CFM; 1¾″ w. x 2″ d. x 1¾″ h. Base and fins are copper with black ebonol C finish. Part No. letter suffix indicates mounting hole type; see *Ordering Information below for other mounting types available—prices on request.

| Wakefield Number | Net Each, Lots of | | | Wakefield Number | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|
| | 1-4 | 5-9 | 10-24 | | 1-4 | 5-9 | 10-24 |
| **501-K** | **$ 6.45** | **$ 5.95** | **$ 5.45** | **504-K** | **$5.80** | **$5.35** | **$4.90** |
| **502-K** | **10.00** | **9.10** | **8.35** | **505-K** | **8.20** | **7.60** | **6.95** |
| **503-K** | **17.70** | **16.30** | **15.00** | | | | |

## SERIES 600 CIRCUIT BOARD COOLERS

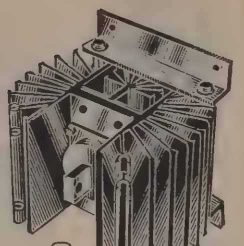
Low profile, flat surface coolers for printed circuit and externally mounted uses. Available for TO-8 and other transistor case styles and sizes to 1⅓″ O.D. **601** (**Fig. K**): For TO-8 transistors; temp. rise 89° C at 10 watts; 1.25″ w. x 2.00″ d. x 0.56″ h. **603** (**Fig. K**): Same, but temp. rise 83° C at 12 watts; 2.00″ w. x 2.00″ d. x 0.56″ h. **621** (**Fig. L**): For semis to 1.335″ O.D.; temp. rise, 84° C at 18 watts; 1.50″ w. x 4.75″ d. x 0.46″ h. **623** (**Fig. L**): Same, but temp. rise, 72° C at 23 watts; 3.00″ w. x 4.75″ d. x 0.46″ h. **641** (**Fig. L**): For semis to 1.335″ O.D.; temp. rise, 50° C at 23 watts; 3″ w. x 4.12″ d. x 1″ h. Aluminum alloy with black anodize finish. For square slots to accept Type 104 insulators, add suffix **S** to number and **5c** to price. Part No. letter suffix indicates mounting hole type; see *Ordering Information below for other mounting types available—prices on request.

| Wakefield Number | Net Each, Lots of | | | | | Wakefield Number | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | | 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
| **601-K** | **$0.85** | **$0.69** | **$0.59** | **$0.50** | **$0.45** | **623-A, K** | **1.56** | **1.27** | **1.08** | **.92** | **.82** |
| **603-K** | **.94** | **.77** | **.65** | **.55** | **.49** | **641-A, K** | **1.95** | **1.59** | **1.35** | **1.14** | **1.02** |
| **621-A, K** | **1.04** | **.85** | **.72** | **.61** | **.54** | | | | | | |

## SERIES 680 CIRCUIT BOARD HEAT SINKS (FIG. M)

Optimum natural convection cooling per unit volume above the circuit board. Free circulation of air from any direction. High thermal conductivity aluminum alloy, black anodized. Accepts all popular transistors. **Temp. Rise:** 608-.5, 90° C at 10 watts; 680-.75, 90° C at 13 watts; 680-1.0, 90° C at 15 watts; 680-1.25, 100° C at 21 watts. **Size:** Base 1.81″ sq. with mtg. centers 1.50″, all units. Transistor mtg. area 1.31″ dia., min. all units. Height, .50″, 680-.5; .75″, 680-.75; 1″, 680-1.0; 1.25″, 680-1.25. Part No. letter suffix indicates mounting hole type; see *Ordering Information below.

| Wakefield Number | Net Each, Lots of | | | Wakefield Number | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|
| | 1-49 | 50-99 | 100-499 | | 1-49 | 50-99 | 100-499 |
| **680-.5A, B, E, F, G, G1, H, J, K** | **$0.98** | **$0.93** | **$0.80** | **680-1.0A, B, E, F, G, G1, H, J, K** | **$1.09** | **$1.03** | **$0.88** |
| **680-.5C, D, R, T, U** | **1.14** | **1.07** | **.91** | **680-1.0C, D, R, T, U** | **1.25** | **1.19** | **1.00** |
| **680-.75A, B, E, F, G, G1, H, J, K** | **1.00** | **.95** | **.82** | **680-1.25A, B, E, F, G1, H, J, K** | **1.14** | **1.07** | **.91** |
| **680-.75C, D, R, T, U** | **1.22** | **1.16** | **1.00** | **680-1.25C, D, R, T, U** | **1.30** | **1.22** | **1.05** |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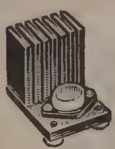
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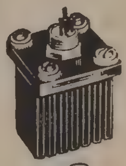
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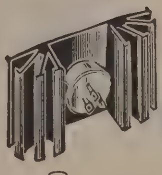
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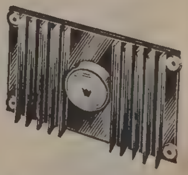
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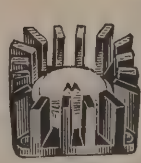
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## ★ORDERING INFORMATION

### SUFFIX LETTERS FOR MOUNTING TYPES

Parts as listed are standard; deviations are special and tooling charges are required.

| Wakefield No. | Standard Suffix Available |
|---|---|
| **301*, 302, 303** | K, L*, M*, N*, R |
| **401, 403, 413, 421, 423** | A, B, C, D, E, F, G, H, J, K, R, T, U, V, W, D1, E1, E2, F1, J1, L1 |
| **431, 433** | H, J, K, W |
| **441** | H, J, W, E1, F1, J1, L1 |
| **451** | H, J, K, W, Z |
| **465** | G, H, J, K |
| **476** | H, J, K, W |
| **486, 489** | K, W, Y, Z |
| **490** | K, W, Y, Z, A1, B1, C1 |
| **501, 502, 503** | A, B, C, D, E, F, G, H, J, K, W, E1, E3, F1 |
| **504, 505** | K, L, M, N, P, Q, X, E1, F1 |
| **601, 603** | E, F, K, R, T, U, F1, H1 |
| **621, 623, 641** | A, B, C, D, E, F, G, H, J, K, R, T, U, V, W, D1, E1, E2, H1 |
| **680** | A, B, C, D, E, F, G, J, K, R, T, U, E1, E2, G1, H1 |

*301 available single-end L, M and N only.

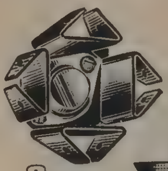
**Final Suffix S:** When ordering heat sinks to accommodate Types 104 or 106 insulators, the suffix **S** is added to the heat sink number. Wider, square bottomed slots required for these two insulators are positioned further from the ends of the sinks.

### MOUNTING SPECIFICATIONS

Location of mounting groups on coolers to be within 1/32″ of true position. Hole diameters **E** thru **Y** not free of anodize on Series 500; **R** (ream) free of anodize.

| Suffix | Mtg. Hole | Suffix | Mtg. Hole |
|---|---|---|---|
| A | TO-3 | T | TO-8 |
| B | TO-36 | U | TO-57 |
| C | SP-33/MT-1 | V | TO-3 |
| D | TO-53 | W | .765″ |
| E | .200″ | X | 5/16-24 |
| F | .270″ | Y | 1.030″ |
| G | .330″ | Z | .765″ |
| H | .390″ | A1, B1 | .270″ |
| J | .520″ | C1 | .220″ |
| K | Blank | D1 | TO-3/10-36 |
| L | 8-32 x ½″ | | |
| M | 10-32 x ⅝″ | E1–E3 | TO-66 |
| N | ¼-28 x ⅝″ | F1 | TO-55 |
| P | ⅜-24 | G1, H1 | TO-66 |
| Q | ½-20 | J1, L1 | TO-3 |
| R | .4975 | | |

# DELTA WAKEFIELD ENGINEERING INC. DIVISION Semiconductor Coolers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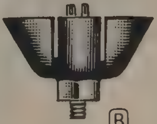
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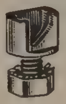
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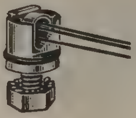
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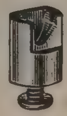
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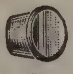
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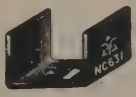
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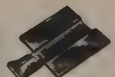
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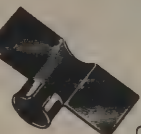
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## TYPE 690 CIRCUIT BOARD HEAT SINKS (FIG. A)

Designed to give the most power dissipation per unit cost. Power dissipation of 10–20 watts is obtainable. Made of highest thermally conductive pure aluminum, 1100 alloy. Available in both plain (suffix **P**) and black anodize (suffix **B**) finish. Available mounting patterns are for TO-3 and TO-66 JEDEC packages.

| Wakefield Number | Fits Case | Size, In. W. x H. | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| 690-3-P | TO-3 | 1.81 x 1.25 | 31c | 23c | 21c | 16c | 15c |
| 690-66-P | TO-66 | 1.81 x 1.25 | 31c | 23c | 21c | 16c | 15c |
| 690-3-B | TO-3 | 1.81 x 1.25 | 37c | 28c | 26c | 19c | 18c |
| 690-66-B | TO-66 | 1.81 x 1.25 | 37c | 28c | 26c | 19c | 18c |

## TYPE 695 CIRCUIT BOARD HEAT SINKS (FIG. B)

Made of thermally conductive pure aluminum, 1100 alloy. Available in black anodize (suffix **B**) or plain (suffix **P**) finish. Designed to accept semiconductors with threaded studs up to 10-32. Power dissipation up to 5 watts is obtainable for low power stud devices.

| Wakefield Number | Fits Case | Size, In. W. x H. | Net per Pkg. of 10 1-9 | 10-49 | 50-99 |
|---|---|---|---|---|---|
| 695-P | DO-4 | 1.33 x .484 | $0.93 | $0.87 | $0.75 |
| 695-B | DO-4 | 1.33 x .484 | 1.30 | 1.20 | 1.05 |

## SERIES 254 THERMAL RETAINERS FOR TO-5 CASES

Designed as thermal links from TO-5 semiconductor case to cooler or chassis member acting as heat sink. Provides heat sink contact at bottom of case flange for best cooling. Ideal for use with TO-5 Kovar header case. All six types include 254-LS stainless steel locking spring for insertion behind transistor, using Type 120 thermal compound at header. Made of Zamak 3, with chromate conversion finish. Type 254-S1 has built-in electrical isolation, with stud mount of 6061-T6 aluminum with gold irridie finish. Supplied less mounting hardware.

| Wakefield Number | Fig. | Mounting | Thermal Resistance | Net per Pkg. of 10 1-9 | 10-24 | 25-49 |
|---|---|---|---|---|---|---|
| 254-S | C | Stud | 4.0° C/W | $1.53 | $1.44 | $1.24 |
| 254-SI | D | Stud* | 6.0° C/W | 1.87 | 1.76 | 1.52 |
| 254-T | E | Tapped hole | 5.3° C/W | 1.70 | 1.60 | 1.38 |
| 254-P | F | Plain | 4.0° C/W | 1.25 | 1.18 | 1.02 |
| 254-D | F | Plain† | 4.0° C/W | 1.62 | 1.50 | 1.32 |

*With electrical isolation. †4-40 tapped thru center of base.

## SERIES 630 HEAT SINKS FOR TO-3 AND TO-66 (FIG. G)

Maximum cooling heat sinks for TO-3 and TO-66. Available in 3 types utilizing same base size but three leg lengths. Type 1100-H14 aluminum 0.062" thick. Black anodize (suffix **B**) or plain (suffix **P**) finish. Full curves on request.

| Wakefield Number TO-3 | Wakefield Number TO-66 | Temp. Rise °C/5 W | Height, In. | Net per Pkg. of 100 1-4 | 5-9 | 10-49 |
|---|---|---|---|---|---|---|
| 631-3-B | 631-66-B | 68 | 1.0 | $14.60 | $10.50 | $ 9.80 |
| 631-3-P | 631-66-P | 68 | 1.0 | 6.75 | 4.85 | 4.50 |
| 632-3-B | 632-66-B | 57 | 2.0 | 17.30 | 12.25 | 11.60 |
| 632-3-P | 632-66-P | 57 | 2.0 | 9.30 | 6.85 | 6.35 |
| 633-3-B | 633-66-B | 45 | 3.0 | 20.00 | 14.40 | 13.40 |
| 633-3-P | 633-66-P | 45 | 3.0 | 12.20 | 8.80 | 8.20 |

## TYPE 292 HEAT SINKS (FIG. H)

Accommodates most TO-92 plastic transistors for heat dissipation. Aluminum (type 6061T6) with black anodize finish (suffix **AB**) or no finish (suffix **AP**); beryllium copper with black ebonol finish (suffix **CB**) or no finish (suffix **CP**).

| Wakefield Number | Net per Pkg. of 10 1-4 | 5-9 | 10-49 | 50-99 | Wakefield Number | Net per Pkg. of 10 1-4 | 5-9 | 10-49 | 50-99 |
|---|---|---|---|---|---|---|---|---|---|
| 292-AB | $3.00 | $2.54 | $2.10 | $1.80 | 292-CB | $7.70 | $5.90 | $5.15 | $4.50 |
| 292-AP | 1.50 | 1.27 | 1.05 | .90 | 292-CP | 6.30 | 5.25 | 4.40 | 3.70 |

## TYPE 296 HEAT SINKS (FIG. I)

Snaps onto TO-5 transistors. Finishes same as Type 292, above. Wing height, ¼", 296-1; ½", 296-2; ¾", 296-3; 1", 296-4.

| Wakefield Number | Net per Pkg. of 100 1-4 | 5-9 | 10-49 | 50-99 | Wakefield Number | Net per Pkg. of 100 1-4 | 5-9 | 10-49 | 50-99 |
|---|---|---|---|---|---|---|---|---|---|
| 296-1-AB | $3.60 | $3.10 | $2.60 | $2.15 | 296-3-AB | $ 3.90 | $ 3.00 | $ 2.60 | $2.10 |
| 296-1-AP | 1.10 | .95 | .80 | .66 | 296-3-AP | 1.80 | 1.50 | 1.30 | 1.05 |
| 296-1-CB | 5.10 | 4.60 | 4.00 | 3.50 | 296-3-CB | 10.00 | 9.00 | 7.70 | 6.50 |
| 296-1-CP | 3.60 | 3.10 | 2.60 | 2.15 | 296-3-CP | 9.70 | 8.00 | 6.80 | 5.70 |
| 296-2-AB | 3.00 | 2.50 | 2.10 | 1.80 | 296-4-AB | 5.90 | 5.00 | 4.20 | 3.90 |
| 296-2-AP | 1.50 | 1.25 | 1.05 | .90 | 296-4-AP | 2.95 | 2.50 | 2.10 | 1.80 |
| 296-2-CB | 7.70 | 5.90 | 5.15 | 4.50 | 296-4-CB | 16.00 | 14.00 | 11.50 | 9.50 |
| 296-2-CP | 6.30 | 5.25 | 4.40 | 3.70 | 296-4-CP | 14.00 | 12.00 | 10.00 | 8.50 |

## INSULATING WAFERS FOR TO-3 AND TO-66

Aluminum alloy per 5052-H38 with Delta Coate 151H (suffix **DC**) or hard coat (suffix **HC**). Thermal conductive coating on transistor side only, including edges, hole I.D.

| Wakefield Number | Net per Pkg. of 10 1-9 | 10-49 | 50-100 |
|---|---|---|---|
| 170-, 171-, 172-DC | $0.94 | $0.81 | $0.78 |
| 170-, 171-, 172-HC | 1.15 | .98 | .95 |

## EPOXY RESINS, HARDENERS AND ADHESIVES

### MIXING PROPORTIONS AND WORKING TIME

| Hdnr. No. | Net Wt./Btl. Lbs. | Parts Hardener per 100 Parts Resin 151 | 152,153 | 154 | Wkg. Time Hours |
|---|---|---|---|---|---|
| A4 | .30 | ..... | 7.5 | 10.5 | .75 |
| B4 | .14 | ..... | 3.5 | 5.0 | .50 |
| C4 | .18 | ..... | 4.5 | 6.5 | 4.0 |
| D4 | .92 | ..... | 23.0 | 33.0 | 24.0 |
| H3 | .12 | 4 | ........ | ...... | 4.0 |

**Delta Coate 151:** Thermally conductive dielectric epoxy coating which may be applied using conventional paint spraying equipment. A .006" coating yields 1000 V working dielectric strength for applications such as electrically isolating semiconductors from their heat sinks. **Delta Bond 152:** Contains no volatile solvents and is therefore 100% solid adhesive. Effective on porous and non-porous surfaces such as metals, glass, ceramics and most plastics. **Delta Cast 153:** Pourable casting resin for encapsulating components and assemblies. Thermal expansion is similar to aluminum and copper and assemblies will operate over a very wide temperature range. **Delta Bond 154:** Medium viscosity aluminum filled resin with the best thermal conductivity of this series. Not recommended for use as an electrical insulator nor conductor; principal application is that of a good thermal-mechanical adhesive for applications such as bonding fins to base plates or semiconductor mounting blocks or brackets to heat sinks. Machines freely. **Hardeners:** Available as listed for use with resins. Working time, cure time and properties of cured resins vary. For additional data request Bulletin No. 28.

| Resin No. | Size Can | Hardener Req'd | Net Ea., Lots 1-9 | 10-49 |
|---|---|---|---|---|
| 151-Q | Qt. | H3 | $14.40 | $12.90 |
| 152-Q | Qt. | A4, B4,<br>C4, D4 | 10.50 | 9.40 |
| 152-G | Gal. | | 37.50 | 33.25 |

| Resin No. | Size Can | Hardener Req'd | Net Ea., Lots 1-9 | 10-49 |
|---|---|---|---|---|
| 153-Q | Qt. | A4, B4<br>C4, D4 | $10.50 | $ 9.40 |
| 153-G | Gal. | | 37.50 | 33.25 |
| 154-Q | Qt. | | 8.75 | 7.90 |

| Hardener No. | Net Ea., Lots 1-9 | 10-49 |
|---|---|---|
| A4 | $5.20 | $3.75 |
| B4 | 3.10 | 2.25 |
| C4 | 4.15 | 3.00 |

| Hardener No. | Net Ea., Lots 1-9 | 10-49 |
|---|---|---|
| D4 | $8.70 | $6.30 |
| H3 | 3.10 | 2.25 |

DELTA
# WAKEFIELD ENGINEERING INC. Semiconductor Coolers
DIVISION

## SERIES 130 PRESS-PAK HEAT SINKS AND CLAMPS (FIG. A)

Standard single heat sinks for use with Type 130 clamps; multiple heat sinks available, data and prices on request. T-slots accept standard hex head machine bolts for mounting and bussing. Only one sink of a given pair should be bolted to rigid bussing. Aluminum alloy 6063T5 with black anodize (suffix **B**) or gold irridite (suffix **G**) finish. Natural and forced convection data available on request. Size, 5" w. x 4½" d., except 133-4.5, 7" w. x 4½" d. and 133-7.5, 7" w. x 7½" d.

| Wakefield Number | Ht., In. | Net Each, Lots of | | | Wakefield Number | Ht., In. | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1-4 | 5-9 | 10-24 | | | 1-4 | 5-9 | 10-24 |
| 131-4.5-B | 1⅛ | $4.75 | $3.45 | $3.20 | 132F-4.5-B | 3¼ | $ 6.30 | $ 4.55 | $ 4.25 |
| 131-4.5-G | 1⅛ | 4.15 | 3.00 | 2.80 | 132F-4.5-G | 3¼ | 5.45 | 3.95 | 3.70 |
| 131F-4.5-B | 2 | 5.05 | 3.65 | 3.40 | 133-4.5-B | 3⅛ | 12.65 | 9.15 | 8.50 |
| 131F-4.5-G | 2 | 3.90 | 3.00 | 2.80 | 133-4.5-G | 3⅛ | 11.75 | 8.50 | 7.90 |
| 132-4.5-B | 2¼ | 5.90 | 4.25 | 3.95 | 133-7.5-B | 3⅛ | 18.00 | 13.00 | 12.10 |
| 132-4.5-G | 2¼ | 5.10 | 3.70 | 3.45 | 133-7.5-G | 3⅛ | 16.90 | 12.20 | 11.40 |

## SERIES 130 CLAMP AND SPRING ASSEMBLIES

Fit all Press-Pak SCR sizes up to 2.25" dia. Affords clamping force centering accuracy of less than 10% of junction diameter with Series 130 heat sinks, above.

### STUD ASSEMBLIES

Crossbar is CRS, 3.8" lg. x 1³⁄₁₆" w. x ½" thick. Stainless steel studs spaced 2¾". Assembly is coated with epoxy insulating compound for 5 kVAC breakdown min.

| Wakefield No. | Clearance* | Net Each, Lots of | | | Wakefield No. | Clearance* | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | | | 1-9 | 10-24 | 25-49 |
| 130-A | 1.74–2.12 | $4.44 | $3.69 | $3.08 | 130-H | 3.91–4.29 | $5.20 | $4.40 | $3.70 |
| 130-B | 2.05–2.43 | 4.44 | 3.69 | 3.08 | 130-J | 4.22–4.60 | 5.20 | 4.40 | 3.70 |
| 130-C | 2.36–2.74 | 4.44 | 3.69 | 3.08 | 130-K | 4.53–4.91 | 5.20 | 4.40 | 3.70 |
| 130-D | 2.67–3.05 | 4.90 | 4.05 | 3.44 | 130-L | 4.84–5.22 | 5.70 | 4.80 | 4.00 |
| 130-E | 2.98–3.36 | 4.90 | 4.05 | 3.44 | 130-M | 5.15–5.53 | 5.70 | 4.80 | 4.00 |
| 130-F | 3.29–3.67 | 4.90 | 4.05 | 3.44 | 130-N | 5.46–5.84 | 5.70 | 4.80 | 4.00 |
| 130-G | 3.60–3.98 | 5.20 | 4.40 | 3.70 | 130-P | 5.77–6.15 | 5.70 | 4.80 | 4.00 |

*Min.–max., stud bar to top of clamp; includes spring assembly height.

### SPRING ASSEMBLIES

Each leaf provides up to 400 lbs. clamping force; integral force indicator reads lbs./leaf in 100-lb. graduations (available without indicator). Stainless steel alloy has low creepage rate (less than 15% in 5 years at 400 lbs./leaf at 150° C operating); better than the best automotive valve-spring steels. Swivel pad is 2024 aluminum.

| Wakefield No.* | Leaves | | Net Each, Lots of | | | Wakefield No.* | Leaves | | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | H. | 1-9 | 10-24 | 25-49 | | No. | H. | 1-9 | 10-24 | 25-49 |
| 130-2 | 2 | .50" | $3.26 | $2.70 | $2.28 | 130-4 | 4 | .72" | $4.44 | $3.69 | $3.08 |
| 130-3 | 3 | .61" | 3.85 | 3.20 | 2.67 | 130-5 | 5 | .83" | 4.97 | 4.19 | 3.47 |

*For unit without indicator, deduct **25c.**

## SERIES 260 CUP CLIPS FOR TO-5 AND TO-18 CASE

Brass base per QQB626a Comp. 22, black ebonol C finish per MIL-F-495. Cups are beryllium copper alloy #10 per MIL-C-81021, black ebonol C finish per MIL-F-495. Ceramic spacers are beryllium oxide, 99% purity, 95% density. Flared lip standard for easy component insertion. **Plain Mounting Base Types** (**Fig. B**): Can solder into place or used with pan head screws (#4 for TO-5; #2 for TO-18); 260-P5B and 260-P18B are for mounting with thermally conductive adhesive such as Delta Bond 152. **Tapped Base Types** (**Similar Fig. B**): Use 4-40 screw for TO-5; 2-56 for TO-18; 260-4TH5B and 260-2TL18 have thick base for wider screw length tolerances. **Stud Mounting Types** (**Figs. C and D**): Have 6-32 or 10-32 studs for TO-5 case; 4-40 and 6-32 for TO-18. Operate continuously between −100° F to +300° F. **Suffix B** (e.g., 260-P5**B**): Beryllium oxide insulated for operations requiring low stray capacity to heat. Hypot rating 1000 VAC, 60 Hz for TO-5; 750 VAC, 60 Hz for TO-18. Color coded white. **Suffix E:** Epoxy insulated; color coded yellow. Hypot rating, 500 VAC, 60 Hz for TO-5; 250 VAC, 60 Hz for TO-18. **No Suffix:** Indicates non-insulated. **Size:** 0.29" I.D. cup, hex base .37" across flats for TO-5; .170" I.D. with .25" hex for TO-18.

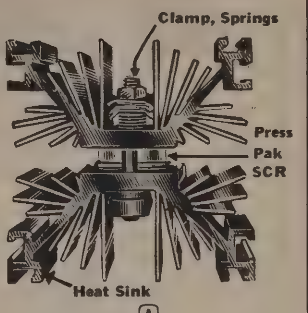
| Wakefield Number | Fig. | Typical Case-to-Sink Thermal Resistance, °C/W | Hole or Thread Size | Net per Pkg. of 10 | | |
|---|---|---|---|---|---|---|
| | | | | 1 | 2-4 | 5-9 |
| 260-P5 | B | 12* | .112" diameter | $1.30 | $1.12 | $1.10 |
| 260-P5B | B | 16* | .185" diameter | 5.70 | 4.90 | 4.80 |
| 260-4T5 | B | 12* | 4-40 fem., chamfer | 2.90 | 2.50 | 2.45 |
| 260-4T5E | B | 14* | 4-40 fem., chamfer | 3.80 | 3.25 | 3.15 |
| 260-4TH5B | B | 16* | 4-40 female | 7.65 | 6.60 | 6.45 |
| 260-4TH5E | B | 14* | 4-40 female | 3.80 | 3.25 | 3.15 |
| 260-6SH5 | C | 12* | 6-32 stud | 4.40 | 3.80 | 3.70 |
| 260-6SH5B | C | 16* | 6-32 stud | 7.65 | 6.60 | 6.45 |
| 260-6SH5E | C | 14* | 6-32 stud | 5.70 | 4.90 | 4.80 |
| 260-10SH5 | D | 12* | 10-32 stud | 3.30 | 2.85 | 2.80 |
| 260-10SH5B | D | 16* | 10-32 stud | 7.65 | 6.60 | 6.45 |
| 260-10SH5E | D | 14* | 10-32 stud | 4.40 | 3.80 | 3.70 |
| 260-P18 | B | 22.5† | .089" diameter | 1.30 | 1.12 | 1.10 |
| 260-P18B | B | 27.5† | .128" diameter | 5.70 | 4.90 | 4.80 |
| 260-2T18 | B | 22.5† | 2-56 female | 3.30 | 2.85 | 2.80 |
| 260-2TH18 | B | 22.5† | 2-56 female | 3.30 | 2.85 | 2.80 |
| 260-2TH18B | B | 27.5† | 2-56 female | 8.10 | 7.00 | 6.85 |
| 260-2TH18E | B | 25.0† | 2-56 female | 4.40 | 3.80 | 3.70 |
| 260-2TL18E | B | 25.0† | 2-56 female | 3.80 | 3.25 | 3.15 |
| 260-4SH18 | C | 22.5† | 4-40 stud | 3.30 | 2.85 | 2.80 |
| 260-4SH18B | C | 27.5† | 4-40 stud | 7.65 | 6.60 | 6.45 |
| 260-4SH18E | C | 25.0† | 4-40 stud | 4.40 | 3.80 | 3.70 |
| 260-6SH18 | D | 22.5† | 6-32 stud | 3.30 | 2.85 | 2.80 |
| 260-6SH18B | D | 27.5† | 6-32 stud | 7.65 | 6.60 | 6.45 |
| 260-6SH18E | D | 25.0† | 6-32 stud | 4.40 | 3.80 | 3.70 |

*With #30 copper-constantan thermocouple soldered to center of header of RCA 2N3053.
†With #30 copper-constantan thermocouple soldered to emitter-tab of Sprague 2N2907A.

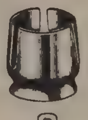
## SERIES 100 "BLIND" NYLON INSULATING FASTENERS

**Type 102-N** (**Fig. F**): Fastener-washer pair quickly mounts and electrically isolates most of the Series 400 and 600 heat sinks. Size, 7⁄16" O.D. x 1⁄16" thick; for panel hole .187" dia. and .063" max. panel thickness. **Type 104** (**Fig. G**): Screw mount with #8 sheet metal or machine screw; screw length, ⅝" plug panel thickness. **Type 106** (**Fig. H**): Larger screw mount type; screw length, ¾" plus panel thickness.

| Wakefield Number | Fig. | Hypot Kilovolts | Shoulder Dia. | Net per Pkg. of 100 | | |
|---|---|---|---|---|---|---|
| | | | | 1-9 | 10-49 | 50-99 |
| 102-N | F | 1.5 | ⅜" | $2.43 | $2.16 | $1.89 |
| 104 | G | 3 | ⅜" | 2.34 | 2.08 | 1.82 |
| 106 | H | 3 | ½" | 3.42 | 3.04 | 2.66 |



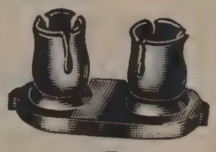
A



B

C

D



E

F

G

H

## SERIES 260
## THERMAL RETAINERS (FIG. E)

Two cup clips are bonded with Delta Bond 152 to an aluminum base precoated with Delta Coate 151H. This provides a thermal equalizing link with excellent thermal dissipation characteristics. Clips are electrically insulated from the strip and each other. Cup clip beryllium copper with black ebonol C finish; base aluminum 1100-H14 clear irridite and Delta Coate 151 finish. **260-5D:** Thermal resistance from TO-5 cup clip to mounting base is 13° C/watt and from cup to cup is 30° C/watt. **260-18D:** Thermal resistance from TO-18 cup clip to mounting base is 24° C/watt and cup to cup is 60° C/watt.

| Wakefield Number | Net per Pkg. of 10 | | |
|---|---|---|---|
| | 1 | 2-4 | 5-9 |
| 260-5D | $8.80 | $7.60 | $7.40 |
| 260-18D | 8.80 | 7.60 | 7.40 |

# Burroughs Readouts

## NIXIE® INDICATOR TUBES

All tubes are available with radioactive gas for improved dark ionization at 10% premium price. Tube types B-4032, B-4021, B-5031, 6844A, B-5991, B-5092 and B-6091 are available to JAN specifications.

| Bur. No. | Description | Size: Character Ht., In. | Net Ea., Lots of 1-24* |
|---|---|---|---|
| **B-4998*** | (0–9), EIA No. 8790 | .3 Rect. | $21.35 |
| **B-49982*** | (+, –) | .3 Rect. | 21.35 |
| **BD-200S** | (0–9), EIA No. 7009 | .3 Min. Rd. | 19.00 |
| **B-4021** | (0–9), low voltage, type BD-244, EIA No. 8502 | .3 Min. Rd. | 33.00 |
| **B-4022** | (+, –), type BD-255 | .3 Min. Rd. | 19.00 |
| **B-4026** | (+, –), low voltage | .3 Min. Rd. | 33.00 |
| **B-4031*** | (+, –) | .3 Min. Rd. | 19.00 |
| **B-4032*** | (0–9), EIA No. 7977 | .3 Min. Rd. | 19.00 |
| **B-4081** | (0–9), wide angle | .3 Min. Rd. | 21.00 |
| **B-5440*** | (0–9) | .6 Std. | 8.00 |
| **B-5441*** | (0–9), decimal points | .6 Std. | 8.40 |
| **B-5445*** | (0–9), B-5440 upside down | .6 Std. | 8.00 |
| **B-5442*** | (+, –) | .6 Std. | 8.00 |
| **B-5448*** | (+, –), OL | .6 Std. | 8.40 |
| **B-5440A*** | B-5440 without top tip-off | .6 Std. | 8.40 |
| **B-5441A*** | B-5441 without top tip-off | .6 Std. | 8.75 |
| **B-5442A*** | B-5442 without top tip-off | .6 Std. | 8.40 |
| **B-5750*** | (0–9) | .5 Std. | 6.75 |
| **B-5750S** | B-5750 with short leads | .5 Std. | 6.75 |
| **B-5961** | (0–9), wide angle, non-mercury extended life | .6 Rect. | 32.00 |
| **B-5991*** | (0–9), wide angle, EIA No. 8422 | .6 Rect. | 15.75 |
| **B-5992*** | (+, –), wide angle | .6 Rect. | 15.75 |
| **B-59956*** | (0–9), wide angle with decimal point | .6 Rect. | 17.35 |
| **6844A** | (0–9) | .6 Rd. | 11.00 |
| **B-5016** | (+, –), type BD-214 | .6 Rd. | 11.00 |
| **B-5031*** | (0–9), EIA No. 8037 | .6 Rd. | 15.75 |
| **B-5032*** | (+, –) | .6 Rd. | 15.75 |
| **B-50911*** | (+, –), wide angle | .6 Rd. | 15.75 |
| **B-5092*** | (0–9), wide angle | .6 Rd. | 15.75 |
| **B-6012** | (+, –) | Super† | 14.50 |
| **B-6033*** | (0–9) | Super† | 20.00 |
| **B-6034*** | (+, –) | Super† | 19.00 |
| **B-6091*** | (0–9), wide angle, EIA No. 8423 | Super† | 19.00 |
| **BD-206** | (0–9), EIA No. 7153 | Super† | 14.50 |
| **B-8091*** | (0–9), wide angle | Large† | 22.50 |
| **B-7037*** | (0–9), side view | Jumbo† | 26.00 |
| **B-7094*** | (0–9), wide angle | Jumbo† | 45.00 |

### ALPHANUMERIC NIXIE TUBES

| | | | |
|---|---|---|---|
| **B-5971*** | 13 segments, wide angle, EIA No. 8781 | .6 | $30.00 |
| **B-8971*** | 15 segments, side view | 1.4 | 28.25 |
| **B-7971*** | 15 segments, side view | 2.5 | 15.85 |

*Ultra-long life; tubes contain mercury. †8", 1.4" and 2".

## SERIES C2500 MULTIDIGIT ASSEMBLIES

For operation of Nixie® tubes with BCD inputs. Can provide configuration of 3 to 15 digits. Mounting hardware available.

### DECODER/DRIVER

| Burroughs No. | Net Each, Lots of | |
|---|---|---|
| | 1-9 | 10-29* |
| C2502-3 | $43.00 | $38.70 |
| C2502-4 | 55.50 | 49.95 |
| C2502-5 | 65.50 | 58.95 |

### DECODER/DRIVER WITH MEMORY

| Burroughs No. | Net Each, Lots of | |
|---|---|---|
| | 1-9 | 10-29* |
| C2504-3 | $66.00 | $59.40 |
| C2504-4 | 80.00 | 72.00 |
| C2504-5 | 96.50 | 86.85 |

### DECADE COUNTER WITH MEMORY

| | | |
|---|---|---|
| C2506-3 | $ 75.50 | $68.00 |
| C2506-4 | 91.00 | 81.90 |
| C2506-5 | 110.00 | 99.00 |
| C2506-6 | $142.50 | $128.25 |
| C2506-7 | 167.00 | 150.30 |

## NIXIE® TUBE BEZEL ASSEMBLIES

These assemblies can be used with Burroughs driver modules; e.g., BIPCO® drives, BCD decoder/drivers, counters, etc. Specify type of module to be used. Include appropriate indicator tube sockets mounted in place. Complete readout driver modules can be mounted to the bezel at no extra charge (specify). Decimal points are available mounted in position with complete socket assembly. Add **$3.00** per decimal point to the basic price. For colons, add **$6.00** per colon to the basic price.

| Description | Net Each Lots of 1-24* | Description | Net Each Lots of 1-24* |
|---|---|---|---|
| 2 position bezel | $17.50 | 7 position bezel | $30.00 |
| 3 position bezel | 20.00 | 8 position bezel | 32.50 |
| 4 position bezel | 22.50 | 9 position bezel | 35.00 |
| 5 position bezel | 25.00 | 10 position bezel | 37.50 |
| 6 position bezel | 27.50 | | |

Ask for prices on unfinished bezel material, available in Extrusion (supplied in cut lengths), End Caps and Polaroid Filter.

## DECODER/DRIVERS

| Burroughs No. | Description | Net Ea., Lots of 1-24* |
|---|---|---|
| **BIP-8211P** | 8-line, 8-4-2-1 BCD, drives B-5991 | $57.00 |
| **BIP-8224P** | 4-line, 8-4-2-1 BCD, negative logic, drives B-5991 | 85.50 |
| **BIP-8229P** | 4-line, 8-4-2-1 BCD, drives B-5991 | 70.50 |
| **BIP-8501P** | Deicmal input driver for B-5991 | 31.00 |
| **BIP-8503-1*** | Memory driver for B-5971 alphanumeric | 66.00 |
| **BIP-8506S** | Driver for PIXIE® tube | 40.00 |
| **BIP-8507P** | Driver for B-5992 (+, –) | 18.00 |
| **BIP-8509-1*** | Memory driver for the B-7971 jumbo size alphanumeric type B-7971 | 73.00 |
| **BIP-8510-1*** | Memory driver for the B-8971 large size alphanumeric | 88.00 |
| **BIP-8512-1*** | Decimal input, memory driver for B-5991 | 46.00 |
| **BIP-8804-1*** | 4-line, 8-4-2-1 BCD, IC driver for B-5991 | 39.00 |
| **BIP-8804-2*** | 4-line, 8-4-2-1 BCD, IC driver for B-59956 with decimal point | 41.25 |
| **BIP-8804-4*** | IC driver for B-5992 (+, –) | 39.00 |
| **BIP-8806-1*** | 4-line, 8-4-2-1 BCD, IC driver with memory for B-5991 | 45.00 |
| **BIP-8806-2*** | 4-line, 8-4-2-1 BCD, IC driver with memory for B-59956 with decimal point | 47.25 |
| **BIP-8806-4*** | IC driver with memory for B-5992 (+, –) | 45.00 |
| **BIP-8910-1*** | 4-line, 8-4-2-1 BCD, IC driver for B-5750 | 32.50 |
| **BIP-9201-1*** | 4-line, 8-4-2-1 BCD negative logic drives B-4998 | 84.00 |
| **BIP-9203-1*** | 4-line, 8-4-2-1 BCD, drives B-4998 | 81.00 |
| **BIP-9205-1*** | 4-line, 8-4-2-1 BCD, drives B-4998 | 87.00 |
| **BIP-9501** | 10-line driver with memory for B-5991 | 60.00 |
| **BIP-9502** | 13-line memory driver for B-5971 alphanumeric | 81.00 |
| **BIP-9801-1*** | 4-line, 8-4-2-1 BCD, IC driver for B-4998 | 63.00 |
| **BIP-9806-1*** | 4-line 8-4-2-1 BCD, IC driver for B-4998 with blanking and dimming capabilities and memory | 90.00 |

*Price includes tube.

## SELF-SCANTM PANEL DISPLAYS

### 16/18 CHARACTER POSITION, 0.4" CHARACTER HEIGHT

| Burroughs No.* | Description | Net Each, Lots of | |
|---|---|---|---|
| | | 1-9 | 10-49* |
| **SSD1000-0010** | Numeric panel without memory | $135.00 | $112.50 |
| **SSD1000-0020** | Numeric panel with memory | 219.00 | 185.50 |
| **SSD1000-0030** | 16/18 digit alphanumeric panel panel without memory | 155.00 | 125.00 |
| **SSD1000-0040** | 16 digit alphanumeric panel with memory (left to right shift by character) | 240.00 | 205.00 |
| **SSD1000-0060** | 16 digit alphanumeric panel with memory (right to left shift by character) | 264.00 | 225.00 |

### 32 CHARACTER POSITION, 0.2" CHARACTER HEIGHT

| | | | |
|---|---|---|---|
| **SSD0132-0010** | Numeric panel without memory | $168.00 | $142.50 |
| **SSD0132-0030** | Alphanumeric panel without memory | 182.00 | 155.00 |

### 80 CHARACTER POSITION (1 ROW), 0.2" CHARACTER HEIGHT

| | | | |
|---|---|---|---|
| **SSD0180-0040** | Alphanumeric panel with memory | $630.00 | $485.00 |

*SELF-SCAN panel displays are supplied with character generator, drive electronics and bezel. A mounting kit that provides a convenient method of mounting SELF-SCAN panels is supplied with each 16 and 32 digit panel.

**★LARGER QUANTITY PRICES AVAILABLE ON REQUEST**

# Industrial Tubes

## EIMAC AND VARIAN TUBES

### EIMAC SPECIAL PURPOSE TUBES

#### POWER GRID ELECTRON TUBES

| EIMAC Number | Net Each | EIMAC Number | Net Each |
|---|---|---|---|
| 2C39A, WA | $ 20.75 | 4CW800B, F | $ 331.00 |
| 2X1000A | 210.00 | 4CW2000A/8244 | 240.00 |
| 2-01C | 22.00 | 4CW10,000A/8661 | 560.00 |
| 2-25A | 41.00 | 4CW25,000A | 825.00 |
| 2-50A | 48.00 | 4CW50,000E, J | 1900.00 |
| 2-150D, 2-240A | 68.50 | 4CW100,000D | 2520.00 |
| 2-450A | 200.00 | 4CW100,000E | 2880.00 |
| 2-2000A | 330.00 | 4CW250,000A | 6350.00 |
| 3C24 | 27.50 | 4CW250,000V | 6450.00 |
| 3CV1500A7 | 225.00 | 4CX125C | 61.50 |
| 3CV30,000A1 | 710.00 | 4CX125F | 123.50 |
| 3CV30,000A3 | 590.00 | 4CX250B/7203 | 35.60 |
| 3CV30,000H3 | 620.00 | 4CX250F/7204 | 38.00 |
| 3CW5000A1/8240 | 290.00 | 4CX250FG/8621 | 38.00 |
| 3CW5000A3/8242 | 250.00 | 4CX250K/8245 | 70.00 |
| 3CW5000F1/8241 | 270.00 | 4CX250M/8246 | 135.00 |
| 3CW5000F3/8243 | 260.00 | 4CX250R/7580W | 44.50 |
| 3CW5000H3 | 265.00 | 4CX300A/8167 | 60.00 |
| 3CW10,000H3 | 445.00 | 4CX300Y/8561 | 105.00 |
| 3CW20,000A1 | 615.00 | 4CX350A/8321 | 48.50 |
| 3CW20,000A3 | 515.00 | 4CX350F/8322 | 51.50 |
| 3CW20,000A7 | 820.00 | 4CX350FJ/8904 | 60.00 |
| 3CW20,000H3 | 540.00 | 4CX600B, F | 319.00 |
| 3CW25,000A3 | 565.00 | 4CX600J/8809 | 250.00 |
| 3CW30,000H3 | 595.00 | 4CX600JA/8921 | 270.00 |
| 3CW40,000H3 | 795.00 | 4CX1000A/8168 | 200.00 |
| 3CX100F5/8250 | 114.00 | 4CX1000K/8352 | 230.00 |
| 3CX1000A7/8283 | 175.00 | 4CX1500A | 215.00 |
| 3CX1500A7/8877 | 200.00 | 4CX1500B/8660 | 205.00 |
| 3CX2500A3/8161 | 200.00 | 4CX3000A/8169 | 420.00 |
| 3CX2500F3/8251 | 205.00 | 4CX5000A/8170 | 495.00 |
| 3CX2500H3 | 240.00 | 4CX5000J/8909 | 545.00 |
| 3CX3000A1/8238 | 238.00 | 4CX5000R/8170W | 705.00 |
| 3CX3000A7 | 280.00 | 4CX10,000D/8171 | 575.00 |
| 3CX3000F1/8239 | 245.00 | 4CX10,000J | 590.00 |
| 3CX3000F7/8162 | 295.00 | 4CX15,000A/8281 | 695.00 |
| 3CX5000A3 | 356.00 | 4CX15,000J/8910 | 765.00 |
| 3CX5000H3 | 440.00 | 4CX35,000C/8349 | 1905.00 |
| 3CX10,000A1/8158 | 545.00 | 4D21A | 54.00 |
| 3CX10,000A3/8159 | 545.00 | 4E27A/5-125B | 50.00 |
| 3CX10,000A7/8160 | 580.00 | 4PR60C/8252W | 116.00 |
| 3CX10,000H3 | 545.00 | 4PR65A/8187 | 50.00 |
| 3CX15,000A3 | 560.00 | 4PR125A/8247 | 57.00 |
| 3CX15,000A7 | 610.00 | 4PR250C/8248 | 230.00 |
| 3CX15,000H3 | 560.00 | 4PR400A/8188 | 64.00 |
| 3CX20,000A3, H3 | 580.00 | 4PR1000A/8189 | 215.00 |
| 3-400Z/8163 | 37.00 | 4PR1000B | 225.00 |
| 3-500Z | 37.00 | 4W300B/8249 | 71.00 |
| 3-1000Z/8164 | 88.00 | 4W20,000A/8173 | 3400.00 |
| 4CN15A | 60.50 | 4X150A/7034 | 23.15 |
| 4CPX250K/8590 | 75.00 | 4X150D/7035 | 29.00 |
| 4CS250H | 84.00 | 4X150G/8172 | 68.50 |
| 4CS250HA | 61.00 | 4X500A | 127.50 |
| 4CS250R | 63.50 | 4-65A/8165 | 32.50 |
| 4CV1500B | 240.00 | 4-125A/4D21 | 55.00 |
| 4CV8000A | 515.00 | 4-250A/5D22 | 50.00 |
| 4CV20,000A | 590.00 | 4-400A/8438 | 53.50 |
| 4CV35,000A | 910.00 | 4-400C/6775 | 60.00 |
| 4CV50,000E, J | 1900.00 | 4-500A | 65.00 |
| 4CV75,000A | 2230.00 | 4-1000A/8166 | 135.00 |
| 4CV100,000C/8351 | 2520.00 | 5CX1500A | 195.00 |
| 4CV250,000A | 6350.00 | 5CX3000A | 437.00 |
| 4CV250,000V | 6450.00 | 5-500A | 71.00 |

| EIMAC Number | Net Each | EIMAC Number | Net Each |
|---|---|---|---|
| 6C21 | 121.00 | 6697A | 1200.00 |
| KY21A, RX21A | 43.00 | 6884 | 40.00 |
| 25T | 43.00 | 6894, 6895 | 28.50 |
| 35T | 47.00 | 7211 | 45.00 |
| 75TH, 75TL | 43.00 | 7289 | 22.00 |
| 100TH, 100TL | 32.00 | 7480 | 1410.00 |
| 152TH | 93.00 | 7527 | 65.00 |
| 152TL | 125.00 | 7609 | 29.30 |
| 175A | 87.00 | 7698 | 45.00 |
| 177WA | 52.25 | 7815 | 25.50 |
| 250R | 42.00 | 7815AL | 27.00 |
| 250TH, 250TL | 45.00 | 7815BAL, 7815XAL | 28.00 |
| 253 | 57.00 | 7843 | 45.50 |
| 254W | 46.00 | 7855, 7855K | 44.00 |
| 264/8576 | 420.00 | 7855KAL | 47.00 |
| 284 | 217.00 | 8020 (100R) | 31.00 |
| 290 | 470.00 | 8072W | 44.00 |
| 298A | 480.00 | 8121W, 8122W | 46.75 |
| 304TH, 304TL | 83.00 | 8295A | 195.00 |
| 322 | 26.00 | 8403 | 71.50 |
| 450TH, 450TL | 103.00 | 8432 | 180.00 |
| 575A | 23.00 | 8533 | 71.50 |
| 592/3-200A3 | 63.00 | 8560A | 46.50 |
| 873 | 23.00 | 8745 | 39.00 |
| 750TL | 248.00 | 8755 | 125.00 |
| 826 | 46.00 | 8755A | 132.00 |
| 869B, 869BL | 150.00 | 8756 | 125.00 |
| 1000T | 260.00 | 8757, 8847 | 132.00 |
| 1500T | 465.00 | 8873–8876 | 38.00 |
| 2000T | 500.00 | 8892 | 144.00 |
| 5867A | 48.50 | 8893 | 187.00 |
| 6155 | 41.75 | 8906/8907 | 51.50 |
| 6156 | 45.25 | 8906AL/8907AL | 55.00 |
| 6569 | 49.00 | 8906XAL | 58.00 |
| 6580 | 65.00 | 8911 | 125.00 |
| 6696A | 1105.00 | 8912 | 86.00 |

### VARIAN KLYSTRONS

| Varian Number | Net Each | Varian Number | Net Each |
|---|---|---|---|
| BLK-010 | $ 217.00 | VA-220B, C, D, E, F, G | $195.00 |
| X-12 | 401.00 | VA-221A | 213.00 |
| X-13 | 426.00 | VA-211B, C, D, E, F, G, K | 201.00 |
| X-13BC | 455.00 | VA-221H | 259.00 |
| X-26B, D, E, F | 401.00 | VA-222A, B, C, D, E, F, G | 201.00 |
| V-53B, C | 406.00 | VA-225A | 478.00 |
| V-54 | 455.00 | VA-237A, B, C, E, F | 737.00 |
| V-55, B | 466.00 | VA-237D | 607.00 |
| V-58 | 424.00 | VA-224A, B, C, E | 324.00 |
| V-58C | 466.00 | VA-259A, B, C, E* | 266.00 |
| VA-92B | 448.00 | VA-259A, B, C, E† | 224.00 |
| VA-92, C | 383.00 | V-262 | 432.00 |
| VA-97 | 1280.00 | VA-264 | 414.00 |
| VA-113 | 406.00 | VA-287A, B, C | 466.00 |
| VA-114, VA-115 | 406.00 | VA-287D | 652.00 |
| V-153/6315 | 301.00 | SFD-305‡, BLM-311‡ | 815.00 |
| VA-201B | 505.00 | VA-508A, E | 880.00 |
| VA-203B | 192.00 | BLK-829 | 450.00 |
| VA-204 | 277.00 | VMX-1025‡, VMX-1027‡ | 815.00 |
| VA-217C | 652.00 | 6310, 6312 | 195.00 |
| VA-218 | 201.00 | 6781/BL-803 | 195.00 |
| VA-218B | 189.00 | VA-1011A§ | 3.30 |
| VA-220A | 206.00 | VA-1011B§ | 4.95 |

*With tuner. †Without tuner. ‡Coaxial magnetron. §Connector and harness.

## E G & G XENON FLASHTUBES, TRANSFORMERS, KRYTRONS, PHOTODIODES

### XENON FLASHTUBES

Efficient light sources convert stored electrical energy into visible light bursts and radiant energy in the ultraviolet and infrared regions. Produce high peak light of comparatively short flash duration. Spectral quality is essentially like daylight extending well into UV and IR ranges. Used for laser stimulation, ballistic studies, semiconductor research, visual signal devices, readout, printed circuits, visual strobes, etc.

| E G & G Number | Maximum Input | | | | Nom. Outp. HCPS | Flash Dur. μsec | Typical Flash Rate | Operating Volts Min.-Max. | Typical Trigger kV | Size, In. O.D. x Lgth. | Net Each, Lots of | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Avg. Watts | Energy per Flash | | | | | | | | | | |
| | | Joules | at μF | at kV | | | | | | | 1-10 | 11-25 |
| FX-6A | 7 | 5 | 24 | 0.65 | 2.5 | 12 | 500 pps | 400–1000 | 2.5–4 | .875 x 1.06 | $15.00 | $15.00 |
| FX-38C-3 | 20 | 400 | 400 | 1.4 | 1,000 | 1,000 | 1 per 10 sec | 700–2500 | 15–20 | .280 x 5.56 | 32.00 | 30.00 |
| FX-42C-3 | 60 | 600 | 400 | 1.7 | 2,500 | 1,000 | 1 per 10 sec | 1000–3000 | 15–20 | .394 x 5.88 | 50.00 | 46.00 |
| FX-47C-6.5 | 80 | 4,000 | 2,250 | 1.9 | 16,000 | 1,400 | 1 per 10 sec | 1000–3000 | 15–20 | .642 x 9.81 | 64.00 | 59.00 |

### TRIGGER TRANSFORMERS

For triggering flashtubes, spark gaps and similar devices.

| E G & G Number | Pri. Disch. VDC* | Peak Outp. kV | Turns Ratio | Typ. Pulse, μsec† | Size, In. W. x D. x H. | Net Each, Lots of | |
|---|---|---|---|---|---|---|---|
| | | | | | | 1-10 | 11-25 |
| TR-36A | 250 | 6 | 1:15 | 5 | 1$\frac{1}{16}$ dia. x $\frac{11}{16}$ | $17.00 | $17.00 |
| TR-132A | 350 | 20 | 1:53 | 2 | 1$\frac{3}{4}$ dia. x $\frac{5}{8}$ | 23.00 | 21.00 |
| TR-149 | 30 | 0.7 | 1:32 | 1.5 | 1$\frac{5}{16}$ x $\frac{9}{16}$ x $\frac{3}{4}$ | 22.00 | 20.00 |
| TR-180 | 200 | 20 | 1:112 | 1.5 | 1$\frac{1}{32}$ dia. x 1$\frac{9}{16}$ | 23.00 | 21.00 |

*Max. †Output duration, varies with input capacitance.

### KRYTRONS

| E G & G No. | Anode VDC | | Max. Cur., A | Pulse μsec | Total Firings | Net Ea., Lots of | |
|---|---|---|---|---|---|---|---|
| | Min. | Max. | | | | 1-10 | 11-25 |
| KN-2 | 300 | 4000 | 500 | 5 | 1 x $10^7$ | $21.00 | $19.00 |
| KN-6 | 700 | 5000 | 3000 | 10 | 35,000 | 26.00 | 23.00 |
| KN-6B | 700 | 8000 | 3000 | 10 | 35,000 | 38.00 | 36.00 |
| KN-22 | 400 | 5000 | 100 | 0.04 | 2 x $10^7$ | 22.00 | 20.00 |
| KS-1 Krytron Socket. . | . . . . . . . . | | . . . . . . | . . . . . . . . | | 1.50 | 1.50 |

### LITE PAC

For triggering bulb type flashtubes, e.g., FX-6A; contains TR36A transformer, circuit components, and mounting socket.

**E G & G No. FY-5D**—Net Each, Lots of 1–25. . . . . . . .**$30.00**

### PHOTODIODES

Fast response light detector operates in visible and near infrared regions, 0.35 to 1.13 microns. Operates at a near constant quantum efficiency over the range of .5 to .95 microns (nearly seven times that of S-4 phototubes) with sensitivity of .5 μA/μW at 0.9 microns. Speed response comparable to good photomultipliers, exceeding most semiconductors. Typical rise time, 4 x $10^{-9}$ sec.; fall, 15 x $10^{-9}$ sec. Noise equivalent power is a function of frequency in the order of 7.9 x $10^{-13}$ watts/$(Hz)^{1/2}$ at 1000 Hz. Dark current is lower than .05 x $10^{-6}$ amps at 10 V bias. For low light level signals, 1 V bias is often sufficient for optimum signal-to-noise ratio. Ideal for receiving equipment, for lasers and injection laser systems, measurements on modulator and pulsed light sources, measurements of light intensity and waveforms, and color change detection. In TO-5 package. Aperture .100″ dia. quartz.

**E G & G No. SGD-100A Photodiode**—
Net Ea., Lots of 1–9. . . . . . . .**$40.00**; 10–24. . . . . . . .**$35.00**

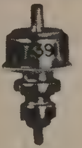
**E G & G No. SGD-040 Type A or SGD-040 Type B**—
Net Each, Lots of 1–24. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **15.00**

# GENERAL ELECTRIC Industrial Tubes

## POWER • INDUSTRIAL RECEIVING • BROADCAST • CAMERA

2C39B, 6897

6005/6AQ5W


7391

2C40A, 2C43

GL-5551A

| GENERAL ELECTRIC TYPE | NET EACH |
|---|---|
| 0A2 | $ 1.45 |
| 0A3 | 1.75 |
| 0A4G | 2.30 |
| 0B2 | 1.60 |
| 0B3 | 2.35 |
| 0C3 | 1.65 |
| 0D3 | 1.65 |
| 1AD4 | 2.80 |
| 1D21/SN4 | 9.60 |
| 1P40 | 5.90 |
| 2B22 | 38.40 |
| GL-2B23 | 102.00 |
| 2C39A | 20.75 |
| 2C39B | 37.95 |
| 2C39WA | 20.75 |
| 2C40A | 37.10 |
| 2C42 | 27.35 |
| 2C43 | 27.35 |
| 2C46 | 29.70 |
| 2D21 | 1.50 |
| 2DF4 | 11.65 |
| 2E26 | 4.55 |
| GL-2H21 | 470.00 |
| 2J42 | 127.50 |
| 2X2A | 4.60 |
| 3B24W | 11.25 |
| 3B28 | 9.55 |
| 3C23 | 13.20 |
| 3CX1000A7/8283 | 162.00 |
| 3CX2500A3/8161 | 200.00 |
| 3CX2500F3/8251 | 205.00 |
| 3CX3000A1 | 238.00 |
| 4-400A | 48.00 |
| 4-1000A | 132.00 |
| 4CX250B | 35.75 |
| 4CX300A/8167 | 54.00 |
| 4CX1000A/8168 | 200.00 |
| 4CX3000A/8169 | 420.00 |
| 4CX5000A/8170 | 495.00 |
| 4D21/4-125A | 44.00 |
| 4X150A | 15.00 |
| 4X500A | 127.50 |
| 5R4GYA | 2.25 |
| 5R4GYB | 2.40 |
| 6AK5WB* | 6.15 |
| 6AN5 | 4.20 |

| GENERAL ELECTRIC TYPE | NET EACH |
|---|---|
| 6AS6 | $ 3.90 |
| 6AS7GA | 5.25 |
| 6C4WA* | 3.15 |
| 6D4 | 3.20 |
| 6DJ8/ECC88 | 1.90 |
| 6J4 | 4.50 |
| 6J4WA | 5.85 |
| 6L6WGB | 7.00 |
| GL-7C29 | 200.00 |
| GL-7D21 | 1110.00 |
| 12AX7WA* | 6.20 |
| 12AY7 | 2.45 |
| FG-81A | 47.60 |
| 83 | 2.25 |
| FG-97 | 102.05 |
| FG-98A | 118.80 |
| FG-105 | 64.90 |
| FG-172 | 200.00 |
| FG-280 | 165.00 |
| 304TL | 83.00 |
| 393A | 15.40 |
| 407A | 5.95 |
| 408A | 5.45 |
| GL-414 | 390.00 |
| 481B | 10.90 |
| 575A | 23.60 |
| 672A | 41.40 |
| 673 | 22.75 |
| 678 | 49.50 |
| 807 | 5.50 |
| 810 | 40.05 |
| 811A | 9.00 |
| 812A | 7.50 |
| 813 | 24.30 |
| 816 | 4.65 |
| 829B | 20.80 |
| 832A | 17.70 |
| 833A | 73.15 |
| GL-838 | 18.00 |
| GL-857B | 235.00 |
| 862A | 1775.00 |
| 866A | 4.30 |
| GL-869B | 140.00 |
| GL-870A | 2740.00 |
| 872A/872 | 12.10 |
| 880 | 610.00 |
| 889A | 290.00 |
| 892 | 345.00 |
| 927 | 9.10 |
| 930 | 6.55 |
| 931A | 13.65 |
| Z-1975 | 35.00 |
| 2050 | 2.45 |

| GENERAL ELECTRIC TYPE | NET EACH |
|---|---|
| 2050A | $ 2.30 |
| 4401 | 1150.00 |
| Z-5188 | 5940.00 |
| Z-5189 | 6300.00 |
| Z-5190 | 7560.00 |
| Z-5191 | 8300.00 |
| Z-5369 | 35.00 |
| GL-5513 | 805.00 |
| GL-5518 | 2020.00 |
| 5544 | 37.55 |
| GL-5549 | 890.00 |
| GL-5550 | 53.00 |
| GL-5551A | 71.00 |
| GL-5551A/PC | 73.00 |
| GL-5552A | 107.00 |
| GL-5552A/PC | 110.00 |
| GL-5553B | 265.00 |
| GL-5553B/PC | 270.00 |
| GL-5554 | 235.00 |
| GL-5555 | 350.00 |
| GL-5556 | 74.00 |
| 5557 | 10.45 |
| 5558 | 19.25 |
| 5559 | 25.30 |
| 5560 | 36.30 |
| 5561 | 71.25 |
| 5563A | 57.30 |
| GL-5564 | 1080.00 |
| 5575/100/616 | 225.00 |
| 5576/200 | 245.00 |
| GL-5593 | 470.00 |
| 5606 | 297.00 |
| 5606A | 310.00 |
| GL-5623/B-47 | 30.00 |
| GL-5627 | 80.00 |
| GL-5630 | 2530.00 |
| 5632/C3J | 12.70 |
| 5642 | 3.55 |
| 5651 | 1.95 |
| 5654/6AK5W* | 2.70 |
| 5663 | 2.70 |
| 5665/C16J | 52.50 |
| 5670* | 2.90 |
| GL-5674 | 225.00 |
| 5675 | 8.95 |
| 5686* | 4.00 |
| 5687* | 4.40 |
| 5687WA* | 5.70 |
| 5687WB* | 5.70 |
| 5691 | 9.35 |
| 5692 | 9.00 |
| 5693 | 7.25 |
| 5696A | 2.35 |
| 5718 | 4.05 |
| 5719 | 3.15 |
| 5720 | 42.55 |
| 5725/6AS6W* | 3.40 |
| 5726/6AL5W* | 2.20 |
| 5727* | 3.05 |
| 5736 | 205.00 |
| 5749/6BA6W* | 3.05 |
| 5750/6BE6W* | 4.10 |
| 5751* | 3.00 |
| 5762/7C24 | 263.00 |
| 5763 | 2.70 |
| GL-5779 | 172.00 |
| GL-5788 | 720.00 |
| 5814A* | 2.80 |
| 5820A | 1095.00 |
| GL-5822A | 125.00 |
| GL-5822A/PC | 128.00 |
| 5823 | 1.85 |
| 5824 | 4.60 |
| GL-5830 | 780.00 |
| 5840 | 5.35 |
| 5842/417A | 7.35 |
| 5844 | 2.75 |
| 5847/404A | 9.55 |
| 5853 | 133.65 |
| 5881 | 3.10 |

| GENERAL ELECTRIC TYPE | NET EACH |
|---|---|
| 5886 | $ 5.00 |
| 5894 | 29.00 |
| 5896 | 4.75 |
| 5902 | 4.80 |
| 5924A | 330.00 |
| 5963 | 1.50 |
| 5964 | 2.05 |
| 5965A | 2.45 |
| 5998A | 14.10 |
| 6005/6AQ5W* | 3.75 |
| 6011/710 | 14.50 |
| 6012 | 8.20 |
| 6014/C1K | 11.80 |
| 6021 | 3.50 |
| GL-6039 | 2850.00 |
| 6046 | 1.80 |
| 6072A* | 4.25 |
| 6076 | 345.00 |
| 6080 | 5.50 |
| 6087* | 6.20 |
| 6111 | 3.70 |
| 6112 | 4.10 |
| 6134* | 6.45 |
| 6135* | 2.60 |
| 6136* | 3.25 |
| 6137* | 3.25 |
| 6146A | 4.45 |
| 6146B/8298A | 5.35 |
| 6161 | 170.00 |
| 6189/12AU7WA* | 4.00 |
| 6197 | 2.90 |
| 6198A | 170.00 |
| 6201* | 3.30 |
| 6202* | 2.85 |
| 6203* | 4.65 |
| 6206 | 7.25 |
| 6211A | 2.70 |
| 6216 | 4.00 |
| GL-6228 | 3696.25 |
| GL-6251 | 3160.00 |
| 6265* | 4.45 |
| 6268 | 48.00 |
| GL-6283 | 565.00 |
| 6299 | 71.05 |
| 6336A | 19.35 |
| 6350 | 2.40 |
| 6360 | 4.95 |
| 6386* | 9.50 |
| 6414 | 4.00 |
| 6414W* | 5.10 |
| 6442 | 39.25 |
| 6463 | 2.00 |
| 6485 | 2.10 |
| GL-6512 | 435.00 |
| GL-6513 | 575.00 |
| GL-6514 | 795.00 |
| GL-6515 | 1370.00 |
| 6550 | 5.75 |
| GL-6619 | 35.00 |
| GL-6620 | 35.00 |
| GL-6621 | 20.00 |
| 6660/6BA6 | 1.70 |
| 6661/6BH6 | 2.10 |
| 6662/6BJ6 | 2.10 |
| 6663/6AL5 | 1.55 |
| 6664/6AB4 | 1.90 |
| 6669/6AQ5A | 1.80 |
| 6676/6CB6A | 1.70 |
| 6677/6CL6 | 2.50 |
| 6678/6U8A | 2.05 |
| 6679/12AT7 | 1.85 |
| 6680/12AU7 | 1.65 |
| 6681/12AX7 | 1.45 |
| 6688* | 8.75 |
| 6771 | 71.90 |

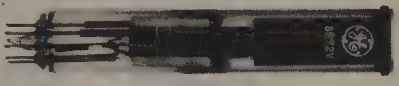
*Five Star type. /PC—indicates plastic coated.

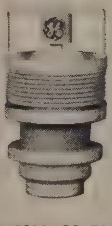
# GENERAL ELECTRIC Industrial Tubes

## POWER • INDUSTRIAL RECEIVING • BROADCAST • CAMERA

| GENERAL ELECTRIC TYPE | NET EACH |
|---|---|
| 6807 | $ 44.00 |
| 6808 | 44.55 |
| 6809 | 49.45 |
| 6829* | 6.60 |
| GL-6848 | 2875.00 |
| 6858/760 | 28.10 |
| 6859/760P | 29.80 |
| 6883 | 4.85 |
| 6883B/8032A/ 8552 | 5.95 |
| 6884 | 50.00 |
| 6897 | 38.55 |
| 6907 | 27.00 |
| 6919 | 1.55 |
| 6922/E88CC | 4.90 |
| 6939 | 12.25 |
| GL-6942 | 1175.00 |
| 7007/6166A | 1020.00 |
| 7036 | 1.70 |
| 7038 | 170.00 |
| 7038V | 190.00 |
| 7038V4 | 225.00 |
| 7044 | 3.15 |
| 7054 | 1.70 |
| 7056 | 1.00 |
| 7058 | 1.50 |
| 7059 | 1.65 |
| 7060 | 2.10 |
| 7061 | 1.65 |
| 7077 | 45.55 |
| GL-7151 | 840.00 |
| 7167 | 1.70 |
| GL-7171 | 65.00 |
| 7226 | 315.00 |
| 7233 | 2.70 |
| 7239 | 8.25 |
| 7262A | 190.00 |
| 7263A | 470.00 |
| 7266 | 43.95 |
| GL-7284, H | 180.00 |
| 7289/ 3CX100A5 | 25.70 |
| 7293A | 1150.00 |
| 7296 | 65.35 |
| 7325 | 170.00 |
| 7370 | 12.55 |
| 7391 | 86.95 |
| GL-7399 | 545.00 |
| 7462 | 46.45 |
| 7486 | 45.55 |
| 7518/710L | 16.25 |
| 7588 | 125.10 |
| 7625 | 54.65 |
| 7629A | 1700.00 |
| 7644 | 90.50 |
| GL-7669 | 71.00 |
| GL-7669/PC | 73.00 |
| GL-7670 | 78.00 |
| GL-7671 | 107.00 |
| GL-7671/PC | 110.00 |
| GL-7672 | 130.00 |
| GL-7673 | 265.00 |
| GL-7673/PC | 270.00 |
| GL-7681 | 170.00 |
| GL-7681/PC | 174.00 |
| 7697 | 170.00 |
| 7701 | 2.45 |
| GL-7703 | 190.00 |
| 7716 | 2.00 |
| 7717 | 1.65 |
| 7720 | 55.90 |
| 7724 | 1.60 |
| 7725 | 19.40 |
| 7726 | 24.75 |
| 7735 | 110.00 |
| 7735A | 150.00 |
| 7735B | 170.00 |
| 7735BX | 340.00 |
| GL-7736 | 1160.00 |
| 7768 | 129.50 |
| 7784 | $ 87.50 |
| 7815/ 3CPN10A5 | 25.60 |
| 7815R | 25.60 |
| 7841 | 46.75 |
| Z-7856 | 400.00 |
| 7861* | 4.00 |
| Z-7866 | 1975.00 |
| Z-7869 | 1725.00 |
| Z-7870 | 1775.00 |
| Z-7888 | 1890.00 |
| Z-7899 | 1890.00 |
| 7910 | 95.60 |
| 7911 | 131.10 |
| Z-7911 | 75.00 |
| Z-7912 | 525.00 |
| 7913 | 152.75 |
| Z-7929 | 370.00 |
| Z-7929B, G, R | 1055.00 |
| Z-7933 | 550.00 |
| Z-7946 | 1820.00 |
| Z-7963 | 235.00 |
| GL-7964 | 68.00 |
| GL-7964-1 | 68.00 |
| 7984 | 5.35 |
| GL-7985 | 2790.00 |
| GL-7998 | 182.00 |
| Z-7998 | 235.00 |
| Z-7999 | 1625.00 |
| 8005 | 21.00 |
| 8008 | 12.40 |
| 8020 | 23.50 |
| 8042 | 12.00 |
| 8068 | 4.10 |
| 8081 | 42.90 |
| 8082 | 57.60 |
| 8083 | 57.60 |
| 8092A | 1870.00 |
| 8093A | 1150.00 |
| 8102 | 1.65 |
| 8106 | 1.75 |
| 8134 | 200.00 |
| 8134V | 370.00 |
| 8136 | 1.20 |
| 8156 | 3.90 |
| GL-8205 | 975.00 |
| 8233 | 15.55 |
| GL-8360 | 78.00 |
| GL-8465 | 630.00 |
| GL-8466 | 680.00 |
| 8484 | 170.00 |
| 8484H | 185.00 |
| GL-8500 | 545.00 |
| 8507A | 190.00 |
| 8511 | 315.00 |
| GL-8513 | 2880.00 |
| 8541 | 310.00 |
| 8541A | 215.00 |
| 8541X | 410.00 |
| 8572 | 215.00 |
| 8572V | 235.00 |
| 8572V4 | 275.00 |
| 8573A | 275.00 |
| 8573X | 410.00 |
| 8604 | 310.00 |
| 8643 | 38.10 |
| 8683 | 23.70 |
| 8751 | 185.95 |
| GL-8866 | 575.00 |
| GE-13971 | 115.95 |
| GE-14501 | 47.65 |
| GE-14811 | 120.60 |
| GE-15371 | 58.90 |
| GE-16841 | 83.05 |
| GE-17241 | 28.05 |
| GL-37207 | 345.00 |
| GL-37248 | 250.00 |
| GL-51038 | 345.00 |
| GL-51038R | 575.00 |
| GL-51064 | 1175.00 |

*Five-Star type. /PC—Indicates plastic coated.


8572V


GL-6283, GL-7399

GL-7518/710L

6807

## McLEOD GAUGES

| GENERAL ELECTRIC TYPE | NET EACH | GENERAL ELECTRIC TYPE | NET EACH |
|---|---|---|---|
| N-24900 AAG1 | $380.00 | N-24900 AEG1 | $115.00 |
| N-24900 AAG2 | 380.00 | N-24900 AEG2 | 115.00 |

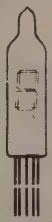
## REED SWITCHES

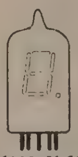
| GE TYPE | NET EACH, LOTS | | GE TYPE | NET EACH, LOTS | |
|---|---|---|---|---|---|
| | 1-49 | 50 UP | | 1-49 | 50 UP |
| DR100 | $1.00 | $0.80 | DR125 | $1.00 | $0.80 |
| DR101 | .75 | .60 | DR138 | 2.45 | 1.95 |
| DR113 | 1.45 | 1.13 | DR145 | 1.25 | 1.00 |
| DR121 | 1.25 | 1.00 | DRV120 | 5.00 | 4.00 |
| DR123 | 1.25 | 1.00 | | | |

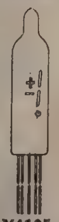
## THERMOSTAT KITS FOR IGNITRONS

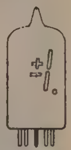
| GE KIT NO. | NET EA. | GE KIT NO. | NET EA. |
|---|---|---|---|
| N-15272AA | $8.80 | N-15286AA | $11.60 |
| N-15273AA | 8.80 | N-15287AA | 11.20 |

## READOUT TUBES


Y-4075


Y-1938, Y-1939


Y4105

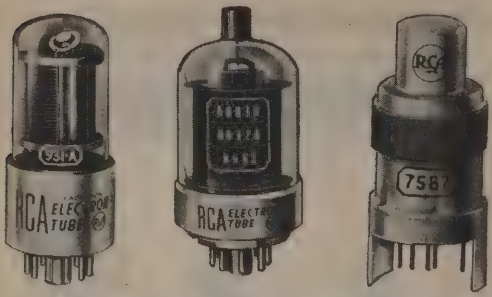

Y4102

Rigid construction, fluorescent vacuum readouts at low cost for low power applications in desk calculators, computer consoles, frequency counters, digital voltmeters and other test equipment. Seven-bar segmented, side display type gives parallax-free character formation in single plane. Display highly visible blue-green characters of approx. 200 ft.-Lambert uniform brightness. Operates at very high speed range through the use of low resistance phosphor segments energized by electrons emitted by a directly heated common cathode. Responds to signal levels up to 55 VDC max., typical operation for high brightness is 25 VDC. Energizing voltages of cathodes are 1.5 volts, Y-1938, Y-1939 or Y-4102; 1.2 volts, Y-4075 or Y-4105; AC or DC; at 42 mA all models. Compatible with solid state IC logic packages. **Size:** Y-1938, Y-1939 or Y-4102, .845" dia. x 1¾" h.; Y-4075 or Y-4105, .375" dia. x 1⅝" h. **Base:** Y-1938 or Y-4102, 9 pin; Y-1939, Y-4075 or Y-4105, 10 pin. **Character Size:** Y-1938 or Y-1939, .360" x .570", slanting to right 8°; Y-4075, .230" x .430", slanting to right 4°. **Characters:** 0–9, A, C, E, F, G, H, I, J, L, O, P, S, U, Y-1938, Y-1939 or Y-4075; plus and minus one with decimal point, Y-4102 or Y-4105.

**GE No. Y-1938 Readout Tube**—Net Each, Lots of 1–49 . . **$4.65***
**GE No. Y-1939 Readout Tube**—Net Each, Lots of 1–49 . . **4.90***
**GE No. Y-4075 Readout Tube**—Net Each, Lots of 1–49 . . **5.10***
**GE No. Y-4102 Readout Tube**—Net Each, Lots of 1–49 . . **4.72***
**GE No. Y-4105 Readout Tube**—Net Each, Lots of 1–49 . . **4.94***

**★LARGER QUANTITY PRICES ON REQUEST**

# RCA Industrial Tubes



## CW APPLICATION

### BEAM POWER

| RCA Type | Net Each |
|---|---|
| 2E24 | $ 8.70 |
| 2E26 | 4.65 |
| 4-125A/4D21 | 44.00 |
| 4X150A | 23.15 |
| 4-250A/5D22 | 48.00 |
| 4CX250B | 35.60 |
| 4E27A/5-125B | 50.00 |
| 4X500A | 128.50 |
| 807 | 5.50 |
| 813 | 25.85 |
| 827R* | 705.00 |
| 828* | 37.00 |
| 1624* | 12.50 |
| 1625* | 6.60 |
| 4604 | 9.85 |
| 4624 | 295.00 |
| 4626 | 645.00 |
| 4628 | 1225.00 |
| 4629 | 445.00 |
| 4631 | 100.00 |
| 4632 | 1160.00 |
| 4634/V1 | 440.00 |
| 4635 | 2500.00 |
| 4637 | 117.30 |
| 4638 | 700.00 |
| 4651 | 390.00 |
| 4652/8042 | 11.65 |
| 4656 | 1520.00 |
| 4661 | 645.00 |
| 4662 | 103.00 |
| 6146A | 4.40 |
| 6146B/8298A | 5.45 |
| 6146W | 6.60 |
| 6155 | 41.75 |
| 6159B | 5.05 |
| 6159W | 9.00 |
| 6816 | 56.15 |
| 6883 | 4.95 |
| 6883B/8032A/8552 | 6.05 |
| 6884 | 35.15 |
| 7094 | 45.50 |
| 7213 | 430.00 |
| 7271* | 44.80 |
| 7457 | 63.90 |
| 7649 | 130.00 |
| 7650 | 275.00 |
| 7842 | 63.90 |
| 7843 | 35.15 |
| 8032 | 5.15 |
| 8072 | 21.85 |
| 8121 | 33.90 |
| 8122 | 35.30 |
| 8165/4-65A | 32.50 |
| 8166/4-1000A | 135.00 |
| 8167/4CX300A | 60.00 |
| 8168/4CX1000A | 200.00 |
| 8170/4CX5000A | 495.00 |
| 8171/4CX10000D | 575.00 |

### BEAM POWER (CONT'D)

| RCA Type | Net Each |
|---|---|
| 8226 | $ 80.05 |
| 8281/4CX15000A | 695.00 |
| 8438/4-400A | 53.80 |
| 8462 | 53.90 |
| 8501 | 1150.00 |
| 8596 | 105.00 |
| 8791/V1 | 148.00 |
| 8792/V1 | 215.00 |
| 8793 | 555.00 |
| 8794, 8806 | 645.00 |
| 8807 | 760.00 |
| 8808 | 16.20 |
| 8828 | 130.00 |
| 8890 | 705.00 |

### TWIN BEAM POWER

| | |
|---|---|
| 829B | $21.00 |
| 832A | 17.70 |
| 6524 | 31.50 |
| 6850 | 28.00 |

### SUPER POWER

| | |
|---|---|
| 8684 | $2775.00 |

### TETRODE

| | |
|---|---|
| 3CX10000A7 | $ 580.00 |
| 4636 | 525.00 |
| 6076 | 350.00 |
| 6076A | 350.00 |
| 8437 | 2890.00 |

### TRIODE

| | |
|---|---|
| 2C39A | $ 20.75 |
| 2C39A/V1 | 28.00 |
| 2C39WA | 28.00 |
| 2C43 | 27.35 |
| 3CX3000A7 | 278.00 |
| 9C25* | 2775.00 |
| 810 | 36.40 |
| 811A | 9.25 |
| 812A | 7.60 |
| 833A | 73.15 |
| 845* | 35.20 |
| 891R* | 455.00 |
| 892* | 290.00 |
| 892R | 448.00 |
| 5556 | 74.00 |
| 5671 | 2665.00 |
| 5713* | 850.00 |
| 5762 | 255.00 |
| 5770* | 1930.00 |
| 5771 | 700.00 |
| 5786 | 310.00 |
| 6161 | 170.00 |
| 6897 | 38.55 |
| 7801 | 280.00 |
| 8005 | 21.00 |
| 8239/3X3000F1 | 245.00 |

## MICROWAVE

### PENCIL

| RCA Type | Net Each |
|---|---|
| 4028A | $37.60 |
| 4037A | 31.85 |
| 4055 | 43.95 |
| 4058 | 14.50 |
| 4062A | 37.80 |
| 4065 | 38.35 |
| 5675 | 9.25 |
| 5876A | 9.45 |
| 5893 | 20.30 |
| 6173 | 16.00 |
| 6263A | 14.45 |
| 6264A | 14.45 |
| 7533 | 11.10 |
| 7552 | 48.05 |
| 7553 | 57.20 |
| 7554 | 40.00 |
| 8727 | 37.80 |

### KLYSTRON

| RCA Type | Net Each |
|---|---|
| 2K26 | $68.00 |
| 4649 | † |

### TRAVELING-WAVE

| | |
|---|---|
| MW4900 | $ 320.00 |
| MW4901 | 495.00 |
| 6861 | 995.00 |
| 7642 | 1265.00 |
| 8379 | 1525.00 |

### MAGNETRONS

| | |
|---|---|
| 6521, R | $800.00 |
| 6521A, R | 830.00 |

### VACUUM GAUGES

| | |
|---|---|
| 1946 | $16.15 |
| 1947 | 47.00 |
| 1949 | 23.75 |

*Recommended for replacement purposes only. †Price on request.

## THYRATRONS

### GAS

| RCA Type | Net Each |
|---|---|
| 3D22A* | $45.25 |

### GAS AND MERCURY

| | |
|---|---|
| 3C23 | $11.98 |
| 710/6011 | 13.15 |
| 714/7021 | 10.00 |
| 760/6858 | 28.10 |

### MERCURY-VAPOR

| RCA Type | Net Each |
|---|---|
| 105 | $59.00 |
| 627 | 29.00 |
| 632B | 35.50 |
| 672A | 43.00 |
| 676, 677 | 66.75 |
| 5557 | 9.50 |
| 5559 | 23.00 |
| 5560 | 36.30 |
| 5563A | 57.30 |

### XENON

| | |
|---|---|
| C1K/6014 | $12.30 |
| C3J/5632 | 13.65 |
| C3JA/5684 | 14.05 |
| C3J/L | 17.95 |
| C6J/5C21 | 28.10 |
| C6JA/5685 | 28.30 |
| C16J/5665 | 52.50 |

### HYDROGEN

| | |
|---|---|
| 6130/3C45 | $25.00 |

## RF PULSE POWER

| RCA Type | Net Each |
|---|---|
| 4621 | $ 125.00 |
| 4630 | 2670.00 |
| 5946 | 160.00 |
| 7214 | 465.00 |
| 7651 | 270.00 |
| 8184 | 2555.00 |

## REGULATOR POWER

| RCA Type | Net Each |
|---|---|
| 4600A | $370.00 |
| 4614* | 345.00 |

## IGNITRONS

| | |
|---|---|
| 5550 | $ 53.75 |
| 5551A | 71.00 |
| 5552A | 110.00 |

## MODULATOR POWER

| | |
|---|---|
| 3E29 | $23.45 |
| 6293 | 6.15 |

## PHOTOTUBES

| RCA Type | Net Each |
|---|---|
| 1P29 | $10.55 |
| 1P37 | 8.40 |
| 1P39 | 4.60 |
| 1P40 | 7.15 |
| 1P41 | 8.45 |
| 1P42 | 20.25 |
| 868 | 7.75 |
| 917 | 10.10 |
| 918 | 7.70 |
| 919 | 12.70 |
| 920 | 17.40 |
| 921 | 6.85 |
| 922 | 4.90 |
| 923 | 6.20 |
| 925 | 6.75 |
| 926 | 6.20 |
| 927 | 9.10 |
| 929 | 5.35 |
| 930 | 6.55 |
| 934 | 8.60 |
| 935 | 15.30 |
| 2022 | 6.35 |
| 4409 | 5.85 |
| 5581 | 7.70 |
| 5582 | 8.85 |
| 5583 | 10.40 |
| 5652 | 9.80 |
| 5653 | 6.05 |
| 6405/1640 | 10.30 |
| 6570 | 14.30 |
| 6953 | 9.85 |

## RECTIFIERS

| RCA Type | Net Each |
|---|---|
| 2X2A | $ 4.90 |
| 3B28 | 9.65 |
| CR273/8008 | 60.00 |
| CR274/872A | 60.00 |
| CR275/866/3B25/3B28 | 13.10 |
| 575A | 23.60 |
| 579B | 20.90 |
| 604/7014 | 15.00 |
| 615/7018 | 11.50 |
| 673 | 22.75 |
| 816 | 4.75 |
| 836* | 14.70 |
| 857B | 239.00 |
| 866A | 4.45 |
| 869B | 142.00 |
| 872A | 12.10 |
| 1616* | 17.85 |
| 5558 | 17.50 |
| 5561 | 64.75 |
| 5825* | 33.00 |
| 6894, 6895 | 26.05 |
| 8008* | 12.40 |
| 8013A* | 21.45 |
| 8020 | 23.50 |

## MULTIPLIER PHOTOTUBES

| RCA Type | Net Each |
|---|---|
| 1P21 | $ 57.40 |
| 1P22 | 19.90 |
| 1P28 | 24.10 |
| 1P28/V1 | 31.50 |
| 1P28A | 29.00 |
| 1P28A/V1 | 46.20 |
| 931A | 13.65 |
| 931VA | 14.30 |
| 2020 | 93.85 |
| 2031 | 17.60 |
| 2055 | 19.20 |
| 2060 | 57.40 |
| 2061 | 69.30 |
| 2063 | 110.00 |
| 2064B | 125.00 |
| 2065 | 153.00 |
| 2067 | 175.00 |
| 4438, 4439 | 120.00 |
| 4440 | 115.00 |
| 4441 | 170.00 |
| 4441A | 360.00 |
| 4458 | 505.00 |
| 4460 | 250.00 |
| 4461 | 320.00 |
| 4463 | 260.00 |
| 4464 | 265.00 |
| 4465 | 305.00 |
| 4471 | 20.60 |
| 4472 | 25.50 |
| 4473 | 63.00 |
| 4516 | 185.00 |
| 4517 | 84.20 |
| 4518 | 105.00 |
| 4521 | 600.00 |
| 4522† | 645.00 |
| 4523 | 125.00 |
| 4524 | 135.00 |
| 4525 | 170.00 |
| 4526 | 415.00 |
| 4589 | 370.00 |
| 5819 | 86.95 |
| 6199 | 58.10 |
| 6217 | 87.65 |
| 6328 | 15.35 |
| 6342A | 69.30 |
| 6655A | 69.00 |
| 6810A | 240.00 |
| 6903 | 430.00 |
| 7102 | 120.00 |
| 7117 | 14.80 |
| 7200 | 210.00 |
| 7264 | 290.00 |
| 7265 | 415.00 |
| 7326 | 385.00 |
| 7746 | 215.00 |
| 7764 | 145.00 |
| 7767 | 135.00 |
| 7850 | 270.00 |
| 8053 | 107.65 |
| 8054 | 125.00 |
| 8055 | 155.00 |
| 8571 | 235.00 |
| 8575† | 335.00 |
| 8575/V1‡ | 345.00 |
| 8644 | 310.00 |
| 8645 | 415.00 |
| 8664 | 1665.00 |
| 8664/V1 | 1775.00 |
| 8850† | 600.00 |

†With AJ2145 socket. ‡With AJ2132 socket.

**Prices shown do not include State or local sales and similar taxes. All prices subject to change or withdrawal without notice.**

RCA INDUSTRIAL TUBES ARE STOCKED AT GAITHERSBURG & BALTIMORE, MD;
ORLANDO & HOLLYWOOD, FL; HUNTSVILLE, AL; AND WINSTON-SALEM, NC

# RCA Industrial Tubes

## CAMERA AND DISPLAY TUBES, VACUUM COMPONENTS AND SPECIAL MARKET TUBES

### OSCILLOGRAPHS

| RCA Type | Net Each |
|---|---|
| 1EP1 | $34.05 |
| 1EP11 | 35.45 |
| 2AP1A | 24.85 |
| 2BP1 | 16.80 |
| 3AP1A | 48.80 |
| 3AQP1 | 34.35 |
| 3BP1A | 33.90 |
| 3JP1 | 25.40 |
| 3KP1 | 35.70 |
| 3RP1 | 21.00 |
| 3RP1A | 38.40 |
| 3RP7A | 41.20 |
| 3WP1 | 43.15 |
| 3WP11 | 45.60 |
| 5ABP1 | 55.05 |
| 5ADP1 | 55.05 |
| 5ADP31 | 51.05 |
| 5BP1A | 47.20 |
| 5CP1A | 47.50 |
| 5FP7A | 45.40 |
| 5UP1 | 22.40 |
| 5UP7 | 33.60 |
| 5UP31 | 28.00 |
| 7MP7 | 59.95 |
| 7VP1, 7VP31 | 30.80 |
| 902A | 24.60 |
| 4490 | 36.05 |
| 4491 | 39.85 |
| 4499 | 28.00 |
| 4510 | 35.70 |
| 4557 | 60.00 |
| 4572 | 26.25 |

### MONOSCOPES

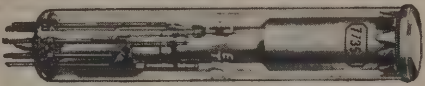
| | |
|---|---|
| 2F21 | $300.00 |
| 1699 | ** |

### VIDICONS

| RCA Type | Net Each |
|---|---|
| XQ1020B, R | $1935.00 |
| XQ1020G | 1985.00 |
| XQ1023R | 2240.00 |
| 4478 | 36.00 |
| 4493–4495 | 1055.00 |
| 4500 | 480.00 |
| 4503A | 555.00 |
| 4542 | 430.00 |
| 4543 | 180.00 |
| 4559A/8507A | 235.00 |
| 4588 | 370.00 |
| 4591B, R* | 1900.00 |
| 4591G, L* | 1950.00 |
| 4592B, R* | 1900.00 |
| 4592G, L* | 1950.00 |
| 7038 | 175.00 |
| 7262A | 190.00 |
| 7263A | 360.00 |
| 7735 | 110.00 |
| 7735A | 150.00 |
| 7735B | 175.00 |
| 8051 | 610.00 |
| 8134 | 200.00 |
| 8134/V1 | 370.00 |
| 8480 | 760.00 |
| 8480/V1 | 1140.00 |
| 8507A | 190.00 |
| 8521 | 610.00 |
| 8541A | 180.00 |
| 8572A | 215.00 |
| 8573A | 210.00 |

### IMAGE-CONVERTER TUBES

| | |
|---|---|
| 4449A | ** |
| 4456 | $670.00 |



### IMAGE ORTHICONS

| RCA Type | Net Each |
|---|---|
| 4401/V2 | $1165.00 |
| 4470 | 8775.00 |
| 4492 | 1650.00 |
| 4536 | 2165.00 |
| 5820A | 1150.00 |
| 5820A/L | 2000.00 |
| 7198A | 1335.00 |
| 7295B | 1530.00 |
| 7295C | 2000.00 |
| 7389C | 2000.00 |
| 8073, 8673/S | 2000.00 |
| 8674, 8674/S | 2000.00 |
| 8748, 8749 | 2000.00 |
| 8775 | 2000.00 |

### UHF-VHF POWER

For broadcast TV transmitters.

| | |
|---|---|
| 6161 | $ 170.00 |
| 6166† | 910.00 |
| 6166A/7007† | 1055.00 |
| 6181 | 1390.00 |
| 6448 | 5975.00 |
| 6806 | 7350.00 |

### 30 kW UHF KLYSTRONS

| | |
|---|---|
| 8824 | $8820.00 |
| 8825 | 8820.00 |
| 8826 | 8820.00 |

### SPECIAL PURPOSE KINESCOPES

| RCA Type | Net Each |
|---|---|
| 5ABP7 | $ 49.70 |
| 5AUP24 | 150.00 |
| 5AZP4 | 145.00 |
| 5ZP16 | 130.00 |
| 7NP4‡ | 1140.00 |
| 7TP4 | 73.15 |
| 7WP4 | 1140.00 |
| 8HP4 | 60.80 |
| 8NP4 | 59.50 |
| 8QP4 | 63.00 |
| 10SP4 | 99.35 |
| 17DWP4‡ | 60.00 |
| 21EYP4 | 49.50 |
| 1845P22A | 99.00 |
| 4486 | 1150.00 |

### DISPLAY STORAGE TUBES

| | |
|---|---|
| 4412 | $3415.00 |
| 4454 | 1135.00 |
| 4547 | 1135.00 |
| 6499 | 285.00 |
| 6866 | 1280.00 |
| 7183A | 965.00 |
| 7315 | 925.00 |
| 7539 | 1765.00 |

*Vistacon. †VHF; all other types UHF. ‡Recommended for replacement purposes only. **Price on request.

## RECEIVING TYPE TUBES FOR INDUSTRY AND COMMUNICATIONS

### VOLTAGE REGULATOR

| RCA Type | Net Each |
|---|---|
| OA2 | $ 1.45 |
| OA2WA* | 3.41 |
| OA3 | 1.74 |
| OA3A | 1.74 |
| OB2 | 1.59 |
| OB2WA* | 2.68 |
| OC2 | 1.75 |
| OC3 | 1.66 |
| OC3A | 1.66 |
| OD3 | 1.64 |
| OD3A | 1.64 |
| 6AS7G | 5.25 |
| 6AS7GA | 4.93 |
| 991 | 2.10 |
| 5651A* | 1.95 |
| 5651WA* | 3.95 |
| 6073 | 3.53 |
| 6073/OA2 | 3.94 |
| 6074 | 4.02 |
| 6074/OB2 | 4.19 |
| 6080 | 5.50 |
| 6080WA* | 11.12 |
| 6336A | 19.85 |
| 6626/OA2WA* | 3.50 |

### BEAM DEFLECTION

| | |
|---|---|
| 7360 | $3.77 |

### GLOW-DISCHARGE

| | |
|---|---|
| OA4G | $2.30 |
| 1C21 | 4.85 |
| 5823 | 1.84 |

### ELECTRON RAY

| | |
|---|---|
| 1629* | $2.86 |

### TRANSDUCER

| | |
|---|---|
| 5734 | $22.05 |

### RECTIFIER

| | |
|---|---|
| 5R4GYB* | $2.40 |
| 6X4W* | 2.35 |
| 83 | 2.31 |
| 2076/5R4GYB | 2.05 |
| 6202 | 2.69 |

### PENTAGRID CONVERTER

| | |
|---|---|
| 12SY7 | $3.18 |
| 26D6 | 3.22 |
| 5750 | 4.10 |

### PENTAGRID MIXER

| | |
|---|---|
| 1612 | $6.84 |

### PENTAGRID AMPLIFIER

| RCA Type | Net Each |
|---|---|
| 5915 | $1.99 |

### PENTODE

| | |
|---|---|
| 1L4 | $ 1.67 |
| 3A4 | 2.16 |
| 6AC7W | 5.84 |
| 6AG7Y | 3.11 |
| 6AH6WA | 7.60 |
| 6AK6 | 1.40 |
| 6AN5 | 4.20 |
| 6AS6 | 3.90 |
| 6AU6WB* | 3.22 |
| 6SJ7Y | 2.82 |
| 26A6 | 3.85 |
| 408A | 4.95 |
| 959‡ | 13.85 |
| 1613 | 3.53 |
| 1620 | 8.64 |
| 1621 | 4.05 |
| 5636 | 6.10 |
| 5639 | 5.25 |
| 5654*† | 2.26 |
| 5672, 5678 | 2.48 |
| 5693* | 7.24 |
| 5725* | 3.40 |
| 5749* | 3.03 |
| 5840 | 5.35 |
| 5847/404A | 9.55 |
| 5899 | 5.55 |
| 6136 | 3.25 |
| 6186/6AG5WA* | 4.60 |
| 6197 | 2.86 |
| 6660/6BA6 | 1.69 |
| 6661/6BH6 | 2.06 |
| 6662/6BJ6 | 2.08 |
| 6676/6CB6A | 1.69 |
| 6677/6CL6 | 2.46 |
| 6688A | 6.80 |
| 6939 | 11.37 |
| 7054 | 1.68 |
| 7056 | 1.02 |
| 8077/7054 | 1.54 |
| 8136 | 1.43 |
| 8233 | 19.85 |
| 9001‡ | 5.38 |
| 9003 | 5.67 |

### TETRODE

| | |
|---|---|
| 6360 | $4.95 |
| 6360A | 6.25 |
| 7167 | 1.67 |
| 7717/6CY5‡ | 1.39 |

### INDICATOR

| | |
|---|---|
| 6977 | $3.05 |

### THYRATRON

| RCA Type | Net Each |
|---|---|
| 2D21 | $1.49 |
| 884 | 2.90 |
| 2050 | 2.48 |
| 2050A | 2.29 |
| 5663 | 2.65 |
| 5696 | 2.36 |
| 5696A | 2.00 |
| 5727* | 3.05 |
| 6012 | 8.21 |

### BEAM POWER

| | |
|---|---|
| 3B4WA | $ 6.33 |
| 12A6 | 3.73 |
| 26A7GT | 8.04 |
| 1614 | 5.84 |
| 1619 | 7.16 |
| 1622 | 6.16 |
| 5686 | 3.97 |
| 5763 | 2.69 |
| 5824 | 4.58 |
| 5881 | 3.10 |
| 6005* | 3.73 |
| 6417 | 3.53 |
| 6550 | 6.00 |
| 6550V1 | 12.50 |
| 6669/6AQ5A | 1.76 |
| 7061 | 1.66 |
| 7551 | 3.67 |
| 7558 | 3.69 |
| 7905 | 4.05 |

### TRIODE

| | |
|---|---|
| 6D4 | $ 3.20 |
| 6F4 | 14.40 |
| 6J4 | 4.51 |
| 407A | 5.90 |
| 955‡ | 7.05 |
| 5718 | 3.65 |
| 5842/417A | 7.35 |
| 6664/6AB4 | 1.85 |
| 8000 | 29.05 |
| 8532/6J4WA* | 5.60 |

### NUVISTOR

| | |
|---|---|
| 7586 | $ 3.65 |
| 7587 | 5.50 |
| 7895 | 3.70 |
| 8056 | 5.15 |
| 8058 | 15.80 |
| 8203 | 4.02 |
| 8393 | 3.60 |
| 8627 | 14.15 |
| 8627A | 57.90 |
| 8628 | 5.00 |

### TWIN TRIODE

| RCA Type | Net Each |
|---|---|
| 3A5 | $2.31 |
| 6DJ8/ECC88 | 1.89 |
| 6J6WA* | 5.51 |
| 12AT7WA*† | 2.86 |
| 12AT7WB | 3.03 |
| 1635 | 5.02 |
| 5670*† | 2.90 |
| 5687 | 4.39 |
| 5691* | 9.31 |
| 5692* | 8.98 |
| 5751*† | 2.99 |
| 5814A*† | 2.76 |
| 5963 | 1.48 |
| 5964 | 2.03 |
| 5965 | 2.24 |
| 6021 | 3.50 |
| 6072‡ | 4.24 |
| 6072A | 4.25 |
| 6101 | 6.01 |
| 6189* | 4.19 |
| 6201 | 3.28 |
| 6211 | 2.71 |
| 6350 | 2.37 |
| 6386 | 9.50 |
| 6485 | 2.25 |
| 6679/12AT7 | 1.83 |
| 6680/12AU7A | 1.61 |
| 6681/12AX7A | 1.44 |
| 6686 | 6.00 |
| 6922/E88CC | 4.87 |
| 7044 | 3.11 |
| 7057 | 2.17 |
| 7058 | 1.50 |
| 7308 | 5.20 |
| 7898 | 1.57 |

### TWIN-DIODE TRIODE

| | |
|---|---|
| 12SW7 | $1.95 |

### DIODE

| | |
|---|---|
| 9006‡ | $2.70 |

### TWIN DIODE

| | |
|---|---|
| 5726* | $2.19 |
| 6663/6AL5 | 1.54 |
| 6887 | 1.46 |
| 7055 | 1.18 |

### TRIODE-PENTODE

| | |
|---|---|
| 6678/6U8A | $2.02 |
| 7059 | 1.65 |
| 7060 | 2.08 |
| 7258 | 2.28 |
| 7643 | 7.25 |
| 7788§ | 15.55 |

*RCA "Premium" type; †RCA "Command" type tube. ‡Recommended for replacement purposes only. §Diode-Pentode.

**Prices shown do not include State or local sales and similar taxes. All prices subject to change or withdrawal without notice.**

# RAYTHEON Industrial and Power Tubes

**SUBMINIATURE • SPECIAL PURPOSE • TRANSMITTING • KLYSTRONS • MAGNETRONS •**

**Information on types available government source inspected to applicable MIL specs available on request.**

| Raytheon Type | Net Each |
|---|---|
| OA2 | $ 1.45 |
| OA2WA | 3.41 |
| OA3A/OA3 | 1.74 |
| OA4G | 2.30 |
| OB2 | 1.59 |
| OB2WA | 2.68 |
| OB3A/OB3 | 2.80 |
| OC2 | 1.75 |
| OC3A/OC3 | 1.66 |
| OC3W | 7.20 |
| OD3A/OD3 | 1.64 |
| OD3W | 7.90 |
| 1AD4 | 3.85 |
| 1AG4 | 8.85 |
| 1AK4 | 8.85 |
| 1P31 | 9.04 |
| 1P32 | 4.90 |
| 1P37 | 5.60 |
| 1P39 | 3.95 |
| 1P40 | 5.90 |
| 1P41 | 6.50 |
| 1R5WA | 9.80 |
| 1T4WA | 9.35 |
| 1U4WA | 9.35 |
| 1U5WA | 9.35 |
| ML-2C39A† | 20.75 |
| ML-2C39A‡ | 28.00 |
| ML-2C39WA† | 20.75 |
| ML-2C39WA‡ | 28.00 |
| ML-2C41 | 28.00 |
| 2D21 | 1.49 |
| 2E26 | 4.60 |
| 2E31 | 8.85 |
| 2E32 | 8.85 |
| 2E35 | 8.85 |
| 2E36 | 8.85 |
| 2G21 | 9.85 |
| 2G22 | 9.85 |
| RK2J42 | 305.00 |
| RK2J42* | 140.00 |
| RK2J50 | 305.00 |
| RK2J51A | 750.00 |
| RK2J55 | 400.00 |
| RK2J55* | 205.00 |
| RK2J70A | 500.00 |
| RK2J70B | 500.00 |
| RK2K22 | 95.00 |
| RK2K25 | 43.00 |
| RK2K26 | 70.00 |
| RK2K28 | 90.00 |
| RK2K28A/6133 | 90.00 |
| RK2K29 | 125.00 |
| RK2K45 | 205.00 |
| RK2K48 | 190.00 |
| RK2K56 | 120.00 |
| 2X2A | 4.60 |
| 3A4 | 2.05 |
| 3A5 | 2.23 |
| 3B4 | 3.37 |
| 3B4WA | 6.28 |
| RK3B22/1C | 10.85 |
| RK3B24W | 10.55 |
| RK3B24WB | 10.95 |
| 3C23 | 11.98 |
| ML-3CPN10A5 | 25.50 |
| ML-3CX100A5 | 25.50 |
| C3J/AL-Ne | 18.40 |
| C3J/L | 15.20 |
| ML-4CV35000A | 910.00 |
| RK4D22 | 84.25 |
| RK4D32 | 84.25 |
| RK4J31 | 600.00 |
| RK4J32 | 600.00 |
| RK4J33 | 600.00 |
| RK4J34 | 600.00 |
| RK4J35 | 600.00 |
| 5A6 | 7.30 |
| 5AX51 | 10.00 |
| 5R4GYA | 2.28 |
| 5R4GYB | 2.40 |
| 5R4WGA | 10.55 |
| 5R4WGB | 15.50 |
| 6AH6WA | 8.20 |
| 6AN5 | 4.56 |
| 6AN5WA | 11.25 |
| 6AR6 | 6.00 |
| 6AS6 | 3.90 |
| 6BL6 | 90.00 |
| 6BM6 | 90.00 |
| 6BM6A | 90.00 |
| 6J4 | 4.51 |
| C6J | 28.10 |
| C6J/K | 28.30 |
| C6J/L | 29.40 |
| 6X4W | $ 2.35 |
| 7AK7 | 8.15 |
| 7AX51 | 12.50 |
| 7BP7A | 62.00 |
| 8CV50 | 13.00 |
| 10AKP7 | 70.00 |
| 10KP7 | 58.00 |
| 10KP7A | 70.00 |
| 10WP7 | 70.00 |
| 10WP7A | 70.50 |
| 12ABP7A | 50.00 |
| 12AT7WA | 2.86 |
| 12AT7WB | 3.03 |
| 12AY7 | 2.65 |
| KY21A | 27.50 |
| RX21A | 25.75 |
| ML-102A | 174.00 |
| ML-103 | 110.00 |
| FG105 | 59.00 |
| ML-121 | 110.00 |
| ML-141 | 117.00 |
| ML-142 | 85.00 |
| ML-298A | 6000.00 |
| ML-322 | 30.00 |
| 323B | 14.00 |
| ML-342A | 1850.00 |
| ML-342AA | 1980.00 |
| ML-356/5771 | 700.00 |
| ML-357B | 470.00 |
| QKK381 | 125.00 |
| 393A | 14.00 |
| QKK404/7158 | 75.00 |
| QKH456/7040 | 815.00 |
| CK510AX | 6.25 |
| CK512AX | 5.25 |
| CK526AX | 8.85 |
| QKK531 | 75.00 |
| QKK532 | 75.00 |
| CK533AX | 5.28 |
| CK534AX | 5.28 |
| QKK549 | 75.00 |
| 572B/T160L | 18.00 |
| RK575A | 21.00 |
| CK587 | 18.55 |
| 604 | 11.80 |
| 604L | 13.00 |
| 606 | 21.40 |
| 606L | 23.50 |
| 610/7723 | 11.40 |
| 615 | 10.05 |
| 616 | 12.70 |
| 617 | 15.00 |
| 619 | 10.00 |
| 623 | 13.35 |
| QKK623 | 75.00 |
| 627 | 41.30 |
| 632B | 33.00 |
| 635 | 13.00 |
| 635L | 13.50 |
| 635P | 14.15 |
| 643 | 14.00 |
| 649/5834 | 12.10 |
| 653/5835 | 16.00 |
| 660 | 13.00 |
| 660L/7786 | 13.50 |
| 664L | 27.50 |
| 664P | 34.50 |
| RK673 | 22.75 |
| QK685/7571 | 1235.00 |
| 710/6011 | 12.70 |
| 710L/7518 | 14.20 |
| 714 | 10.00 |
| RK715C | 73.50 |
| 716 | 13.50 |
| RK725A | 380.00 |
| RK726C | 115.00 |
| QKH729 | 600.00 |
| QKH730 | 600.00 |
| QKH731 | 600.00 |
| QKH732 | 600.00 |
| QKH733 | 600.00 |
| 734/5544 | 22.50 |
| 734L | 24.10 |
| 740/6856 | 21.70 |
| 740L/7022 | 22.30 |
| 740P/6857 | 22.50 |
| QKK752 | 75.00 |
| QKK753 | 75.00 |
| QKK754A | 380.00 |
| QKK755A | 380.00 |
| QKK755B | 715.00 |
| QKK756A | 380.00 |
| QKK758A | 380.00 |
| QKK759A | 380.00 |
| 760 | $ 28.10 |
| 760L | 29.40 |
| 760P | 29.40 |
| QK767/3BCP7 | 245.00 |
| 770L | 44.75 |
| 770P | 48.90 |
| 780 | 80.00 |
| QK787/7575 | 2100.00 |
| RK807 | 5.50 |
| RK811A | 9.00 |
| RK812A | 7.50 |
| RK813 | 23.15 |
| RK814 | 28.35 |
| RK816 | 4.65 |
| QKK822 | 240.00 |
| QKK826 | 240.00 |
| RK829B | 20.80 |
| RK832A | 17.70 |
| QKK833A | 710.00 |
| QKK860 | 130.00 |
| RK866A | 4.30 |
| QKK869 | 240.00 |
| RK872A | 12.10 |
| QKK877 | 205.00 |
| QKK878 | 600.00 |
| ML-880 | 595.00 |
| QKK882 | ** |
| 884 | 2.90 |
| ML-889RA | 370.00 |
| ML-891 | 275.00 |
| ML-891R | 430.00 |
| ML-892 | 270.00 |
| ML-892R | 425.00 |
| ML-893A | 1370.00 |
| ML-893AR | 2140.00 |
| QKK910 | 380.00 |
| 917 | 8.50 |
| 918 | 6.10 |
| 923 | 5.80 |
| 927 | 4.70 |
| 929 | 3.90 |
| 930 | 5.90 |
| 931A | 12.25 |
| 934 | 7.40 |
| QKK965 | 380.00 |
| QKK966 | 380.00 |
| QKK967 | 380.00 |
| QKK968 | 380.00 |
| QKK1022 | 340.00 |
| CK1047 | 5.40 |
| 1051A | 75.00 |
| QKK1237 | 800.00 |
| QKK1288A | 510.00 |
| QKK1289A | 510.00 |
| QKK1315 | 135.00 |
| QKK1316 | 135.00 |
| CK1383 | 1670.00 |
| CK1414 | 300.00 |
| CK1415P31 | 107.25 |
| QKK1459 | 80.00 |
| QKK1463 | 650.00 |
| QKK1468 | ** |
| CK1500 | 2240.00 |
| CK1503 | 245.00 |
| CK1517 | 5440.00 |
| CK1518 | 2800.00 |
| CK1519 | 5440.00 |
| CK1521 | 5120.00 |
| QKK1571 | 88.00 |
| 1614 | 5.84 |
| 1625 | 6.60 |
| 2050A/2050 | 2.29 |
| 2050W | 8.95 |
| CK5517 | 5.30 |
| ML-5530 | 475.00 |
| ML-5530H | 475.00 |
| ML-5531 | 795.00 |
| ML-5541 | 690.00 |
| 5550 | 65.00 |
| 5555/FG238B | 316.00 |
| 5557/715 | 9.50 |
| 5558/FG32 | 17.50 |
| 5559/FG57 | 23.00 |
| 5560/FG95 | 33.00 |
| ML-5575/100 | 225.00 |
| ML-5576/200 | 245.00 |
| 5581 | 6.60 |
| 5583 | 9.85 |
| RK5586 | 575.00 |
| ML-5604 | 570.00 |
| ML-5606 | 288.00 |
| ML-5619 | 423.00 |
| CK5636 | 6.55 |
| CK5639 | 5.70 |
| CK5639WA | 10.50 |
| CK5643 | $ 6.85 |
| CK5651 | 1.95 |
| CK5651A | 1.95 |
| CK5651WA | 3.95 |
| 5653 | 5.65 |
| CK5654 | 2.73 |
| CK5654/6AK5W | 2.73 |
| CK5656 | 19.60 |
| RK5657 | 550.00 |
| ML-5658 | 595.00 |
| 5665/C16J | 56.90 |
| ML-5666 | 280.00 |
| ML-5667 | 370.00 |
| ML-5668 | 350.00 |
| ML-5669 | 515.00 |
| CK5670 | 2.90 |
| CK5672 | 2.97 |
| CK5675 | 16.05 |
| CK5676 | 3.78 |
| CK5678 | 2.97 |
| ML-5681 | 2195.00 |
| ML-5682 | 2625.00 |
| ML-5682K | 2900.00 |
| ML-5682KT | 2975.00 |
| 5684/C3J/A | 14.50 |
| 5684-Ne | 16.70 |
| CK5686 | 3.55 |
| CK5687 | 4.28 |
| CK5687WA | 6.15 |
| CK5691 | 9.15 |
| CK5692 | 8.75 |
| CK5693 | 7.10 |
| CK5702 | 5.02 |
| CK5702WA | 7.70 |
| CK5702WB | 11.40 |
| CK5703 | 3.85 |
| CK5703WA | 8.55 |
| CK5703WB | 10.65 |
| CK5704 | 5.20 |
| CK5704WA | 9.70 |
| CK5718 | 4.00 |
| RK5721 | 120.00 |
| CK5725 | 3.40 |
| CK5725/6AS6W | 3.40 |
| CK5726/6AL5W | 2.19 |
| CK5727/2D21W | 3.05 |
| CK5744 | 3.85 |
| CK5744WA | 8.55 |
| CK5744WB | 10.80 |
| CK5749/6BA6W | 3.03 |
| CK5750/6BE6W | 3.80 |
| CK5751 | 2.99 |
| CK5755 | 11.24 |
| CK5763 | 2.69 |
| RK5777 | 440.00 |
| RK5778 | 440.00 |
| CK5783 | 5.00 |
| CK5783A | 8.50 |
| CK5783WA | 8.40 |
| CK5784 | 6.00 |
| CK5784WA | 11.05 |
| CK5784WB | 18.55 |
| CK5787 | 5.55 |
| CK5787A | 6.45 |
| CK5787WA | 6.10 |
| CK5814A | 2.76 |
| CK5823 | 1.84 |
| CK5829 | 5.00 |
| CK5829WA | 9.04 |
| RK5836 | 90.00 |
| RK5837 | 90.00 |
| CK5840 | 5.75 |
| CK5842 | 8.10 |
| CK5842WA | 17.35 |
| CK5844 | 2.40 |
| CK5847 | 10.45 |
| CK5847A | 15.70 |
| CK5875 | 3.90 |
| CK5876A | 10.25 |
| CK5879 | 2.40 |
| CK5881 | 3.50 |
| CK5886 | 6.35 |
| CK5889 | 24.90 |
| CK5894(COM) | 24.20 |
| CK5899 | $ 6.02 |
| CK5902 | 5.26 |
| CK5902WA | 10.50 |
| CK5915 | 1.99 |
| CK5963 | 1.48 |
| CK5964 | 2.03 |
| CK5965 | 2.24 |
| CK5965A | 2.11 |
| CK5971 | 8.80 |
| CK5975 | 4.20 |
| RK5976 | 75.00 |
| CK6005/6AQ5W | 3.93 |
| CK6012 | 8.21 |
| 6014/C1K | 11.80 |
| CK6021 | 3.80 |
| CK6021WA | 9.50 |
| CK6029 | 8.80 |
| RK6043 | 165.00 |
| CK6072 | 4.24 |
| CK6072A | 4.24 |
| CK6073/OA2 | 3.60 |
| CK6074/OB2 | 3.60 |
| CK6080 | 5.50 |
| CK6080WA | 11.85 |
| CK6080WB | 28.35 |
| CK6082WB | 37.60 |
| CK6087/5Y3WGTB | 6.25 |
| CK6088 | 4.20 |
| CK6110 | 8.85 |
| CK6111 | 4.00 |
| CK6111WA | 9.50 |
| CK6112 | 4.40 |
| CK6112WA | 6.70 |
| RK6115A | 95.00 |
| RK6116 | 149.00 |
| CK6135 | 2.65 |
| CK6136/6AU6WA | 3.10 |
| CK6146, A | 4.40 |
| CK6146B/8298A | 5.35 |
| CK6146W | 7.70 |
| CK6174 | 5.70 |
| RK6177 | 260.00 |
| CK6186/6AG5WA | 4.35 |
| CK6189/12AU7WA | 4.00 |
| CK6201/12AT7WA | 3.28 |
| CK6202 | 2.95 |
| CK6205 | 5.80 |
| CK6206 | 8.65 |
| CK6213 | 7.95 |
| CK6213A | 7.95 |
| RK6236 | 125.00 |
| CK6245 | 10.50 |
| CK6247 | 13.50 |
| CK6247WA | 24.10 |
| ML-6256 | 345.00 |
| ML-6257 | 350.00 |
| ML-6258 | 390.00 |
| CK6265 | 4.10 |
| CK6286 | 4.75 |
| CK6293 | 6.15 |
| CK6293W | 10.50 |
| CK6336A | 23.00 |
| CK6336B | 32.35 |
| CK6350 | 2.37 |
| CK6360 | 5.45 |
| RK6390 | 150.00 |
| CK6397 | 11.00 |
| CK6418 | 4.75 |
| CK6419 | 8.80 |
| ML-6420 | 445.00 |
| ML-6421 | 525.00 |
| ML-6421F | 545.00 |
| ML-6422 | 450.00 |
| ML-6423 | 525.00 |
| ML-6423F | 545.00 |
| ML-6424 | 518.00 |
| ML-6425 | 645.00 |
| ML-6425F | 645.00 |
| ML-6426 | 720.00 |
| ML-6427 | 840.00 |
| CK6436 | 8.30 |
| ML-6442 | 39.00 |
| CK6476 | 19.10 |

**RAYTHEON-MACHLETT INDUSTRIAL TUBES CONTINUED ON NEXT PAGE**

*Foreign made. †Ceramic. ‡Glass. **Price on request. **Prices subject to change or withdrawal without notice.**

# RAYTHEON Industrial and Power Tubes

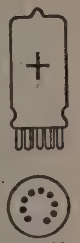
**MODULATORS • AMPLIFIERS • OSCILLATORS • RECTIFIERS • STORAGE • PHOTOSENSITIVE**

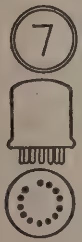
**Information on types available government source inspected to applicable MIL specs available on request.**

| Raytheon Type | Net Each | Raytheon Type | Net Each | Raytheon Type | Net Each | Raytheon Type | Net Each | Raytheon Type | Net Each |
|---|---|---|---|---|---|---|---|---|---|
| CK6476A | $ 19.10 | CK6677/6CL6 | $ 1.86 | CK6909 | $ 16.35 | 7786-Ne | $ 15.50 | CK8262 | $ 17.90 |
| CK6519 | 8.80 | CK6678/6U8A | 1.58 | CK6910 | 19.15 | ML-7815 | 25.50 | ML-8281/ 4CX15000A | 695.00 |
| CK6526 | 8.00 | CK6679/12AT7 | 1.58 | RK6940 | 150.00 | ML-7815/AL | 34.75 | ML-8317 | 4455.00 |
| CK6528 | 26.10 | CK6680/12AU7 | 1.26 | 6989/C6J/KL | 29.45 | ML-7815R | 25.50 | ML-8403 | 115.00 |
| CK6528A | 39.20 | CK6681/12AX7 | 1.34 | 6989-Ne | 33.90 | ML-7815R/AL | 34.75 | CK8520 | 62.95 |
| CK6533 | 16.50 | CK6688 | 9.60 | ML-7007 | 1020.00 | ML-7855, K | 60.00 | ML-8533 | 115.00 |
| CK6533WA | 24.75 | ML-6696 | 1090.00 | CK7044 | 3.47 | ML-7855K/AL | 65.00 | ML-8534 | 120.00 |
| CK6540 | 13.00 | ML-6696A | 1090.00 | RK7158/404 | 75.00 | CK7978 | 15.75 | ML-8535 | 120.00 |
| CK6542 | 14.30 | ML-6697 | 1320.00 | ML-7209 | 31.50 | CK7979 | 15.35 | ML-8536 | 120.00 |
| CK6542A | 14.95 | ML-6697A | 1320.00 | ML-7210 | 73.50 | CK7994 | 20.45 | ML-8537 | 120.00 |
| CK6550 | 5.85 | CK6763 | 5.30 | ML-7211 | 75.00 | CK7995 | 20.45 | ML-8538 | 120.00 |
| ML-6576 | 925.00 | ML-6771 | 71.90 | CK7246 | 9.20 | CK7996 | 72.00 | ML-8539 | 120.00 |
| CK6611 | 14.20 | CK6792 | 17.10 | ML-7289 | 30.75 | RK8008 | 9.90 | ML-8661/ 4CW10000A | 610.00 |
| CK6612 | 17.30 | CK6802 | 16.30 | ML-7479A | 950.00 | RK8020 | 24.00 | ML-8795 | 3475.00 |
| CK6626/ OA2WA | 3.47 | CK6814 | 6.58 | ML-7480 | 1590.00 | ML-8038 | 2270.00 | 9001 | 5.40 |
| CK6627/ OB2WA | 2.55 | CK6829 | 6.55 | ML-7482 | 4455.00 | ML-8040 | 2395.00 | 9002 | 4.33 |
| CK6659 | 12.00 | CK6832 | 17.55 | ML-7560 | 4455.00 | ML-8041 | 2270.00 | 9003 | 5.67 |
| CK6660/6BA6 | 1.08 | CK6872 | 11.35 | CK7576 | 13.25 | ML-8094/199 | 335.00 | 9005 | 8.05 |
| CK6661/6BH6 | 1.43 | CK6883 | 4.85 | CK7587 | 5.50 | CK8096 | 26.10 | 9006 | 2.70 |
| CK6662/6BJ6 | 1.30 | CK6883B/ 8032A/8552 | 5.95 | ML-7668 | 2175.00 | ML-8170/ 4CX5000A | 495.00 | | |
| CK6663/6AL5 | .99 | 6894 | 25.00 | ML-7698 | 75.00 | ML-8171/ 4CX10000D | 550.00 | | |
| CK6669/6AQ5 | 1.12 | 6895 | 25.00 | ML-7698R | 75.00 | ML-8224 | 170.00 | | |
| | | ML-6908 | 820.00 | CK7702 | 1670.00 | | | | |
| | | | | 7723-Ne | 13.10 | | | | |

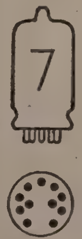
## PHOTOCELLS

| Raytheon Type | Net Each, Lots of | | | Raytheon Type | Net Each, Lots of | | | Raytheon Type | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1-99 | 100-499 | 500-999 | | 1-99 | 100-499 | 500-999 | | 1-99 | 100-499 | 500-999 |
| CK1201 | $1.75 | $1.50 | $1.40 | CK1224 | $1.50 | $1.15 | $1.05 | CK1261 | $2.20 | $1.60 | $1.50 |
| CK1202 | 1.75 | 1.50 | 1.40 | CK1225 | 1.50 | 1.15 | 1.05 | CK1262 | 2.20 | 1.60 | 1.50 |
| CK1203 | 1.75 | 1.50 | 1.40 | CK1226 | 1.50 | 1.15 | 1.05 | CK1263 | 2.20 | 1.60 | 1.50 |
| CK1204 | 1.75 | 1.50 | 1.40 | CK1241 | 2.20 | 1.60 | 1.50 | CK1264 | 2.20 | 1.60 | 1.50 |
| CK1205 | 1.75 | 1.50 | 1.40 | CK1242 | 2.20 | 1.60 | 1.50 | CK1265 | 2.20 | 1.60 | 1.50 |
| CK1206 | 1.75 | 1.50 | 1.40 | CK1243 | 2.20 | 1.60 | 1.50 | CK1266 | 2.20 | 1.60 | 1.50 |
| CK1206A | 1.75 | 1.50 | 1.40 | CK1244 | 2.20 | 1.60 | 1.50 | EM1502 | 2.20 | 1.50 | 1.50 |
| CK1207 | 1.75 | 1.50 | 1.40 | CK1245 | 2.20 | 1.60 | 1.50 | EM1505 | 2.20 | 1.50 | 1.50 |
| CK1222 | 1.50 | 1.15 | 1.05 | CK1246 | 2.20 | 1.60 | 1.50 | EM1508 | 2.20 | 1.50 | 1.50 |
| CK1223 | 1.50 | 1.15 | 1.05 | CK1247 | 2.20 | 1.60 | 1.50 | | | | |


CK1900


CK8421

CK8422


CK8650

Gas filled, cold cathode numerical indicator tubes designed for decimally coded readout applications such as basic counter and computer circuits. Common anode and metallic cathodes form numerical or polarity symbols and provide high readability with a brilliant orange-red glow. All-electronic design enables high speed operation with low power drain.

## DATAVUE® NUMERICAL INDICATOR TUBES

With 0.61″ characters.

| Raytheon Number | Description | Characters | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-99 | 100-499 | 500-999 |
| CK1900 | Long life, side view | ± | $ 8.00 | $ 5.60 | $ 4.95 |
| CK1901 | Regular life, top view | ± | 11.00 | 9.70 | 8.80 |
| CK1902 | Long life, top view | ± | 15.75 | 13.40 | 11.00 |
| CK1903 | Long life, rect., top view | ± | 15.75 | 13.40 | 11.00 |
| CK1904 | Top view, L.H., decimal | 0–9 | 16.25 | 13.90 | 11.50 |
| CK1905 | Side view, L.H. decimal | 0–9 | 8.75 | 6.20 | 5.45 |
| CK1906 | Side view, R.H. decimal | 0–9 | 8.75 | 6.20 | 5.45 |
| CK1907 | Side view | ± | 8.00 | 5.60 | 4.95 |
| CK1909 | High contrast 8754 | 0–9 | 8.60 | 6.10 | 4.65 |
| CK1916 | Side view, L.H. decimal | 0–9 | 8.75 | 6.20 | 4.45 |
| CK1917 | Side view, R.H. decimal | 0–9 | 8.75 | 6.20 | 4.45 |
| CK1918 | Side view, R.H., L.H. decimals | 0–9 | 8.75 | 6.20 | 5.45 |
| CK1920 | Long life, side view | 0–9 | 8.50 | 5.90 | 5.25 |
| CK1922 | High contrast CK1916 | 0–9 | 8.75 | 6.20 | 5.25 |
| CK1923 | High contrast CK1917 | 0–9 | 8.75 | 6.20 | 5.25 |
| CK6844A | Regular life, top view | 0–9 | 11.00 | 9.70 | 8.80 |
| JAN6844A | Meets MIL requirements | 0–9 | 11.75 | 10.50 | 9.50 |
| CK8037 | Long life, top view | 0–9 | 15.75 | 13.40 | 11.00 |
| JAN8037 | Meets MIL requirements | 0–9 | 16.75 | 14.40 | 11.75 |
| CK8421 | Long life, top view | 0–9 | 15.75 | 13.40 | 11.00 |
| JAN8421 | Meets MIL requirements | 0–9 | 16.75 | 14.40 | 11.75 |
| CK8422 | Long life, rect., top view | 0–9 | 15.75 | 13.40 | 11.00 |
| JAN8422 | Meets MIL requirements | 0–9 | 16.75 | 14.40 | 11.75 |
| CK8650 | Long life, side view | 0–9 | 8.00 | ......... | ......... |
| CK8754 | Side view | 0–9 | 8.00 | 5.60 | 4.25 |

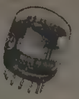
## INDICATOR SOCKETS

| Raytheon Number | Net Each, Lots of | | | Raytheon Number | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|
| | 1-99 | 100-499 | 500-999 | | 1-99 | 100-499 | 500-999 |
| CK1806, CK1808 | 30c | 22c | 22c | CK1826 | 30c | 22c | 22c |
| CK1807, CK1809 | 40c | 30c | 30c | CK1827 | 40c | 30c | 30c |
| CK1810, CK1812 | 30c | 22c | 22c | CK1828–CK1830 | 30c | 22c | 22c |
| CK1811, CK1813 | 40c | 30c | 30c | CK1831, CK1832 | 40c | 30c | 30c |
| CK1816 | 30c | 22c | 22c | CK1833, CK1835 | 30c | 22c | 22c |
| CK1817 | 40c | 30c | 30c | CK1834, CK1836 | 40c | 30c | 30c |
| CK1818, CK1820 | 70c | 45c | 35c | CK1837, CK1839 | 30c | 22c | 22c |
| CK1819, CK1821 | 80c | 55c | 45c | CK1838, CK1840 | 40c | 30c | 30c |
| CK1822, CK1824 | 70c | 45c | 35c | CK1843, CK1844 | 40c | 30c | 30c |
| CK1823, CK1825 | 80c | 55c | 45c | | | | |

**Data Sheets Available on Request**

GENERAL ELECTRIC / RCA / RAYTHEON

*SERVICE-DESIGNED*



# RECEIVING TUBES

## TUBES MAY BE ASSORTED—SEE TABLE HEADINGS BELOW

**The receiving tubes listed below and on the following pages represent practically all types generally in demand. Many pre-war types have not been included in this list in order that we catalog a complete listing of new types now available. If you require a particular type which is not listed it is due to space limitations rather than our inability to supply. We invite your inquiries and orders for all types whether listed or not as we can supply many pre-war types from stock and as new types are released by the manufacturer we will have them immediately available. While we try to maintain complete stocks at all times, the listing and pricing of a particular tube does not necessarily mean it is immediately available. Average shipping weight per tube, 4 oz.; per 100 tubes, 25 lbs.**

**PHONE—WRITE—WIRE FOR PRICES & QUOTATIONS ON TUBES NOT LISTED.**

| Tube Type | Can be Assorted Price Ea., Lots of | | | Not Asst'd |
|---|---|---|---|---|
| | 1-9 | 10-49 | 50 Up | 100Up Each |
| 0Z4/0Z4A | $2.15 | $1.94 | $1.72 | $1.55 |
| 1A3 | 3.33 | 2.99 | 2.66 | 2.39 |
| 1AD2A | 2.13 | 1.91 | 1.70 | 1.53 |
| 1AY2A | 2.03 | 1.82 | 1.62 | 1.46 |
| 1B3GT/1G3GT | 2.10 | 1.89 | 1.68 | 1.51 |
| 1BC2 | 1.63 | 1.46 | 1.30 | 1.17 |
| 1BH2A | 1.95 | 1.76 | 1.56 | 1.40 |
| 1K3/1J3 | 2.10 | 1.89 | 1.68 | 1.51 |
| 1L6 | 6.28 | 5.65 | 5.02 | 4.52 |
| 1N5GT | 2.45 | 2.21 | 1.96 | 1.76 |
| 1R5 | 2.95 | 2.66 | 2.36 | 2.12 |
| 1S2A/DY87 | 1.28 | 1.15 | 1.02 | .92 |
| 1U4 | 2.30 | 2.07 | 1.84 | 1.66 |
| 1U5 | 2.25 | 2.03 | 1.80 | 1.62 |
| 1V2 | 1.28 | 1.15 | 1.02 | .92 |
| 1X2C/1BX2 | 2.05 | 1.85 | 1.64 | 1.48 |
| 2A3 | 4.95 | 4.46 | 3.96 | 3.56 |
| 2AF4B/2DZ4 | 2.45 | 2.21 | 1.96 | 1.76 |
| 2BU2/2AH2 | 2.35 | 2.12 | 1.88 | 1.69 |
| 2AS2A | 1.95 | 1.76 | 1.56 | 1.40 |
| 2AV2 | 1.73 | 1.55 | 1.38 | 1.24 |
| 2BN4A | 2.15 | 1.94 | 1.72 | 1.55 |
| 2CW4 | 2.93 | 2.63 | 2.34 | 2.11 |
| 2CY5 | 2.68 | 2.41 | 2.14 | 1.93 |
| 2DS4 | 2.45 | 2.21 | 1.96 | 1.76 |
| 2DV4 | 3.70 | 3.33 | 2.96 | 2.66 |
| 2EG4 | 2.45 | 2.21 | 1.96 | 1.76 |
| 2EN5 | 1.60 | 1.44 | 1.28 | 1.15 |
| 2ER5 | 1.85 | 1.67 | 1.48 | 1.33 |
| 2FH5 | 1.85 | 1.67 | 1.48 | 1.33 |
| 2FS5 | 2.43 | 2.18 | 1.94 | 1.75 |
| 2GK5/2FQ5A | 2.10 | 1.89 | 1.68 | 1.51 |
| 2GU5 | 2.25 | 2.03 | 1.80 | 1.62 |
| 2HA5 | 1.93 | 1.73 | 1.54 | 1.39 |
| 3A2 | 2.75 | 2.48 | 2.20 | 1.98 |
| 3A3C/3AW3/3B2 | 2.13 | 1.91 | 1.70 | 1.53 |
| 3AF4B/3DZ4 | 2.38 | 2.14 | 1.90 | 1.71 |
| 3AL5 | 1.60 | 1.44 | 1.28 | 1.15 |
| 3AT2B | 2.13 | 1.91 | 1.70 | 1.53 |
| 3AU6 | 1.70 | 1.53 | 1.36 | 1.22 |
| 3AV6 | 1.48 | 1.33 | 1.18 | 1.06 |
| 3AW2A | 2.23 | 2.00 | 1.78 | 1.60 |
| 3BA6 | 1.18 | 1.06 | .94 | .85 |
| 3BC5/3CE5 | 1.70 | 1.53 | 1.36 | 1.22 |
| 3BN2A | 2.00 | 1.80 | 1.60 | 1.44 |
| 3BN4A | 1.70 | 1.53 | 1.36 | 1.22 |
| 3BN6 | 2.75 | 2.48 | 2.20 | 1.98 |
| 3BU8/3GS8 | 2.60 | 2.34 | 2.08 | 1.87 |
| 3BW2/3BS2A/3BT2 | 2.45 | 2.21 | 1.96 | 1.76 |
| 3BY6 | 1.50 | 1.35 | 1.20 | 1.08 |
| 3BZ6 | 2.05 | 1.85 | 1.64 | 1.48 |
| 3CA3 | 2.18 | 1.96 | 1.74 | 1.57 |
| 3CB6/3CF6 | 1.48 | 1.33 | 1.18 | 1.06 |
| 3CN3B | 2.30 | 2.07 | 1.84 | 1.66 |
| 3CS6 | 2.35 | 2.12 | 1.88 | 1.69 |
| 3CU3A | 2.90 | 2.61 | 2.32 | 2.09 |
| 3CY5 | 1.95 | 1.76 | 1.56 | 1.40 |
| 3CZ3 | 2.60 | 2.34 | 2.08 | 1.87 |
| 3DA3/3CX3 | 2.10 | 1.89 | 1.68 | 1.51 |
| 3DB3/3CY3 | 2.38 | 2.14 | 1.90 | 1.71 |
| 3DC3 | 2.93 | 2.63 | 2.34 | 2.11 |
| 3DF3 | 2.10 | 1.89 | 1.68 | 1.51 |
| 3DG4 | 3.18 | 2.86 | 2.54 | 2.29 |
| 3DJ3 | 2.30 | 2.07 | 1.84 | 1.66 |
| 3DK6 | 1.78 | 1.60 | 1.42 | 1.28 |
| 3DT6A | 1.85 | 1.67 | 1.48 | 1.33 |
| 3EH7/XF183 | 1.28 | 1.15 | 1.02 | .92 |
| 3EJ7/XF184 | 1.28 | 1.15 | 1.02 | .92 |
| 3ER5 | 2.60 | 2.34 | 2.08 | 1.87 |
| 3GK5 | 2.10 | 1.89 | 1.68 | 1.51 |
| 3HM5/3HA5 | 1.93 | 1.73 | 1.54 | 1.39 |
| 3HQ5 | 3.13 | 2.81 | 2.50 | 2.25 |
| 3HS8 | 2.15 | 1.94 | 1.72 | 1.55 |
| 3JC6A | $2.95 | $2.66 | $2.36 | $2.12 |
| 3KT6 | 2.08 | 1.87 | 1.66 | 1.49 |
| 3Q4 | 1.68 | 1.51 | 1.34 | 1.21 |
| 3V4 | 2.23 | 2.00 | 1.78 | 1.60 |
| 4AU6 | 1.93 | 1.73 | 1.54 | 1.39 |
| 4AV6 | 1.48 | 1.33 | 1.18 | 1.06 |
| 4BC8 | 2.45 | 2.21 | 1.96 | 1.76 |
| 4BL8/XCF80 | 1.20 | 1.08 | .96 | .86 |
| 4BN6 | 2.03 | 1.82 | 1.62 | 1.46 |
| 4BQ7A | 2.45 | 2.21 | 1.96 | 1.76 |
| 4BS8 | 2.13 | 1.91 | 1.70 | 1.53 |
| 4BZ6 | 2.05 | 1.85 | 1.64 | 1.48 |
| 4BZ7 | 2.45 | 2.21 | 1.96 | 1.76 |
| 4CB6 | 1.55 | 1.40 | 1.24 | 1.12 |
| 4CE5/4BC5 | 1.53 | 1.37 | 1.22 | 1.10 |
| 4CS6 | 1.93 | 1.73 | 1.54 | 1.39 |
| 4DE6 | 1.48 | 1.33 | 1.18 | 1.06 |
| 4DT6A | 2.15 | 1.94 | 1.72 | 1.55 |
| 4EH7/LF183 | 2.13 | 1.91 | 1.70 | 1.53 |
| 4EJ7/LF184 | 2.13 | 1.91 | 1.70 | 1.53 |
| 4EW6 | 1.78 | 1.60 | 1.42 | 1.28 |
| 4GK5 | 1.95 | 1.76 | 1.56 | 1.40 |
| 4GM6 | 1.10 | .99 | .88 | .79 |
| 4HA5/PC900 | 1.18 | 1.06 | .94 | .85 |
| 4HA7/4HC7 | 2.13 | 1.91 | 1.70 | 1.53 |
| 4HM6 | 2.00 | 1.80 | 1.60 | 1.44 |
| 4HS8 | 2.50 | 2.25 | 2.00 | 1.80 |
| 4HT6A | 1.28 | 1.15 | 1.02 | .92 |
| 4JC6A | 2.75 | 2.48 | 2.20 | 1.98 |
| 4JD6 | 2.53 | 2.27 | 2.02 | 1.82 |
| 4KE8 | 3.53 | 3.17 | 2.82 | 2.54 |
| 4LJ8 | 2.93 | 2.63 | 2.34 | 2.11 |
| 4LU6 | 1.70 | 1.53 | 1.36 | 1.22 |
| 5AM8 | 2.83 | 2.54 | 2.26 | 2.03 |
| 5AQ5 | 2.05 | 1.85 | 1.64 | 1.48 |
| 5AR4/GZ34 | 2.13 | 1.91 | 1.70 | 1.53 |
| 5AS4A | 1.73 | 1.55 | 1.38 | 1.24 |
| 5AS8 | 2.20 | 1.98 | 1.76 | 1.58 |
| 5AV8 | 2.03 | 1.82 | 1.62 | 1.46 |
| 5B8 | 2.75 | 2.48 | 2.20 | 1.98 |
| 5BC3A | 2.00 | 1.80 | 1.60 | 1.44 |
| 5BE8 | 1.55 | 1.40 | 1.24 | 1.12 |
| 5BT8 | 1.55 | 1.40 | 1.24 | 1.12 |
| 5BW8 | 2.15 | 1.94 | 1.72 | 1.55 |
| 5CG8 | 2.28 | 2.05 | 1.82 | 1.64 |
| 5CL8A | 2.98 | 2.68 | 2.38 | 2.14 |
| 5CQ8 | 2.05 | 1.85 | 1.64 | 1.48 |
| 5CZ5 | 2.23 | 2.00 | 1.78 | 1.60 |
| 5DH8 | 2.75 | 2.48 | 2.20 | 1.98 |
| 5DJ4 | 1.78 | 1.60 | 1.42 | 1.28 |
| 5EA8 | 2.83 | 2.54 | 2.26 | 2.03 |
| 5ES8/YCC189 | 2.75 | 2.48 | 2.20 | 1.98 |
| 5EU8 | 2.63 | 2.36 | 2.10 | 1.89 |
| 5EW6 | 2.00 | 1.80 | 1.60 | 1.44 |
| 5FG7 | 2.30 | 2.07 | 1.84 | 1.66 |
| 5FV8/5BR8 | 2.83 | 2.54 | 2.26 | 2.03 |
| 5GH8A | 2.53 | 2.27 | 2.02 | 1.82 |
| 5GJ7 | 1.48 | 1.33 | 1.18 | 1.06 |
| 5GM6 | 1.85 | 1.67 | 1.48 | 1.33 |
| 5GS7 | 1.73 | 1.55 | 1.38 | 1.24 |
| 5GX6 | 1.23 | 1.10 | .98 | .88 |
| 5GX7 | 2.95 | 2.66 | 2.36 | 2.12 |
| 5HZ6 | 1.85 | 1.67 | 1.48 | 1.33 |
| 5J6 | 1.85 | 1.67 | 1.48 | 1.33 |
| 5KD8 | 1.95 | 1.76 | 1.56 | 1.40 |
| 5KE8 | 3.53 | 3.17 | 2.82 | 2.54 |
| 5KZ8 | 2.13 | 1.91 | 1.70 | 1.53 |
| 5LJ8 | 2.65 | 2.39 | 2.12 | 1.91 |
| 5MB8 | 1.83 | 1.64 | 1.46 | 1.31 |
| 5U4GB | 1.73 | 1.55 | 1.38 | 1.24 |
| 5U8 | 2.78 | 2.50 | 2.22 | 2.00 |
| 5U9/LCF201 | 1.48 | 1.33 | 1.18 | 1.06 |
| 5V3A/5AU4 | 2.20 | 1.98 | 1.76 | 1.58 |
| 5V4GA | 2.55 | 2.30 | 2.04 | 1.84 |
| 5V6GT | $1.85 | $1.67 | $1.48 | $1.33 |
| 5Y3GT | 1.70 | 1.53 | 1.36 | 1.22 |
| 5Y4GA | 1.55 | 1.40 | 1.24 | 1.12 |
| 5Z3 | 2.23 | 2.00 | 1.78 | 1.60 |
| 6A7 | 4.00 | 3.60 | 3.20 | 2.88 |
| 6AB4 | 2.00 | 1.80 | 1.60 | 1.44 |
| 6AC7 | 3.68 | 3.31 | 2.94 | 2.65 |
| 6AC10 | 2.90 | 2.61 | 2.32 | 2.09 |
| 6AD10 | 4.43 | 3.98 | 3.54 | 3.19 |
| 6AF3 | 2.03 | 1.82 | 1.62 | 1.46 |
| 6AF4, A | 2.45 | 2.21 | 1.96 | 1.76 |
| 6AF6G | 3.15 | 2.84 | 2.52 | 2.27 |
| 6AF9 | 1.75 | 1.58 | 1.40 | 1.26 |
| 6AF11 | 2.90 | 2.61 | 2.32 | 2.09 |
| 6AG5 | 2.15 | 1.94 | 1.72 | 1.55 |
| 6AG7 | 3.85 | 3.47 | 3.08 | 2.77 |
| 6AG9 | 3.28 | 2.95 | 2.62 | 2.36 |
| 6AG11 | 3.00 | 2.70 | 2.40 | 2.16 |
| 6AH6 | 2.90 | 2.61 | 2.32 | 2.09 |
| 6AH9 | 2.38 | 2.14 | 1.90 | 1.71 |
| 6AK5/EF95 | 2.25 | 2.03 | 1.80 | 1.62 |
| 6AK6 | 1.28 | 1.15 | 1.02 | .92 |
| 6AL3/EY88 | 1.30 | 1.17 | 1.04 | .94 |
| 6AL5 | 1.48 | 1.33 | 1.18 | 1.06 |
| 6AL7GT | 4.43 | 3.98 | 3.54 | 3.19 |
| 6AL11 | 3.33 | 2.99 | 2.66 | 2.39 |
| 6AM4 | 3.60 | 3.24 | 2.88 | 2.59 |
| 6AM8A | 2.53 | 2.27 | 2.02 | 1.82 |
| 6AN4, A | 3.08 | 2.77 | 2.46 | 2.21 |
| 6AN8A | 2.75 | 2.48 | 2.20 | 1.98 |
| 6AQ5A/6HG5 | 1.85 | 1.67 | 1.48 | 1.33 |
| 6AQ6 | 1.93 | 1.73 | 1.54 | 1.39 |
| 6AQ7GT | 2.35 | 2.12 | 1.88 | 1.69 |
| 6AQ8/ECC85 | 1.50 | 1.35 | 1.20 | 1.08 |
| 6AR5 | 1.23 | 1.10 | .98 | .88 |
| 6AR8 | 2.95 | 2.66 | 2.36 | 2.12 |
| 6AR11 | 2.80 | 2.52 | 2.24 | 2.02 |
| 6AS5 | 2.23 | 2.00 | 1.78 | 1.60 |
| 6AS8 | 2.68 | 2.41 | 2.14 | 1.93 |
| 6AS11 | 3.03 | 2.72 | 2.42 | 2.18 |
| 6AT6 | 1.20 | 1.08 | .96 | .86 |
| 6AU4GTA | 2.60 | 2.34 | 2.08 | 1.87 |
| 6AU5GT | 2.90 | 2.61 | 2.32 | 2.09 |
| 6AU6A | 1.63 | 1.46 | 1.30 | 1.17 |
| 6AU8A | 3.15 | 2.84 | 2.52 | 2.27 |
| 6AV5GA | 3.25 | 2.93 | 2.60 | 2.34 |
| 6AV6 | 1.48 | 1.33 | 1.18 | 1.06 |
| 6AV11 | 2.48 | 2.23 | 1.98 | 1.78 |
| 6AW8A | 2.45 | 2.21 | 1.96 | 1.76 |
| 6AX3 | 1.88 | 1.69 | 1.50 | 1.35 |
| 6AX4GTB | 2.10 | 1.89 | 1.68 | 1.51 |
| 6AX5GT | 2.18 | 1.96 | 1.74 | 1.57 |
| 6AX8 | 1.95 | 1.76 | 1.56 | 1.40 |
| 6AY3B/6BS3A | 2.10 | 1.89 | 1.68 | 1.51 |
| 6AY11 | 2.95 | 2.66 | 2.36 | 2.12 |
| 6AZ8 | 3.00 | 2.70 | 2.40 | 2.16 |
| 6B8 | 3.43 | 3.08 | 2.74 | 2.47 |
| 6B10 | 2.65 | 2.39 | 2.12 | 1.91 |
| 6BA3 | 1.53 | 1.37 | 1.22 | 1.10 |
| 6BA6/EF93 | 1.88 | 1.69 | 1.50 | 1.35 |
| 6BA7 | 2.95 | 2.66 | 2.36 | 2.13 |
| 6BA8A | 2.60 | 2.34 | 2.08 | 1.87 |
| 6BA11 | 2.80 | 2.52 | 2.24 | 2.02 |
| 6BC7 | 1.80 | 1.62 | 1.44 | 1.30 |
| 6BC8/6BZ8 | 2.68 | 2.41 | 2.14 | 1.93 |
| 6BD6 | 1.18 | 1.06 | .94 | .85 |
| 6BE3A/6BZ3 | 2.65 | 2.39 | 2.12 | 1.91 |
| 6BE6 | 1.90 | 1.71 | 1.52 | 1.37 |
| 6BF5 | 1.68 | 1.51 | 1.34 | 1.21 |
| 6BF11 | 2.88 | 2.59 | 2.30 | 2.07 |
| 6BH3A | 1.40 | 1.26 | 1.12 | 1.01 |
| 6BH6 | 2.23 | 2.00 | 1.78 | 1.60 |
| 6BH8 | 2.93 | 2.63 | 2.34 | 2.11 |
| 6BH11 | 2.83 | 2.54 | 2.26 | 2.03 |

NERAL ELECTRIC / RCA / RAYTHEON

SERVICE-DESIGNED

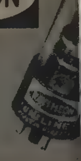
# RECEIVING TUBES

| Tube Type | Can be Assorted Price Ea., Lots of | | | Not Asst'd |
|---|---|---|---|---|
| | 1-9 | 10-49 | 50 Up | 100Up Each |
| 6BJ3 | $1.63 | $1.46 | $1.30 | $1.17 |
| 6BJ6 | 2.23 | 2.00 | 1.78 | 1.60 |
| 6BJ7 | 1.48 | 1.33 | 1.18 | 1.06 |
| 6BJ8 | 2.38 | 2.14 | 1.90 | 1.71 |
| 6BK4C/6EL4A | 3.93 | 3.53 | 3.14 | 2.83 |
| 6BK5 | 1.75 | 1.58 | 1.40 | 1.26 |
| 6BK7B | 2.60 | 2.34 | 2.08 | 1.87 |
| 6BL7GTA | 3.03 | 2.72 | 2.42 | 2.18 |
| 6BL8/ECF80 | 1.35 | 1.22 | 1.08 | .97 |
| 6BM8/ECL82 | 1.45 | 1.31 | 1.16 | 1.04 |
| 6BN4A | 2.00 | 1.80 | 1.60 | 1.44 |
| 6BN6/6KS6 | 2.70 | 2.43 | 2.16 | 1.94 |
| 6BN8 | 2.15 | 1.94 | 1.72 | 1.55 |
| 6BN11 | 2.75 | 2.48 | 2.20 | 1.98 |
| 6BQ5/EL84 | 2.13 | 1.91 | 1.70 | 1.53 |
| 6BQ6GTB/6CU6 | 3.03 | 2.72 | 2.42 | 2.18 |
| 6BQ7A/6BZ7 | 2.68 | 2.41 | 2.14 | 1.93 |
| 6BS8 | 2.68 | 2.41 | 2.14 | 1.93 |
| 6BU8 | 2.78 | 2.50 | 2.22 | 2.00 |
| 6BV8 | 1.98 | 1.78 | 1.58 | 1.42 |
| 6BV11 | 2.70 | 2.43 | 2.16 | 1.94 |
| 6BW8 | 2.60 | 2.34 | 2.08 | 1.87 |
| 6BW11 | 2.75 | 2.48 | 2.20 | 1.98 |
| 6BX7GT | 3.33 | 2.99 | 2.66 | 2.39 |
| 6BY5GA | 2.40 | 2.16 | 1.92 | 1.73 |
| 6BY6 | 2.20 | 1.98 | 1.76 | 1.58 |
| 6BY8 | 1.35 | 1.22 | 1.08 | .97 |
| 6BZ6 | 1.70 | 1.53 | 1.36 | 1.22 |
| 6C4 | 2.08 | 1.87 | 1.66 | 1.49 |
| 6C6 | 3.93 | 3.53 | 3.14 | 2.83 |
| 6C9 | 2.75 | 2.48 | 2.20 | 1.98 |
| 6C10 | 2.23 | 2.00 | 1.78 | 1.60 |
| 6CA4 | 1.88 | 1.69 | 1.50 | 1.35 |
| 6CA7/EL34 | 2.95 | 2.66 | 2.36 | 2.12 |
| 6CB5A | 4.93 | 4.43 | 3.94 | 3.55 |
| 6CB6A/6CF6 | 1.80 | 1.62 | 1.44 | 1.30 |
| 6CD6GA | 3.80 | 3.42 | 3.04 | 2.74 |
| 6CE5/6BC5 | 1.63 | 1.46 | 1.30 | 1.17 |
| 6CG3/6CE3/ 6CD3/6BW3 | 2.15 | 1.94 | 1.72 | 1.55 |
| 6CG8A | 2.40 | 2.16 | 1.92 | 1.73 |
| 6CJ3/6CH3 | 2.05 | 1.85 | 1.64 | 1.48 |
| 6CK3 | 2.05 | 1.85 | 1.64 | 1.48 |
| 6CL3 | 2.05 | 1.85 | 1.64 | 1.48 |
| 6CL6 | 2.60 | 2.34 | 2.08 | 1.87 |
| 6CL8A | 2.45 | 2.21 | 1.96 | 1.76 |
| 6CM3 | 2.63 | 2.36 | 2.10 | 1.89 |
| 6CM6 | 2.35 | 2.12 | 1.88 | 1.69 |
| 6CM7 | 2.28 | 2.05 | 1.82 | 1.64 |
| 6CN7 | 2.70 | 2.43 | 2.16 | 1.94 |
| 6CQ8 | 2.53 | 2.27 | 2.02 | 1.82 |
| 6CR6 | 1.48 | 1.33 | 1.18 | 1.06 |
| 6CS6 | 2.05 | 1.85 | 1.64 | 1.48 |
| 6CS7 | 2.23 | 2.00 | 1.78 | 1.60 |
| 6CU5 | 2.20 | 1.98 | 1.76 | 1.58 |
| 6CU8 | 2.80 | 2.52 | 2.24 | 2.02 |
| 6CW4 | 2.95 | 2.66 | 2.36 | 2.12 |
| 6CW5/EL86 | 1.38 | 1.24 | 1.10 | .99 |
| 6CX8 | 2.80 | 2.52 | 2.24 | 2.02 |
| 6CY5 | 2.68 | 2.41 | 2.14 | 1.93 |
| 6CY7 | 1.53 | 1.37 | 1.22 | 1.10 |
| 6CZ5 | 2.60 | 2.34 | 2.08 | 1.87 |
| 6D10 | 2.78 | 2.50 | 2.22 | 2.00 |
| 6DA4A/6DM4A | 2.10 | 1.89 | 1.68 | 1.51 |
| 6DC6 | 2.20 | 1.98 | 1.76 | 1.58 |
| 6DE4/6CQ4 | 1.88 | 1.69 | 1.50 | 1.35 |
| 6DE6 | 1.63 | 1.46 | 1.30 | 1.17 |
| 6DE7 | 2.78 | 2.50 | 2.22 | 2.00 |
| 6DG6GT | 2.30 | 2.07 | 1.84 | 1.66 |
| 6DK6 | 1.78 | 1.60 | 1.42 | 1.28 |
| 6DL4/EC88 | 3.98 | 3.58 | 3.18 | 2.86 |
| 6DN6 | 3.50 | 3.15 | 2.80 | 2.52 |
| 6DN7 | 2.88 | 2.59 | 2.30 | 2.07 |
| 6DQ5 | 4.20 | 3.78 | 3.36 | 3.02 |
| 6DR7 | 2.93 | 2.63 | 2.34 | 2.11 |
| 6DS4 | 2.95 | 2.66 | 2.36 | 2.12 |
| 6DS5 | 1.83 | 1.64 | 1.46 | 1.31 |
| 6DT5 | 1.78 | 1.60 | 1.42 | 1.28 |
| 6DT6A | 1.78 | 1.60 | 1.42 | 1.28 |
| 6DT8 | 2.23 | 2.00 | 1.78 | 1.60 |
| 6DV4 | 3.40 | 3.06 | 2.72 | 2.45 |
| 6DW4B | 1.85 | 1.67 | 1.48 | 1.33 |
| 6DX8/ECL84 | 1.48 | 1.33 | 1.18 | 1.06 |
| 6DZ4/6AF4A | 2.45 | 2.21 | 1.96 | 1.76 |
| 6DZ7 | 5.18 | 4.66 | 4.14 | 3.73 |
| 6EA8 | 2.15 | 1.94 | 1.72 | 1.55 |
| 6EH4A | 4.30 | 3.87 | 3.44 | 3.10 |
| 6EH5 | 2.08 | 1.87 | 1.66 | 1.49 |
| 6EH7/EF183 | 1.93 | 1.73 | 1.54 | 1.39 |
| 6EH8 | 1.75 | 1.58 | 1.40 | 1.26 |
| 6EJ4A | 4.68 | 4.21 | 3.74 | 3.37 |
| 6EJ7/EF184 | 1.78 | 1.60 | 1.42 | 1.28 |
| 6EM5 | 2.45 | 2.21 | 1.96 | 1.76 |
| 6EM7/6EA7 | 3.05 | 2.75 | 2.44 | 2.20 |
| 6EQ7 | 1.48 | 1.33 | 1.18 | 1.06 |

| Tube Type | Can be Assorted Price Ea., Lots of | | | Not Asst'd |
|---|---|---|---|---|
| | 1-9 | 10-49 | 50 Up | 100Up Each |
| 6ER5 | $2.33 | $2.09 | $1.86 | $1.67 |
| 6ES5 | 1.43 | 1.28 | 1.14 | 1.03 |
| 6ES8/ECC189 | 2.73 | 2.45 | 2.18 | 1.96 |
| 6ET7 | 2.00 | 1.80 | 1.60 | 1.44 |
| 6EU7 | 2.20 | 1.98 | 1.76 | 1.58 |
| 6EU8 | 2.20 | 1.98 | 1.76 | 1.58 |
| 6EV5 | 2.13 | 1.91 | 1.70 | 1.53 |
| 6EV7 | 1.63 | 1.46 | 1.30 | 1.17 |
| 6EW6 | 1.93 | 1.73 | 1.54 | 1.39 |
| 6EW7 | 3.25 | 2.93 | 2.60 | 2.34 |
| 6EY6 | 2.50 | 2.25 | 2.00 | 1.80 |
| 6EZ5 | 2.90 | 2.61 | 2.32 | 2.09 |
| 6F5 | 3.25 | 2.93 | 2.60 | 2.34 |
| 6F6 | 3.35 | 3.02 | 2.68 | 2.41 |
| 6FA7 | 1.48 | 1.33 | 1.18 | 1.06 |
| 6FD6 | 1.78 | 1.60 | 1.42 | 1.28 |
| 6FD7 | 3.10 | 2.79 | 2.48 | 2.23 |
| 6FE5 | 1.70 | 1.53 | 1.36 | 1.22 |
| 6FG5 | 2.68 | 2.41 | 2.14 | 1.93 |
| 6FG6/EM84 | 1.68 | 1.51 | 1.34 | 1.21 |
| 6FG7 | 2.30 | 2.07 | 1.84 | 1.66 |
| 6FH5 | 2.50 | 2.25 | 2.00 | 1.80 |
| 6FH8 | 2.20 | 1.98 | 1.76 | 1.58 |
| 6FJ7 | 2.45 | 2.21 | 1.96 | 1.76 |
| 6FM7 | 2.78 | 2.50 | 2.22 | 2.00 |
| 6FQ7/6CG7 | 1.48 | 1.33 | 1.18 | 1.06 |
| 6FS5 | 2.05 | 1.85 | 1.64 | 1.48 |
| 6FV6 | 2.68 | 2.41 | 2.14 | 1.93 |
| 6FV8A/6BR8A | 2.30 | 2.07 | 1.84 | 1.66 |
| 6FW5 | 2.70 | 2.43 | 2.16 | 1.94 |
| 6FY7 | 1.75 | 1.58 | 1.40 | 1.26 |
| 6G11 | 3.15 | 2.84 | 2.52 | 2.27 |
| 6GB5/EL500 | 1.90 | 1.71 | 1.52 | 1.37 |
| 6GC5 | 2.83 | 2.54 | 2.26 | 2.03 |
| 6GE5 | 3.15 | 2.84 | 2.52 | 2.27 |
| 6GF5 | 2.28 | 2.05 | 1.82 | 1.64 |
| 6GF7A | 2.83 | 2.54 | 2.26 | 2.03 |
| 6GH8A | 1.68 | 1.51 | 1.34 | 1.21 |
| 6GJ5A | 3.33 | 2.99 | 2.66 | 2.39 |
| 6GJ7/ECF801 | 1.55 | 1.40 | 1.24 | 1.12 |
| 6GK5/6FQ5A | 2.53 | 2.27 | 2.02 | 1.82 |
| 6GK6 | 2.05 | 1.85 | 1.64 | 1.48 |
| 6GL7 | 2.90 | 2.61 | 2.32 | 2.09 |
| 6GM5 | 1.53 | 1.37 | 1.22 | 1.10 |
| 6GM6 | 2.13 | 1.91 | 1.70 | 1.53 |
| 6GM8/ECC86 | 2.18 | 1.96 | 1.74 | 1.57 |
| 6GN8/6EB8 | 2.83 | 2.54 | 2.26 | 2.03 |
| 6GS7 | 1.78 | 1.60 | 1.42 | 1.28 |
| 6GT5A | 3.18 | 2.86 | 2.54 | 2.29 |
| 6GU5 | 2.45 | 2.21 | 1.96 | 1.76 |
| 6GU7 | 2.23 | 2.00 | 1.78 | 1.60 |
| 6GV5 | 2.45 | 2.21 | 1.96 | 1.76 |
| 6GV8/ECL85 | 2.30 | 2.07 | 1.84 | 1.66 |
| 6GW5/6DQ6B | 2.93 | 2.63 | 2.34 | 2.11 |
| 6GW8/ECL86 | 1.53 | 1.37 | 1.22 | 1.10 |
| 6GX7 | 2.95 | 2.66 | 2.36 | 2.12 |
| 6GY5 | 2.75 | 2.48 | 2.20 | 1.98 |
| 6GY6/6GX6 | 1.75 | 1.58 | 1.40 | 1.26 |
| 6GY8 | 2.58 | 2.32 | 2.06 | 1.85 |
| 6GZ5 | 1.35 | 1.22 | 1.08 | .97 |
| 6H6 | 3.03 | 2.72 | 2.42 | 2.18 |
| 6HA5/6HM5 | 2.10 | 1.89 | 1.68 | 1.51 |
| 6HB5 | 2.53 | 2.27 | 2.02 | 1.82 |
| 6HB6/6HA6 | 2.45 | 2.21 | 1.96 | 1.76 |
| 6HB7 | 2.38 | 2.14 | 1.90 | 1.71 |
| 6HE5 | 2.78 | 2.50 | 2.22 | 2.00 |
| 6HF5 | 4.35 | 3.92 | 3.48 | 3.13 |
| 6HF8 | 2.95 | 2.66 | 2.36 | 2.12 |
| 6HG8/ECF86 | 1.85 | 1.67 | 1.48 | 1.33 |
| 6HK5 | 1.95 | 1.76 | 1.56 | 1.40 |
| 6HL8 | 1.85 | 1.67 | 1.48 | 1.33 |
| 6HM6 | 1.48 | 1.33 | 1.18 | 1.06 |
| 6HQ5 | 2.78 | 2.50 | 2.22 | 2.00 |
| 6HR5 | 1.28 | 1.15 | 1.02 | .92 |
| 6HR6 | 1.85 | 1.67 | 1.48 | 1.33 |
| 6HS5 | 4.30 | 3.87 | 3.44 | 3.10 |
| 6HS8 | 2.60 | 2.34 | 2.08 | 1.87 |
| 6HZ6 | 1.83 | 1.64 | 1.46 | 1.31 |
| 6HZ8 | 2.75 | 2.48 | 2.20 | 1.98 |
| 6J5 | 2.53 | 2.27 | 2.02 | 1.82 |
| 6J6A | 2.45 | 2.21 | 1.96 | 1.76 |
| 6J7 | 3.80 | 3.42 | 3.04 | 2.74 |
| 6J11 | 2.88 | 2.59 | 2.30 | 2.07 |
| 6JB6A | 3.18 | 2.86 | 2.54 | 2.29 |
| 6JC6A | 2.38 | 2.14 | 1.90 | 1.71 |
| 6JC8 | 2.00 | 1.80 | 1.60 | 1.44 |
| 6JD5 | 3.88 | 3.49 | 3.10 | 2.79 |
| 6JD6 | 2.30 | 2.07 | 1.84 | 1.66 |
| 6JE6C/6LQ6 | 4.40 | 3.96 | 3.52 | 3.17 |
| 6JF6 | 3.63 | 3.26 | 2.90 | 2.61 |
| 6JG6A | 3.70 | 3.33 | 2.96 | 2.66 |
| 6JH6 | 2.08 | 1.87 | 1.66 | 1.49 |
| 6JH8 | 2.95 | 2.66 | 2.36 | 2.12 |
| 6JK8 | 2.03 | 1.82 | 1.62 | 1.46 |
| 6JM6A | 3.15 | 2.84 | 2.52 | 2.27 |

| Tube Type | Can be Assorted Price Ea., Lots of | | | Not Asst'd |
|---|---|---|---|---|
| | 1-9 | 10-49 | 50 Up | 100Up Each |
| 6JN6 | $2.93 | $2.63 | $2.34 | $2.11 |
| 6JN8 | 2.38 | 2.14 | 1.90 | 1.71 |
| 6JQ6 | 2.60 | 2.34 | 2.08 | 1.87 |
| 6JS6C | 3.93 | 3.53 | 3.14 | 2.83 |
| 6JT6A | 2.93 | 2.63 | 2.34 | 2.11 |
| 6JT8 | 2.53 | 2.27 | 2.02 | 1.82 |
| 6JU8A | 2.38 | 2.14 | 1.90 | 1.71 |
| 6JV8 | 2.53 | 2.27 | 2.02 | 1.82 |
| 6JW8/ECF802 | 1.55 | 1.40 | 1.24 | 1.12 |
| 6JZ6 | 2.33 | 2.09 | 1.86 | 1.67 |
| 6JZ8 | 2.23 | 2.00 | 1.78 | 1.60 |
| 6K6GT | 2.33 | 2.09 | 1.86 | 1.67 |
| 6KA8 | 2.68 | 2.41 | 2.14 | 1.93 |
| 6KD6 | 4.88 | 4.39 | 3.90 | 3.51 |
| 6KE8 | 3.35 | 3.02 | 2.68 | 2.41 |
| 6KL8 | 1.48 | 1.33 | 1.18 | 1.06 |
| 6KM6 | 4.43 | 3.98 | 3.54 | 3.19 |
| 6KM8 | 1.73 | 1.55 | 1.38 | 1.24 |
| 6KN6 | 4.00 | 3.60 | 3.20 | 2.88 |
| 6KR8A | 2.13 | 1.91 | 1.70 | 1.53 |
| 6KT6 | 2.45 | 2.21 | 1.96 | 1.76 |
| 6KT8 | 2.95 | 2.66 | 2.36 | 2.12 |
| 6KU8 | 2.40 | 2.16 | 1.92 | 1.73 |
| 6KV8 | 3.28 | 2.95 | 2.62 | 2.36 |
| 6KY8A | 4.08 | 3.67 | 3.26 | 2.93 |
| 6KZ8 | 2.25 | 2.03 | 1.80 | 1.62 |
| 6L6 | 5.10 | 4.59 | 4.08 | 3.67 |
| 6L6GC | 3.33 | 2.99 | 2.66 | 2.39 |
| 6LB6 | 4.43 | 3.98 | 3.54 | 3.19 |
| 6LB8 | 2.35 | 2.12 | 1.88 | 1.69 |
| 6LC8 | 2.85 | 2.57 | 2.28 | 2.05 |
| 6LE8 | 3.33 | 2.99 | 2.66 | 2.39 |
| 6LF6 | 4.23 | 3.80 | 3.38 | 3.04 |
| 6LF8 | 2.83 | 2.54 | 2.26 | 2.03 |
| 6LJ6A/6LH6A | 3.78 | 3.40 | 3.02 | 2.72 |
| 6LJ8 | 2.60 | 2.34 | 2.08 | 1.87 |
| 6LM8 | 2.68 | 2.41 | 2.14 | 1.93 |
| 6LN8/LCF80 | 1.20 | 1.08 | .96 | .86 |
| 6LQ8 | 3.15 | 2.84 | 2.52 | 2.27 |
| 6LR6 | 4.43 | 3.98 | 3.54 | 3.19 |
| 6LT8 | 2.38 | 2.14 | 1.90 | 1.71 |
| 6LU8 | 2.85 | 2.57 | 2.28 | 2.05 |
| 6LX8/LCF802 | 1.30 | 1.17 | 1.04 | .94 |
| 6LY8 | 2.23 | 2.00 | 1.78 | 1.60 |
| 6M11 | 3.18 | 2.86 | 2.54 | 2.29 |
| 6MB8 | 1.83 | 1.64 | 1.46 | 1.31 |
| 6MD8 | 2.90 | 2.61 | 2.32 | 2.09 |
| 6ME8 | 3.10 | 2.79 | 2.48 | 2.23 |
| 6MF8 | 2.38 | 2.14 | 1.90 | 1.71 |
| 6MJ8 | 2.53 | 2.27 | 2.02 | 1.82 |
| 6MK8A | 2.45 | 2.21 | 1.96 | 1.76 |
| 6MN8 | 2.65 | 2.39 | 2.12 | 1.91 |
| 6MQ8 | 2.23 | 2.00 | 1.78 | 1.60 |
| 6MV8 | 2.70 | 2.43 | 2.16 | 1.94 |
| 6N7 | 3.03 | 2.72 | 2.42 | 2.18 |
| 6N7GT | 2.95 | 2.66 | 2.36 | 2.12 |
| 6S4A | 1.85 | 1.67 | 1.48 | 1.33 |
| 6SA7 | 2.95 | 2.66 | 2.36 | 2.12 |
| 6SA7GT | 2.20 | 1.98 | 1.76 | 1.58 |
| 6SC7 | 2.95 | 2.66 | 2.36 | 2.12 |
| 6SJ7 | 2.93 | 2.63 | 2.34 | 2.11 |
| 6SK7 | 2.95 | 2.66 | 2.36 | 2.12 |
| 6SL7GT | 2.70 | 2.43 | 2.16 | 1.94 |
| 6SN7GTB | 2.20 | 1.98 | 1.76 | 1.58 |
| 6SQ7 | 2.98 | 2.68 | 2.38 | 2.14 |
| 6SQ7GT | 2.50 | 2.25 | 2.00 | 1.80 |
| 6T4 | 2.58 | 2.32 | 2.06 | 1.85 |
| 6T8A | 2.68 | 2.41 | 2.14 | 1.93 |
| 6T9 | 2.20 | 1.98 | 1.76 | 1.58 |
| 6T10 | 2.95 | 2.66 | 2.36 | 2.12 |
| 6U5 | 3.70 | 3.33 | 2.96 | 2.66 |
| 6U8A/6KD8 | 1.95 | 1.76 | 1.56 | 1.40 |
| 6U10 | 2.23 | 2.00 | 1.78 | 1.60 |
| 6V6 | 3.70 | 3.33 | 2.96 | 2.66 |
| 6V6GTA | 2.45 | 2.21 | 1.96 | 1.76 |
| 6W6GT | 2.30 | 2.07 | 1.84 | 1.66 |
| 6X4 | 1.88 | 1.69 | 1.50 | 1.35 |
| 6X5GT | 1.98 | 1.78 | 1.58 | 1.42 |
| 6X8A | 2.23 | 2.00 | 1.78 | 1.60 |
| 6X9/ECF200 | 1.48 | 1.33 | 1.18 | 1.06 |
| 6Y6GA/6Y6G | 2.48 | 2.23 | 1.98 | 1.78 |
| 6Y9 | 1.55 | 1.40 | 1.24 | 1.12 |
| 6Z10/6J10 | 3.33 | 2.99 | 2.66 | 2.39 |
| 7AU7 | 1.55 | 1.40 | 1.24 | 1.12 |
| 7EY6 | 2.20 | 1.98 | 1.76 | 1.58 |
| 7GV7 | 1.95 | 1.76 | 1.56 | 1.40 |
| 7HG8/PCF86 | 1.38 | 1.24 | 1.10 | .99 |
| 8AR11 | 2.68 | 2.41 | 2.14 | 1.93 |
| 8AU8, A | 1.93 | 1.73 | 1.54 | 1.39 |
| 8AW8A | 2.93 | 2.63 | 2.34 | 2.11 |
| 8B10 | 2.43 | 2.18 | 1.94 | 1.75 |
| 8BA8A | 1.73 | 1.55 | 1.38 | 1.24 |
| 8BA11 | 3.03 | 2.72 | 2.42 | 2.18 |
| 8BH8 | 1.68 | 1.51 | 1.34 | 1.21 |
| 8BN8 | 1.85 | 1.67 | 1.48 | 1.33 |

GENERAL ELECTRIC / RCA / RAYTHEON



## SERVICE-DESIGNED RECEIVING TUBES

| Tube Type | Can be Assorted Price Ea., Lots of | | | Not Asst'd |
|---|---|---|---|---|
| | 1-9 | 10-49 | 50 Up | 100Up Each |
| 8BQ5 | $2.20 | $1.98 | $1.76 | $1.58 |
| 8BQ11 | 2.38 | 2.14 | 1.90 | 1.71 |
| 8BU11 | 2.75 | 2.48 | 2.20 | 1.98 |
| 8CG7/8FQ7 | 1.63 | 1.46 | 1.30 | 1.17 |
| 8CM7 | 1.35 | 1.22 | 1.08 | .97 |
| 8CN7 | 1.53 | 1.37 | 1.22 | 1.10 |
| 8CS7 | 2.00 | 1.80 | 1.60 | 1.44 |
| 8CW5/XL86 | 1.28 | 1.15 | 1.02 | .92 |
| 8CX8 | 2.20 | 1.98 | 1.76 | 1.58 |
| 8EM5 | 2.05 | 1.85 | 1.64 | 1.48 |
| 8ET7 | 2.08 | 1.87 | 1.66 | 1.49 |
| 8GJ7/PCF801 | 1.45 | 1.31 | 1.16 | 1.04 |
| 8GN8/8EB8 | 2.08 | 1.87 | 1.66 | 1.49 |
| 8JU8A | 1.85 | 1.67 | 1.48 | 1.33 |
| 8JV8 | 2.53 | 2.27 | 2.02 | 1.82 |
| 8KA8 | 2.68 | 2.41 | 2.14 | 1.93 |
| 8LC8 | 2.85 | 2.57 | 2.28 | 2.05 |
| 8LT8 | 2.33 | 2.09 | 1.86 | 1.67 |
| 9A8/PCF80 | 1.33 | 1.19 | 1.06 | .95 |
| 9AH9 | 2.53 | 2.27 | 2.02 | 1.82 |
| 9AU7 | 1.48 | 1.33 | 1.18 | 1.06 |
| 9BR7 | 1.58 | 1.42 | 1.26 | 1.13 |
| 9EA8 | 1.53 | 1.37 | 1.22 | 1.10 |
| 9GV8/XCL85 | 1.70 | 1.53 | 1.36 | 1.22 |
| 9KC6 | 2.18 | 1.96 | 1.74 | 1.57 |
| 9KZ8 | 1.48 | 1.33 | 1.18 | 1.06 |
| 9U8A | 1.55 | 1.40 | 1.24 | 1.12 |
| 10AL11 | 2.28 | 2.05 | 1.82 | 1.64 |
| 10C8 | 3.03 | 2.72 | 2.42 | 2.18 |
| 10CW5/LL86 | 1.28 | 1.15 | 1.02 | .92 |
| 10DE7 | 2.70 | 2.43 | 2.16 | 1.94 |
| 10DR7 | 2.23 | 2.00 | 1.78 | 1.60 |
| 10DX8/LCL84 | 1.38 | 1.24 | 1.10 | .99 |
| 10EG7 | 2.20 | 1.98 | 1.76 | 1.58 |
| 10EM7 | 2.45 | 2.21 | 1.96 | 1.76 |
| 10GF7A | 2.73 | 2.45 | 2.18 | 1.96 |
| 10GK6 | 2.25 | 2.03 | 1.80 | 1.62 |
| 10GN8 | 2.75 | 2.48 | 2.20 | 1.98 |
| 10HF8 | 2.95 | 2.66 | 2.36 | 2.12 |
| 10JT8 | 2.35 | 2.12 | 1.88 | 1.69 |
| 10JY8 | 2.18 | 1.96 | 1.74 | 1.57 |
| 10KR8 | 2.35 | 2.12 | 1.88 | 1.69 |
| 10KU8 | 2.43 | 2.18 | 1.94 | 1.75 |
| 10LB3 | 2.35 | 2.12 | 1.88 | 1.69 |
| 10LE8 | 2.95 | 2.66 | 2.36 | 2.12 |
| 10LZ8/10JA8 | 2.45 | 2.21 | 1.96 | 1.76 |
| 11AF9 | 1.55 | 1.40 | 1.24 | 1.12 |
| 10T10 | 2.68 | 2.41 | 2.14 | 1.93 |
| 10Z10 | 3.08 | 2.77 | 2.46 | 2.21 |
| 11AR11 | 2.68 | 2.41 | 2.14 | 1.93 |
| 11BM8 | 2.93 | 2.63 | 2.34 | 2.11 |
| 11BQ11 | 2.93 | 2.63 | 2.34 | 2.11 |
| 11BT11 | 3.58 | 3.22 | 2.86 | 2.57 |
| 11CA11 | 3.75 | 3.38 | 3.00 | 2.70 |
| 11CF11 | 3.90 | 3.51 | 3.12 | 2.81 |
| 11CY7 | 2.40 | 2.16 | 1.92 | 1.73 |
| 11DS5 | 2.30 | 2.07 | 1.84 | 1.66 |
| 11FY7 | 2.23 | 2.00 | 1.78 | 1.60 |
| 11HM7 | 2.93 | 2.63 | 2.34 | 2.11 |
| 11KV8 | 3.25 | 2.93 | 2.60 | 2.34 |
| 11LQ8 | 3.25 | 2.93 | 2.60 | 2.34 |
| 12AB5 | 2.28 | 2.05 | 1.82 | 1.64 |
| 12AC6 | 1.05 | .95 | .84 | .76 |
| 12AC10A | 2.65 | 2.39 | 2.12 | 1.91 |
| 12AD6 | 2.03 | 1.82 | 1.62 | 1.46 |
| 12AE6A | 1.55 | 1.40 | 1.24 | 1.12 |
| 12AE10 | 3.03 | 2.72 | 2.42 | 2.18 |
| 12AL5 | 1.75 | 1.58 | 1.40 | 1.26 |
| 12AL8 | 3.10 | 2.79 | 2.48 | 2.23 |
| 12AQ5 | 1.93 | 1.73 | 1.54 | 1.39 |
| 12AT6 | 1.63 | 1.46 | 1.30 | 1.17 |
| 12AT7/ECC81 | 1.78 | 1.60 | 1.42 | 1.28 |
| 12AU6 | 1.93 | 1.73 | 1.54 | 1.39 |
| 12AU7A/ECC82 | 1.55 | 1.40 | 1.24 | 1.12 |
| 12AV5GA | 2.73 | 2.45 | 2.18 | 1.96 |
| 12AV6 | 1.35 | 1.22 | 1.08 | .97 |
| 12AV7 | 2.68 | 2.41 | 2.14 | 1.93 |
| 12AX3 | 1.85 | 1.67 | 1.48 | 1.33 |
| 12AX4GTB | 1.85 | 1.67 | 1.48 | 1.33 |
| 12AX7A/ECC83 | 1.53 | 1.37 | 1.22 | 1.10 |
| 12AY3A/BS3A | 1.45 | 1.31 | 1.16 | 1.04 |
| 12AY7 | 3.23 | 2.90 | 2.58 | 2.32 |
| 12AZ7A | 2.23 | 2.00 | 1.78 | 1.60 |
| 12B4A | 2.30 | 2.07 | 1.84 | 1.66 |
| 12BA6 | 1.55 | 1.40 | 1.24 | 1.12 |
| 12BA7 | 2.95 | 2.66 | 2.36 | 2.12 |
| 12BD6 | 1.18 | 1.06 | .94 | .85 |
| 12BE3 | 2.10 | 1.89 | 1.68 | 1.51 |
| 12BE6 | 1.70 | 1.53 | 1.36 | 1.22 |
| 12BF11 | 3.33 | 2.99 | 2.66 | 2.39 |
| 12BH7A | 2.15 | 1.94 | 1.72 | 1.55 |
| 12BK5 | 1.88 | 1.69 | 1.50 | 1.35 |
| 12BL6 | 2.13 | 1.91 | 1.70 | 1.53 |
| 12BN6 | 2.30 | 2.07 | 1.84 | 1.66 |
| 12BR7 | 1.53 | 1.37 | 1.22 | 1.10 |

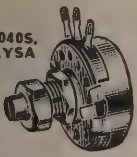
| Tube Type | Can be Assorted Price Ea., Lots of | | | Not Asst'd |
|---|---|---|---|---|
| | 1-9 | 10-49 | 50 Up | 100Up Each |
| 12BT3 | $1.73 | $1.55 | $1.38 | $1.24 |
| 12BV7 | 2.08 | 1.87 | 1.66 | 1.49 |
| 12BV11 | 2.40 | 2.16 | 1.92 | 1.73 |
| 12BY7A | 2.08 | 1.87 | 1.66 | 1.49 |
| 12BZ6 | 1.20 | 1.08 | .96 | .86 |
| 12BZ7 | 2.08 | 1.87 | 1.66 | 1.49 |
| 12C5/12CU5 | 2.38 | 2.14 | 1.90 | 1.71 |
| 12CA5 | 2.30 | 2.07 | 1.84 | 1.66 |
| 12CL3 | 1.75 | 1.58 | 1.40 | 1.26 |
| 12CN5 | 1.63 | 1.46 | 1.30 | 1.17 |
| 12CR6 | 1.48 | 1.33 | 1.18 | 1.06 |
| 12CX6 | 1.38 | 1.24 | 1.10 | .99 |
| 12D4 | 1.53 | 1.37 | 1.22 | 1.10 |
| 12DK6 | 1.15 | 1.04 | .92 | .83 |
| 12DQ7 | 1.78 | 1.60 | 1.42 | 1.28 |
| 12DS7 | 2.70 | 2.43 | 2.16 | 1.94 |
| 12DT5 | 1.70 | 1.53 | 1.36 | 1.22 |
| 12DT8 | 1.95 | 1.76 | 1.56 | 1.40 |
| 12DU7 | 2.20 | 1.98 | 1.76 | 1.58 |
| 12DW7 | 1.53 | 1.37 | 1.22 | 1.10 |
| 12DY8 | 3.98 | 3.58 | 3.18 | 2.86 |
| 12DZ6 | 1.80 | 1.62 | 1.44 | 1.30 |
| 12EG6 | 1.73 | 1.55 | 1.38 | 1.24 |
| 12EK6 | 1.80 | 1.62 | 1.44 | 1.30 |
| 12F8 | 1.63 | 1.46 | 1.30 | 1.17 |
| 12FK6 | 1.28 | 1.15 | 1.02 | .92 |
| 12FM6 | 1.30 | 1.17 | 1.04 | .94 |
| 12FQ8 | 2.60 | 2.34 | 2.08 | 1.87 |
| 12FV7 | 1.70 | 1.53 | 1.36 | 1.22 |
| 12FX5 | 1.85 | 1.67 | 1.48 | 1.33 |
| 12FX8A | 1.93 | 1.73 | 1.54 | 1.39 |
| 12GA6 | 1.35 | 1.22 | 1.08 | .97 |
| 12GC6 | 2.60 | 2.34 | 2.08 | 1.87 |
| 12GE5 | 2.95 | 2.66 | 2.36 | 2.12 |
| 12GN7A/12HG7 | 2.95 | 2.66 | 2.36 | 2.12 |
| 12GT5A | 2.68 | 2.41 | 2.14 | 1.93 |
| 12GW6/12DQ6B | 2.48 | 2.23 | 1.98 | 1.78 |
| 12H6 | 2.23 | 2.00 | 1.78 | 1.60 |
| 12HE7 | 3.40 | 3.06 | 2.72 | 2.45 |
| 12HL7 | 2.68 | 2.41 | 2.14 | 1.93 |
| 12J8 | 2.18 | 1.96 | 1.74 | 1.57 |
| 12JB6A | 3.48 | 3.13 | 2.78 | 2.50 |
| 12JQ6 | 1.85 | 1.67 | 1.48 | 1.33 |
| 12K5 | 1.73 | 1.55 | 1.38 | 1.24 |
| 12L6GT | 1.78 | 1.60 | 1.42 | 1.28 |
| 12MD8 | 2.43 | 2.18 | 1.94 | 1.75 |
| 12R5 | 1.68 | 1.51 | 1.34 | 1.21 |
| 12R-K19 | 1.80 | 1.62 | 1.44 | 1.30 |
| 12SN7GTA | 2.45 | 2.21 | 1.96 | 1.76 |
| 12SQ7 | 2.75 | 2.48 | 2.20 | 1.98 |
| 12T10 | 2.95 | 2.66 | 2.36 | 2.12 |
| 12X4 | 1.13 | 1.01 | .90 | .81 |
| 13CW4 | 2.95 | 2.66 | 2.36 | 2.12 |
| 13DE7 | 2.95 | 2.66 | 2.36 | 2.12 |
| 13DR7 | 2.85 | 2.57 | 2.28 | 2.05 |
| 13EM7/15EA7 | 3.23 | 2.90 | 2.58 | 2.32 |
| 13FD7 | 2.95 | 2.66 | 2.36 | 2.12 |
| 13GB5/XL500 | 2.18 | 1.96 | 1.74 | 1.57 |
| 13GF7A | 2.85 | 2.57 | 2.28 | 2.05 |
| 13V10 | 3.33 | 2.99 | 2.66 | 2.39 |
| 13Z10/13J10 | 3.55 | 3.20 | 2.84 | 2.56 |
| 14BL11 | 4.03 | 3.62 | 3.22 | 2.90 |
| 14JG8 | 2.00 | 1.80 | 1.60 | 1.44 |
| 15BD11A | 3.03 | 2.72 | 2.42 | 2.18 |
| 15CW5/PL84 | 1.23 | 1.10 | .98 | .88 |
| 15FM7/13FM7 | 2.00 | 1.80 | 1.60 | 1.44 |
| 15FY7 | 1.95 | 1.76 | 1.56 | 1.40 |
| 15KY8A | 3.48 | 3.13 | 2.78 | 2.50 |
| 15LE8 | 3.83 | 3.44 | 3.06 | 2.75 |
| 16A8/PCL82 | 1.73 | 1.55 | 1.38 | 1.24 |
| 16AQ3/XY88 | 1.35 | 1.22 | 1.08 | .97 |
| 16BQ11 | 2.68 | 2.41 | 2.14 | 1.93 |
| 16GY5 | 2.43 | 2.18 | 1.94 | 1.75 |
| 17AX4GTA | 1.85 | 1.67 | 1.48 | 1.33 |
| 17AY3A | 2.10 | 1.89 | 1.68 | 1.51 |
| 17BE3/17BZ3 | 2.10 | 1.89 | 1.68 | 1.51 |
| 17BF11 | 3.33 | 2.99 | 2.66 | 2.39 |
| 17BQ6GTB | 2.60 | 2.34 | 2.08 | 1.87 |
| 17C5 | 3.58 | 3.22 | 2.86 | 2.57 |
| 17CK3 | 1.78 | 1.60 | 1.42 | 1.28 |
| 17CT3 | 1.85 | 1.67 | 1.48 | 1.33 |
| 17CU5/17C5 | 1.85 | 1.67 | 1.48 | 1.33 |
| 17D4/17DM4A | 2.23 | 2.00 | 1.78 | 1.60 |
| 17DE4 | 1.83 | 1.64 | 1.46 | 1.31 |
| 17GE5 | 2.18 | 1.96 | 1.74 | 1.57 |
| 17GT5A | 3.33 | 2.99 | 2.66 | 2.39 |
| 17GW6/17DQ6B | 3.03 | 2.72 | 2.42 | 2.18 |
| 17JB6A | 3.23 | 2.90 | 2.58 | 2.32 |
| 17JM6A | 3.33 | 2.99 | 2.66 | 2.39 |
| 17JN6 | 2.95 | 2.66 | 2.36 | 2.12 |
| 17JZ8 | 2.13 | 1.91 | 1.70 | 1.53 |
| 18FW6A | 1.23 | 1.10 | .98 | .88 |
| 18FX6A | 1.48 | 1.33 | 1.18 | 1.06 |
| 18FY6A | 1.48 | 1.33 | 1.18 | 1.06 |
| 18GD6A | 1.48 | 1.33 | 1.18 | 1.06 |

| Tube Type | Can be Assorted Price Ea., Lots of | | | Not Asst'd |
|---|---|---|---|---|
| | 1-9 | 10-49 | 50 Up | 100Up Each |
| 19AU4GTA | $2.18 | $1.96 | $1.74 | $1.57 |
| 19BG6GA | 3.33 | 2.99 | 2.66 | 2.39 |
| 19CG3 | 2.10 | 1.89 | 1.68 | 1.51 |
| 19EA8 | 2.23 | 2.00 | 1.78 | 1.60 |
| 19EZ8 | 2.70 | 2.43 | 2.16 | 1.94 |
| 19GQ7 | 1.90 | 1.71 | 1.52 | 1.37 |
| 19HR6 | 1.23 | 1.10 | .98 | .88 |
| 19HS6 | 1.20 | 1.08 | .96 | .86 |
| 19JN8/19CL8A | 1.60 | 1.44 | 1.28 | 1.15 |
| 19T8 | 2.95 | 2.66 | 2.36 | 2.12 |
| 19X8 | 2.05 | 1.85 | 1.64 | 1.48 |
| 20AQ3/LY88 | 1.65 | 1.49 | 1.32 | 1.19 |
| 20EZ7 | 1.73 | 1.55 | 1.38 | 1.24 |
| 20LF6 | 4.25 | 3.83 | 3.40 | 3.06 |
| 21GY5 | 2.78 | 2.50 | 2.22 | 2.00 |
| 21HB5A | 2.95 | 2.66 | 2.36 | 2.12 |
| 21HJ5 | 2.93 | 2.63 | 2.34 | 2.11 |
| 21JS6A/23JS6A | 6.23 | 5.60 | 4.98 | 4.48 |
| 21JV6 | 2.33 | 2.09 | 1.86 | 1.67 |
| 21JZ6 | 2.83 | 2.54 | 2.26 | 2.03 |
| 21LR8 | 2.38 | 2.14 | 1.90 | 1.71 |
| 21LU8 | 2.38 | 2.14 | 1.90 | 1.71 |
| 22BH3A | 1.85 | 1.67 | 1.48 | 1.33 |
| 22BW3 | 2.23 | 2.00 | 1.78 | 1.60 |
| 22DE4 | 2.38 | 2.14 | 1.90 | 1.71 |
| 22JF6 | 3.85 | 3.47 | 3.08 | 2.77 |
| 22JG6A | 3.38 | 3.04 | 2.70 | 2.43 |
| 22JR6 | 3.40 | 3.06 | 2.72 | 2.45 |
| 22JU6 | 3.40 | 3.06 | 2.72 | 2.45 |
| 22KM6 | 4.43 | 3.98 | 3.54 | 3.19 |
| 22KV6A | 3.65 | 3.29 | 2.92 | 2.63 |
| 23Z9 | 2.75 | 2.48 | 2.20 | 1.98 |
| 24JZ8 | 2.25 | 2.03 | 1.80 | 1.62 |
| 24LQ6/24JE6A | 4.40 | 3.96 | 3.52 | 3.17 |
| 25AV5GA | 2.83 | 2.54 | 2.26 | 2.03 |
| 25AX4GT | 1.53 | 1.37 | 1.22 | 1.10 |
| 25BK5 | 1.70 | 1.53 | 1.36 | 1.22 |
| 25BQ6GTB/CU6 | 2.20 | 1.98 | 1.76 | 1.58 |
| 25C5 | 2.08 | 1.87 | 1.66 | 1.49 |
| 25CA5 | 1.80 | 1.62 | 1.44 | 1.30 |
| 25CG3 | 1.70 | 1.53 | 1.36 | 1.22 |
| 25DN6 | 3.30 | 2.97 | 2.64 | 2.38 |
| 25EC6 | 3.48 | 3.13 | 2.78 | 2.50 |
| 25EH5 | 2.23 | 2.00 | 1.78 | 1.60 |
| 25JZ8 | 2.25 | 2.03 | 1.80 | 1.62 |
| 25L6GT/25W6GT | 2.60 | 2.34 | 2.08 | 1.87 |
| 25W4GT | 1.85 | 1.67 | 1.48 | 1.33 |
| 27GB5/PL500 | 1.85 | 1.67 | 1.48 | 1.33 |
| 27LF6 | 4.25 | 3.83 | 3.40 | 3.06 |
| 31JS6C | 3.83 | 3.44 | 3.06 | 2.75 |
| 33GT7 | 3.70 | 3.33 | 2.96 | 2.66 |
| 33GY7A | 3.48 | 3.13 | 2.78 | 2.50 |
| 34CE3/34CD3 | 2.23 | 2.00 | 1.78 | 1.60 |
| 34GD5A | 1.48 | 1.33 | 1.18 | 1.06 |
| 35B5 | 1.60 | 1.44 | 1.28 | 1.15 |
| 35C5 | 1.93 | 1.73 | 1.54 | 1.39 |
| 35GL6 | 1.45 | 1.31 | 1.16 | 1.04 |
| 35L6GT | 2.45 | 2.21 | 1.96 | 1.76 |
| 35W4 | 1.13 | 1.01 | .90 | .81 |
| 35Y4 | 2.25 | 2.03 | 1.80 | 1.62 |
| 35Z5GT | 1.70 | 1.53 | 1.36 | 1.22 |
| 36AM3B | 1.63 | 1.46 | 1.30 | 1.17 |
| 36KD6/40KD6 | 4.43 | 3.98 | 3.54 | 3.19 |
| 38HE7 | 4.00 | 3.60 | 3.20 | 2.88 |
| 38HK7 | 4.00 | 3.60 | 3.20 | 2.88 |
| 42 | 2.43 | 2.18 | 1.94 | 1.75 |
| 42KN6 | 4.00 | 3.60 | 3.20 | 2.88 |
| 43 | 3.60 | 3.24 | 2.88 | 2.59 |
| 50A5 | 2.93 | 2.63 | 2.34 | 2.11 |
| 50B5 | 1.48 | 1.33 | 1.18 | 1.06 |
| 50C5 | 1.75 | 1.58 | 1.40 | 1.26 |
| 50DC4 | 1.20 | 1.08 | .96 | .86 |
| 50EH5 | 1.95 | 1.76 | 1.56 | 1.40 |
| 50FE5 | 2.23 | 2.00 | 1.78 | 1.60 |
| 50HC6 | 2.08 | 1.87 | 1.66 | 1.49 |
| 50HK6 | 1.08 | .97 | .86 | .77 |
| 50L6GT | 2.83 | 2.54 | 2.26 | 2.03 |
| 50X6 | 2.93 | 2.63 | 2.34 | 2.11 |
| 50Y6GT | 2.18 | 1.96 | 1.74 | 1.57 |
| 50Y7GT | 2.13 | 1.91 | 1.70 | 1.53 |
| 60FX5 | 1.48 | 1.33 | 1.18 | 1.06 |
| 84/6Z4 | 2.60 | 2.34 | 2.08 | 1.87 |
| 5879 | 2.68 | 2.41 | 2.14 | 1.93 |
| 6973 | 2.53 | 2.27 | 2.02 | 1.82 |
| 7025 | 1.55 | 1.40 | 1.24 | 1.12 |
| 7027A | 3.73 | 3.35 | 2.98 | 2.68 |
| 7189A | 2.20 | 1.98 | 1.76 | 1.58 |
| 7199 | 2.83 | 2.54 | 2.26 | 2.03 |
| 7355 | 1.83 | 1.64 | 1.46 | 1.31 |
| 7543 | 1.63 | 1.46 | 1.30 | 1.17 |
| 7581A/KT66 | 3.08 | 2.77 | 2.46 | 2.21 |
| 7591A | 1.40 | 1.26 | 1.12 | 1.01 |
| 7695 | 2.20 | 1.98 | 1.76 | 1.58 |
| 7868 | 2.83 | 2.54 | 2.26 | 2.03 |
| 8417 | 2.83 | 2.54 | 2.26 | 2.03 |

# ALLEN-BRADLEY HOT-MOLDED COMPOSITION POTENTIOMETERS

## 2¼-WATT HOT-MOLDED COMPOSITION POTENTIOMETERS

These hot-molded composition potentiometers are rated 2¼ watts at 70° C with a rotational life of over 100,000 cycles with less than 10% resistance change. Smooth adjustment with infinite resolution. Designed for continuous operation in ambient temperatures from −55° C to +120° C. Low initial noise level actually improves with use. Excellent for high frequency applications. Rugged, dust-tight and splash-proof. Lockwasher and mounting nut supplied. Marked with Type and MIL numbers (Type numbers only on JA1N200P-). Case Size: ⅝″ x 1 3/32″ diameter.



**Type JA1L040S, MIL-R-94 RV4LAYSA:** Style RV4. Slotted shaft ⅝″ long x ¼″ dia.; ½″ lg. true-collet-action locking bushing with locking nut. Linear taper. Mounts in ⅜″ hole on panels up to ⅛″ thick.

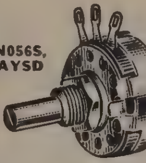
### MIL-R-94 RV4LAYSA

10% Tolerance

| A-B Type No. JA1L 040S- | MIL-R-94 No. RV4-LAYSA- | Ohms | Price Code ★ |
|---|---|---|---|
| 500UC | 500A | 50 | A |
| 101UC | 101A | 100 | A |
| 151UC | 151A | 150 | A |
| 201UC | 201A | 200 | A |
| 251UC | 251A | 250 | A |
| 351UC | 351A | 350 | A |
| 501UC | 501A | 500 | A |
| 751UC | 751A | 750 | A |
| 102UC | 102A | 1.0K | A |
| 152UC | 152A | 1.5K | A |
| 202UC | 202A | 2.0K | A |
| 252UC | 252A | 2.5K | A |
| 352UC | 352A | 3.5K | A |
| 502UC | 502A | 5.0K | A |
| 752UC | 752A | 7.5K | A |
| 103UC | 103A | 10K | A |
| 153UC | 153A | 15K | A |
| 203UC | 203A | 20K | A |
| 253UC | 253A | 25K | A |
| 353UC | 353A | 35K | A |
| 503UC | 503A | 50K | A |
| 753UC | 753A | 75K | A |
| 104UC | 104A | .10M | A |
| 154UC | 154A | .15M | A |
| 204UC | 204A | .20M | A |
| 254UC | 254A | .25M | A |
| 354UC | 354A | .35M | A |
| 504UC | 504A | .50M | A |

20% Tolerance

| | | | |
|---|---|---|---|
| 500MC | 500B | 50 | B |
| 101MC | 101B | 100 | B |
| 251MC | 251B | 250 | B |
| 501MC | 501B | 500 | B |
| 102MC | 102B | 1.0K | B |
| 252MC | 252B | 2.5K | B |
| 502MC | 502B | 5.0K | B |
| 103MC | 103B | 10K | B |
| 253MC | 253B | 25K | B |
| 503MC | 503B | 50K | B |
| 104MC | 104B | .10M | B |
| 254MC | 254B | .25M | B |
| 504MC | 504B | .50M | B |
| 754MC | 754B | .75M | A |
| 105MC | 105B | 1.0M | A |
| 155MC | 155B | 1.5M | A |
| 205MC | 205B | 2.0M | A |
| 255MC | 255B | 2.5M | A |
| 355MC | 355B | 3.5M | A |
| 505MC | 505B | 5.0M | A |



**Type JA1N056S, MIL-R-94 RV4NAYSD:** Style RV4. Slotted shaft ⅞″ long x ¼″ dia.; ⅜″ lg. plain bushing. Linear taper. Mounts in ⅜″ hole on panels up to ¼″ thick.

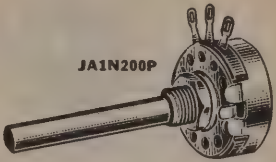
### MIL-R-94 RV4NAYSD

10% Tolerance

| A-B Type No. JA1N 056S- | MIL-R-94 No. RV4-NAYSD- | Ohms | Price Code ★ |
|---|---|---|---|
| 500UA | 500A | 50 | C |
| 101UA | 101A | 100 | C |
| 151UA | 151A | 150 | C |
| 201UA | 201A | 200 | C |
| 251UA | 251A | 250 | C |
| 351UA | 351A | 350 | C |
| 501UA | 501A | 500 | C |
| 751UA | 751A | 750 | C |
| 102UA | 102A | 1.0K | C |
| 152UA | 152A | 1.5K | C |
| 202UA | 202A | 2.0K | C |
| 252UA | 252A | 2.5K | C |
| 352UA | 352A | 3.5K | C |
| 502UA | 502A | 5.0K | C |
| 752UA | 752A | 7.5K | C |
| 103UA | 103A | 10K | C |
| 153UA | 153A | 15K | C |
| 203UA | 203A | 20K | C |
| 253UA | 253A | 25K | C |
| 353UA | 353A | 35K | C |
| 503UA | 503A | 50K | C |
| 753UA | 753A | 75K | C |
| 104UA | 104A | .10M | C |
| 154UA | 154A | .15M | C |
| 204UA | 204A | .20M | C |
| 254UA | 254A | .25M | C |
| 354UA | 354A | .35M | C |
| 504UA | 504A | .50M | C |

20% Tolerance

| | | | |
|---|---|---|---|
| 500MA | 500B | 50 | D |
| 101MA | 101B | 100 | D |
| 251MA | 251B | 250 | D |
| 501MA | 501B | 500 | D |
| 102MA | 102B | 1.0K | D |
| 252MA | 252B | 2.5K | D |
| 502MA | 502B | 5.0K | D |
| 103MA | 103B | 10K | D |
| 253MA | 253B | 25K | D |
| 503MA | 503B | 50K | D |
| 104MA | 104B | .10M | D |
| 254MA | 254B | .25M | D |
| 504MA | 504B | .50M | D |
| 754MA | 754B | .75M | C |
| 105MA | 105B | 1.0M | C |
| 155MA | 155B | 1.5M | C |
| 205MA | 205B | 2.0M | C |
| 255MA | 255B | 2.5M | C |
| 355MA | 355B | 3.5M | C |
| 505MA | 505B | 5.0M | C |



**Type JA1N200P:** Plain shaft 2″ long x ¼″ dia.; ⅜″ lg. plain bushing. Linear, CW log and CCW log tapers. For log tapers, derate power rating by 50%. Mounts in ⅜″ hole on panels up to ¼″ thick.

### LINEAR TAPER

10% Tolerance

| A-B Type No. JA1N200P- | Ohms | Price Code ★ |
|---|---|---|
| 500UA | 50 | C |
| 101UA | 100 | C |
| 151UA | 150 | C |
| 201UA | 200 | C |
| 251UA | 250 | C |
| 351UA | 350 | C |
| 501UA | 500 | C |
| 751UA | 750 | C |
| 102UA | 1.0K | C |
| 152UA | 1.5K | C |
| 202UA | 2.0K | C |
| 252UA | 2.5K | C |
| 352UA | 3.5K | C |
| 502UA | 5.0K | C |
| 752UA | 7.5K | C |
| 103UA | 10K | C |
| 153UA | 15K | C |
| 203UA | 20K | C |
| 253UA | 25K | C |
| 353UA | 35K | C |
| 503UA | 50K | C |
| 753UA | 75K | C |
| 104UA | .10M | C |
| 154UA | .15M | C |
| 204UA | .20M | C |
| 254UA | .25M | C |
| 354UA | .35M | C |
| 504UA | .50M | C |

20% Tolerance

| | | |
|---|---|---|
| 500MA | 50 | D |
| 101MA | 100 | D |
| 251MA | 250 | D |
| 501MA | 500 | D |
| 102MA | 1.0K | D |
| 252MA | 2.5K | D |
| 502MA | 5.0K | D |
| 103MA | 10K | D |
| 253MA | 25K | D |
| 503MA | 50K | D |
| 104MA | .10M | D |
| 254MA | .25M | D |
| 504MA | .50M | D |
| 754MA | .75M | C |
| 105MA | 1.0M | C |
| 155MA | 1.5M | C |
| 205MA | 2.0M | C |
| 255MA | 2.5M | C |
| 355MA | 3.5M | C |
| 505MA | 5.0M | C |

### LOG TAPER

10% Tolerance

| A-B Type No. JA1N200P- CW Log | A-B Type No. JA1N200P- CCW Log | Ohms | Price Code ★ |
|---|---|---|---|
| 501AA | 501BA | 500 | E |
| 102AA | 102BA | 1.0K | E |
| 252AA | 252BA | 2.5K | E |
| 502AA | 502BA | 5.0K | E |
| 103AA | 103BA | 10K | E |
| 253AA | 253BA | 25K | E |
| 503AA | 503BA | 50K | E |
| 104AA | 104BA | .10M | E |
| 254AA | 254BA | .25M | E |
| 504AA | 504BA | .50M | E |

20% Tolerance

| | | | |
|---|---|---|---|
| 105RA | 105TA | 1.0M | E |
| 255RA | 255TA | 2.5M | E |
| 505RA | 505TA | 5.0M | E |

**SEE NEXT PAGE FOR DUAL CONTROLS**

## ★PRICING INFORMATION

| Price Code | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|
| A | $2.55 | $2.29 | $2.24 | $2.12 | $1.41 | $1.09 |
| B | 2.35 | 2.14 | 2.09 | 2.02 | 1.31 | 1.01 |
| C | 1.95 | 1.75 | 1.70 | 1.62 | 1.26 | .97 |
| D | 1.75 | 1.60 | 1.55 | 1.52 | 1.16 | .90 |
| E | 2.25 | 2.02 | 1.97 | 1.87 | 1.26 | .97 |

**JS-1 Switch**

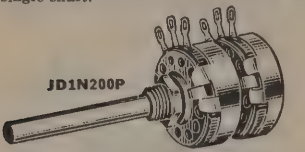
## ADD-ON SPST SWITCH

**Type JS-1 SPST Switch:** MIL-R-94 approved. For use with any 2¼-watt potentiometer on this page.
Net Each, Lots 1–9 . . **$0.66**; 10–24 . . **$0.62**; 25–49 . . . . . . . . **$0.60**; 50–99 . . . . . . . . **$0.59**; 100–249 . . . . . . **$0.38**; 250–499 . . . . . . **$0.29**

# ALLEN-BRADLEY HOT-MOLDED COMPOSITION POTENTIOMETERS

## DUAL CONTROLS

Product features are the same as Type J (2¼-watt) on preceding page and Type G (½-watt) on this page, except with two variable resistance elements controlled by a single shaft.



### TYPE JD1N200P

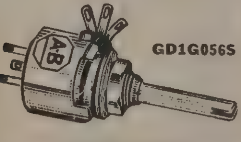
**Type JD1N200P:** Dual section rated 2¼ watts with 0 watts in rear section, or 1⅓ watts in each section. Plain shaft 2″ long by ¼″ diameter, ⅜″ long plain bushing. Mounts in ⅜″ hole on panels up to ¼″. **Case Size:** 1¹⁷⁄₆₄″ x 1⁵⁄₃₂″ diameter.

**10% Tolerance**

| A-B Type No. JD1N200P- | Ohms | Price Code★ |
|---|---|---|
| 500UA | 50 | A |
| 101UA | 100 | A |
| 251UA | 250 | A |
| 501UA | 500 | A |
| 102UA | 1.0K | A |
| 252UA | 2.5K | A |
| 502UA | 5.0K | A |
| 103UA | 10K | A |
| 253UA | 25K | A |
| 503UA | 50K | A |
| 104UA | .10M | A |
| 254UA | .25M | A |
| 504UA | .50M | A |

**20% Tolerance**

| A-B Type No. JD1N200P- | Ohms | Price Code★ |
|---|---|---|
| 105MA | 1.0M | A |
| 255MA | 2.5M | A |
| 505MA | 5.0M | A |



### TYPE GD1G056S

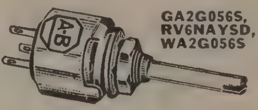
**Type GD1G056S:** Smallest dual potentiometer available. Rated ½ watt with zero watt in rear section or ⅓ watt in each section. MIL grade. Immersion-proof; watertight bushing. Linear taper. Slotted shaft ⅞″ long by ⅛″ dia.; ¼″ lg. plain bushing. Mounts in ¼″ hole on panels up to ⅛″. Case Size: ³⁵⁄₆₄″ x ½″ dia.

**10% Tolerance**

| A-B Type No. GD1G056S- | Ohms | Price Code★ |
|---|---|---|
| 101UA | 100 | B |
| 201UA | 200 | B |
| 251UA | 250 | B |
| 501UA | 500 | B |
| 102UA | 1.0K | B |
| 202UA | 2.0K | B |
| 252UA | 2.5K | B |
| 502UA | 5.0K | B |
| 103UA | 10K | B |
| 203UA | 20K | B |
| 253UA | 25K | B |
| 503UA | 50K | B |
| 104UA | .10M | B |
| 204UA | .20M | B |
| 254UA | .25M | B |
| 504UA | .50M | B |
| 105UA | 1.0M | B |
| 205UA | 2.0M | B |
| 255UA | 2.5M | B |
| 505UA | 5.0M | B |

## ½-WATT COMPOSITION POTENTIOMETERS

Miniature, hot-molded composition variable resistors rated ½ watt at 70° C with a rotational life of over 50,000 cycles with less than 10% resistance change. Smooth adjustment with infinite resolution. Designed for continuous operation in ambient temperatures from −55° C to +120° C. Low initial noise level improves with use. Excellent for high frequency applications. Rugged, immersion-proof with watertight bushings. Linear taper. Lockwasher and mounting nut supplied. Case Size: ¹⁵⁄₃₂″ x ½″ dia.



### TYPE GA2G056S, MIL-R-94 RV6NAYSD

**Types GA2G056S, MIL-R-94 RV6NAYSD:** Style RV6. Slotted shaft ⅞″ long by ⅛″ diameter, ¼″ long plain bushing. Mounts in ¼″ hole on panels up to ⅛″. Marked with Type and MIL numbers.

**10% Tolerance**

| A-B Type No. GA2G 056S- | MIL-R-94 No. RV6 NAYSD- | Ohms | Price Code ★ |
|---|---|---|---|
| 101UA | 101A | 100 | C |
| 251UA | 251A | 250 | C |
| 501UA | 501A | 500 | C |
| 102UA | 102A | 1.0K | C |
| 252UA | 252A | 2.5K | C |
| 502UA | 502A | 5.0K | C |
| 103UA | 103A | 10K | C |
| 253UA | 253A | 25K | C |
| 503UA | 503A | 50K | C |
| 104UA | 104A | .10M | C |
| 254UA | 254A | .25M | C |
| 504UA | 504A | .50M | C |

**20% Tolerance**

| A-B Type No. GA2G 056S- | MIL-R-94 No. RV6 NAYSD- | Ohms | Price Code ★ |
|---|---|---|---|
| 105MA | 105B | 1.0M | D |
| 205MA | 205B | 2.0M | D |
| 255MA | 255B | 2.5M | D |
| 505MA | 505B | 5.0M | D |

### TYPE WA2G056S

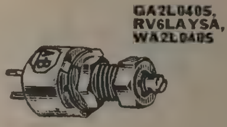
**Type WA2G056S:** Commercial version of the Type GA2G potentiometer described above. Marked with Type number.

**10% Tolerance**

| A-B Type No. WA2G056S- | Ohms | Price Code★ |
|---|---|---|
| 101UA | 100 | G |
| 201UA | 200 | G |
| 251UA | 250 | G |
| 501UA | 500 | G |
| 102UA | 1.0K | G |
| 202UA | 2.0K | G |
| 252UA | 2.5K | G |
| 502UA | 5.0K | G |
| 103UA | 10K | G |
| 203UA | 20K | G |
| 253UA | 25K | G |
| 503UA | 50K | G |
| 104UA | .10M | G |
| 204UA | .20M | G |
| 254UA | .25M | G |
| 504UA | .50M | G |

**20% Tolerance**

| A-B Type No. WA2G056S- | Ohms | Price Code★ |
|---|---|---|
| 105MA | 1.0M | H |
| 205MA | 2.0M | H |
| 255MA | 2.5M | H |
| 505MA | 5.0M | H |



### TYPE GA2L040S, MIL-R-94 RV6LAYSA

**Types GA2L040S, MIL-R-94 RV6LAYSA:** Style RV6. Slotted shaft ⅝″ long by ⅛″ diameter, ½″ long true-collet-action locking bushing with locking nut. Mounts in ¼″ hole on panels up to ³⁄₁₆″. Marked with Type and MIL numbers.

**10% Tolerance**

| A-B Type No. GA2L 040S- | MIL-R-94 No. RV6 LAYSA- | Ohms | Price Code ★ |
|---|---|---|---|
| 101UC | 101A | 100 | E |
| 251UC | 251A | 250 | E |
| 501UC | 501A | 500 | E |
| 102UC | 102A | 1.0K | E |
| 252UC | 252A | 2.5K | E |
| 502UC | 502A | 5.0K | E |
| 103UC | 103A | 10K | E |
| 253UC | 253A | 25K | E |
| 503UC | 503A | 50K | E |
| 104UC | 104A | .10M | E |
| 254UC | 254A | .25M | E |
| 504UC | 504A | .50M | E |

**20% Tolerance**

| A-B Type No. GA2L 040S- | MIL-R-94 No. RV6 LAYSA- | Ohms | Price Code ★ |
|---|---|---|---|
| 105MC | 105B | 1.0M | F |
| 255MC | 255B | 2.5M | F |
| 505MC | 505B | 5.0M | F |

### TYPE WA2L040S

**Type WA2L040S:** Commercial version of the Type GA2L potentiometer described above. Marked with Type number.

**10% Tolerance**

| A-B Type No. WA2L040S- | Ohms | Price Code★ |
|---|---|---|
| 101UC | 100 | I |
| 201UC | 200 | I |
| 251UC | 250 | I |
| 501UC | 500 | I |
| 102UC | 1.0K | I |
| 202UC | 2.0K | I |
| 252UC | 2.5K | I |
| 502UC | 5.0K | I |
| 103UC | 10K | I |
| 203UC | 20K | I |
| 253UC | 25K | I |
| 503UC | 50K | I |
| 104UC | .10M | I |
| 204UC | .20M | I |
| 254UC | .25M | I |
| 504UC | .50M | I |

**20% Tolerance**

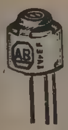
| A-B Type No. WA2L040S- | Ohms | Price Code★ |
|---|---|---|
| 105MC | 1.0M | J |
| 205MC | 2.0M | J |
| 255MC | 2.5M | J |
| 505MC | 5.0M | J |

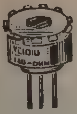
## ★PRICING INFORMATION

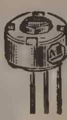
| Price Code | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
| A | $ 5.85 | $5.26 | $5.20 | $5.06 | $3.20 | $2.47 |
| B | 10.14 | 7.46 | 6.70 | 5.60 | 4.63 | 4.32 |
| C | 4.87 | 4.37 | 4.29 | 4.03 | 2.56 | 1.98 |
| D | 4.47 | 4.07 | 3.99 | 3.64 | 2.30 | 1.77 |
| E | 5.10 | 4.59 | 4.50 | 4.23 | 2.71 | 2.09 |

| Price Code | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
| F | $4.70 | $4.29 | $4.20 | $3.84 | $2.44 | $1.88 |
| G | 4.41 | 3.67 | 3.06 | 2.45 | 1.22 | 1.12 |
| H | 4.21 | 3.47 | 2.86 | 2.24 | 1.12 | 1.03 |
| I | 4.66 | 3.91 | 3.29 | 2.62 | 1.33 | 1.20 |
| J | 4.46 | 3.70 | 3.10 | 2.41 | 1.23 | 1.15 |

# ALLEN-BRADLEY HOT-MOLDED COMPOSITION AND CERMET TRIMMERS


F


YC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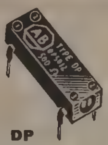
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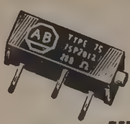
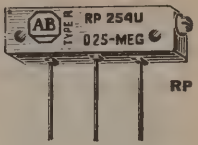
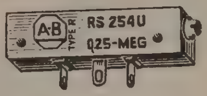

75P


RP


RS

### TYPE F SINGLE-TURN TRIMMERS

**Type F:** Hot-molded composition trimmer for PC board mounting. Single turn. Rated ¼ watt at 70° C. Temperature range, −55° C to +120° C. Linear taper. Rotational life, less than 10% resistance change after 5,000 cycles. Size: ½" dia. x 17/32" h. Metal enclosure. Entire unit is immersion-proof. Three durable pin leads 0.028" dia. x 35/64" lg. Slotted for screwdriver adjustment. MIL grade. Marked with Type number.

**10% Tolerance**

| A-B Type No. FR- | Ohms | Price Code★ |
|---|---|---|
| 101U | 100 | A |
| 201U | 200 | A |
| 251U | 250 | A |
| 501U | 500 | A |
| 102U | 1.0K | A |
| 202U | 2.0K | A |
| 252U | 2.5K | A |
| 502U | 5.0K | A |
| 103U | 10K | A |
| 203U | 20K | A |
| 253U | 25K | A |
| 503U | 50K | A |
| 104U | .10M | A |
| 204U | .20M | A |
| 254U | .25M | A |
| 504U | .50M | A |
| 105U | 1.0M | A |
| 205U | 2.0M | A |
| 255U | 2.5M | A |
| 505U | 5.0M | A |

**20% Tolerance**

| | | |
|---|---|---|
| 101M | 100 | B |
| 201M | 200 | B |
| 251M | 250 | B |
| 501M | 500 | B |
| 102M | 1.0K | B |
| 202M | 2.0K | B |
| 252M | 2.5K | B |
| 502M | 5.0K | B |
| 103M | 10K | B |
| 203M | 20K | B |
| 253M | 25K | B |
| 503M | 50K | B |
| 104M | .10M | B |
| 204M | .20M | B |
| 254M | .25M | B |
| 504M | .50M | B |
| 105M | 1.0M | B |
| 205M | 2.0M | B |
| 255M | 2.5M | B |
| 505M | 5.0M | B |

### TYPE Y SINGLE-TURN TRIMMERS

**Type Y:** Single-turn, hot-molded composition trimmer designed for use on PC board. Rated ¼ watt at 70° C. Temperature range, −55° C to +120° C for intermittent duty; to +100° C, continuous. Linear taper. Size: 23/64" h. x ½" dia. (0.540" dia. with notched actuator). Three durable pin leads 0.028" dia. x 35/64" lg. Slot for screwdriver adjustment on Type YR; notched actuator for finger adjustment on Type YC. Dust-tight and splash-proof. Metal enclosure. Marked with Type number.

**10% Tolerance**

| A-B Type No. YC- or YR- | Ohms | Price Code★ YC | YR |
|---|---|---|---|
| 101U | 100 | C | D |
| 201U | 200 | C | D |
| 251U | 250 | C | D |
| 501U | 500 | C | D |
| 102U | 1.0K | C | D |
| 202U | 2.0K | C | D |
| 252U | 2.5K | C | D |
| 502U | 5.0K | C | D |
| 103U | 10K | C | D |
| 203U | 20K | C | D |
| 253U | 25K | C | D |
| 503U | 50K | C | D |
| 104U | .10M | C | D |
| 204U | .20M | C | D |
| 254U | .25M | C | D |
| 504U | .50M | C | D |
| 105U | 1.0M | C | D |
| 205U | 2.0M | C | D |
| 255U | 2.5M | C | D |
| 505U | 5.0M | C | D |

**20% Tolerance**

| | | | |
|---|---|---|---|
| 101M | 100 | E | F |
| 201M | 200 | E | F |
| 251M | 250 | E | F |
| 501M | 500 | E | F |
| 102M | 1.0K | E | F |
| 202M | 2.0K | E | F |
| 252M | 2.5K | E | F |
| 502M | 5.0K | E | F |
| 103M | 10K | E | F |
| 203M | 20K | E | F |
| 253M | 25K | E | F |
| 503M | 50K | E | F |
| 104M | .10M | E | F |
| 204M | .20M | E | F |
| 254M | .25M | E | F |
| 504M | .50M | E | F |
| 105M | 1.0M | E | F |
| 205M | 2.0M | E | F |
| 255M | 2.5M | E | F |
| 505M | 5.0M | E | F |

### TYPE R 25-TURN TRIMMERS

**Type R:** Hot-molded composition rectilinear trimmer for PC board mounting. 25 turns for continuous adjustment. Rated ¼ watt at 70° C. Temperature range, −55° C to +125° C. Immersion-proof. Style RJ11. Rotational life, less than 5% change after 500 cycles (25,000 revolutions of the adjustment screw). Size: 1¼" lg. x ¼" w. x 23/64" h. Three durable pin leads 0.028" dia. x 19/32" lg., Type RP; three solder lugs 3/32" w. x 5/32" lg., Type RS. Metal actuator slotted for screwdriver adjustment. Type and MIL number marked on ±10% tolerance units; Type number only on ±20% unit except, when applicable, marked with type number and MIL number.

**10% Tolerance**

| A-B Type No. RP- or RS- | MIL-R-22097 No. RJ11AS- | Ohms | Price Code★ |
|---|---|---|---|
| 101U | 101 | 100 | G |
| 201U | 201 | 200 | G |
| 251U | ............. | 250 | G |
| 501U | 501 | 500 | G |
| 102U | 102 | 1.0K | G |
| 202U | 202 | 2.0K | G |
| 252U | ............. | 2.5K | G |
| 502U | 502 | 5.0K | G |
| 103U | 103 | 10K | G |
| 203U | 203 | 20K | G |
| 253U | 253 | 25K | G |
| 503U | 503 | 50K | G |
| 104U | 104 | .10M | G |
| 204U | ............. | .20M | G |
| 254U | 254 | .25M | G |
| 504U | 504 | .50M | G |
| 105U | 105 | 1.0M | G |
| 205U | ............. | 2.0M | G |
| 255U | ............. | 2.5M | G |

**20% Tolerance**

| A-B Type No. RP- or RS- | Ohms | Price Code★ |
|---|---|---|
| 101M | 100 | H |
| 201M | 200 | H |
| 251M | 250 | H |
| 501M | 500 | H |
| 102M | 1.0K | H |
| 202M | 2.0K | H |
| 252M | 2.5K | H |
| 502M | 5.0K | H |
| 103M | 10K | H |
| 203M | 20K | H |
| 253M | 25K | H |
| 503M | 50K | H |
| 104M | .10M | H |
| 204M | .20M | H |
| 254M | .25M | H |
| 504M | .50M | H |
| 105M | 1.0M | H |
| 205M | 2.0M | H |
| 255M | 2.5M | H |

### CERMET TRIMMERS

**Type DP**—Dual inline 20-turn cermet trimmer is compatible with TO-116 package; designed for automatic insertion. Rated ¾ watt at 25° C, derated to ½ watt at 85° C; derate to zero at 125° C; max. continuous working voltage, 300 V. Temp. range, −65° C to +125° C. Temp. coefficient less than ±100 ppm/° C. Rotation, 20 turns nominal. Resistance change, less than 1% after soldering, less than 2% after 200 cycles (8,000 turns) under load, after temperature cycling or after humidity test, less than 3% total after 1,000-hour load life test. Marked with A-B No. and nom. resistance. Size, .250" w. x .76" lg. x .195" h. Tolerance, 10%. **Type 75**—Specifications essentially identical to Type DP, except size, .19" w. x .75" lg. x .27" h.

| Ohms | A-B Type No. | Price Code ★ | A-B Type No. | Price Code ★ |
|---|---|---|---|---|
| 100 | DP1011 | I | 75P1011 | J |
| 250 | DP2511 | I | 75P2511 | J |
| 500 | DP5011 | I | 75P5011 | J |
| 1.0K | DP1021 | I | 75P1021 | J |
| 2.5K | DP2521 | I | 75P2521 | J |
| 5.0K | DP5021 | I | 75P5021 | J |
| 10K | DP1031 | I | 75P1031 | J |
| 25K | DP2531 | I | 75P2531 | J |
| 50K | DP5031 | I | 75P5031 | J |
| .10M | DP1041 | I | 75P1041 | J |
| .25M | DP2541 | I | 75P2541 | J |
| .50M | DP5041 | I | 75P5041 | J |
| 1.0M | DP1051 | I | 75P1051 | J |

### ★PRICING INFORMATION

| Price Code | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|
| A | $3.20 | $2.20 | $1.70 | $1.60 | $1.50 | $1.40 |
| B | 3.00 | 2.00 | 1.50 | 1.40 | 1.30 | 1.20 |
| C | 3.35 | 2.35 | 1.85 | 1.75 | 1.65 | 1.55 |
| D | 3.10 | 2.10 | 1.60 | 1.50 | 1.40 | 1.30 |
| E | 3.15 | 2.15 | 1.65 | 1.55 | 1.45 | 1.35 |

| Price Code | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|
| F | $2.90 | $1.90 | $1.40 | $1.30 | $1.20 | $1.10 |
| G | 4.20 | 3.95 | 3.75 | 3.55 | 3.30 | 3.10 |
| H | 4.00 | 3.75 | 3.55 | 3.35 | 3.10 | 2.90 |
| I | 3.93 | 3.42 | 2.96 | 2.71 | 2.53 | 2.41 |
| J | 2.10 | 1.89 | 1.78 | 1.70 | 1.63 | 1.51 |

# ALLEN-BRADLEY HOT-MOLDED COMPOSITION AND CERMET TRIMMERS

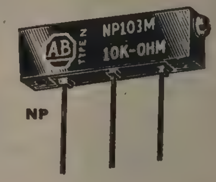
## TYPE N HOT-MOLDED COMPOSITION TRIMMERS

**Type N:** Hot-molded composition rectilinear trimmer for PC board mounting. Continuous adjustment, 25 turns. Rated ⅓ watt at 50° C. Rotational life, less than 5% resistance change after 500 cycles (25,000 revolutions of the actuating screw). Temperature range, −55° C to +100° C. Size: 1¼″ lg. x ¼″ w. x 23/64″ h. Immersion-proof. Three durable pin leads 0.028″ dia. x 19/32″ lg. Metal actuator slotted for screwdriver adjustment. Marked with Type number.

**20% Tolerance**

| A-B Type No. NP- | Ohms | Price Code★ |
|---|---|---|
| 101M | 100 | A |
| 201M | 200 | A |
| 251M | 250 | A |
| 501M | 500 | A |
| 102M | 1.0K | A |
| 202M | 2.0K | A |
| 252M | 2.5K | A |
| 502M | 5.0K | A |
| 103M | 10K | A |
| 203M | 20K | A |

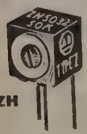
| A-B Type No. NP- | Ohms | Price Code★ |
|---|---|---|
| 253M | 25K | A |
| 503M | 50K | A |
| 104M | .10M | A |
| 204M | .20M | A |
| 254M | .25M | A |
| 504M | .50M | A |
| 105M | 1.0M | A |
| 205M | 2.0M | A |
| 255M | 2.5M | A |



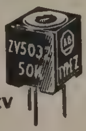
NP

## CERMET TRIMMERS

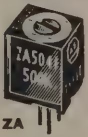
Ideal when environmental conditions are toughest. Excellent performance when temperatures are extreme, humidities extra high, and mechanical shocks and vibrations are particularly severe. A-B Cermets have long load and wear life. In severe environments, they maintain their setting to give dependable performance. Leads are permanently fastened, anchored and bonded. All are MIL grade and immersion-proof.



ZH



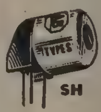
ZV



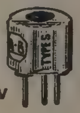
ZA

**Type Z:** Miniature, single-turn cermet trimmer for PC board mounting. Rated ½ watt at 70° C. Operating temperature range, −55° C to +125° C. Size: Horizontal mounting Type ZH, ¼″ cube; vertical mounting Type ZV, ¼″ w. x 19/64″ sq. Type ZA same as ZV, but 10% only and different pin spacing. Three 0.016″ dia. pin leads. Screwdriver slot adjustment. Marked with Type number.

**Type S:** Single-turn cermet trimmer for PC board mounting. Rated ½ watt at 85° C. Temperature range, −65° C to +150° C. Metal enclosure. Size: Type SV for vertical mounting, ⅜″ dia. x ⅜″ h.; Type SH for horizontal mounting, ⅜″ h. x ⅜″ w. x 17/32″ lg. Three durable 0.025″ dia. pin leads. Slot for screwdriver adjustment. Marked with Type number.



SH



SV

### TYPE ZH HORIZONTAL MOUNT

**10% Tolerance**

| A-B Type No. ZH- | Ohms | Price Code★ |
|---|---|---|
| 5001 | 50 | B |
| 7501 | 75 | B |
| 1011 | 100 | B |
| 2011 | 200 | B |
| 2511 | 250 | B |
| 5011 | 500 | B |
| 7511 | 750 | B |
| 1021 | 1.0K | B |
| 2021 | 2.0K | B |
| 2521 | 2.5K | B |
| 5021 | 5.0K | B |
| 7521 | 7.5K | B |
| 1031 | 10K | B |
| 2031 | 20K | B |
| 2531 | 25K | B |
| 5031 | 50K | B |
| 7531 | 75K | B |
| 1041 | .10M | B |
| 2041 | .20M | B |
| 2541 | .25M | B |
| 5041 | .50M | B |
| 7541 | .75M | B |
| 1051 | 1.0M | B |

**20% Tolerance**

| A-B Type No. ZH- | Ohms | Price Code★ |
|---|---|---|
| 5002 | 50 | C |
| 7502 | 75 | C |
| 1012 | 100 | C |
| 2012 | 200 | C |
| 2512 | 250 | C |
| 5012 | 500 | C |
| 7512 | 750 | C |
| 1022 | 1.0K | C |
| 2022 | 2.0K | C |
| 2522 | 2.5K | C |
| 5022 | 5.0K | C |
| 7522 | 7.5K | C |
| 1032 | 10K | C |
| 2032 | 20K | C |
| 2532 | 25K | C |
| 5032 | 50K | C |
| 7532 | 75K | C |
| 1042 | .10M | C |
| 2042 | .20M | C |
| 2542 | .25M | C |
| 5042 | .50M | C |
| 7542 | .75M | C |
| 1052 | 1.0M | C |

### TYPES ZV, ZA VERTICAL MOUNT

**10% Tolerance**

| A-B Type No. ZV- or ZA- | Ohms | Price Code★ |
|---|---|---|
| 5001 | 50 | B |
| 7501 | 75 | B |
| 1011 | 100 | B |
| 2011 | 200 | B |
| 2511 | 250 | B |
| 5011 | 500 | B |
| 7511 | 750 | B |
| 1021 | 1.0K | B |
| 2021 | 2.0K | B |
| 2521 | 2.5K | B |
| 5021 | 5.0K | B |
| 7521 | 7.5K | B |
| 1031 | 10K | B |
| 2031 | 20K | B |
| 2531 | 25K | B |
| 5031 | 50K | B |
| 7531 | 75K | B |
| 1041 | .10M | B |
| 2041 | .20M | B |
| 2541 | .25M | B |
| 5041 | .50M | B |
| 7541 | .75M | B |
| 1051 | 1.0M | B |

**20% Tolerance**

| A-B Type No. ZV- or ZA- | Ohms | Price Code★ |
|---|---|---|
| 5002 | 50 | C |
| 7502 | 75 | C |
| 1012 | 100 | C |
| 2012 | 200 | C |
| 2512 | 250 | C |
| 5012 | 500 | C |
| 7512 | 750 | C |
| 1022 | 1.0K | C |
| 2022 | 2.0K | C |
| 2522 | 2.5K | C |
| 5022 | 5.0K | C |
| 7522 | 7.5K | C |
| 1032 | 10K | C |
| 2032 | 20K | C |
| 2532 | 25K | C |
| 5032 | 50K | C |
| 7532 | 75K | C |
| 1042 | .10M | C |
| 2042 | .20M | C |
| 2542 | .25M | C |
| 5042 | .50M | C |
| 7542 | .75M | C |
| 1052 | 1.0M | C |

### TYPE SH HORIZONTAL MOUNT

**10% Tolerance**

| A-B Type No. SH- | Ohms | Price Code★ |
|---|---|---|
| 5001 | 50 | D |
| 7501 | 75 | D |
| 1011 | 100 | D |
| 2011 | 200 | D |
| 2511 | 250 | D |
| 5011 | 500 | D |
| 7511 | 750 | D |
| 1021 | 1.0K | D |
| 2021 | 2.0K | D |
| 2521 | 2.5K | D |
| 5021 | 5.0K | D |
| 7521 | 7.5K | D |
| 1031 | 10K | D |
| 2031 | 20K | D |
| 2531 | 25K | D |
| 5031 | 50K | D |
| 7531 | 75K | D |
| 1041 | .10M | D |
| 2041 | .20M | D |
| 2541 | .25M | D |
| 5041 | .50M | D |
| 7541 | .75M | D |
| 1051 | 1.0M | D |

### TYPE SV VERTICAL MOUNT

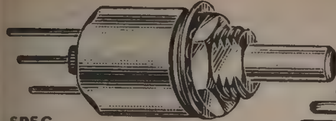
**10% Tolerance**

| A-B Type No. SV- | Ohms | Price Code★ |
|---|---|---|
| 5001 | 50 | E |
| 7501 | 75 | E |
| 1011 | 100 | E |
| 2011 | 200 | E |
| 2511 | 250 | E |
| 5011 | 500 | E |
| 7511 | 750 | E |
| 1021 | 1.0K | E |
| 2021 | 2.0K | E |
| 2521 | 2.5K | E |
| 5021 | 5.0K | E |
| 7521 | 7.5K | E |
| 1031 | 10K | E |
| 2031 | 20K | E |
| 2531 | 25K | E |
| 5031 | 50K | E |
| 7531 | 75K | E |
| 1041 | .10M | E |
| 2041 | .20M | E |
| 2541 | .25M | E |
| 5041 | .50M | E |
| 7541 | .75M | E |
| 1051 | 1.0M | E |

### ★PRICING INFORMATION

| Price Code | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
| A | $3.30 | $2.75 | $2.25 | $1.60 | $1.50 | $1.40 |
| B | 2.00 | 1.88 | 1.76 | 1.70 | 1.54 | 1.44 |
| C | 1.90 | 1.80 | 1.70 | 1.65 | 1.50 | 1.40 |
| D | 3.75 | 2.75 | 2.00 | 1.75 | 1.65 | 1.55 |
| E | 3.25 | 2.25 | 1.60 | 1.50 | 1.40 | 1.30 |

# ALLEN-BRADLEY CERMET AND COMPOSITION POTENTIOMETERS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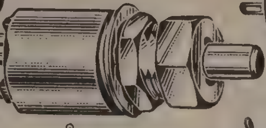
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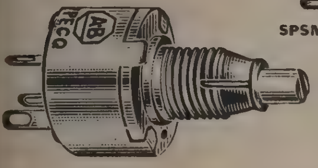
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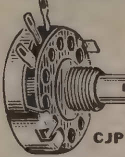
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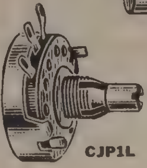
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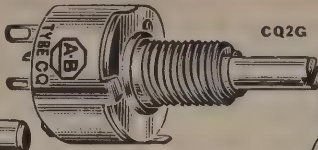
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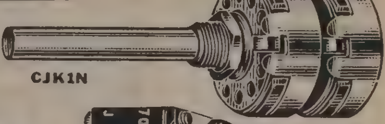
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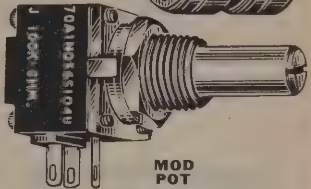


MOD POT

## CERMET POTENTIOMETERS

**Type SPSG**—Single-turn potentiometers rated 1 watt at 70° C, derated to 0 at 150° C. Total resistance change, less than 2% after shock, vibration or moisture tests, less than 3% after temperature cycling; less than 5% total after 1,000 hours at rated load. Max. continuous working voltage, 300 V. Temp. coefficient, less than ±250 ppm. Insulation resistance, 100 megs min. Rotation, 280° ±5° mechanical and electrical; torque, 0.5–6 in.-oz. Linear taper, 10% tolerance only; ¼″ lg. plain bushing with ⅝″ lg. shaft ⅛″ dia. Marked with Type No. and nom. resistance. Supplied with hardware. **Type SPSM**—Same as above, but ⅜″ lg. locking bushing with 7/16″ lg. shaft. Both types mount in ¼″ hole. Case size, 7/16″ x ⅜″ dia.

| Ohms | A-B Type SPSG 040S- | Price Code ★ | A-B Type SPSM 028S- | Price Code ★ |
|---|---|---|---|---|
| 50 | 500U | A | 500U | B |
| 100 | 101U | A | 101U | B |
| 250 | 251U | A | 251U | B |
| 500 | 501U | A | 501U | B |
| 1.0K | 102U | A | 102U | B |
| 2.5K | 252U | A | 252U | B |
| 5.0K | 502U | A | 502U | B |
| 10K | 103U | A | 103U | B |
| 25K | 253U | A | 253U | B |
| 50K | 503U | A | 503U | B |
| .1M | 104U | A | 104U | B |
| .25M | 254U | A | 254U | B |
| .50M | 504U | A | 504U | B |
| 1.0M | 105U | A | 105U | B |

**Type CQ2G**—Designed for severe environmental conditions in military and industrial equipment; exceeds highest requirements of applicable EIA and military specifications. Rated 0.5 watt at 125° C, derated to 0 at 175° C. Temperature range, −65° C to +175° C with temp. coefficient less than ±250 ppm/° C. Rotation, 295° ±5°. Dielectric withstanding voltage, 750 V rms at sea level. Max. continuous working voltage, 350 V rms. Total resistance change, less than 1% after low temperature test, less than 2% after shock, vibration and moisture tests, less than 3% after 1,000 hours at rated load, less than 5% after 50,000 cycle rotational test; Linear taper, 10% tolerance only; ¼″ lg. plain bushing with ⅞″ lg. slotted shaft ⅛″ dia. Supplied with hardware. **Type CQ2L**—Same as above, but ½″ lg. plain bushing with ⅝″ lg. slotted shaft. Additional hardware: M-4721 mounting nut, **5c**; M-4748 lockwasher, **5c**; M-4761 locknut, **10c.** Both types mount in ¼″ hole. Case size, 15/32″ max. x ½″ dia.

| Ohms | A-B Type CQ2G 056S- | Price Code ★ | A-B Type CQ2L 040S- | Price Code ★ |
|---|---|---|---|---|
| 100 | 101U | C | 101U | D |
| 250 | 251U | C | 251U | D |
| 500 | 501U | C | 501U | D |
| 1.0K | 102U | C | 102U | D |
| 2.5K | 252U | C | 252U | D |
| 5.0K | 502U | C | 502U | D |
| 10K | 103U | C | 103U | D |
| 25K | 253U | C | 253U | D |
| 50K | 503U | C | 503U | D |
| .10M | 104U | C | 104U | D |
| .25M | 254U | C | 254U | D |
| .50M | 504U | C | 504U | D |
| 1.0M | 105U | C | 105U | D |
| 2.5M | 255U | C | 255U | D |
| 5.0M | 505U | C | 505U | D |

**Type CJP1N**—Designed for severe environmental applications. Rated 5 watts at 70° C, derated to 0 at 150° C. Less than 3% resistance change after temperature cycling; less than 5% after moisture resistance test; less than 5% permanent change after 1,000 hours at rated load. Temperature coefficient, ±250 ppm, −65° C to +150° C. Linear taper, 10% tolerance only; ⅜″ lg. plain bushing with ⅞″ lg. x ¼″ dia. slotted shaft. **Type CJP1L**—As above, but ½″ lg. locking bushing with ⅝″ lg. x ¼″ dia. slotted shaft. **Type CJK1N**—Dual potentiometer; each section as above; ⅜″ lg. plain bushing with 2″ lg. x ¼″ dia. plain shaft. Supplied with hardware. All types mount in ⅜″ hole. Case size, CJP, ⅝″ max. x 1 5/32″ max. dia.; CJK, 1 17/64″ max. x 1 5/32″ max. dia.

| Ohms | Price Code★ E A-B Type CJP1N- | Price Code★ F A-B Type CJP1L- | Price Code★ G A-B Type CJK1N- |
|---|---|---|---|
| 100 | 056S101U | 040S101U | 200P101U |
| 250 | 056S251U | 040S251U | 200P251U |
| 500 | 056S501U | 040S501U | 200P501U |
| 1.0K | 056S102U | 040S102U | 200P102U |
| 2.5K | 056S252U | 040S252U | 200P252U |
| 5.0K | 056S502U | 040S502U | 200P502U |
| 10K | 056S103U | 040S103U | 200P103U |
| 25K | 056S253U | 040S253U | 200P253U |
| 50K | 056S503U | 040S503U | 200P503U |
| .10M | 056S104U | 040S104U | 200P104U |
| .25M | 056S254U | 040S254U | 200P254U |
| .50M | 056S504U | 040S504U | 200P504U |
| 1.0M | 056S105U | 040S105U | 200P105U |
| 2.5M | 056S255U | 040S255U | 200P255U |
| 5.0M | 056S505U | 040S505U | 200P505U |

## ★PRICING INFORMATION

| Price Code | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
| A | $ 8.80 | $7.30 | $6.45 | $6.00 | $5.50 | $4.70 |
| B | 9.10 | 7.50 | 6.65 | 6.20 | 5.70 | 4.85 |
| C | 6.00 | 4.00 | 3.40 | 3.20 | 2.90 | 2.60 |
| D | 6.30 | 4.15 | 3.60 | 3.35 | 3.05 | 2.75 |
| E | 4.90 | 4.40 | 4.10 | 3.60 | 3.20 | 2.50 |
| F | 5.60 | 5.10 | 4.55 | 4.15 | 3.65 | 2.85 |
| G | 10.40 | 9.50 | 8.50 | 7.70 | 6.80 | 5.35 |
| H | 2.65 | 2.05 | 1.79 | 1.58 | 1.32 | 1.04 |
| I | 2.98 | 2.25 | 1.95 | 1.71 | 1.43 | 1.12 |
| J | 2.95 | 2.50 | 2.14 | 1.83 | 1.57 | 1.30 |
| K | 3.28 | 2.70 | 2.30 | 1.96 | 1.68 | 1.38 |

## SERIES 70 MOD POTS

Modular potentiometers can be assembled with up to four sections using carbon composition and cermet modules interchangeably. Space does not allow a full display of all possible variations; write for full information. Supplied with hardware. Module size, ⅝″ sq. Single controls 19/32″ deep; ⅜″ dia. bushing, ⅜″ long, is standard, **Type 70A1N**—Hot-molded carbon composition element rated 1 watt at 70° C, derated to 0 at 125° C. Resistance change, less than 2% after shock and vibration tests, less than 3% after temperature cycling or low temperature exposure, less than 10% after load life, moisture and rotational life tests. Linear taper only; ⅜″ lg. plain bushing with ⅞″ lg. x ¼″ dia. slotted shaft is standard. **Type 70A1L**—As above, but ½″ lg. locking bushing with ⅝″ lg. slotted shaft. **Type 70B1N**—Cermet element rated 2 watts at 70° C, derated to 0 at 150° C. Temperature characteristic less than 250 ppm. Resistance change, less than 2% after shock, vibration and low temperature exposure tests, less than 3% after temperature cycling, less than 5% after load life and moisture tests, less than 10% after rotational life test. Linear taper only; ⅜″ lg. plain bushing with ⅞″ lg. slotted shaft. **Type 70B1L**—As above, but ½″ lg. locking bushing with ⅝″ lg. slotted shaft.

### COMPOSITION

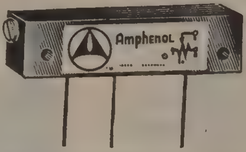
| Ohms | A-B Type 70A1N 056S- | Price Code ★ | A-B Type 70A1L 040S- | Price Code ★ |
|---|---|---|---|---|
| 50 | 500U | H | 500U | I |
| 100 | 101U | H | 101U | I |
| 250 | 251U | H | 251U | I |
| 500 | 501U | H | 501U | I |
| 1.0K | 102U | H | 102U | I |
| 2.5K | 252U | H | 252U | I |
| 5.0K | 502U | H | 502U | I |
| 10K | 103U | H | 103U | I |
| 25K | 253U | H | 253U | I |
| 50K | 503U | H | 503U | I |
| .10M | 104U | H | 104U | I |
| .25M | 254U | H | 254U | I |
| .50M | 504U | H | 504U | I |
| 1.0M | 105U | H | 105U | I |
| 2.5M | 255U | H | 255U | I |
| 5.0M | 505U | H | 505U | I |
| 10M | 106U | H | 106U | I |

### CERMET

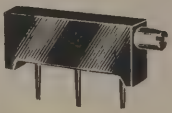
| Ohms | A-B Type 70B1N 056S- | Price Code ★ | A-B Type 70B1L 040S- | Price Code ★ |
|---|---|---|---|---|
| 100 | 101W | J | 101W | K |
| 250 | 251W | J | 251W | K |
| 500 | 501W | J | 501W | K |
| 1.0K | 102W | J | 102W | K |
| 2.5K | 252W | J | 252W | K |
| 5.0K | 502W | J | 502W | K |
| 10K | 103W | J | 103W | K |
| 25K | 253W | J | 253W | K |
| 50K | 503W | J | 503W | K |
| .10M | 104W | J | 104W | K |
| .25M | 254W | J | 254W | K |
| .50M | 504W | J | 504W | K |
| 1.0M | 105W | J | 105W | K |
| 2.5M | 255W | J | 255W | K |
| 5.0M | 505W | J | 505W | K |

# BUNKER RAMO AMPHENOL Micropot® Trimmers

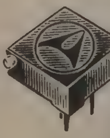
992L, 994L, 2850L, 2860L

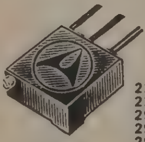

992P, 994P, 2850P, 2851P, 2855P

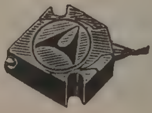
992SL, 994SL, 2850SL, 6034


2600P, 2610P, 3800P, 3805P, 3810P, 3811P, 3815P

2750L


2300P, 2305P, 3600P, 3610P


2300W, 2301W, 2900W, 2901W, 2905W


2900L, 2901L, 2905L

6203P

6203X

6900, 6905

Linear electrical output with shaft adjustment. Units may also be gang mounted. Power rating given is maximum. **Terminals:** Indicated by suffix: **L**, color coded wire leads; **P**, gold plated printed circuit pins; **SL**, gold plated solder lugs; **W**, printed circuit pins, top adjustable leadscrew; **X**, printed circuit pins, side adjustable leadscrew; **Y**, printed circuit pins—staggered, top adjustable screw; **K**, printed circuit pins with .200″ spacing.

## GENERAL PURPOSE TYPES

Table below shows humidity-proof types that are otherwise equivalent to listed general-purpose types.

| Amphenol Series | Description | Equivalent Humidity Proof Amph. Series |
|---|---|---|
| 992 | Gen. Purpose Wire-Wound | See 994 |
| 2600P | Microminiature Wire-Wound | See 2610P |
| 2860 | High Temperature Wire-Wound | See 2850 |
| 3600 | Microminiature Wire-Wound | See 3610 |
| 3800* | Microminiature Wire-Wound | See 3810 |
| 3805* | Cermet Microminiature | See 3815 |

### WIRE-WOUND TYPES

**Series 992:** Power Rating, 1 watt at 40° C. Resistance Tolerance, ±10% below 75 ohms; ±5%, 100 ohms and above. Temperature Range, −55° C to +125° C. Temperature Coefficient, 70 ppm/° C. Adjustment, 22 turns. Size, 0.32″ h. x 0.28″ w. x 1.25″ lg. Terminals: **L, P** or **SL.** Standard Resistances: Specify 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K or 50K ohms.

**Series 2600 Microminiature:** Power Rating, 1 watt at 40° C. Resistance Tolerance, ±10%. Temperature Range, −55° C to +125° C. Temperature Coefficient, 100 ppm/° C. Adjustment, 22 turns. Size, 0.31″ h. x 0.16″ w. x 0.75″ lg. Terminals: **P** only. Standard Resistances: Specify 100, 200, 500, 1K, 2K, 5K, 10K or 20K ohms.

**Series 2860 High Temperature:** Meets MIL-R-27208 style RT11. Power Rating, ¾ watt at 85° C. Resistance Tolerance, ±5%. Temperature Range, −55° C to +150° C. Temperature Coefficient, 50 ppm/° C. Adjustment, 22 turns. Size, 0.32″ h. x 0.28″ w. x 1.25″ lg. Terminals: **L, P** or **SL.** Standard Resistances: Specify 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K or 50K ohms.

**Series 3600 Microminiature:** Power Rating, ½ watt at 40° C. Resistance Tolerance, ±10%. Temperature Range, −55° C to +125° C. Temperature Coefficient, 100 ppm/° C. Adjustment, 23 turns. Size, ⅜″ sq. x 0.20″ d. Terminals: **P, W** or **X.** Standard Resistances: Specify 100, 200, 500, 1K, 2K, 5K, 10K or 20K ohms.

**Series 3800* Microminiature:** Solvent resistant. Power Rating, 1 watt at 40° C. Resistance Tolerance, ±10%. Temperature Range, −55° C to +125° C. Temperature Coefficient, 100 ppm/° C. Adjustment, 22 turns. Size, 0.31″ h. x 0.16″ w. x 0.75″ lg. Terminals: **P** or **K.** Standard Resistances: Specify 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K or 20K ohms.

### CERMET INFINITE RESOLUTION TYPES

**Series 3805* Microminiature:** Solvent resistant. Power Rating, ¼ watt at 40° C. Resistance Tolerance, ±10%. Temperature Range, −55° C to +125° C. Temperature Coefficient†, ±150 ppm/° C. Adjustment, 22 turns Size, 0.31″ h. x 0.16″ w. x 0.75″ lg. Terminals: **P** or **K.** Standard Resistances: Specify 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K or 500K ohms.

*For Vista-Trim view top, use suffix **-2**, (e.g., 3805P-100-2).
† ±100 ppm/° C also available in 1K and up resistance values.

## HUMIDITY-PROOF TYPES

Pass MIL-R-27208A moisture resistance test.

### WIRE-WOUND TYPES

**Series 994:** Power Rating, 1 watt at 40° C. Resistance Tolerance, ±10% below 75 ohms; ±5%, 100 ohms and above. Temperature Range, −55° C to +125° C. Temperature Coefficient, 70 ppm/° C. Adjustment, 22 turns. Size, 0.32″ h. x 0.28″ w. x 1.25″ lg. Terminals: **L, P** or **SL.** Standard Resistances: Specify 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K or 50K ohms.

**Series 2300 Microminiature:** Meets MIL-R-27208 style RT24. Power Rating, ¾ watt at 85° C. Resistance Tolerance, ±5%. Temperature Range, −55° C to +150° C. Temperature Coefficient, 50 ppm/° C. Adjustment, 26 turns. Size, ⅜″ sq. x 0.198″ d., P; 0.415″ h. x 0.193″ w. x 0.375″ lg., W; 0.415″ h x 0.200″ w. x 0.375″ lg., X. Terminals: **P, W** or **X.** Standard Resistances: Specify 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K or 20K ohms.

**Series 2610 Microminiature:** Power Rating, 1 watt at 40° C. Resistance Tolerance, ±10%. Temperature Range, −55° C to +125° C. Temperature Coefficient, 100 ppm/° C. Adjustment, 22 turns. Size, 0.31″ h. x 0.16″ w. x 0.75″ lg. Terminals: **P** only. Standard Resistances: Specify 100, 200, 500, 1K, 2K, 5K, 10K or 20K ohms.

**Series 2750 High Temperature:** Meets MIL-R-27208 style RT12. Power Rating, ¾ watt at 85° C. Resistance Tolerance, ±5%. Temperature Range, −55° C to +150° C. Temperature Coefficient, 50 ppm/° C. Adjustment, 22 turns. Size, 0.32″ h. x 0.19″ w. x 1.25″ lg. Terminals: **L, P** or **SL.** Standard Resistances: Specify 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K or 50K ohms.

MICROPOT TRIMMERS CONTINUED ON FOLLOWING PAGE

# BUNKER RAMO AMPHENOL Micropot® Trimmers

## MICROPOT® HUMIDITY-PROOF TRIMMERS (CONT'D)

### WIRE-WOUND TYPES (CONT'D)

**Series 2850 High Temperature:** Meets MIL-R-27208 style RT11. Power Rating, ¾ watt at 85° C. Resistance Tolerance, ±5%. Temperature Range, −55° C to +150° C. Temperature Coefficient, 50 ppm/° C. Adjustment, 22 turns. Size, 0.32″ h. x 0.28″ w. x .25″ lg. Terminals: **L, P** or **SL.** Standard Resistances: Specify 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K or 50K ohms.

**Series 2900 Subminiature:** Meets MIL-R-27208 style RT22. Power Rating, ¾ watt at 85° C. Resistance Tolerance, ±5%. Temperature Range, −55° C to +150° C. Temperature Coefficient, 50 ppm/° C. Adjustment, 25 turns. Size, ½″ sq. x 0.187″ d., L; 0.220″ d., P; 0.195″ d., W or X; 0.575″ h. x 0.190″ w. x 0.500″ lg., Y. Terminals: **L, P, W, X** or **Y.** Standard Resistances: Specify 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K or 50K ohms.

**Series 3610 Microminiature:** Power Rating, ½ watt at 40° C. Resistance Tolerance, ±10%. Temperature Range, −55° C to +125° C. Temperature Coefficient, 100 ppm/° C. Adjustment, 23 turns. Size, ⅜″ sq. x 0.20″ d. Terminals: **P, W** or **X.** Standard Resistances: Specify 100, 200, 500, 1K, 2K, 5K, 10K or 20K ohms.

**Series 3810* Microminiature:** Solvent resistant. Power Rating, 1 watt at 40° C. Resistance Tolerance, ±10%. Temperature Range, −55° C to +125° C. Temperature Coefficient, 100 ppm/° C. Adjustment, 22 turns. Size, 0.31″ h. x 0.16″ w. x 0.75″ lg. Terminals: **P** or **K.** Standard Resistances: Specify 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K or 20K ohms.

**Series 6900 Subminiature:** Power Rating, 1 watt at 40° C. Resistance Tolerance, ±10%. Temperature Range, −55° C to +125° C. Temperature Coefficient, 50 ppm/° C. Adjustment, single turn. Size, 0.500″ dia. x 0.255″ h. Terminals: **P** only. Resistance Range: Specify 10, 20, 50, 100, 200, 500, 1K, 2K, 10K, 20K or 50K ohms.

### CERMET INFINITE RESOLUTION TYPES

**Series 2305 Microminiature:** Meets MIL-R-22097 style RJ24. Power Rating, ½ watt at 85° C. Resistance Tolerance, ±10%. Temperature Range, −55° C to +150° C. Temperature Coefficient†, ±150 ppm/° C. Adjustment, 26 turns. Size: Same as Series 2300. Terminals: **P, W** or **X.** Standard Resistances: Specify 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 25K, 50K, 100K, 250K, 500K or 1 megohm.

**Series 2855 High Temperature:** Meets MIL-R-22097 style RJ11. Power Rating, ¾ watt at 85° C. Resistance Tolerance, ±10%. Temperature Range, −55° C to +150° C. Temperature Coefficient†, ±150 ppm/° C. Adjustment, 22 turns. Size, 0.32″ h. x 0.28″ w. x 1.25″ lg. Terminals: **L, P** or **SL.** Standard Resistances: Specify 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 25K, 50K, 100K, 250K, 500K or 1 megohm.

**Series 2905 Subminiature:** Meets MIL-R-22097 style RJ22. Power Rating, ½ watt at 85° C. Resistance Tolerance, ±10%. Temperature Range, −55° C to +150° C. Temperature Coefficient†, ±150 ppm/° C. Adjustment, 25 turns. Size, Same as Series 2900. Terminals: **L, P, W, X** or **Y.** Standard Resistances: Specify 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 25K, 50K, 100K, 250K, 500K, 1 meg, 2.5 megs, 5 megs or 10 megs.

**Series 3815* Microminiature:** Solvent resistant. Power Rating, ¾ watt at 40° C. Resistance Tolerance, ±10%. Temperature Range, −55° C to +125° C. Temperature Coefficient†, ±150 ppm/° C. Adjustment, 22 turns. Size, 0.31″ h. x 0.16″ w. x 0.75″ lg. Terminals: **P** or **K.** Standard Resistances: Specify 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K or 500K ohms.

**Series 6034 Microminiature:** Power Rating, ½ watt at 85° C. Resistance Tolerance, ±10%; ±5% available on request. Temperature Range, −55° C to +125° C. Temperature Coefficient, ±100 ppm/° C. Adjustment, 15 turns. Size, 0.20″ h. x 0.16″ w. x 0.75″ lg. Terminals: **P, K** or **Y.** Standard Resistances: Specify 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K or 1 megohm.

**Series 6203 Microminiature:** Power Rating, ¼ watt at 85° C. Resistance Tolerance, ±20%. Temperature Range, −25° C to +125° C. Temperature Coefficient, ±100 ppm/° C. Adjustment, single turn. Size, 0.22″ h. x 0.25″ dia., P; 0.33″ h. x 0.26″ w. x 0.26″ lg., X. Terminals: **P** or **X.** Standard Resistances: Specify 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K or 1 megohm.

**Series 6905 Subminiature:** Power Rating, ½ watt at 40° C. Resistance Tolerance, ±10%. Temperature Range, −55° C to +125° C. Temperature Coefficient†, ±150 ppm/° C. Adjustment, Single turn. Size, 0.500″ dia. x 0.255″ h. Terminals: **P** only. Resistance Range: Specify 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 25K, 50K, 100K, 200K, 500K, 1 meg, 2 megs, 2.5 megs or 5 megs.

*For Vista-Trim view top, use suffix **-2,** (e.g., 3815P-100-2).
†±100 ppm/° C also available in 1K and up resistance values.

### HOW TO ORDER

**3815** **P** **-100** **-2**
Ⓐ Ⓑ Ⓒ Ⓓ

Ⓐ Series Number.

Ⓑ Terminal type; select from types indicated as available for particular series. See previous page for explanation of terminal types.

Ⓒ Resistance code. First two digits are significant figures of resistance; last digit is number of zeroes that follow (e.g., **100** is 10 ohms, **504** is 500K ohms).

Ⓓ Add **-2** suffix only when ordering Vista-Trim view top on series that offer this option.

### FILM-MET™ INFINITE RESOLUTION TYPES

**Series 2301 Microminiature:** Power Rating, ½ watt at 85° C. Resistance Tolerance†, ±10%. Temperature Range, −55° C to +150° C. Temperature Coefficient, ±50 ppm/° C. Adjustment, 26 turns. Size: P, W or X, same as Series 2300. Terminals: **P, W** or **X.** Standard Resistances: Specify 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K or 20K ohms.

**Series 2851 High Temperature:** Power Rating, ¾ watt at 85° C. Resistance Tolerance†, ±10% Temperature Range, −55° C to +150° C. Temperature Coefficient, ±50 ppm/° C. Adjustment, 22 turns. Size, 0.32″ h. x 0.28″ w. x 1.25″ lg. Terminals: **L, P** or **SL.** Standard Resistances: Specify 20, 50, 100, 200, 500, 1K, 2K, 5K or 10K ohms.

**Series 2901 Subminiature:** Power Rating, ¾ watt at 85° C. Resistance Tolerance†, ±10%. Temperature Range, −55° C to +150° C. Temperature Coefficient, ±50 ppm/° C. Adjustment, 25 turns. Size: L, P, W, X or Y same as Series 2900. Terminals: **L, P, W, X** or **Y.** Standard Resistances: Specify 50, 100, 200, 500, 1K, 2K, 5K or 10K ohms.

**Series 3811* Microminiature:** Solvent resistant. Power Rating, ¾ watt at 40° C. Resistance Tolerance†, ±10%. Temperature Range, −55° C to +125° C. Temperature Coefficient, ±50 ppm/° C. Adjustment, 15 turns. Size, 0.31″ h. x 0.16″ w. x 0.75″ lg. Terminals: **P** or **K.** Standard Resistance: Specify 50, 100, 200, 500, 1K, 2K, 5K, 10K or 20K ohms.

*For Vista-Trim view top, use suffix **-2,** (e.g., 3811P-100-2).
†Also available in ±5% Resistance Tolerance.

### MODEL 999 PANEL MOUNTING BRACKET

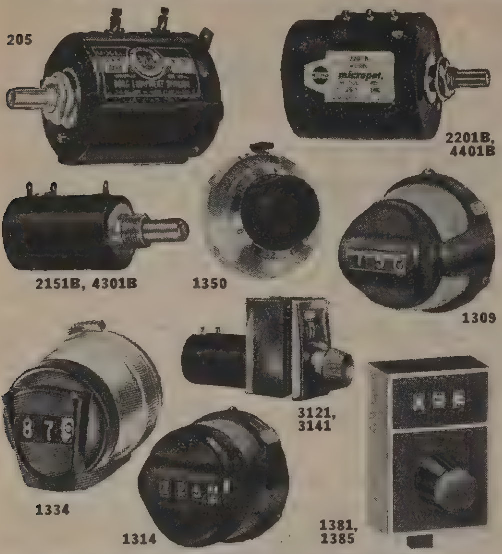
For use with trimmer models 992, 994, 2700, 2750, 2850, 2851, 2855, 2860, 2900, 2901 or 2905 with **L** terminals. Adapts trimmer to panel use; self-locking; permits screwdriver adjustment. Gold anodized aluminum. Fits panel ⅛″ thick with #1 drill hole (.228″ dia.). Hex nut threaded 10-32 NF2.

### TRIMMER PRICES

| Amphenol Model | Resis. Values, Ohms | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499* |
| 992L, P or SL | 50–10K<br>20K, 50K | $2.95<br>4.10 | $2.73<br>3.79 | $2.46<br>3.42 | $2.33<br>3.24 | $2.18<br>3.03 | $2.07<br>2.88 |
| 994L, P or SL | 50–10K<br>20K, 50K | 3.10<br>4.25 | 2.87<br>3.94 | 2.59<br>3.54 | 2.45<br>3.36 | 2.29<br>3.14 | 2.18<br>2.99 |
| 999 | Bracket | .81 | .75 | .68 | .64 | .60 | ..... |
| 2300P, W or X | 10–20K | 6.90 | 6.35 | 5.80 | 5.43 | 5.16 | 4.88 |
| 2301P, W or X | 10–20K | 8.27 | 7.61 | 6.95 | 6.52 | 6.19 | 5.86 |
| 2305P, W or X | 20–1 meg | 7.32 | 6.74 | 6.15 | 5.77 | 5.48 | 5.18 |
| 2600P | 100–20K | 1.75 | 1.62 | 1.46 | 1.39 | 1.30 | 1.23 |
| 2610P | 100–20K | 2.45 | 2.27 | 2.04 | 1.95 | 1.82 | 1.72 |
| 2700L or W | 100–10K<br>20K, 30K<br>50K | 5.93<br>6.45<br>7.00 | 5.50<br>6.00<br>6.50 | 5.15<br>5.62<br>6.10 | 4.83<br>5.27<br>5.73 | 4.61<br>5.03<br>5.46 | 4.28<br>4.68<br>5.06 |
| 2750L, P or SL | 10–10K<br>20K<br>50K | 5.21<br>5.74<br>6.50 | 4.83<br>5.32<br>6.05 | 4.53<br>4.99<br>5.66 | 4.27<br>4.70<br>5.31 | 4.04<br>4.45<br>5.07 | 3.78<br>4.16<br>4.70 |
| 2850L, P or SL | 10–10K<br>20K<br>50K | 5.21<br>5.74<br>6.55 | 4.83<br>5.32<br>6.07 | 4.53<br>4.99<br>5.67 | 4.27<br>4.70<br>5.33 | 4.04<br>4.45<br>5.08 | 3.78<br>4.16<br>4.71 |
| 2851L, P or SL | 20–10K | 7.02 | 6.50 | 5.85 | 5.56 | 5.20 | 4.94 |
| 2855L, P or SL | 100–1 meg | 5.72 | 5.26 | 4.81 | 4.51 | 4.28 | 4.05 |
| 2900L, W, X or Y | 10–10K<br>20K<br>50K | 5.43<br>5.93<br>7.10 | 5.04<br>5.50<br>6.60 | 4.72<br>5.16<br>6.16 | 4.45<br>4.85<br>5.80 | 4.21<br>4.60<br>5.53 | 3.94<br>4.30<br>5.13 |
| 2900P | 10–10K<br>20K<br>50K | 4.87<br>5.36<br>7.10 | 4.52<br>4.97<br>6.60 | 4.24<br>4.67<br>6.16 | 3.98<br>4.39<br>5.80 | 3.77<br>4.16<br>5.53 | 3.53<br>3.89<br>5.13 |
| 2901L, P, W, X or Y | 50–10K | 7.35 | 6.95 | 6.60 | 6.25 | 5.85 | 5.50 |
| 2905L, P, W, X or Y | 100–10 megs | 6.48 | 6.01 | 5.64 | 5.31 | 5.02 | 4.69 |
| 3600P, W or X | 100–20K | 2.95 | 2.73 | 2.46 | 2.33 | 2.18 | 2.07 |
| 3610P, W or X | 100–20K | 3.55 | 3.31 | 3.02 | 2.85 | 2.58 | 2.51 |
| 3800P or K | 10–20K | 1.75 | 1.62 | 1.46 | 1.39 | 1.30 | 1.23 |
| 3805P or K | 50–500K | 1.92 | 1.77 | 1.64 | 1.53 | 1.43 | 1.34 |
| 3810P or K | 10–20K | 2.14 | 1.98 | 1.86 | 1.75 | 1.66 | 1.55 |
| 3811P or K | 50–20K | 2.94 | 2.77 | 2.59 | 2.44 | 2.31 | 2.16 |
| 3815P or K | 50–500K | 2.02 | 1.87 | 1.74 | 1.63 | 1.53 | 1.44 |
| 6034P, K or Y | 100–1 meg | 1.58 | 1.46 | 1.31 | 1.25 | 1.17 | 1.08 |
| 6203P or X | 100–1 meg | 1.75 | 1.62 | 1.46 | 1.39 | 1.30 | 1.23 |
| 6900P | 10–10K<br>20K<br>50K | 3.06<br>3.74<br>5.54 | 2.82<br>3.44<br>5.10 | 2.57<br>3.14<br>4.66 | 2.41<br>2.95<br>4.36 | 2.29<br>2.80<br>4.14 | 2.17<br>2.65<br>3.92 |
| 6905P | 50–5 megs | 3.83 | 3.50 | 3.28 | 3.12 | 2.95 | 2.76 |

★LARGER QUANTITY DISCOUNTS ON REQUEST

# BUNKER RAMO AMPHENOL Micropots, Microdials



## TEN-TURN PRECISION MICROPOTS

**Model 205:** Bushing mount. Power Rating, 5 watts max. at 40° C. Temperature Range, −55° C to +105° C. Linearity Tolerance (Zero-Based), ±0.1%. Resistance Tolerance, ±10% below 50 ohms; ±3%, 50 ohms and above. Size, 1¾″ dia. x 2⅛″ lg.; ¼″ dia. shaft. Standard Resistance: Specify 1.15, 2.9, 25, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 30K, 50K or 100K ohms.

**Model 2101B:** Bushing-servo mount. Power Rating, 5 watts max. at 40° C. Temperature Range, −55° C to +125° C. Linearity Tolerance, ±0.25%. Resistance Tolerance, ±5%, 25 and 50 ohms; ±3%, 100–100K ohms; ±5%, 120K ohms. Size, ⅞″ dia. x 1.448″ lg., bushing; ⅞″ dia. x 1.573″ lg., servo; ⅛″ dia. shaft. Standard Resistance: Specify 25, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 30K, 40K, 50K, 100K or 120K ohms.

**Model 2151B:** Bushing mount. Power Rating, 3 watts max. at 40° C. Temperature Range, −55° C to +105° C. Linearity Tolerance, ±0.25%. Resistance Tolerance, ±3%. Size, ⅞″ dia. x 1.455″ lg.; ¼″ dia. shaft. Standard Resistance: Specify 100, 500, 1K, 5K, 10K, 20K, 30K, 50K or 100K ohms.

**Model 2161B:** Same as Model 2151B, except bushing-servo mtg.; ⅛″ dia. shaft.

**Model 2201B:** Bushing mount. Power Rating, 5 watts max. at 40° C. Temperature Range, −55° C to +105° C. Linearity Tolerance, ±0.5% below 100 ohms, ±0.25%, 100–100K; ±0.5%, 200K. Resistance Tolerance, ±5%, 25 and 50 ohms; ±3%, 100–100K; ±5%, 200K. Size, 1¹³⁄₁₆″ dia. x 2⅛″ lg.; ¼″ dia. shaft. Standard Resistance: Specify 25, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 30K, 50K, 100K or 200K ohms.

**Model 2251B:** Bushing mount. Power Rating, 5 watts max. at 40° C. Temperature Range, −55° C to +105° C. Linearity Tolerance, ±0.5% below 100 ohms; ±0.25%, 100–100K; ±0.5%, 200K. Resistance Tolerance, ±5%, 25 and 50 ohms; ±3%, 100–100K; ±5%, 200K. Size, 1¹³⁄₁₆″ dia. x 2⅛″ lg.; ¼″ dia. shaft. Standard Resistance: Specify 25, 50, 100, 500, 1K, 2K, 5K, 10K, 30K, 50K, 100K or 200K ohms.

**Model 4101B:** Bushing mount. Power Rating, 2 watts max. at 40° C. Temperature Range, −55° C to +125° C. Linearity Tolerance, ±0.25%. Resistance Tolerance, ±5%. Size, ⅞″ dia. x 1.182″ lg.; ¼″ dia. shaft. Standard Resistance: Specify 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K or 100K ohms.

**Model 4301B:** Bushing-servo mount. Power Rating, 3 watts at 40° C. Temperature Range, −55° C to +105° C. Linearity Tolerance, ±0.25%. Resistance Tolerance, ±5%. Size, ⅞″ dia. x 1.455″ lg.; ¼″ dia. shaft. Standard Resistance: Specify 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K or 100K ohms.

**Model 4401B:** Bushing mount. Power Rating, 5 watts at 40° C. Temperature Range, −55° C to +105° C. Linearity Tolerance, ±0.5% below 100 ohms; ±0.25%, 100–100K ohms. Resistance Tolerance, ±5%. Size, 1¹³⁄₁₆″ dia. x 2⅛″ lg.; ¼″ dia. shaft. Standard Resistance: Specify 25, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K or 100K ohms.

**Model MF-78:** Bushing mount. Power Rating, 2 watts at 40° C. Temperature Range, −55° C to +85° C. Linearity Tolerance, ±0.2%. Resistance Tolerance, ±3%. Size, ⅞″ dia. x 1¼″ lg.; ¼″ dia. shaft. Standard Resistance: Specify 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K or 125K ohms.

## THREE-TURN PRECISION MICROPOT

**Model 205-3T:** 3-turn precision Micropot. Bushing mount. Power Rating, 3 watts at 40° C. Temperature Range, −55° C to +105° C. Linearity Tolerance, ±0.5%, zero-based. Resistance Tolerance, ±10%, 10 ohms; ±3%, 50–50K ohms. Size, 1¾″ dia. x 1³¹⁄₆₄″ lg.; ¼″ dia. shaft. Standard Resistance: Specify 10, 50, 100, 500, 1K, 5K, 10K, 20K, 30K or 50K ohms.

**Model 2131B:** Bushing-servo mount. Power Rating, 4 watts at 40° C. Temperature Range, −55° C to +125° C. Linearity Tolerance, ±0.5%. Resistance Tolerance, ±5%, 10–30 ohms; ±3%, 100–50K. Size, ⅞″ dia. x 0.930″ lg. bushing; ⅞″ dia. x 1.055″ lg., servo; ⅛″ dia. shaft. Standard Resistance: Specify 10, 30, 100, 200, 300, 500, 1K, 2K, 3K, 5K, 10K, 20K, 30K or 50K ohms.

## MICROPOT PRICES

Prices are for all resistance ranges.

| Amphenol Model | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250 Up |
| 205 | $19.42 | $18.42 | $17.48 | $16.48 | $15.54 | Prices on Request |
| 205-3T | 15.43 | 14.64 | 13.91 | 13.12 | 12.33 | |
| 2101B | 27.30 | 25.93 | 24.57 | 23.20 | 21.84 | |
| 2131B | 27.30 | 25.93 | 24.57 | 23.20 | 21.84 | |
| 2151B | 10.50 | 9.97 | 9.45 | 8.92 | 8.40 | |
| 2161B | 10.50 | 9.97 | 9.45 | 8.92 | 8.40 | |
| 2201B | 10.50 | 9.97 | 9.45 | 8.92 | 8.40 | |
| 2251B | 10.50 | 9.97 | 9.45 | 8.92 | 8.40 | |
| 4101B | 5.95 | 5.65 | 5.35 | 5.05 | 4.75 | |
| 4301B | 6.95 | 6.45 | 6.20 | 5.90 | 5.45 | |
| 4401B | 6.95 | 6.45 | 6.20 | 5.90 | 5.45 | |
| MF-78* | 6.50 | 6.20 | 5.85 | 5.55 | 5.20 | |
| MF-78† | 7.80 | 7.40 | 7.00 | 6.65 | 6.25 | |

*Resistance range, 100–20K ohms. †50–125K ohms.

## CONCENTRIC SCALE MICRODIALS®

**Type 1350:** Ten-turn concentric scale increment dial has 100 divisions; turns-counting dial numbered 0–10. Extra-large outer vernier dial and foolproof turns dial for readout accuracy of 1000:1. Smooth epicyclic gear movement. Zero backlash. Fingertip brake. Clear anodized aluminum finish. Size, 1¹¹⁄₁₆″ dia. x 1″ deep. For ¼″ dia. shafts.

**Type 1370:** Same as Type 1350, except size only ⅞″ dia. x .898″ deep. For ¼″ dia. shafts.

**Type DFA:** Ten-turn dial has 1000:1 indexing accuracy; couples directly to potentiometer shaft, hence no backlash. Single numeral in window above the knob indicates completed turns of shaft. Available in satin chrome finish **DFA-N** or with white numbers on black finish **DFA-NB.** Size, 1.06″ w. x 1.25″ h. (1.63″ h. with lock lever).

## DIGITAL READOUT MICRODIALS

**Type 1300:** Digital units for fast, accurate readings; indicates precise shaft position up to 1000 turns. Available in 3-digit 10-turn, 4-digit 100-turn, and 5-digit 1000-turn models with counts to 6000 per minute. Optional fingertip brakes. Knurled aluminum knobs; Cycolac* counter wheels. Rugged, dust-sealed case. Continuous rotation. Numbers ³⁄₁₆″ high. *Reg. TM Borg-Warner Corp.

| Amphenol Number | | No. Digits | No. Turns | Counts | Size, In. Dia. x Depth |
|---|---|---|---|---|---|
| Std. | With Brake | | | | |
| 1310 | 1309 | 3 | 10 | 000–999 | 1¹³⁄₁₆ x 1²¹⁄₃₂ |
| 1304 | 1314 | 4 | 100 | 0000–9999 | 2⅛ x 1²¹⁄₃₂ |
| 1305 | 1315 | 5 | 1000 | 00000–99999 | 2⅛ x 1²¹⁄₃₂ |

**Type 1330:** Ten-turn 3-digit units with on-off switchable brake and magnified digits for widest versatility. Internally illuminated. Lens type window gives 1½X magnification of digits. Snap-on cap for easy lamp replacement. Sealed against dust and moisture. Machined aluminum knob with fluted rim. Numbers ³⁄₁₆″ high. Size, 1¾″ dia. x 1²⁷⁄₃₂″ deep.

| No Light No. | White Light No. | Red Light No. | Std. Color |
|---|---|---|---|
| 1331 | 1331LW | 1331LR | Dark Gray |
| 1332 | 1332LW | 1332LR | Light Gray |
| 1333 | 1333LW | 1333LR | Red |
| 1334 | 1334LW | 1334LR | Black |
| 1335 | 1335LW | 1335LR | White |

**Type 1380:** Ten-turn dial has 1000:1 indexing accuracy; mounts to ¼″ potentiometer shaft with a single set screw. Control knob mounts directly to shaft to eliminate backlash inaccuracy; on-off brake switch. Available in black finish **1381** or in black with gray hammertone finish **1385.** Size, 1⁷⁄₆₄″ w. x 1.075″ d. x 1⁵¹⁄₆₄″ h.

**Type 3100:** Extremely precise, digital Microdial. Measures 1⅛″ x 1²¹⁄₃₂″ and protrudes only ²⁵⁄₃₂″ from panel. Digits (illumination optional) magnified by convex lens in recessed window. Three-digit 10-turn dial rotates continuously forward and backward with fingertip brake to lock settings. Indexing accuracy, 1000:1. For panels ⅛″ to ⅜″ thick. Natural brush aluminum finish. Illuminated types supplied with 28-volt bulb; optional 6-volt bulb available, specify.

| Amphenol Number | Shaft Dia. | Light | Amphenol Number | Shaft Dia. | Light |
|---|---|---|---|---|---|
| 3121 | ⅛″ | None | 3141 | ¼″ | None |
| 3121-2 | ⅛″ | White | 3141-2 | ¼″ | White |
| 3121-3 | ⅛″ | Red | 3141-3 | ¼″ | Red |

**Type DFD:** Ten-turn 3-digit readout with a vernier wheel providing 4 graduations intermediate between adjacent digits on the least significant digit counter wheel permits interpolating to 250 parts per million. Magnified digits and vernier scale for easy viewing. Size, less than 1″ wide and less than 2″ high.

## MICRODIAL PRICES

| Amphenol Model | Net Each, Lots of | | | | |
|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
| 1304 | $21.00 | $19.95 | $18.90 | $17.85 | $16.80 |
| 1305 | 22.57 | 21.42 | 20.31 | 19.16 | 18.06 |
| 1309 | 16.38 | 15.54 | 14.75 | 13.91 | 13.12 |
| 1310 | 15.22 | 14.43 | 13.70 | 12.91 | 12.18 |
| 1314 | 22.57 | 21.42 | 20.31 | 19.16 | 18.06 |
| 1315 | 25.20 | 23.94 | 22.68 | 21.42 | 20.16 |
| 1331-1335 | 19.42 | 18.42 | 17.48 | 16.48 | 15.54 |
| 1331LW–1335LW | 19.42 | 18.42 | 17.48 | 16.48 | 15.54 |
| 1331LR–1335LR | 19.42 | 18.42 | 17.48 | 16.48 | 15.54 |
| 1350 | 5.75 | 5.46 | 5.18 | 4.89 | 4.60 |
| 1370 | 6.50 | 6.17 | 5.85 | 5.53 | 5.20 |
| 1381, 1385 | 9.00 | 8.55 | 8.10 | 7.65 | 7.20 |
| 3121 | 13.65 | 12.96 | 12.28 | 11.60 | 10.92 |
| 3121-2, -3 | 15.40 | 14.61 | 13.88 | 13.05 | 12.32 |
| 3141 | 12.60 | 11.97 | 11.34 | 10.71 | 10.08 |
| 3141-2, -3 | 14.35 | 13.62 | 12.94 | 12.16 | 11.48 |
| DFA-N, DFA-NB | 4.50 | 4.25 | 4.05 | 3.80 | 3.60 |
| DFD | 9.00 | 8.50 | 8.00 | 7.60 | 7.20 |

# BOURNS TRIMPOT® Potentiometers

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## BOURNS® PART NUMBERING SYSTEM

Resistance tolerance given is standard; closer tolerances available. Standard resistance range given; special resistances available. Panel mount available with lead, lug or wire types as noted.

| 200, 3010 | L | 1 | 102 | M |
|---|---|---|---|---|
| **Basic Model** | **Terminal Style** | **Modifying Number** | **Resistance Code** | **Panel Mount** |
| Contains 3 or 4 digits | **L**—Insulated stranded leads<br>**J, S**—Solder lugs<br>**P, T**—Printed circuit pins<br>**H, W66, X**—PC pins, side-adjust<br>**R, W**—PC pins, top-adjust<br>**Y**—RJ11, RJ12, RT12 PC pins | **1**—Standard resistance<br>**2**—100K standard resistance | First 2 digits indicate significant numbers; 3rd digit indicates number of zeros | Available as noted |

## COMMERCIAL SINGLE-TURN POTENTIOMETERS

**Model 3359P**

**Model 3359W**

### CERMET MODEL 3359

Low TC, high power rating and wide temperature capability at a new low price. Excellent resistance stability under humid conditions. TC: 0 to +300 ppm/° C, 100 to 1K; 0 to +200 ppm/° C, 1K and up. Power Rating: 0.5 watt at 70° C. Operating Temperature: +125° C max. Tolerance: ±20%. Mechanical Rotation: 270°. Size: 0.375″ dia. x 0.228″ thk.

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 3359 | P | 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K, 1 meg | $0.95 | $0.85 | $0.75 | $0.70 | $0.65 | $0.60 |
| | | 20, 50, 2 megs | 1.05 | .94 | .83 | .77 | .72 | .67 |
| | W | 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K, 1 meg | .98 | .88 | .78 | .72 | .67 | .62 |
| | | 20, 50, 2 megs | 1.08 | .97 | .86 | .80 | .74 | .69 |

**Model 3389P**

**Model 3389T**

### CERMET MODEL 3389

New low cost in a potentiometer **sealed** for industrial process cleaning. TC: ±150 ppm/° C. Power Rating: 0.5 watt at 70° C. Operating Temperature: +125° C max. Tolerance: ±20%. Electrical Rotation: 280° nom. Size: 0.390″ x 0.360″ x 0.240″ high.

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 3389 | P<br>R<br>S<br>T<br>W | 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K, 1 meg, 2 megs | $0.76 | $0.70 | $0.65 | $0.63 | $0.60 | $0.56 |

**Model 3359W**

**Model 3305P**

### WIRE-WOUND MODEL 3305

Sealed to prevent contamination from fluxing, soldering and cleaning. Stops provided at each end of travel. Power Rating: 0.5 watt at 70° C. Abs. Min. Res.: 0.5 ohm to 1.0%. Operating Temperature: 125° C max. Tolerance: ±5%. Size: 5/16″ dia. x 3/16″ thk. (**P**): 5/16″ w. x 1/4″ d. x 3/8″ h. (**W**).

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 3305 | P | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K | $1.75 | $1.68 | $1.61 | $1.56 | $1.47 | $1.37 |
| | | 10K | 2.00 | 1.92 | 1.84 | 1.78 | 1.68 | 1.57 |
| | | 20K, 25K | 2.50 | 2.40 | 2.30 | 2.23 | 2.10 | 1.96 |
| | W | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K | 2.25 | 2.16 | 2.07 | 2.00 | 1.89 | 1.77 |
| | | 10K | 2.50 | 2.40 | 2.30 | 2.23 | 2.10 | 1.96 |
| | | 20K, 25K | 3.00 | 2.88 | 2.76 | 2.67 | 2.52 | 2.36 |

**Model 3305W**

### CERMET MODEL 3329

Single turn capable of meeting MIL-R-22097. Sealed to withstand any wave soldering and immersion cleaning process. TC: ±100 ppm/° C. Power Rating: 0.5 watt at 85° C. Abs. Min. Res.: 2 ohms. Operating Temperature: 150° C max. Tolerance: ±20%. Size: 0.250″ dia. x 0.180″ h. (**H, P**); 0.290″ dia. x 0.245″ h. (**W**).

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 3329 | H<br>P | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K, 1 meg | $1.75 | $1.66 | $1.57 | $1.50 | $1.45 | $1.40 |
| | W | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K, 1 meg | 2.50 | 2.38 | 2.25 | 2.15 | 2.07 | 2.00 |

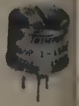
**Model 3329H**

## COMMERCIAL SINGLE-TURN POTENTIOMETERS (CONT'D)

### CERMET MODEL 3369

High power rating in small size. Replaces carbon element potentiometers for better temperature coefficient and stability under humid conditions. TC: ±150 ppm/° C. Power Rating: 1 watt at 125° C. Operating Temperature: 175° C max. Tolerance: ±10%. Size: 0.5″ dia. x 0.492″ h.

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 3369 | P | 100, 250, 500, 1K, 2.5K, 5K, 10K, 25K, 50K, 100K, 250K, 500K, 1 meg, 2.5 megs, 5 megs | $3.20 | $2.20 | $1.70 | $1.60 | $1.50 | $1.40 |
| | S | 100, 250, 500, 1K, 2.5K, 5K, 10K, 25K, 50K, 100K, 250K, 500K, 1 meg, 2.5 megs, 5 megs | 3.40 | 2.40 | 1.90 | 1.80 | 1.70 | 1.60 |


Model 3369P

Model 3369S

## COMMERCIAL MULTI-TURN POTENTIOMETERS

### CERMET MODEL 3339

Sealed to withstand wave soldering and immersion cleaning process; humidity meets MIL-STD-202. Four turns. TC: ±100 ppm/° C. Power Rating: 0.5 watt at 85° C. Operating Temperature: 150° C max. Tolerance: ±20%. Size: 0.30″ dia. x 0.25″ thk.

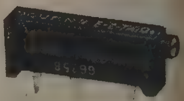
| Bourns Model | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|
| 3339P, 3339H | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K, 1 meg | $2.50 | $2.32 | $2.09 | $1.98 | $1.86 | $1.76 |

Model 3339P

### WIRE-WOUND E-Z TRIM® MODEL 3005

Humidity meets MIL-STD-202, Method 103. Self-locking adjustment screw; 20-turn screwdriver adjustment. Power Rating: 1.0 watt at 40° C. Abs. Min. Res.: 0.5% or 1.0 ohm, whichever is greater. Operating Temperature: 125° C max. Tolerance: ±10%. Size: 1 1/64″ w. x 5/16″ h. x 3/4″ lg.

| Bourns Model | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|
| 3005P | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 25K | $2.00 | $1.85 | $1.75 | $1.72 | $1.65 | $1.55 |
| | 50K | 2.40 | 2.22 | 2.10 | 2.06 | 1.98 | 1.86 |


Models 3005P, 3007P, 3009P

### CERMET E-Z TRIM® MODEL 3006

Low cost industrial model only 0.250″ high above the printed circuit board. TC: ±100 ppm/° C. Power Rating: 0.75 watt at 70° C. Operating Temperature: +125° C max. Tolerance: ±10%. Size: 0.75″ x 0.190″ x 0.250″ th.

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 3006 | P<br>W | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K 10K, 20K, 50K, 100K, 200K, 500K, 1 meg, 2 megs | $1.40 | $1.30 | $1.21 | $1.19 | $1.15 | $1.08 |

Model 3006W

### WIRE-WOUND E-Z-TRIM® MODEL 3007

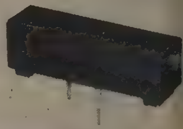
Humidity meets MIL-STD-202, Method 103. Self-locking adjustment screw; 20-turn screwdriver adjustment; welded terminations. Power Rating: 1.0 watt at 40° C. Abs. Min. Res.: 0.5% or 1.0 ohm, whichever is greater. Operating Temperature: 125° C. Tolerance: ±10%. Size: 1 1/64″ w. x 5/16″ h. x 3/4″ lg.

| Bourns Model | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|
| 3007P | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 25K | $1.75 | $1.62 | $1.46 | $1.39 | $1.30 | $1.23 |
| | 50K | 2.15 | 1.99 | 1.79 | 1.71 | 1.60 | 1.51 |

### CERMET E-Z TRIM® MODEL 3009

Wiper assembly idles at both ends; 20 turns nominal adjustment. TC: ±100 ppm/° C. Power Rating: 0.75 watt at 25° C. Abs. Min. Res.: 2.0% or 1 ohm, whichever is greater. Operating Temperature: 125° C max. Tolerance: ±10%. Size: 0.19″ w. x 0.35″ h. x 0.75″ lg.

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 3009 | P<br>Y | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K, 1 meg, 2 megs | $1.94 | $1.84 | $1.75 | $1.71 | $1.65 | $1.55 |


Models 3065P, 3067P

### WIRE-WOUND E-Z TRIM® MODEL 3065

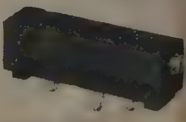
Meets steady-state humidity spec. Adjustment turns, 15 nom. Power Rating: 0.5 watt at 25° C. Operating Temperature: 85° C max. Tolerance: ±10%. Size: 0.29″ w. x 0.36″ h. x 1.0″ lg.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3065 | P<br>S | 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K | $2.00 | $1.85 | $1.67 | $1.58 | $1.48 | $1.41 |

### WIRE-WOUND E-Z-TRIM® MODEL 3067

Wiper assembly idles at both ends of travel; 15-turn screwdriver adjustment. Power Rating: 0.5 watt at 25° C. Abs. Min. Res.: 0–2.0%. Operating Temp.: 85° C max. Tol.: ±10%. Size: 9/32″ w. x 23/64″ h. x 1″ lg.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3067 | P<br>S | 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K | $1.85 | $1.71 | $1.54 | $1.46 | $1.37 | $1.30 |


Models 3065S, 3067S

# BOURNS TRIMPOT® Potentiometers

## COMMERCIAL MULTI-TURN POTENTIOMETERS (CONT'D)

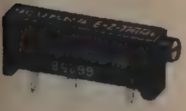
### CARBON E-Z-TRIM® MODEL 3068

**Model 3068P**

Stable infinite resolution carbon element. Self-locking adjustment screw: 15-turn screwdriver adjustment. Power Rating: 0.2 watt at 25° C. End Setting: 0–5% voltage ratio. Operating Temperature: 85° C max. Tolerance: ±20%. Size: $\frac{9}{32}$″ w. x $\frac{23}{64}$″ h. x 1″ lg.

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 3068 | P<br>S | 20K, 50K, 100K, 200K, 500K, 1 meg | $1.85 | $1.71 | $1.54 | $1.46 | $1.37 | $1.30 |

### CERMET E-Z TRIM® MODEL 3069



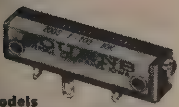
**Model 3069P**

MIL spec immersion seal; tinned pins for compatibility with automated and hand soldering methods; 20 turns nominal adjustment. TC: ±100 ppm/° C. Power Rating: 0.75 watt at 25° C. Abs. Min. Res.: 2% or 1 ohm, whichever is greater. Operating Temperature: 125° C max. Tolerance: ±10%. Size: 0.25″ w. x 0.35″ h. x 0.75″ lg.

| Bourns Model | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|
| 3069P | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K, 1 meg, 2 megs | $1.94 | $1.84 | $1.75 | $1.71 | $1.65 | $1.55 |

**Models 271L, 272L**

### WIRE-WOUND TRIMIT® MODELS 271, 273, 275

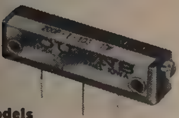


**Models 273S, 274S**

Ideal for industrial controls and lab type applications. Self-locking adjustment shaft; wiper assembly idles both ends; 25-turn screwdriver adjustment. Power Rating: 0.5 watt at 70° C. Abs. Min. Res.: 2.0%. Operating Temperature: 105° C max. Tolerance: ±10%. Size: $\frac{1}{4}$″ w. x $\frac{5}{16}$″ h. x 1$\frac{1}{4}$″ lg.

| Bourns Model | Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 271 | L | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K | $3.19 | $2.95 | $2.66 | $2.52 | $2.36 | $2.24 |
| 273 | S | 20K | 4.32 | 4.00 | 3.60 | 3.42 | 3.20 | 3.04 |
| 275 | P | 50K | 5.40 | 5.00 | 4.50 | 4.27 | 4.00 | 3.80 |
| Panel mount | | Available **271** or **273** model. Add to price | 1.10 | 1.02 | .92 | .87 | .82 | .77 |

### CARBON TRIMIT® MODELS 272, 274, 276



**Models 275P, 276P**

Infinite resolution Resistaloy® carbon element. Self-locking shaft; 25-turn adjustment. Power Rating: 0.2 watt at 25° C. End Setting: 0–5.0% voltage ratio. Operating Temperature: 105° C max. Tolerance: ±20%. Size: $\frac{1}{4}$″ w. x $\frac{5}{16}$″ h. x 1$\frac{1}{4}$″ lg.

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 272<br>274<br>276 | L<br>S<br>P | 5K, 10K, 20K, 50K, 100K, 200K, 500K, 750K, 1 meg, 2 megs, 5 megs | $3.78 | $3.50 | $3.15 | $2.99 | $2.80 | $2.66 |
| Panel mount | | Available **272** or **274** model. Add to price | 1.10 | 1.02 | .92 | .87 | .82 | .77 |

**Model 3255L Panel Mount**

### MODEL 3255

High temperature all-plastic case; 25-turn screwdriver adjustment. Power Rating: 1.0 watt at 50° C. End Settings: 0 to 0.1% or 0 to 0.5 ohm, whichever is greater. Operating Temperature: 150° C max. Tolerance: ±5%. Size: $\frac{1}{2}$″ sq. x $\frac{3}{16}$″ thk. (**L**); $\frac{7}{32}$″ thk. (**P** or **W**).

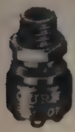
| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 3255 | L, P<br>W<br>W66 | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K | $3.19 | $2.95 | $2.66 | $2.52 | $2.36 | $2.24 |
| | | 20K, 25K | 4.32 | 4.00 | 3.60 | 3.42 | 3.20 | 3.04 |
| | | 50K | 4.78 | 4.43 | 3.98 | 3.78 | 3.54 | 3.36 |
| Panel mount | | Available **L** or **W** terminals. Add to basic price | 2.20 | 2.03 | 1.83 | 1.74 | 1.63 | 1.55 |

**Model 3099P**

### CERMET DUAL IN-LINE MODEL 3099

Sealed to meet MIL-R-22097 immersion requirements. Standard DIP size (TO-116) compatible with DIP automatic insertion equipment. TC: ±100 ppm/° C max. over entire temperature and resistance range. Power Rating: 0.75 watt at 25° C. Abs. Min. Res.: 2% or 1 ohm, whichever is greater. Mechanical Adjustment: 20 turns nominal. Operating Temperature: −55° C to +125° C. Size: 0.250″ w. x 0.190″ h. x 0.750″ lg.

| Bourns Model | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|
| 3099P | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K, 1 meg, 2 megs | $3.75 | $3.35 | $3.00 | $2.80 | $2.60 | $2.45 |



**Model 3300S**

## HIGH PERFORMANCE SINGLE-TURN POTENTIOMETER

### WIRE-WOUND MODEL 3300

Meets applicable portions of MIL-R-27208, MIL-E-5272C. Single-turn adjustment. Power Rating: 0.5 watt at 70° C. Abs. Min. Res.: 0.5 ohm or 1.0%, whichever is greater. Operating Temperature: 175° C max. Tolerance: ±5%. Size: $\frac{5}{16}$″ dia. x $\frac{3}{16}$″ h. (**P**); $\frac{1}{4}$″ w. x $\frac{3}{8}$″ h. (**W**); $\frac{15}{32}$″ h. (**S**, panel mount).

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 3300 | P or W | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K | $ 5.94 | $5.50 | $4.95 | $4.70 | $4.40 | $4.18 |
| | | 20K, 25K | 7.56 | 7.00 | 6.30 | 5.98 | 5.60 | 5.32 |
| | S | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K | 8.91 | 8.25 | 7.43 | 7.05 | 6.60 | 6.27 |
| | | 20K, 25K | 10.53 | 9.75 | 8.78 | 8.33 | 7.80 | 7.41 |

**Model 3300W**

**Model 3300P**

## HIGH-PERFORMANCE SINGLE-TURN POTENTIOMETERS (CONT.)

### CERMET MODEL 3322 (RJ50)

Meets or exceeds MIL-R-22097, Style RJ50. TC: ±100 ppm/° C. Power Rating: 0.5 watt at 85° C. Abs. Min. Res.: 1 ohm. Operating Temperature: −65° C to +175° C. Tol.: ±10%. Size: .25″ dia. x .22″ thk.

| Bourns Model | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|
| 3322P | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K, 1 meg | $5.50 | $5.22 | $4.90 | $4.66 | $4.35 | $4.13 |

### WIRE-WOUND MODEL 3365

Pins sealed for PC applications; single-turn adjustment; meets steady-state humidity. Available with thumb adjustment knob. Power Rating: 1.0 watt at 25° C max. Operating Temperature: 125° C max. Tolerance: ±5%. Size: ½″ dia. x 0.23″ thk. (**P**); 0.50″ w. x 0.59″ h. x 0.315″ thk. (**W**).

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 3365 | P | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K | $3.30 | $3.00 | $2.70 | $2.45 | $2.30 | $2.15 |
| | | 20K, 25K | 4.13 | 3.75 | 3.38 | 3.06 | 2.88 | 2.69 |
| | | 50K | 4.46 | 4.05 | 3.65 | 3.31 | 3.11 | 2.91 |
| | W | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K | 3.55 | 3.23 | 2.90 | 2.63 | 2.47 | 2.31 |
| | | 20K, 25K | 4.38 | 3.98 | 3.58 | 3.25 | 3.05 | 2.86 |
| | | 50K | 4.71 | 4.28 | 3.85 | 3.49 | 3.28 | 3.07 |

## HIGH PERFORMANCE MULTI-TURN POTENTIOMETERS

### HIGH TEMPERATURE HUMIDITY-PROOF TRIMPOT® MODEL 3059 (RJ12)

MIL spec immersion seal gives trouble free operation after PC board processes. Gold plated nickel pins for compatibility with automated and hand soldering methods. TC: ±100 ppm/° C max. over entire resistance and temperature range. Power Rating: 1.0 watt or 400 volts max. at 70° C. Abs. Min. Res.: 2 ohms max. Mechanical Adjustment: 22 ±5 turns. Oper. Temp: −55° C to +150° C. Size: 3⁄16″ w. x 5⁄16″ h. x 1¼″ lg.

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 3059 | J<br>L<br>P<br>Y | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K, 750K, 1 meg, 2 megs | $3.00 | $2.85 | $2.70 | $2.57 | $2.43 | $2.29 |
| Panel mount | | Available **J** or **L** terminals. Add to price | 1.10 | 1.02 | .92 | .87 | .82 | .77 |

### WIRE-WOUND MODEL 3057 (RT12)

MIL spec immersion seal. Meets all MIL spec tests for style RT12. Power Rating: 1.0 watt at 70° C. Operating Temperature: +125° C max. Tolerance: ±5%. Size: 1.25″ x 0.19″ x 0.32″ high.

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 3057 | J<br>L<br>P<br>Y | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K | $5.46 | $4.83 | $4.15 | $3.73 | $3.56 | $3.40 |
| | | 20K | 6.01 | 5.31 | 4.60 | 4.11 | 3.93 | 3.74 |
| | | 50K | 6.55 | 5.79 | 5.01 | 4.48 | 4.27 | 4.08 |
| | | 100K | 8.29 | 7.33 | 6.34 | 5.96 | 5.68 | 5.34 |

### WIRE-WOUND MODEL 200

Exceeds steady-state humidity of MIL-STD-202. Power Rating: 0.5 watt at 70° C. Abs. Min. Res.: 0.7% or 0.5 ohm, whichever is greater, 10 ohms to 50K; 5% for 100K. Operating Temperature: 105° C max. Tolerance: ±10%. Size: ¼″ w. x 5⁄16″ h. x 1¼″ lg.

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 200 | L<br>P<br>S | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K | $4.86 | $4.50 | $4.05 | $3.84 | $3.60 | $3.42 |
| | | 20K, 25K | 6.48 | 6.00 | 5.40 | 5.12 | 4.80 | 4.56 |
| | | 50K | 7.56 | 7.00 | 6.30 | 5.98 | 5.60 | 5.32 |
| | | 100K (**L** terminal only) | 9.18 | 8.50 | 7.65 | 7.26 | 6.80 | 6.46 |
| Panel mount | | Available **L** or **S** terminals. Add to basic price | 1.10 | 1.02 | .92 | .87 | .82 | .77 |

### CARBON MODEL 215

Excellent shock, vibration and acceleration stability. Stable wiper assembly idles at both ends; self-locking adjustment screw. Power Rating: 0.25 watt or 300 volts max. at 50° C. End Setting: 0–1.0% voltage ratio. Operating Temperature: 135° C max. Size: 5⁄16″ h. x ¼″ w. x 1¼″ lg.

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 215 | L<br>S<br>P | 5K, 10K, 20K, 50K, 100K, 200K, 500K, 750K, 1 meg, 2 megs, 5 megs | $4.86 | $4.50 | $4.05 | $3.84 | $3.60 | $3.42 |
| Panel mount | | Available **L** or **S** terminals. Add to basic price | 1.10 | 1.02 | .92 | .87 | .82 | .77 |

### WIRE-WOUND MODEL 236

Meets MIL-R-27208. Self-locking 25-turn screwdriver adjustment. Power Rating: 0.8 watt at 70° C. Abs. Min. Res.: 0.2% or 1.0 ohm, whichever is greater, 10 ohms to 1K; 0.1% for 2K–50K; 5% for 100K. Operating Temperature: 135° C max. Tolerance: ±10%. Size: 19⁄64″ w. x 23⁄64″ h. x 1 11⁄32″ lg.

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 236 | L<br>P<br>S | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K | $ 7.02 | $ 6.50 | $5.85 | $5.55 | $5.20 | $4.94 |
| | | 20K, 25K | 8.64 | 8.00 | 7.20 | 6.83 | 6.40 | 6.08 |
| | | 50K | 9.18 | 8.50 | 7.65 | 7.26 | 6.80 | 6.46 |
| | | 100K (**L** terminal only) | 11.34 | 10.50 | 9.45 | 8.97 | 8.40 | 7.98 |
| Panel mount | | Available **L** or **S** terminals. Add to basic price | 1.10 | 1.02 | .92 | .87 | .82 | .77 |

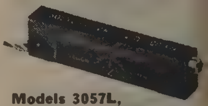
### WIRE-WOUND MODEL 260

Exceeds steady-state humidity requirements to MIL-STD-202. Power Rating: 1.0 watt at 70° C. Abs. Min. Res.: 0.2% or 0.5 ohm, whichever is greater, 10 ohms to 1K; 0.1% for 2K to 50K; 5% for 100K. Operating Temperature: 175° C max. Tolerance: ±10%. Size: ¼″ w. x 5⁄16″ h. x 1¼″ lg.

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 260 | L<br>P<br>S | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K | $5.94 | $5.50 | $4.95 | $4.70 | $4.40 | $4.18 |
| | | 20K, 25K | 7.56 | 7.00 | 6.30 | 5.98 | 5.60 | 5.32 |
| | | 50K | 8.10 | 7.50 | 6.75 | 6.41 | 6.00 | 5.70 |
| | | 100K (**L** terminal only) | 9.72 | 9.00 | 8.10 | 7.68 | 7.20 | 6.84 |
| Panel mount | | Available **L** or **S** terminals. Add to basic price | 1.10 | 1.02 | .92 | .87 | .82 | .77 |

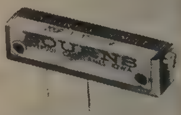
**Model 3322P**

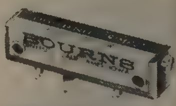
**Model 3365P**

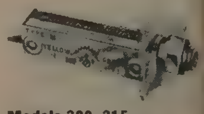

**Models 3057L, 3059L**

**Models 3057P, 3059P**

**Models 200L, 215L, 236L, 260L**


**Models 200P, 215P, 236P, 260P**


**Models 200S, 215S, 236S, 260S**


**Models 200, 215, 236, 260 Panel Mount**

## HIGH PERFORMANCE MULTI-TURN POTENTIOMETERS (CONT'D)

**Models 224L, 3051L, 3052L**

### WIRE-WOUND MODEL 224 (RT12)

Meets or exceeds all requirements of MIL-R-27208. Power Rating: 1.0 watt at 70° C. Abs. Min. Res.: 0.25% or 1.0 ohm, whichever is greater, 10 ohms to 200 ohms; 0.2% for 500 ohms to 2K; 0.01% for 5K to 50K; 5% for 100K. Operating Temperature: 175° C max. Tolerance: ±5%. Size: 3/16" w. x 5/16" h. x 1¼" lg.

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 224 | L<br>S<br>P | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K | $ 7.02 | $ 6.50 | $5.85 | $5.55 | $5.20 | $4.94 |
| | | 20K, 25K | 8.64 | 8.00 | 7.20 | 6.83 | 6.40 | 6.08 |
| | | 50K | 9.18 | 8.50 | 7.65 | 7.26 | 6.80 | 6.46 |
| | | 100K | 11.34 | 10.50 | 9.45 | 8.97 | 8.40 | 7.98 |
| Panel mount | | Available **L** or **S** terminals. Add to basic price | 1.10 | 1.02 | .92 | .87 | .82 | .77 |

**Models 224P, 3051P, 3052P**

### ULTRA-RELIABLE WIRE-WOUND MODEL 224-500 (RTR12)

Meets or exceeds all requirements of MIL-R-39015, Style RTR12. Power Rating: 0.5 watt at 70° C. Abs. Min. Res.: 0.2% or 1.0 ohm, whichever is greater, 100 ohms to 1K; 0.1% for 2K to 20K. Operating Temperature: 150° C max. Tolerance: ±5%. Size: 3/16" w. x 5/16" h. x 1¼" lg.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 224 | L-500<br>P-500 | 100, 200, 500, 1K, 2K, 5K, 10K | $14.58 | $13.50 | $12.15 | $11.53 | $10.80 | $10.26 |
| | | 20K | 16.20 | 15.00 | 13.50 | 12.81 | 12.00 | 11.40 |

### CARBON MODEL 3051 (RJ12)

Meets or exceeds all requirements of MIL-R-22097. High temperature all plastic case. Power Rating: 0.25 watt or 300 volts max. at 50° C. End Setting: 0–1.0% voltage ratio. Operating Temperature: 150° C max. Size: 3/16" w. x 5/16" h. x 1¼" lg.

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 3051 | L<br>S<br>P | 5K, 10K, 20K, 25K, 50K, 100K, 200K, 250K, 500K, 750K, 1 meg, 2 megs, 5 megs | $7.02 | $6.50 | $5.85 | $5.55 | $5.20 | $4.94 |
| Panel mount | | Available **L** or **S** terminals. Add to price | 1.10 | 1.02 | .92 | .87 | .82 | .77 |

**Models 224S, 3051S, 3052S**

### CERMET MODEL 3052 (RJ12)

Meets or exceeds all requirements of MIL-R-22097, Power Rating: 1.0 watt or 500 volts max. at 70° C. End Setting: 0.5 voltage ratio for 10–200 ohms; 0.1% voltage ratio for 500 ohms to 1 meg. Mechanica. Adjustment: 22 ±5 turns. Operating Temperature: −65° C to +175° C. Size: 3/16" w. x 5/16" h. x 1¼" lg

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3052 | L<br>P<br>S | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K, 750K, 1 meg | $5.94 | $5.50 | $4.95 | $4.70 | $4.40 | $4.18 |
| Panel mount | | Available **L** or **S** terminals. Add to price | 1.10 | 1.02 | .92 | .87 | .82 | .77 |

**Models 3010L, 3012L**

### WIRE-WOUND MODEL 3010 (RT11)

Meets MIL-R-27208. Sealed against humidity, liquids and potting compounds. Power Rating: 1.0 watt at 70° C. Abs. Min. Res.: 0.2% or 0.5 ohm, whichever is greater, 10 ohms to 1K; 0.1% for 2K to 50K; 5.0% for 100K. Operating Temperature: 175° C max. Tolerance: ±5%. Size: 9/32" w. x 5/16" h. x 1¼" lg.

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 3010 | L<br>P | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K | $ 7.02 | $ 6.50 | $5.85 | $5.55 | $5.20 | $4.94 |
| | | 20K, 25K | 8.64 | 8.00 | 7.20 | 6.83 | 6.40 | 6.08 |
| | | 50K | 9.18 | 8.50 | 7.65 | 7.26 | 6.80 | 6.46 |
| | | 100K | 11.34 | 10.50 | 9.45 | 8.97 | 8.40 | 7.98 |
| Panel mount | | Available **L** terminal. Add to basic price | 1.10 | 1.02 | .92 | .87 | .82 | .77 |

**Models 3010P, 3012P**

### CERMET MODEL 3012 (RJ11)

Meets or exceeds requirements of MIL-R-22097. Power Rating: 1.0 watt or 500 volts max. at 70° C. End Setting: 0.5% voltage ratio for 10–200 ohms; 0.1% voltage ratio for 500 ohms to 1 meg. Mechanical Adjustment: 22 ±5 turns. Operating Temperature: −65° C to +175° C. Size: 9/32" w. x 5/16" h. x 1¼" lg.

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 3012 | L<br>P | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K, 750K, 1 meg | $5.94 | $5.50 | $4.95 | $4.70 | $4.40 | $4.18 |
| Panel mount | | Available **L** terminal. Add to price | 1.10 | 1.02 | .92 | .87 | .82 | .77 |

**Models 3010, 3012 Panel Mount**

### WIRE-WOUND MODEL 3250 (RT22)

Humidity-proof; sealed in high-temperature plastic case. Power Rating: 1.0 watt at 70° C. Abs. Min. Res.: 0.1% or 1.0 ohm, whichever is greater. Operating Temperature: 175° C max. Tolerance: ±5%. Size: ½" sq. x 3/16" thk. (**L**); 7/32" thk. (**P, W** or **W66**).

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 3250 | L | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K | $ 6.71 | $6.22 | $5.59 | $5.31 | $4.97 | $4.72 |
| | | 20K, 25K | 7.56 | 7.00 | 6.30 | 5.98 | 5.60 | 5.32 |
| | | 50K | 10.00 | 9.27 | 8.34 | 7.91 | 7.41 | 7.04 |
| | P<br>W<br>W66 | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K | 7.23 | 6.69 | 6.02 | 5.71 | 5.35 | 5.08 |
| | | 20K, 25K | 7.97 | 7.38 | 6.64 | 6.30 | 5.90 | 5.61 |
| | | 50K | 10.53 | 9.75 | 8.78 | 8.33 | 7.80 | 7.41 |
| Panel mount | | Available **L** or **W** terminals. Add to basic price | 2.20 | 2.03 | 1.83 | 1.74 | 1.63 | 1.55 |

**Model 3250L Panel Mount**

### HIGH RELIABILITY WIRE-WOUND MODEL 3250-501 (RTR22)

Incorporates the inherent reliability, performance and configuration of the field-proven Model 3250. Power Rating: 0.5 watt at 70° C. Abs. Min. Res.: 0.1% or 1.0 ohm, whichever is greater. Operating Temperature: 150° C max. Tolerance: ±5%. Size: ½" sq. x 3/16" thk. (**L**); 7/32" thk. (**P** or **W**).

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3250 | L-501<br>P-501<br>W-501<br>X-501 | 100, 200, 500, 1K, 2K, 5K, 10K | $13.50 | $12.50 | $11.25 | $10.68 | $10.00 | $ 9.50 |
| | | 20K | 14.58 | 13.50 | 12.15 | 11.53 | 10.80 | 10.26 |

# HIGH PERFORMANCE MULTI-TURN POTENTIOMETERS (CONT'D)

## ½" SQUARE CERMET MODEL 3252 (RJ22)

Meets or exceeds requirements of MIL-R-22097, Style RJ22, Char. C. TC: ±100 ppm/° C max. over entire temperature and resistance range. Power Rating: 1.0 watt or 400 volts max. at 70° C. Abs. Min. Res.: 1 ohm, all resistances. Mechanical Adjustment: 22 turns nominal. Operating Temperature: −65° C to +150° C. Size: ½" sq. x 3⁄16" h. (**L**); 7⁄32" h. (**P, W** and **X**).

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
| 3252 | L<br>P<br>W<br>X | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 25K, 50K, 100K, 200K, 500K, 1 meg, 2 megs | $5.62 | $5.35 | $5.06 | $4.77 | $4.50 | $4.05 |
| Panel mount | | Available **L** or **W** terminals. Add to price | 2.20 | 2.03 | 1.83 | 1.74 | 1.63 | 1.55 |

## ⅜" SQUARE WIRE-WOUND MODEL 3280

Meets or exceeds requirements of MIL-R-27208. All plastic case provides sealing against liquids and potting compounds plus reliable moisture resistance. Power Rating: 1.0 watt at 70° C. Absolute Min. Res.: 0.1% or 1.0 ohm, whichever is greater. Operating Temperature: 175° C max. Tolerance: ±5%. Size: ⅜" sq. x 13⁄16" thk.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3280 | L<br>P<br>W<br>W66 | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K | $7.56 | $7.00 | $6.30 | $5.98 | $5.60 | $5.32 |
| | | 20K, 25K | 9.18 | 8.50 | 7.65 | 7.26 | 6.80 | 6.46 |
| | | 50K | 9.72 | 9.00 | 8.10 | 7.69 | 7.20 | 6.84 |
| Panel mount | | Available **L** or **W** terminals. Add to basic price | 2.20 | 2.03 | 1.83 | 1.74 | 1.63 | 1.55 |

## ⅜" SQUARE CARBON MODEL 3281

Meets or exceeds MIL-R-22097 requirements. All plastic case; positive end stops at both ends of travel; sealed against liquids and potting compounds. Power Rating: 0.5 watt or 300 volts max. at 50° C. End Setting: 0–1.0% voltage ratio. Operating Temperature: 150° C max. Size: ⅜" sq. x 13⁄64" thk.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3281 | L<br>P<br>W<br>W66 | 20K, 50K, 100K, 200K, 500K, 750K, 1 meg | $7.56 | $7.00 | $6.30 | $5.98 | $5.60 | $5.32 |
| Panel mount | | Available **L** terminal. Add to basic price | 2.20 | 2.03 | 1.83 | 1.74 | 1.63 | 1.55 |

## ⅜" SQUARE CERMET MODEL 3282

Meets applicable requirements of MIL-R-22097. Stacking tabs for alignment and anti-rotation locking. TC: ±150 ppm/° C. Power Rating: 1.0 watt or 500 volts max. at 70° C. End Settings: ±0.5% voltage ratio for 10–200 ohms; ±0.1% voltage ratio for 500 ohms to 1 meg. Mechanical Adjustment: 25 turns nominal. Operating Temperature: −65° C to +175° C. Size: ⅜" sq. x 13⁄64" thk.

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
| 3282 | H<br>L<br>P<br>W | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 25K, 50K, 100K, 200K, 500K, 750K, 1 meg | $6.50 | $6.18 | $5.85 | $5.72 | $5.52 | $5.18 |
| Panel mount | | Available **H, L, W** terminals. Add to price | 2.20 | 2.03 | 1.83 | 1.74 | 1.63 | 1.55 |

## ⅜" SQUARE WIRE-WOUND MODEL 3290 (RT24)

Meets or exceeds MIL-R-27208. All plastic case provides sealing against liquids and potting; positive end stops; reliable moisture resistance. Power Rating: 1.0 watt at 70° C. Abs. Min. Res.: 0.1% or 1.0 ohm, whichever is greater. Operating Temperature: 175° C max. Tolerance: ±5%. Size: ⅜" sq. x 0.145" thk. (**L**); 0.150" thk. (**P**); .375" w. x .390" d. x .145" thk. (**H, W**).

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3290 | H<br>L<br>P<br>W | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K | $ 7.33 | $6.79 | $6.11 | $5.80 | $5.43 | $5.16 |
| | | 20K, 25K | 8.75 | 8.10 | 7.30 | 6.92 | 6.48 | 6.16 |
| | | 50K | 10.10 | 9.35 | 8.42 | 7.99 | 7.48 | 7.11 |
| Panel mount | | Available **H, L, W** terminals. Add to price | 2.20 | 2.03 | 1.83 | 1.74 | 1.63 | 1.55 |

## ⅜" SQUARE CERMET MODEL 3292 (RJ24)

Meets or exceeds MIL-R-22097, Char. C, Style RJ24. TC: ±100 ppm/° C over entire temperature and resistance range. Power Rating: 0.5 watt or 400 volts maximum at 85° C. Abs. Min. Res.: 1 ohm, all resistances. Mechanical Adjustment: 22 turns nominal. Operating Temperature: −65° C to +175° C. Size: 0.375" sq. x 0.150" thk.

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
| 3292 | L<br>P<br>W<br>X | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 25K, 50K, 100K, 200K, 500K, 1 meg | $6.50 | $6.18 | $5.85 | $5.72 | $5.52 | $5.18 |
| Panel mount | | Available **L** or **W** terminals. Add to price | 2.20 | 2.03 | 1.83 | 1.74 | 1.63 | 1.55 |

## ¼" SQUARE WIRE-WOUND MODEL 3260 (RT26)

All plastic case provides positive end stops at both ends of travel; sealing against liquids and potting compounds. Clutch action wiper. Power Rating: 0.2 watt at 70° C. Abs. Min. Res.: 0.1% or 1.0 ohm, whichever is greater. Operating Temperature: 175° C max. Tolerance: ±5%. Size: ¼" sq. x 11⁄64" h.

| Bourns Model | Specify Terminal | Resistance Range, Ohms | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
| 3260 | H<br>W | 10, 20, 50, 100, 200, 500, 1K | $ 7.50 | $ 6.95 | $6.25 | $5.93 | $5.56 | $5.28 |
| | | 2K, 5K | 8.25 | 7.64 | 6.88 | 6.53 | 6.11 | 5.81 |
| | | 10K, 20K | 10.50 | 9.72 | 8.75 | 8.31 | 7.78 | 7.39 |
| | | 25K | 11.00 | 10.19 | 9.17 | 8.70 | 8.15 | 7.74 |

## ¼" SQUARE CERMET MODEL 3262 (RJ26)

Meets or exceeds requirements of MIL-R-22097, Style RJ26. TC: ±100 ppm/° C max. over entire temperature and resistance range. Power Rating: .25 watt at 85° C. Abs. Min. Res.: 1 ohm, all resistances. Mechanical Adjustment: 12 ±2 turns. Oper. Temp.: −65° C to +175° C. Size: 0.250" sq. x 0.170" thk.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3262 | P<br>W<br>X | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 25K, 50K, 100K, 200K, 250K, 500K, 1 meg | $7.00 | $6.50 | $5.84 | $5.55 | $5.20 | $4.94 |

Model 3252P

Model 3280P

Model 3281L

Model 3281P

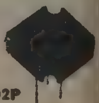
Model 3281W

Model 3282H

Model 3290L

Model 3290P

Model 3292L


Model 3292P

Models 3260H, 3262X

Models 3260W, 3262W

# BOURNS INC TRIMPOT® Potentiometers

## HIGH PERFORMANCE MULTI-TURN POTENTIOMETERS (CONT'D)

Model 3000P

### WIRE-WOUND MODEL 3000

Conforms to MIL-R-27208 humidity, shock, vibration, etc. Plastic case unaffected by normal flux, solvents or cleaning compounds. Power Rating: 0.5 watt at 70° C. Abs. Min. Res.: 0.1% or 1.0 ohm, whichever is greater. Operating Temperature: 175° C max. Tolerance: ±10%. Size: 5/32" w. x 5/16" h. x 3/4" lg.

| Bourns Model | Resistance Range, Ohms | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
| 3000P | 50, 100, 200, 500, 1K, 2K, 5K, 10K | $ 9.72 | $ 9.00 | $8.10 | $7.68 | $7.20 | $6.84 |
| | 20K | 10.80 | 10.00 | 9.00 | 8.54 | 8.00 | 7.60 |

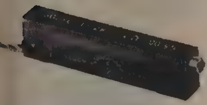
Model 3082P

### MICROMINIATURE CERMET MODEL 3082

Meets or exceeds applicable requirements of MIL-R-22097. TC: ±100 ppm/° C max. over entire temperature and resistance range. Power Rating: 0.3 watt at 85° C. Abs. Min. Res.: 2 ohms max. Mechanical Adjustment: 10 turns nominal. Oper. Temp: −65° C to +150° C. Size: 0.100" w. x 0.150" h. x 0.500" lg.

| Bourns Model | Resistance Range, Ohms | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
| 3082P | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K, 750K, 1 meg, 2 megs | $7.70 | $7.13 | $6.42 | $6.09 | $5.71 | $5.42 |

## MIL-SPEC ADJUSTMENT POTENTIOMETERS


Types RJ11CL, RT11C2L

Type RJ11CP

Types RT12, RTR12

### WIRE-WOUND MIL-R-27208 POTENTIOMETERS

| MIL Type | Resistance Range, Ohms | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
| RT11C2L,<br>RT11C2P | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K | $5.56 | $5.13 | $4.71 | $4.34 | $4.03 | $3.79 |
| | 20K | 6.11 | 5.64 | 5.18 | 4.77 | 4.43 | 4.17 |
| RT12C2L,<br>RT12C2P,<br>RT12C2Y | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K | 5.56 | 5.13 | 4.71 | 4.34 | 4.03 | 3.79 |
| | 20K | 6.11 | 5.64 | 5.18 | 4.77 | 4.43 | 4.17 |
| RT22C2L | 50, 100, 200, 500, 1K, 2K, 5K, 10K | 5.27 | 5.01 | 4.74 | 4.48 | 4.22 | 3.95 |
| | 20K | 5.75 | 5.46 | 5.18 | 4.89 | 4.60 | 4.31 |
| RT22C2P,<br>RT22C2W,<br>RT22C2X | 50, 100, 200, 500, 1K, 2K, 5K, 10K | 4.72 | 4.48 | 4.25 | 4.01 | 3.78 | 3.54 |
| | 20K | 5.20 | 4.94 | 4.68 | 4.42 | 4.16 | 3.90 |
| RT24C2L,<br>RT24C2P,<br>RT24C2W,<br>RT24C2X | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K | 7.33 | 6.79 | 6.11 | 5.80 | 5.43 | 5.16 |
| RT26C2W,<br>RT26C2X | 10, 20, 50, 100, 200, 500, 1K | 7.50 | 6.95 | 6.25 | 5.93 | 5.56 | 5.28 |
| | 2K, 5K | 8.25 | 7.64 | 6.88 | 6.53 | 6.11 | 5.81 |

### WIRE-WOUND MIL-R-39015 POTENTIOMETERS

Failure rate level M.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| RTR12DL,<br>RTR12DP | 500, 1K, 2K, 5K, 10K | $19.78 | $18.32 | $16.49 | $15.65 | $14.66 | $13.93 |
| | 20K | 21.40 | 19.82 | 17.84 | 16.93 | 15.86 | 15.07 |
| RTR22DL<br>RTR22DP<br>RTR22DW<br>RTR22DX | 500, 1K, 2K, 5K, 10K | 11.75 | 10.85 | 9.72 | 9.40 | 8.87 | 8.39 |
| | 20K | 13.41 | 12.38 | 11.10 | 10.73 | 10.13 | 9.58 |
| RTR24DP,<br>RTR24DW,<br>RTR24DX | 500, 1K, 2K, 5K, 10K | 8.66 | 8.02 | 7.22 | 6.85 | 6.42 | 6.10 |

Type RJ22

Type RJ24, RTR24

Type RJ26

Type RJ50

### MIL-R-22097 POTENTIOMETERS

| MIL Type | Resistance Range, Ohms | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
| RJ11CL,<br>RJ11CP | 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 25K, 50K, 100K, 250K, 500K, 1 meg | $5.94 | $5.22 | $4.95 | $4.84 | $4.66 | $4.38 |
| RJ12CL,<br>RJ12CP,<br>RJ12CY | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 25K, 50K, 100K, 250K, 500K, 1 meg | 5.94 | 5.22 | 4.95 | 4.84 | 4.66 | 4.38 |
| RJ22CL,<br>RJ22CP,<br>RJ22CW,<br>RJ22CX | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 25K, 50K, 100K, 250K, 500K, 1 meg | 6.25 | 5.94 | 5.63 | 5.30 | 5.00 | 4.50 |
| RJ24CL,<br>RJ24CP,<br>RJ24CW,<br>RJ24CX | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 25K, 50K, 100K, 250K, 500K, 1 meg | 6.50 | 6.18 | 5.85 | 5.72 | 5.52 | 5.18 |
| RJ26CW,<br>RJ26CX | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 25K, 50K, 100K, 250K, 500K, 1 meg | 7.00 | 6.50 | 5.84 | 5.55 | 5.20 | 4.94 |
| RJ50CP | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 25K, 50K, 100K, 250K, 500K | 5.50 | 5.22 | 4.90 | 4.66 | 4.35 | 4.13 |

Type RV6N

### MOLDED CARBON MIL-R-94C POTENTIOMETER

| MIL Type | Resistance Range, Ohms | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-9 | 10-49 | 50-99 | 100-249 | 250-499 |
| RV6NAYSD( )A | 100, 250, 500, 1K, 2.5K, 5K, 10K, 25K, 50K, 100K, 250K, 500K | $4.10 | $3.65 | $2.19 | $1.90 | $1.61 |
| RV6NAYSD( )B | 1 megohm | 4.10 | 3.65 | 2.19 | 1.90 | 1.61 |
| RV6LAYSA( )A | 100, 250, 500, 1K, 2.5K, 5K, 10K, 25K, 50K, 100K, 250K, 500K | 4.15 | 3.70 | 2.33 | 2.02 | 1.71 |
| RV6LAYSA( )B | 1 megohm | 4.15 | 3.70 | 2.33 | 2.02 | 1.71 |

*See following page for commercial equivalent, Model 3861 and illustrations.

# TRIMPOT® POTENTIOMETERS AND MOUNTING HARDWARE

## PANEL MOUNTED POTENTIOMETERS

### CERMET ELEMENT SINGLE TURN POTENTOMETERS

Single turn potentiometers for panel mounting. Resistance Tolerance: ±10%; ±5% available. Tapers: Linear; 10% CW or 10% CCW. Contact Resistance Variation: ±3% max. of total resistance. TC: ±150 ppm/° C. High Performance Models meet or exceed applicable requirements of MIL-R-94 and MIL-R-23285. **High Performance Model 3852:** Housing ¾" dia. x ¼" lg. Resistance Range: 50 ohms to 5 megs, linear taper; 1K to 2.5 megs, CW and CCW taper. Power Rating: 2 watts at 70° C, linear; 1 watt, CW and CCW taper. Operating Temperature: −65° C to +150° C. **Commerical Model 3859:** Same except Operating Temperature Range −65° C to +125° C. **High Performance Model 3862:** Housing ½" dia. by .453" lg. Resistance Range: 100 ohms to 5 megs, linear taper; 500 ohms to 2.5 megs, CW and CCW tapers. Power Rating: 1 watt at 125° C, linear taper; 0.5 watt, CW and CCW taper. Operating Temperature Range: −65° C to +175° C. All models supplied with hardware; other shaft lengths available. Types with locking bushings supplied with lock nut. Specify: Plain round, screwdriver slot, round with flat shaft; solder lugs or PC terminals; resistance; and linear, CW or CCW taper.

Model 3852E

Model 3859B

Model 3862C

Model 3862E

| Bourns Model | Bushing | | Shaft Dia. | Standard Shaft Lgth. | | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Style | Lgth. | | Min. | Max. | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
| 3852A | ⅜-32 UNEF | ⅜" | ¼" | ½" | ⅞" | $2.40 | $2.14 | $2.09 | $1.99 | $1.56 | $1.23 |
| 3852B | ⅜-32 UNEF locking | ½" | ¼" | ⅝" | ⅞" | 2.80 | 2.49 | 2.44 | 2.32 | 1.82 | 1.43 |
| 3852C | ¼-32 UNEF | ¼" | ⅛" | ⅜" | ⅞" | 2.50 | 2.23 | 2.18 | 2.08 | 1.63 | 1.28 |
| 3852E | ¼-32 UNEF locking | ⅜" | ⅛" | ½" | ⅞" | 2.80 | 2.49 | 2.44 | 2.32 | 1.82 | 1.43 |
| 3859A | ⅜-32 UNEF threaded plastic | ⅜" | ¼" | ½" | ⅞" | 1.95 | 1.74 | 1.70 | 1.62 | 1.27 | 1.00 |
| 3859B | Plastic snap-in | ¼" | ¼" | ⅜" | ⅞" | 1.85 | 1.65 | 1.61 | 1.54 | 1.20 | .95 |
| 3862C | ¼-32 UNEF-2A | ¼" | ⅛" | ⅜" | ⅞" | 4.20 | 3.95 | 3.80 | 3.40 | 2.20 | 1.70 |
| 3862E | ¼-32 UNEF-2A locking | ½" | ⅛" | ⅝" | ...... | 4.60 | 4.32 | 4.16 | 3.68 | 2.54 | 1.85 |

### MODEL 3861 (RV6) HOT MOLDED CARBON ELEMENT POTENTIOMETER

Miniature, ½" dia., single turn, variable resistor available as listed on DESC QPL for MIL-R-94, Style RV6. Resistance Tolerance: ±10%, 100 to 500K ohms; ±20% to 5 megohms. Power Rating: ½ watt at 70° C, 350 volts max. Operating Temperature Range: −55° C to +120° C. Size: ½" dia. x .688" lg. over body and solder lug terminals. All shafts screwdriver slotted.

Model 3861C (RV6N)

Model 3861E (RV6L)

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3861C | ¼-32 UNEF-2A | ¼" | ⅛" | ⅜" | ⅞" | $4.10 | $3.65 | $3.65 | $2.19 | $1.90 | $1.61 |
| 3861E | ¼-32 UNEF-2A locking | ½" | ⅛" | ⅝" | ...... | 4.15 | 3.70 | 3.70 | 2.33 | 2.02 | 1.71 |

### PANEL MOUNTED POTENTIOMETER NUMBERING SYSTEM

XXXX X XX 2 XXX A

| Model | Bushing | | | Shaft Length from Mounting Surface | | | |
|---|---|---|---|---|---|---|---|
| | Style | Lg. | Shaft Dia. | Min. Std.* | Code† | Max. Std. | Code† |
| 3852 | A | ⅜" | ¼" | ½" | 16 | ⅞"<br>2" | 28<br>64 |
| 3852 | B | ½" | ¼" | ⅝" | 20 | ⅞ | 28 |
| 3852 | C | ¼" | ⅛" | ⅜" | 12 | ⅞" | 28 |
| 3852 | E | ⅜" | ⅛" | ½" | 16 | ⅞" | 28 |
| 3859 | A | ⅜" | ¼" | ½" | 16 | ⅞"<br>2" | 28<br>64 |
| 3859 | B | ¼" | ¼" | ⅜" | 12 | ⅞" | 28 |
| 3861 | C | ¼" | ⅛" | ⅜" | 12 | ⅞" | 28 |
| 3861 | E | ½" | ⅛" | ⅝" | 20 | | |
| 3862 | C | ¼" | ⅛" | ⅜" | 12 | ⅞" | 28 |
| 3862 | E | ½" | ⅛" | ⅝" | 20 | | |

*This standard is also the minimum shaft length available for this model. †The shaft length numbering code is based on $\frac{1}{32}$" increments; thus, a 1" long shaft FMS is ordered by code 32.

Shaft lengths other than those listed above are available at no extra charge in ⅛" increments from the minimum in table above to 1½" FMS on all models except 3852A and 3859A which can be obtained with shafts 2" FMS at no extra charge. There is an extra charge for all other shaft lengths.

2: Screwdriver slot. Other shaft endings available.

Solder lug terminals.

Resistance Code

| Resistance Ohms | Part No. | Resistance Ohms | Part No. |
|---|---|---|---|
| 50 | 500 | 25K* | 253 |
| 100* | 101 | 35K | 353 |
| 150 | 151 | 50K* | 503 |
| 200 | 201 | 75K | 753 |
| 250* | 251 | 100K* | 104 |
| 350 | 351 | 150K | 154 |
| 500* | 501 | 200K | 204 |
| 750 | 751 | 250K* | 254 |
| 1,000* | 102 | 350K | 354 |
| 1,500 | 152 | 500K* | 504 |
| 2,000 | 202 | 750K | 754 |
| 2,500* | 252 | 1,000K* | 105 |
| 3,500 | 352 | 1,500K | 155 |
| 5,000* | 502 | 2,000K | 205 |
| 7,500 | 752 | 2,500K | 255 |
| 10,000 | 103 | 3,500K | 355 |
| 15,000 | 153 | 5,000K | 505 |
| 20,000 | 203 | | |

*Standard resistances for all models. All resistances in this table are available for Models 3852 and 3859.

A: Linear taper ±10% resistance tolerance. Other tapers available.

## STAINLESS STEEL POTENTIOMETER MOUNTING HARDWARE, ACCESSORIES

| Bourns Model | For use on Bourns Potentiometer Models | Description | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-24 | 25-99 | 100 Up |
| H-01 | All | #2-56 x 1½" lg. rd. head machine screw | 2c | .......... | .......... |
| H-02 | All | #2-56 x 12" lg. threaded rod stock | 80c | .......... | .......... |
| H-03 | All | #2-56 hex nut for H-01 screws | 3c | .......... | .......... |
| H-04-01 | 3250, 3251, 3255, 3280, 3281 | #1-72 x 1" lg. rd. head machine screw | 3c | .......... | .......... |
| H-04-02 | 3250, 3251, 3255, 3280, 3281 | #1-72 x ⅝" lg. rd. head machine screw | 3c | .......... | .......... |
| H-05 | 3250, 3251, 3255, 3280, 3281 | #1-72 hex nut for H-04 screws | 5c | .......... | .......... |
| H-06 | 3250, 3251, 3255, 3280, 3281 | #1 lockwasher for H-04 and H-05 | 2c | .......... | .......... |
| H-11E | 200, 207, 208, 209, 215, 224, 235, 236, 260, 271, 272, 273, 274, 3010, 3011, 3012, 3020, 3051, 3052, 3053 | End mtg. bracket for 1" mtg. centers | 20c | 15c | 10c |
| H-12S | Same as for H-11E | Side mtg. bracket for 1" mtg. centers | 20c | 15c | 10c |
| H-13P | 271, 272, 273, 274 | Panel clip mtg. bracket for 1" centers | 20c | 15c | 10c |
| H-15S | 3067, 3068 | Side mtg. bracket for .830" centers | 20c | 15c | 10c |
| H-21E | 220 | End mtg. bracket for ¾" centers | 20c | 15c | 10c |
| H-22S | 220 | Side mtg. bracket for ¾" centers | 20c | 15c | 10c |
| H-24 | 3250, 3251, 3255 | Threaded mounting strap for .320" ctrs. | 25c | 20c | 15c |
| H-25 | 3250, 3251, 3255 | Stack mtg. strap for .520" mtg. ctr. units | 5c | 4c | 3c |
| H-26S | 3250, 3251, 3255 | Side mtg. bracket for .520" mtg. crt. units | 20c | 15c | 10c |
| H-81 | 200, 207, 208, 209, 215, 235, 236, 260, 271, 272, 273, 274, 3010, 3011, 3012, 3020 | Panel mount seal washer | 16c | 14c | 12c |
| H-82 | 220, 224, 3051, 3052, 3053 | Panel mount seal washer | 16c | 14c | 12c |
| H-90 | All | Screwdriver with clip | 35c | 30c | 25c |

# BOURNS TRIMPOT® Potentiometers

A

## BUSHING MOUNT PRECISION POTENTIOMETERS

Lockwasher and mounting nut supplied. Standard resistance range given; special resistances available. Resistance Code: First 2 digits indicate significant Nos.; 3rd digit number of zeros, e.g., 101 = 100 ohms.

### 10-TURN 1-13/16″ DIAMETER MODEL 3400 (FIG. A)

High temperature, moisture resistant, thermosetting plastic housing. Exceeds humidity cycling requirements of MIL-R-12934. Shaft supported front and rear by sleeve bearings. Power Rating: 5.0 watts at 40° C. Abs. Min. Res.: 1.0 ohm or 0.15%, whichever is greater. Independent Linearity: ±0.15% max. Operating Temperature: 105° C max. Resistance Tolerance: ±3%. Size: 1$\frac{13}{16}$″ dia. x 1¾″ lg.

| Bourns Model | Resistance Range, Ohms | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | 100-249 |
| **3400S-1** | 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 30K, 50K, 100K, 200K | **$11.00** | **$10.00** | **$ 9.50** | **$ 9.00** | **$ 8.50** | **$ 8.00** |
| | 500K | **20.90** | **19.00** | **18.05** | **17.10** | **16.15** | **15.20** |

B

### SINGLE-TURN INDUSTRIAL 1-1/16″ DIA. WIRE-WOUND MODEL 3437 (FIG. B)

Silverweld® termination; dual collector pick-off. Moisture resistant, thermosetting plastic housing. Stainless steel shaft ⅞″ lg. Power Rating: 1.0 watt at 40° C. Independent Linearity: ±0.5% max. Operating Temperature: 80° C max. Resistance Tolerance: ±5%. Size: 1$\frac{1}{16}$″ dia. x $\frac{11}{16}$″ lg.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **3437S-1** | 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K | **$13.75** | **$12.50** | **$10.00** | **$9.00** | **$8.50** | **$8.00** |

### SINGLE-TURN 1-1/16″ DIAMETER CONDUCTIVE PLASTIC MODEL 3438 (FIG. B)

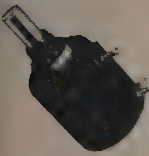
Infinitron® conductive plastic element provides essentially infinite resolution. High temperature, moisture resistant, thermosetting plastic housing. Stainless steel shaft ⅞″ lg. Power Rating: 1 watt at 40° C (250 volts max.). Independent Linearity: ±1.0% max. Operating Temperature: 105° C max. Resistance Tolerance: ±20%. Size: 1$\frac{1}{16}$″ dia. x $\frac{11}{16}$″ lg.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **3438S-1** | 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K, 1 meg | **$13.75** | **$12.50** | **$11.25** | **$10.00** | **$9.50** | **$9.00** |

### 10-TURN ⅞″ DIAMETER WIRE-WOUND MODEL 3500 (FIG. C)

High temperature, thermosetting plastic housing. Shaft sealed "O" ring. Special rotor and slider block design assures excellent wiper stability. Humidity exceeds MIL-STD-202, Method 103. Power Rating: 2.0 watts at 70° C. Abs. Min. Res.: 1.0 ohm or 0.1%, whichever is greater. Independent Linearity: ±0.20%. Operating Temperature: 125° C max. Resistance Tolerance: ±3%. Size: ⅞″ dia. x 1″ lg.

| Bourns Model | Resistance Range, Ohms | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | 100-249 |
| **3500S-1 or 3500S-2** | 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 30K, 50K, 75K, 100K, 125K | **$11.00** | **$10.00** | **$ 9.50** | **$ 9.00** | **$ 8.50** | **$ 8.00** |
| | 150K, 200K, 250K | **20.90** | **19.00** | **18.05** | **17.10** | **16.15** | **15.20** |
| | 500K | **30.80** | **28.00** | **26.60** | **25.20** | **23.80** | **22.40** |


D

### 10-TURN ⅞″ DIAMETER CONDUCTIVE PLASTIC MODEL 3501 (FIG. D)

Infinitron® conductive plastic element provides essentially infinite resolution. Exceeds moisture resistance requirements of MIL-R-39023. Exclusive termination assures low end resistance and definite effective electrical angle. Power Rating: 2.0 watts at 70° C (325 volts max.). Independent Linearity: ±0.5% max. Operating Temperature: 105° C max. Resistance Tolerance: ±10%. Size: ⅞″ dia. x 1″ lg.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **3501S-1** | 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K | **$16.50** | **$15.00** | **$14.25** | **$13.50** | **$12.75** | **$12.00** |
| | 1 meg, 2 megs, 4 megs | **38.50** | **35.00** | **33.25** | **31.50** | **29.75** | **28.00** |

### 10-TURN INDUSTRIAL ⅞″ DIAMETER WIRE-WOUND MODEL 3507 (FIG. E)

Special rotor and slider assembly assures excellent wiper stability. Power Rating: 2.0 watts at 25° C. Abs. Min. Res.: 1.0 ohm or 0.25% max. Temperature: 105° C max. Size: ⅞″ dia. x 1⅛″ lg. For 0.032″ w. x 0.032″ d. shaft slot, order 3507S-3-RC.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **3507S-1 or 3507S-3-RC** | 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 30K, 50K, 100K | **$ 8.25** | **$ 7.50** | **$ 6.60** | **$ 6.25** | **$ 5.95** | **$ 5.50** |
| | 250K | **18.15** | **16.50** | **14.52** | **13.74** | **13.08** | **12.09** |

### 10-TURN ⅞″ DIAMETER WIRE-WOUND MODEL 3509 (FIG. E)

Nonmetallic shaft and bushing; shaft with screwdriver slot standard; other shafts and modifications available on request. Power Rating: 2.0 watts at 25° C. Abs. Min. Res.: 1 ohm or .25%, whichever is greater. Independent Linearity: ±.25% max. Operating Temperature: 105° C max. Resistance Tolerance: ±5%. Size, ⅞″ dia. x 1⅛″ lg. For stainless steel shaft and metal bushing, order 3509S-8.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **3509S-1** | 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K | **$6.55** | **$5.95** | **$5.66** | **$5.36** | **$5.06** | **$4.76** |
| **3509S-8** | 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K | **7.37** | **6.70** | **6.36** | **6.03** | **5.69** | **5.36** |

F

### 3-TURN ⅞″ DIAMETER MODEL 3510 (FIG. F)

Exceeds MIL-R-12934 humidity cycling requirements. High temperature, moisture resistant, thermosetting plastic housing. Space saving housing depth; special rotor design assures excellent wiper stability. Power Rating: 1.0 watt at 70° C. Abs. Min. Res.: 1.0 ohm or 0.1%, whichever is greater. Independent Linearity: ±0.30% max. Operating Temp.: 125° C max. Resistance Tol.: ±3%. Size: ⅞″ dia. x $\frac{9}{16}$″ lg.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **3510S-1** | 25, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 75K | **$16.50** | **$15.00** | **$14.25** | **$13.50** | **$12.75** | **$12.00** |
| | 100K | **36.30** | **33.00** | **31.35** | **29.70** | **28.05** | **26.40** |

**BOURNS POTENTIOMETERS ARE STOCKED AT NEWTON, MA; NO. HAVEN, CT; HAUPPAUGE, L.I. AND SYRACUSE, NY; HOLLYWOOD, FL; HUNTSVILLE, AL; AND WINSTON-SALEM, NC**

# BOURNS TRIMPOT® Potentiometers

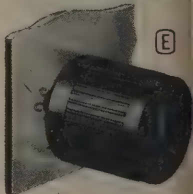
## BUSHING MOUNT PRECISION POTENTIOMETERS (CONT'D)

(A)

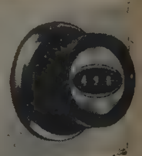
(B)

(C)

(D)



(E)



(F)

### 5-TURN ⅞" DIAMETER WIRE-WOUND MODEL 3520 (FIG. A)

Exceeds humidity cycling requirements of MIL-R-12934. High temperature, moisture resistant, thermosetting plastic housing; special rotor and slider design. Contact pressure control of 100% assures low noise and long rotational life. Power Rating: 1.5 watts at 70° C. Abs. Min. Res.: 1.0 ohm or 0.1%, whichever is greater. Independent Linearity: ±0.3% max. Operating Temperature: 125° C max. Resistance Tolerance: ±3%. Size: ⅞" dia. x 1¹⁄₁₆" lg.

| Bourns Model | Resistance, Range, Ohms | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | 100-249 |
| 3520S-1 | 25, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 75K | $14.85 | $13.50 | $12.82 | $12.15 | $11.47 | $10.80 |
| | 100K | 24.75 | 22.50 | 21.37 | 20.25 | 19.12 | 18.00 |
| | 250K | 34.65 | 31.50 | 29.92 | 28.35 | 26.77 | 25.20 |

### 10-TURN ½" DIAMETER MODEL 3700 (FIG. B)

Contact pressure control of 100% assures low noise and long rotational life. Exceeds MIL-R-12934 humidity cycling requirements. High temperature, moisture resistant, thermosetting plastic housing. Power Rating: 1.0 watt at 70° C. Abs. Min. Res.: 1.0 ohm or 0.1%, whichever is greater. Independent Linearity: ±0.5% max. Operating Temperature: 125° C max. Resistance Tolerance: ±5%. Size: ½" dia. x 1" lg.

| Bourns Model | Resistance Range, Ohms | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | 100-249 |
| 3700S-1 | 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K | $26.95 | $24.50 | $23.27 | $22.05 | $20.82 | $19.60 |

### 10-TURN INDUSTRIAL ½" DIAMETER MODEL 3707 (FIG. B)

Silverweld® termination eliminates vulnerable single wire termination. Special rotor design assures excellent wiper stability. Power Rating: 1.0 watt at 40° C. Independent Linearity: ±1.0%. Operating Temperature: 105° C max. Resistance Tolerance: ±5%. Size: ½" dia. x 1" lg.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3707S-1 | 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K | $18.98 | $17.25 | $16.39 | $15.53 | $14.67 | $13.80 |

## KNOBPOT® BUSHING MOUNT PRECISION POTENTIOMETERS

Knob, readout dial and potentiometer in one package requires less front panel space than most dials alone; requires no back panel space. Self-locking feature provides excellent stability during vibration and shock; 100% contact pressure control insures high mechanical life. Sealed to pass MIL-STD-202, Method 103, humidity. Lockwasher and mounting nut included.

### 10-TURN ¾" DIAMETER KNOBPOT® MODEL 3600 (FIG. C)

Phasing of dial readout to potentiometer performed at factory with accuracy of ±0.5% (including linearity). Power Rating: 1.5 watts at 25° C. Abs. Min. Res.: 1.0 ohm or 0.1%, whichever is greater. Operating Temperature: 85° C max. Resistance Tolerance: ±5%. Size: ¾" dia. x 1" lg. FMS.

| Bourns Model | Resistance Range, Ohms | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
| 3600S-1 | 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K | $19.80 | $19.32 | $17.54 | $16.50 | $15.60 |
| | 200K, 250K | 29.27 | 28.57 | 25.92 | 24.39 | 23.06 |

### 10-TURN ⅞" DIAMETER KNOBPOT® MODEL 3610 (FIG. D)

Offers guaranteed accuracy of ±0.5% (combining base linearity and dial accuracy). Saves space two ways: ⅞" dia. and ⅞" depth behind panel (.740" FMS). Snap-in mounting cup; recessed lens. Power Rating: 1.5 W at 25° C. Abs. Min. Res.: 1 ohm or 0.1%, whichever is greater. Operating Temp.: 85° C max. Resis. Tol., ±5%.

| | | | | | | |
|---|---|---|---|---|---|---|
| 3610S-1 | 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K | $21.00 | $20.50 | $18.60 | $17.50 | $16.55 |
| | 250K | 28.92 | 28.23 | 25.61 | 24.10 | 22.79 |

### 10-TURN 1¼" DIAMETER KNOBPOT® SENIOR MODEL 3640 (FIG. E)

Phasing of dial readout to potentiometer performed at factory with accuracy to ±0.1% (including linearity). Power Rating: 2.5 watts at 25° C. Abs. Min. Res.: 1.0 ohm or 0.1%, whichever is greater. Operating Temperature: 85° C max. Resistance Tolerance: ±3%. Size: 1¼" dia. x 1½" lg. FMS.

| | | | | | | |
|---|---|---|---|---|---|---|
| 3640S-1 | 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 75K, 100K, 125K, 200K, 250K | $23.00 | $21.30 | $19.17 | $18.19 | $17.04 |
| | 500K | 34.00 | 31.48 | 28.34 | 26.89 | 25.18 |

### 10-TURN 1¼" DIAMETER DIGITAL KNOBPOT® MODEL 3650 (FIG. F)

Integral digital readout, knob and potentiometer requires less front panel space than most dials alone. Readability of 1 part in 10,000. Output accuracy to 0.1% (including linearity). Repeatability within 0.05% voltage ratio. Silverweld® termination. Power Rating: 2.5 watts at 25° C. Abs. Min. Res.: 1.0 ohm or 0.1%, whichever is greater. Operating Temperature: 85° C max. Resistance Tolerance: ±3%. Size: 1¾" dia. x 2⁹⁄₃₂" lg. FMS. Mounting cup furnished as shown in illustration.

| | | | | | | |
|---|---|---|---|---|---|---|
| 3650S-1 | 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 75K, 100K, 200K, 250K | $28.50 | $26.39 | $23.75 | $22.54 | $21.11 |
| | 500K | 39.25 | 36.35 | 32.71 | 31.04 | 29.07 |

## 1-INCH TURNS COUNTING DIALS

Mounts directly to potentiometer shaft; for rotating devices up to 30 turns. Readability: 1 part in 1000 for 10 turns.

| Bourns No. | Finish | Shaft Dia. | Bushing Dia. | Brake | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1-9 | 10-24 | 25-99 | 100-249 | 250-499 |
| H-491-1* | Clear | ³⁄₃₂" | ¼" | No | $7.05 | $6.70 | $6.35 | $5.99 | $5.64 |
| H-492-1* | Clear | ³⁄₃₂" | ¼" | Yes | 7.25 | 6.89 | 6.53 | 6.16 | 5.80 |
| H-493-1* | Black | ³⁄₃₂" | ¼" | No | 7.25 | 6.89 | 6.53 | 6.16 | 5.80 |
| H-494-1* | Black | ³⁄₃₂" | ¼" | Yes | 7.40 | 7.03 | 6.66 | 6.29 | 5.92 |
| H-491-3 | Clear | ¼" | ⅜" | No | 6.75 | 6.41 | 6.08 | 5.74 | 5.40 |
| H-492-3 | Clear | ¼" | ⅜" | Yes | 6.95 | 6.60 | 6.26 | 5.91 | 5.56 |
| H-493-3 | Black | ¼" | ⅜" | No | 6.95 | 6.60 | 6.26 | 5.91 | 5.56 |
| H-494-3 | Black | ¼" | ⅜" | Yes | 7.15 | 6.79 | 6.44 | 6.08 | 5.72 |
| H-510-1† | Clear | ⅛" | ...... | Yes | 5.70 | 5.42 | 5.13 | 4.85 | 4.56 |
| H-510-2† | Clear | ¼" | ...... | Yes | 5.70 | 5.42 | 5.13 | 4.85 | 4.56 |

*Available with ⅛" shaft dia.; to order, substitute -2 for suffix -1 (H-491-2). †H-510 Series 1⅜" diameter; 10-turn.

## KNOBPOT® ACCESSORIES

Accessory colors meet Federal Standard 595.

| Bourns No. For Knobpot | | Description | Net Each, Lots of | | |
|---|---|---|---|---|---|
| 3600 | 3640 | | 1-24 | 25-99 | 100-499 |
| H-93 | H-99 | Snap-on color rings* | $0.35 | $0.29 | $0.25 |
| H-95 | ........ | Stainless steel skirt | 1.50 | 1.25 | 1.00 |
| ........ | H-98 | | 3.77 | 3.43 | 3.10 |
| H-103 | H-97 | Plastic slip-over friction brake | 1.25 | 1.07 | .97 |
| H-100 | ........ | MIL spec 1" dia. slip-over knob† | 1.25 | 1.07 | .97 |
| ........ | H-105 | Flat face recess mounting bracket | 2.19 | 1.99 | 1.80 |
| H-107 | ........ | | 2.73 | 2.48 | 2.25 |
| ........ | H-106 | Beveled face recess mounting bracket | 2.61 | 2.38 | 2.15 |
| H-108 | ........ | | 2.49 | 2.26 | 2.05 |
| H-109 | | Recess mounting bracket for 3650 | 2.63 | 2.39 | 2.16 |

*Specify color: -1, red; -2, yellow; -3, blue; -4, green; -5, white: †-1, red; -2, yellow; -3, blue; -4, green; -5, black; -6, gray.

# Clarostat Controls and Decades

## COMPOSITION-ELEMENT

Tolerances are within RETMA standards; verall resistance tolerance ±20% through 00K ohm values and ±30% for all values bove 100K ohms.

### SERIES A47 ½-WATT CONTROLS

Available with factory assembled shafts at o extra charge. See general description bove. Catalog Number indicates the esistance in ohms and †Curves elow. Net Each.................. **$1.13**

| o. A47- | No. A47- | No. A47- | No. A47- |
|---|---|---|---|
| 500-S | 15K-S | 75K-V | 1 Meg-Z |
| 750-S | 15K-V | 100K-S | 1.5 Meg-S |
| 1000-S | 15K-W | 100K-Z | 2 Meg-S |
| 1500-S | 20K-S | 150K-S | 2 Meg-Z |
| 2000-S | 25K-S | 200K-S | 2.5 Meg-S |
| 2500-S | 25K-W | 250K-S | 3 Meg-S |
| 3000-S | 25K-V | 250K-Z | 3 Meg-Z |
| 4000-S | 30K-S | 300K-S | 4 Meg-S |
| 5000-S | 40K-S | 500K-S | 4 Meg-Z |
| 7500-S | 50K-S | 500K-Z | 5 Meg-S |
| 10K-S | 50K-W | 750K-S | 5 Meg-Z |
| 10K-V | 50K-Z | 750K-Z | 7.5 Meg-S |
| 10K-W | 75K-S | 1 Meg-S | 10 Meg-S |
| 10K-Z | ......... | ......... | ......... |

### †CURVES

**S**—Straight or uniform res. change with otation. **U**—Left-hand 1% res. at 33⅓% f CW rotation. **V**—Right-hand 20% res. t 50% of CCW rotation. **W**—Left-hand 20% res. at 50% of CW rotation. **Z**—Left-hand (Log. audio) 10% res. at 50% of W rotation.

### TYPE "SWE" SWITCHES FOR "AD-A-SWITCH®" CONTROLS

A line of switches for installation on A47 and A47F controls. UL approved.

**Clarostat No. SWE-12**—SPST Switch, 5 amp., 125 v. AC. Net Ea. **53c**

**Clarostat No. SWE-13**—SPST switch. 15 amp., 10 v. DC. Net Ea. **81c**

**Clarostat No. SWE-20**—DPST switch. 3 amp., 125 v. AC. Net Ea. **59c**

**Clarostat No. SWE-21**—Modified DPST Switch. One pole on, one off, or with Jumper SPDT. 3 amperes, 125 volts AC or DC. Net Each............ **59c**

**Claorstat No. SWE-23**—Modified DPST Switch. One pole on, one off or with Jumper SPDT. 15 amp., 10 VDC. Net Each........................ **81c**

### "PICK-A-SHAFT®" SHAFTS

Net Each.............................**35c**

| Claro. No. | Description |
|---|---|
| SS-⅜ | (Male) takes female fitting |
| RS-2 | Round shaft, 2" long |
| RS-³⁄₁₆ | Round, slotted ³⁄₁₆" dia., 3" long |
| KSS-3 | Knurled, split shaft, 3" long |
| RS-5 | Round shaft, 5" long |
| FS-5 | Flatted shaft, 5" long |
| KSS-5 | Knurled, split shaft, 5" long |
| FS-3 | Flatted shaft, 3" long |
| RS-3 | Round shaft, 3" long |
| DFS-½ | Dble. flatted, Philco type ½" l. |
| FKS-¼ | Fine knurled slotted, ¼" long |
| FKS-½ | Fine knurled slotted, ½" long |
| KFS-3 | Knurled flatted shaft, 3" long |

## SERIES A43 AND A43S 2-WATT WIRE-WOUND CONTROLS

A43 Controls are without switches. A43S Controls have factory attached SPST switches. Available with factory assembled shafts at no extra charge by omitting prefix "A" from number and designating shaft desired. Tolerance, ±10%.

**Any Model A43**—Without switch.**$1.31**
**Any Model A43S**—With switch... **1.89**

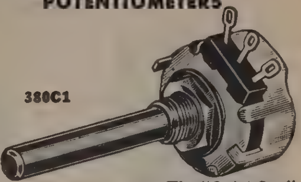
| Ohms | No. A43- or A43S- | Ohms | No. A43- or A43S- |
|---|---|---|---|
| 5 | 5 | 400 | 400 |
| 10 | 10 | 500 | 500 |
| 20 | 20 | 750 | 750 |
| 25 | 25 | 1000 | 1000 |
| 30 | 30 | 1500 | 1500 |
| 40 | 40 | 2000 | 2000 |
| 50 | 50 | 2500 | 2500 |
| 75 | 75 | 3000 | 3000 |
| 100 | 100 | 4000 | 4000 |
| 150 | 150 | 5000 | 5000 |
| 200 | 200 | 7500 | 7500 |
| 300 | 300 | 10K | 10K |

## SERIES A58 WIRE-WOUND CONTROLS

Wire-wound 3-watt controls that will take any of the 13 Pick-A-Shafts. Overall resistance tolerance ±10% for all values. All controls are linear. Available with factory assembled shafts at no extra cost; just order by dropping the prefix letter "A" from the number and specify the type of shaft desired. Prices and information on request.

| Resistance Ohms | Clarostat Number | Net Each |
|---|---|---|
| 1 | A58-1 | $1.31 |
| 2 | A58-2 | 1.31 |
| 4 | A58-4 | 1.31 |
| 6 | A58-6 | 1.31 |
| 10 | A58-10 | 1.31 |
| 15 | A58-15 | 1.31 |
| 20 | A58-20 | 1.31 |
| 25 | A58-25 | 1.31 |
| 30 | A58-30 | 1.31 |
| 40 | A58-40 | 1.31 |
| 50 | A58-50 | 1.31 |
| 60 | A58-60 | 1.31 |
| 75 | A58-75 | 1.31 |
| 100 | A58-100 | 1.31 |
| 200 | A58-200 | 1.31 |
| 250 | A58-250 | 1.31 |
| 300 | A58-300 | 1.31 |
| 400 | A58-400 | 1.31 |
| 500 | A58-500 | 1.31 |
| 750 | A58-750 | 1.31 |
| 1000 | A58-1000 | 1.31 |
| 1500 | A58-1500 | 1.31 |
| 2000 | A58-2000 | 1.31 |
| 2250 | A58-2250 | 1.31 |
| 2500 | A58-2500 | 1.31 |
| 3000 | A58-3000 | 1.31 |
| 4000 | A58-4000 | 1.31 |
| 5000 | A58-5000 | 1.31 |
| 7500 | A58-7500 | 1.31 |
| 10K | A58-10K | 1.31 |
| 15K | A58-15K | 1.60 |
| 20K | A58-20K | 1.60 |
| 25K | A58-25K | 1.60 |
| 30K | A58-30K | 2.05 |
| 40K | A58-40K | 2.05 |
| 50K | A58-50K | 2.05 |

## 2-WATT SERIES 380 POTENTIOMETERS


380C1

380C2

The "Quiet One" Series 380 exceeds MIL-R-94 specifications. Manufactured in a controlled environment, features stainless steel shafts. 1% dynamic noise and 5% independent linearity. Electrical tolerances are ±10% for values up to 1 megohm; ±20%, 1 meg and above. Linear taper. Specify resistance per table, below. **Size:** 1³⁄₃₂" dia. max. x ⁹⁄₁₆" d.

**Clarostat Model 380C1, Taper S**—2" round shaft FMS; ⅜" long bushing with ⅜-32-NEF-2A thread. Net Each.......**$1.95**

**Clarostat Model 380C2, Taper S**—⅝" screwdriver slotted shaft FMS; with ½" split locking bushing. Net Each..**$2.25**

**Clarostat Model 380C3, Taper S**—⅞" screwdriver slotted shaft FMS; ⅜" long bushing with ⅜-32-NEF-2A thread. Net Each..........................**$1.95**

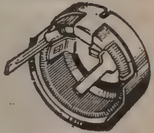
| Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|
| 100 | 2500 | 50K | 1 meg |
| 150 | 3500 | 75K | 1.5 meg |
| 250 | 5000 | 100K | 2 meg |
| 350 | 7500 | 150K | 2.5 meg |
| 500 | 10K | 200K | 3 meg |
| 750 | 15K | 250K | 3.5 meg |
| 1000 | 20K | 350K | 4 meg |
| 1500 | 25K | 500K | 5 meg |
| 2000 | 35K | 750K | |

## "HUMDINGER®" 2-WATT, WIRE-WOUND CONTROLS

### SERIES U39 "HUMDINGER" CONTROLS

The design of terminals and mounting tabs meets these requirements: Above chassis mounting, as a potentiometer or rheostat; printed circuit mounting, as a potentiometer or rheostat. A fiber adapter plate is furnished with each control. Clarostat number indicates the U39 series followed by the total resistance ohms and, in some cases, the bias resistance. Tolerance, ±20% Net Each........................................ **63c**

| Clarostat Number | | | |
|---|---|---|---|
| U39-1.5 | U39-150 | U39-700 | U39-2000-100 |
| U39-5 | U39-175 | U39-700-200 | U39-3000 |
| U39-8 | U39-200 | U39-800 | U39-3000-700 |
| U39-15 | U39-300 | U39-800-50 | U39-4000 |
| U39-50 | U39-500 | U39-1000 | U39-4000-350 |
| U39-75 | U39-500-100 | U39-1000-100 | U39-4000-1000 |
| U39-100 | U39-600 | U39-1500 | U39-5000 |
| U39-125 | U39-650 | U39-2000 | |


SERIES U39

SERIES 39

### SERIES 39 "HUMDINGER" CONTROLS

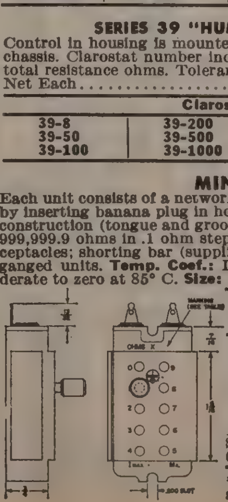
Control in housing is mounted by rivet, screw or other means to chassis. Clarostat number indicates the 39 series followed by the total resistance ohms. Tolerance, ±20% Net Each........................................ **53c**

| Clarostat Number | | | |
|---|---|---|---|
| 39-8 | 39-200 | 39-1500 | 39-4000 |
| 39-50 | 39-500 | 39-2000 | 39-5000 |
| 39-100 | 39-1000 | 39-3000 | |

CLAROSTAT
39

## MINIATURE DECADE BOXES

Each unit consists of a network of five ±1% metal film resistors. Desired value is selected by inserting banana plug in hole adjacent to desired decade digit. Housing is interlocking construction (tongue and groove) interconnecting up to 7 units for a complete range .1 to 999,999.9 ohms in .1 ohm steps. External connections by solder lug and banana plug receptacles; shorting bar (supplied) or dual shorting banana plug for connections between ganged units. **Temp. Coef.:** Less than 100 ppm. **Temp.:** 40° C max. at rated current; derate to zero at 85° C. **Size:** 1½" w. x ⅞" d. x 2¾" h., body. Wt., 2 oz. per unit.



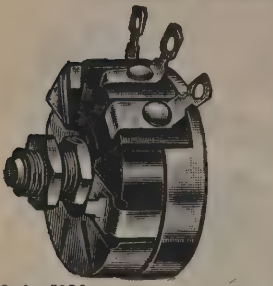
| Clarostat Number | Total Resis., Ohms | Resis./ Step, Ohms | Accuracy * | Max. Current | Net Each |
|---|---|---|---|---|---|
| 260-1† | 0.9 | 0.1 | ±5% | 1 amp | $ 4.15 |
| 260-2† | 9 | 1.0 | ±1% | 350 mA | 4.15 |
| 260-3 | 90 | 10 | ±1% | 100 mA | 4.15 |
| 260-4 | 900 | 100 | ±1% | 35 mA | 4.15 |
| 260-5 | 9K | 1K | ±1% | 10 mA | 4.15 |
| 260-6 | 90K | 10K | ±1% | 3.5 mA | 4.15 |
| 260-7 | 900K | 100K | ±1% | 1 mA | 4.15 |
| Set of 1 each of above.................... | | | | | 28.88 |
| 6 each of above, with rack.................. | | | | | 174.20 |

*Contact resis., .005–.03 ohms; .01 ohm typical. †Resistors are wire-wound.

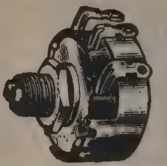
# Controls and MIL Potentiometers

## CLAROSTAT CONTROLS, POTENTIOMETERS

### "C LINE®" WIRE-WOUND INDUSTRIAL CONTROLS



Series 58C2



Series 43C2

Clarostat "C Line" controls are designed primarily for industrial applications. They feature moisture and dust-proof construction, corrosion proof finish and locking or standard bushing. Suffix C1 indicates 1⅝" round shaft beyond bushing and ⅜" long bushing with ⅜-32-NEF-2 thread. Suffix C2 indicates ⅛" screwdriver slotted shaft, ½" split locking bushing. One nickel plated hex mounting nut and internal lock washer supplied with all units. All C2 units supplied with a nickel plated machined hex locking nut. Switches, ohmages not listed, tapers not listed, bushings and shaft lengths not listed, and dual combinations are also available on special order. (Prices and delivery information available on request.)

### SERIES 43C1 AND 43C2

### 2-WATT CONTROLS

Smallest 2-watt wire-wound control available up to 50K ohms. Tolerance ±5%. Independent Linearity ±2%.

| | Net Each | | | Net Each | |
|---|---|---|---|---|---|
| Ohms | 43C1 | 43C2 | Ohms | 43C1 | 43C2 |
| 5 | $2.36 | $2.63 | 1000 | $2.36 | $2.63 |
| 10 | 2.36 | 2.63 | 1500 | 2.36 | 2.63 |
| 20 | 2.36 | 2.63 | 2000 | 2.36 | 2.63 |
| 25 | 2.36 | 2.63 | 2500 | 2.36 | 2.63 |
| 30 | 2.36 | 2.63 | 3000 | 2.36 | 2.63 |
| 40 | 2.36 | 2.63 | 4000 | 2.36 | 2.63 |
| 50 | 2.36 | 2.63 | 5000 | 2.36 | 2.63 |
| 75 | 2.36 | 2.63 | 7500 | 2.36 | 2.63 |
| 100 | 2.36 | 2.63 | 10K | 2.36 | 2.63 |
| 150 | 2.36 | 2.63 | 15K | 2.68 | 2.95 |
| 200 | 2.36 | 2.63 | 20K | 2.68 | 2.95 |
| 300 | 2.36 | 2.63 | 25K | 2.68 | 2.95 |
| 400 | 2.36 | 2.63 | 30K | 3.15 | 3.47 |
| 500 | 2.36 | 2.63 | 40K | 3.15 | 3.47 |
| 750 | 2.36 | 2.63 | 50K | 3.15 | 3.47 |

### SERIES 58C1 AND 58C2

### 3-WATT CONTROLS

Tolerance ±5%. Linearity ±1%.

| | Net Each | | | Net Each | |
|---|---|---|---|---|---|
| Ohms | 58C1 | 58C2 | Ohms | 58C1 | 58C2 |
| 1 | $2.36 | $2.63 | 500 | $2.36 | $2.63 |
| 2 | 2.36 | 2.63 | 750 | 2.36 | 2.63 |
| 4 | 2.36 | 2.63 | 1000 | 2.36 | 2.63 |
| 6 | 2.36 | 2.63 | 1500 | 2.36 | 2.63 |
| 10 | 2.36 | 2.63 | 2000 | 2.36 | 2.63 |
| 15 | 2.36 | 2.63 | 2500 | 2.36 | 2.63 |
| 20 | 2.36 | 2.63 | 3000 | 2.36 | 2.63 |
| 25 | 2.36 | 2.63 | 5000 | 2.36 | 2.63 |
| 30 | 2.36 | 2.63 | 7500 | 2.36 | 2.63 |
| 40 | 2.36 | 2.63 | 10K | 2.36 | 2.63 |
| 50 | 2.36 | 2.63 | 15K | 2.68 | 2.95 |
| 60 | 2.36 | 2.63 | 20K | 2.68 | 2.95 |
| 75 | 2.36 | 2.63 | 25K | 2.68 | 2.95 |
| 100 | 2.36 | 2.63 | 30K | 3.15 | 3.47 |
| 200 | 2.36 | 2.63 | 40K | 3.15 | 3.47 |
| 300 | 2.36 | 2.63 | 50K | 3.15 | 3.47 |
| 400 | 2.36 | 2.63 | | | |

### 2-WATT "C-LINE®" POTENTIOMETERS

53C1

53C2

Molded composition element type totally sealed against moisture. High quality resistance device has high stability under extreme conditions. Use for critical applications such as test equipment, military, computers, servo mechanisms, etc. One-piece wiper assembly; carbon to carbon contact for low noise level; stainless steel shaft; gold plated terminals. Electrical tolerances are ±10% for values up to 1 megohm; ±20%, 1 meg. and above. "S" taper supplied. **Size:** 1¹⁄₁₆" dia. x ⁹⁄₁₆" deep.

**Clarostat Model 53C1, Taper S—** Specify resistance value. Net Each $1.95

**Clarostat Model 53C2, Taper S—** Specify resistance. Net Each..... $2.25

| Ohms | Ohms | Ohms |
|---|---|---|
| 50 | 7.5K | 500K |
| 100 | 10K | 750K |
| 150 | 15K | 1 meg |
| 250 | 20K | 1.5 meg |
| 350 | 25K | 2 meg |
| 500 | 35K | 2.5 meg |
| 750 | 50K | 3 meg |
| 1000 | 75K | 3.5 meg |
| 1500 | 100K | 4 meg |
| 2000 | 150K | 5 meg |
| 2500 | 200K | 7.5 meg |
| 3500 | 250K | 10 meg |
| 5000 | 350K | |

## MILITARY WIRE-WOUND AND CARBON POTENTIOMETERS

RV4LAYSA, 53C2

### MIL-R-19A VARIABLE WIRE-WOUND POTENTIOMETERS

Certified for MIL-R-19A and available in common shaft lengths and values. Linear taper. **Tolerance:** ±10%. **Ratings:** RA10, one watt. RA20, two watts. RA30, four watts **Bushing and Shaft:** Specify by letters (i.e. RA20**NASD**351A). RA10: NASD, ⅞" lg. x ¼" dia.; NASL, ⁵⁄₁₆" lg. x ¼" dia.; LASM, ⁷⁄₁₆" lg. x ¼" dia., lock bushing. RA10, 20: LASD, ⅞" lg. x ¼" dia., lock bushing. RA20, 30: NASA, ½" lg. x ¼" dia.; NASD, ⅞" lg. x ¼" dia.; LASB, ⅝" lg. x ¼" dia., lock bushing. All have slotted shafts.

| Ohms ±10% | No. RA10()-, RA20()-, RA30()- | Ohms ±10% | No. RA10()-, RA20()-, RA30()- |
|---|---|---|---|
| 3 | 3R0A* | 350 | 351A |
| 6 | 6R0A* | 500 | 501A |
| 8 | 8R0A* | 750 | 751A |
| 10 | 100A* | 1000 | 102A |
| 15 | 150A | 1500 | 152A |
| 20 | 200A* | 2000 | 202A |
| 25 | 250A | 2500 | 252A |
| 35 | 350A* | 3500 | 352A* |
| 50 | 500A | 5000 | 502A* |
| 75 | 750A | 7500 | 752A* |
| 100 | 101A | 10K | 103A* |
| 150 | 151A | 15K | 153A* |
| 200 | 201A | 20K | 203A† |
| 250 | 251A | 25K | 253A† |

*Not available in one-watt type. †Not available in one- or two-watt types.

### MIL-R-94B VARIABLE 2-WATT CARBON POTENTIOMETERS

Certified for MIL-R-94B and available in common shaft lengths and values. Linear taper. **Tolerance:** ±10% unless otherwise specified. **Rating:** 2 watts. **Bushing and Shaft:** Specify by letters (example: RV4**NAYSD**101A, or 53C3-100-S): NAYSD (53C3) for standard bushing with ⅞" l. x ¼" dia. slotted shaft; LAYSA (53C2) for lock bushing and ⅝" l. x ¼" dia. slotted shaft. **Note:** Where no military number is shown, no MIL value is available; and, only the commercial version may be ordered (53C). All others are dual-marked.

| Resis., Ohms ±10% | MIL No. RV4()- | Claro. No. 53C()- | Resis. Ohms ±10% | MIL No. RV4()- | Claro. No. 53C()- | Resis., Ohms ±10% | MIL No. RV4()- | Claro. No. 53C()- |
|---|---|---|---|---|---|---|---|---|
| 50 | 500A | 50-S | 7500 | 752A | 7500-S | 500K | 504A | 500K-S |
| 100 | 101A | 100-S | 10K | 103A | 10K-S | 750K† | 754B | 750K-S |
| 150 | 151A | 150-S | 15K | 153A | 15K-S | 1 meg† | 105B | 1 Meg-S |
| 250 | 251A | 250-S | 20K | ....... | 20K-S | 1.5 meg† | 155B | 1.5 Meg-S |
| 350 | 351A | 350-S | 25K | 253A | 25K-S | 2 meg† | 205B | 2 Meg-S |
| 500 | 501A | 500-S | 35K | 353A | 35K-S | 2.5 meg† | 255B | 2.5 Meg-S |
| 750 | 751A | 750-S | 50K | 503A | 50K-S | 3 meg† | ....... | 3 Meg-S |
| 1000 | 102A | 1000-S | 75K | 753A | 75K-S | 3.5 meg† | 355B | 3.5 Meg-S |
| 1500 | 152A | 1500-S | 100K | 104A | 100K-S | 4 meg† | ....... | 4 Meg-S |
| 2000 | ....... | 2000-S | 150K | 154A | 150K-S | 5 meg† | 505B | 5 Meg-S |
| 2500 | 252A | 2500-S | 200K | ....... | 200K-S | 10 meg† | ....... | 10 Meg-S |
| 3500 | 352A | 3500-S | 250K | 254A | 250K-S | | | |
| 5000 | 502A | 5000-S | 350K | 354A | 350K-S | | | |

### MIL-R-94B HOT MOLDED ½-WATT CARBON POTENTIOMETERS

Rated 0.5 watt at 70° C, derated to zero at 120° C. Available with standard (RV6NAYSD) or locking (RV6LAYSA) bushing. Dia., ½"; 350 WVDC.

| Ohms ±10% | No.* RV6()- | Ohms ±10% | No.* RV6()- | Ohms ±10% | No.* RV6()- | Ohms ±10% | No.* RV6()- |
|---|---|---|---|---|---|---|---|
| 100 | 101A | 2,500 | 252A | 25,000 | 253A | 250,000 | 254A |
| 250 | 251A | 5,000 | 502A | 50,000 | 503A | 500,000 | 504A |
| 500 | 501A | 10,000 | 103A | 100,000 | 104A | 1 meg | 105A |
| 1000 | 102A | 15,000 | 153A | 150,000 | 154A | | |

### INDUSTRIAL NET PRICES

| MIL or (Clarostat) Type* | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
| RV4NAYSD- or (53C3-) | $1.95 | $1.60 | $1.60 | $1.50 | $1.25 | $0.92 |
| RV4LAYSA- or (53C2-) | 2.25 | 1.90 | 1.90 | 1.58 | 1.33 | .99 |
| RV6NAYSD- | 5.00 | 3.65 | 3.65 | 2.19 | 1.90 | 1.61 |
| RV6LAYSA | 5.00 | 3.88 | 3.88 | 2.33 | 2.02 | 1.71 |
| RA20NAS( )- | 3.00 | 2.01 | 2.01 | 1.41 | 1.16 | .88 |
| RA20LAS( )- | 3.00 | 2.09 | 2.09 | 1.49 | 1.24 | .95 |
| RA30NAS( )- | 3.00 | 2.19 | 2.19 | 1.59 | 1.34 | 1.06 |
| RA30LASB- | 3.00 | 2.27 | 2.27 | 1.67 | 1.42 | 1.14 |
| RA10NAS( )- | 5.19 | 3.94 | 3.41 | 2.88 | 2.52 | 2.34* |
| RA10LAS( )- | 5.37 | 4.08 | 3.53 | 2.97 | 2.60 | 2.41* |

*Ordering number must show bushing and shaft desired (as described above) and appropriate suffix to indicate ohms. Example: RA20**NASD3R0A.** †Tol., ±20%. *Larger quantity pricing on request.

# Potentiometers, Dials and Rheostats

## CLAROSTAT DECADE BOXES, DIALS AND POTENTIOMETERS

### MODEL 240C PORTABLE DECADE

This resistance decade allows changing resistance at a flip of a switch in a working circuit. Any value can be obtained, from one ohm to 999,999 ohms, in steps of one ohm and at a maximum power rating of 225 watts, using a maximum of 1,000 volts DC or 660 volts AC. Clarostat "Greenohm" resistors are used throughout. These are inorganic-cement-coated, wire-wound power resistors. The resistors are mounted on rigid metal supports; a baffle plate separating the resistor bank from the switch assembly protects the latter against heat. Resistance changing switches are of the type that prevents a resistance breakdown between steps, thus protecting delicate meters and measuring instruments in the circuit. Pointer knobs indicate at a glance the resistance value being used.

**Resistance Tolerance:** ±2.0% all decades except No. 1, ±5.0%. **Max. Current:** 5 amps, No. 1; 1.5 amps, No. 2; 0.5 amp, No. 3; 0.15 amp, No. 4; 0.05 amp, No. 5; 0.005 amp, No. 6.
In a heavy gauge metal case, finished in frosted gray wrinkle, with an etched black-and-aluminum front panel. Overall length, 13″; 8½″ deep; 5¾″ high. Weight, 11.5 lbs.
**Model 240C Power Resistor Decade Box**—Net...... **$115.50**

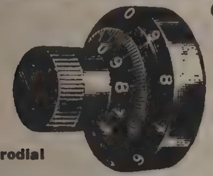
### MODEL 250 RACK MOUNTED DECADE

RESISTANCE DECADE
CLAROSTAT

Same as Model 240C except for rack mounting. Fits in standard 19″ relay rack. **Size:** 19″ w. x 13¼″ d. x 7″ h. Wt., 18½ lbs.

**Model 250 Power Resistor Decade Box**—
Net Each....... **$157.50**

## CLARODIALS—10-TURN CONCENTRIC SCALE DIALS



**Clarodial**

Calibrated dials designed for multi-turn potentiometers up to ten turns or other rotary devices. Requires only one inch of panel space. Knob attaches directly to the shaft, and the body of the dial is mounted rigidly to the panel. Therefore, accurate readings with a ratio of 1000 to one for 10 turns are provided with zero backlash and no reading error. Made of anodized aluminum. Mounting requirements: ¼″ shaft and ⅜″-32 NEF-2A bushing. Model 411 is black, has no lock. Model 412 is black, has lock. Model 461 is clear, has no lock. Model 462 is clear, has lock.

| Clarostat No. | Net Each, Lots of 1-9 | 10-24 | 25-99 | 100-249 |
|---|---|---|---|---|
| 411 | $7.75 | $7.30 | $6.95 | $6.55 |
| 412 | 8.95 | 8.50 | 8.05 | 7.60 |
| 461 | 8.25 | 7.80 | 7.40 | 7.00 |
| 462 | 9.45 | 8.95 | 8.50 | 8.00 |

## SERIES 62JA TEN-TURN POTENTIOMETER

Opens new application areas for the advantages of multi-turn potentiometer design, including far greater resolution in trimming, better instrument control and settings for all types of electronic equipment. Resistance tolerance, ±5%. Functional output, linear. Absolute linearity, ±0.25%. Power dissipation at 25° C, 2 watts, derated to zero at 85° C. Dielectric strength, 1000 VAC. Electrical and mechanical rotation, 3600°, +10, −0. Maximum torque, 3 oz.-in. Stop strength, 50 oz.-in. Insulation resistance, 1000 megohms. Life, 100,000 shaft revolutions. Max. rotation speed, 60 rpm. Size, ⅞″ dia. x 2½″ overall.

Net Each, Lots of 1–9.................................... **$7.50**
Net Each, Lots of 10–24.................................... **$6.50**
Net Each, Lots of 25–99.................................... **6.00**
Net Each, Lots of 100–499.................................... **5.50**

| Stock Value, Ohms | Resolutions 100/Total Turns | Stock Value, Ohms | Resolutions 100/Total Turns |
|---|---|---|---|
| 100* | .062% | 5,000 | .026% |
| 200* | .048% | 10,000 | .024% |
| 250* | .038% | 20,000 | .019% |
| 500 | .036% | 25,000 | .017% |
| 1,000 | .030% | 30,000 | .016% |
| 2,000 | .023% | 50,000 | .013% |
| 2,500 | .022% | 100,000 | .012% |

*Absolute linearity, ±0.5%.

## 1-WATT SERIES 381 POTENTIOMETERS

Similar to Series 380. The "Quiet One" series has 1% dynamic noise and 5% independent linearity. Manufactured to MIL-R-94 specifications. One watt max. power at 70° C for linear taper, derated to zero at 120° C. **Resistance Tolerance:** Linear, ±10% up to 500K ohms; ±20%, 500K ohms and above. Tapers, ±10% up to 100K ohms; ±20%, 100K ohms and above. **Size:** ⅝″ dia. x 25/64″ d. **Standard Stock Values:** Specify resistance 100, 250, 500, 1000, 2500, 5K, 10K, 25K, 50K, 100K, 250K, 500K, 1 meg, 2.5 megs and 5 megohms.

**Clarostat Model 381N**—½″ long shaft, ¼″ long plain bushing. Specify resistance value. Net Each.......................... **$2.66**

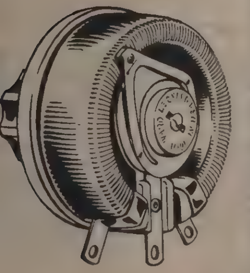
**Clarostat Model 381NS**—Same as above, but with 1 A, 125 VAC or VDC SPST switch. Specify resistance value. Net Each.... **$4.06**

**Clarostat Model 381N (Z taper)**—Model 381N with taper. Specify resistance value from 10K to 1 megohm only. Net Each.... **$2.94**

**Clarostat Model D381N**—Dual version of Model 381N. Specify resistance value from 500 to 100K ohms, except 2500 ohms resistance. Net Each.................................... **$6.86**

**Clarostat Model 381L**—1/16″ long screwdriver slotted shaft, ⅜″ lg. shaft locking bush with ¼-32-NEF-2A thread. Net Each.. **$2.86**

## WARD LEONARD VITREOUS ENAMELED POWER RHEOSTATS



**MP Series.** Compact power rheostats meet MIL-R-22 specifications. Designed with fewer parts, to insure high mechanical strength. Vitreous enamel bonded ceramic construction with self-lubricating contact show, uniform resistance winding, low-resistance contact assembly. Three terminals, for use as potentiometer or rheostat. **Tolerance:** ±10%. **Rotation:** 300°. **MP06** has ⅛″ dia. shaft, mounts on panels up to ⅛″ with ¼-32 bushing and hex nut. **MP10 and MP15** have ¼″ dia. shaft, mount on panels to ¼″ with ⅜-32 bushing and hex nut. All types have no-turn lugs. **R Series.** High power types for commercial use. 100R and 150R have ¼″ dia. shaft with bushing and hex nut; 300R has ⅜″ shaft and requires two 9/32″ dia. mounting holes.

### MP06 AND MP10 STOCK VALUES

| Ohms | Ohms | Ohms | Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|---|---|---|
| 1.0 | 5.0* | 15 | 75 | 175 | 500 | 2500 |
| 2.0 | 6.0 | 25 | 100 | 200* | 750 | 3500 |
| 2.5* | 8.0 | 35 | 125 | 250 | 1000 | 5000 |
| 3.0 | 10 | 50 | 150* | 350 | 1500 | |

*Available only in MP06 type.

### MP15 STOCK VALUES

| | | | | | | |
|---|---|---|---|---|---|---|
| 0.5 | 6.0 | 22 | 125 | 500 | 2500 | 10,000 |
| 1.0 | 8.0 | 35 | 150 | 800 | 3500 | |
| 2.0 | 12 | 50 | 225 | 1000 | 5000 | |
| 4.0 | 16 | 80 | 300 | 1600 | 8000 | |

### 100R, 150R AND 300R STOCK VALUES

| Ohms | Ohms | Ohms | Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|---|---|---|
| 1.0 | 3.0 | 10 | 50 | 200 | 750 | 2500 |
| 1.5† | 4.0† | 15 | 75 | 300 | 1000 | 5000‡ |
| 2.0 | 5.0 | 25 | 100 | 400 | 1500† | 7500‡ |
| 2.5† | 7.5 | 35† | 150† | 500 | 2000‡ | 10,000‡ |

†Available only in 300R type. ‡Not available in 300R type.

### PRICES

| W-L Type | Watts | Size, In. Dia. x D* | Resistance, Ohms | Net Each, Lots of 1-4 | 5-9 | 10-24 |
|---|---|---|---|---|---|---|
| MP06A | 12.5 | ⅞ x 1 1/16 | 1–10 | $ 9.42 | $ 5.65 | $ 3.95 |
| | | | 15–750 | 8.55 | 5.13 | 3.59 |
| | | | 1000–2500 | 9.42 | 5.65 | 3.95 |
| | | | 3500–5000 | 9.87 | 5.92 | 4.14 |
| MP10A | 25 | 1 9/16 x 1⅜ | 1–10 | 9.42 | 5.65 | 3.95 |
| | | | 15–750 | 8.55 | 5.13 | 3.59 |
| | | | 1000–2500 | 9.42 | 5.65 | 3.95 |
| | | | 3500–5000 | 9.87 | 5.92 | 4.14 |
| MP15A | 50 | 2 9/32 x 1⅜ | 0.5–6 | 11.00 | 6.60 | 4.62 |
| | | | 8–500 | 10.14 | 6.08 | 4.25 |
| | | | 800–2500 | 10.55 | 6.33 | 4.43 |
| | | | 3500–10,000 | 11.00 | 6.60 | 4.62 |
| 100R | 100 | 3 5/32 x 1½ | 1–15 | 9.20 | 7.82 | 6.16 |
| | | | 25–750 | 8.70 | 7.40 | 5.83 |
| | | | 1000–2500 | 9.20 | 7.82 | 6.16 |
| | | | 5000 | 9.80 | 8.33 | 6.57 |
| | | | 7500 | 10.60 | 9.01 | 7.10 |
| | | | 10,000 | 11.10 | 9.44 | 7.44 |
| 150R | 150 | 4 x 1¾ | 1–15 | 11.60 | 9.86 | 7.77 |
| | | | 25–500 | 11.10 | 9.44 | 7.44 |
| | | | 750–1000 | 11.60 | 9.86 | 7.77 |
| | | | 2000–2500 | 12.40 | 10.54 | 8.31 |
| | | | 5000–7500 | 13.40 | 11.39 | 8.98 |
| | | | 10,000 | 14.70 | 12.50 | 9.85 |
| 300R | 300 | 6 x 2 3/16 | 1–2500 | 18.75† | 15.94‡ | ...... |

*Depth behind panel, not including shaft. Lots of: †1–2; ‡3 Up.

# CTS Trimmer Potentiometers

## MULTI-TURN TRIMMER POTENTIOMETERS

### HOW TO ORDER

CTS trimmer potentiometers and variable resistors are available in the resistance values shown for each series. To order, add 3-digit suffix to basic CTS Type Number (or Military Type Number), to indicate resistance value desired (first 2 digits of this suffix indicate significant numbers; 3rd digit indicates number of zeros). Examples: 190PC101A is a series 190 trimmer with PC terminals, resistance of 100 ohms, ±10% tolerance; 190PC504A is the same trimmer, but 500K ohms.

RJ24CP

RJ24CW

RJ24CX

### MIL STYLE RJ24 3/8" SQUARE, 1/2-WATT CERMET TRIMMERS

Approved to MIL-R-22097E, Style RJ24, Characteristics C requirements. Excellent heat sink qualities, high stability, low inductance. Sealed construction; clutch stops; infinite resolution. Molded diallyl phthalate housing. **Power Rating:** 1/2 watt at 85° C, derated to zero at 150° C. **Oper. Temperature Range:** −55° C to +150° C. **Max. Operating Voltage:** 400 VDC. **Tolerance:** ±10%. **Insulation Resistance:** 1000 megohms minimum, dry. **Rotation:** 25 turns (±3); 0.1–5.0 in.-oz. rotational torque. **Size:** 3/8" square x 13/64" high. **Terminals:** PC pins, spaced .100" (RJ24CP has staggered pins). **Adjusting Screw:** RJ24CW h screw on top; others, on side.

| MIL Type | Terminals | Resistance Values, Ohms (Specify) | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|---|
| RJ24CP | PC pins | 50, 100, 200, 500, 1K, 2K, 5K, 10K, 25K, 50K, 100K, 250K, 500K or 1 meg | $6.10 | $5.60 | $5.35 | $5.10 | $4.80 | $4.72 | $4.58 |
| RJ24CW | PC pins | | 6.05 | 5.55 | 5.30 | 5.05 | 4.75 | 4.67 | 4.53 |
| RJ24CX | PC pins | | 6.05 | 5.55 | 5.30 | 5.05 | 4.75 | 4.67 | 4.53 |

RJ22CP

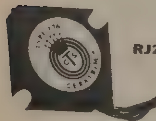
RJ22CW

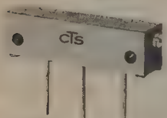
RJ22CX

### MIL STYLE RJ22 1/2" SQUARE, 1/2-WATT CERMET TRIMMERS

Approved to MIL-R-22097E, Style RJ22, Char. C. High stability, low inductance. Molded diallyl phthalate housing. Infinite resolution, clutch stops. **Power Rating:** 1/2 watt at 85° C, derated to zero at 150° C. **Voltage Rating:** 400 VDC max. operating. **Tolerance:** ±10%. **Temperature Coefficient:** ±250 ppm/° C max. **Rotation:** 35 turns (±3). **Running Torque:** 0.1–5.0 in.-oz. **Size:** 1/2" square x .235" maximum. **Terminals:** PC pins or wire leads. **Adjusting Screw:** RJ22CW has screw on top; others on side.

| MIL Type | Terminals | Resistance Values, Ohms (Specify) | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|---|
| RJ22CP | PC pins | 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 25K, 50K, 100K, 250K, 500K or 1 meg | $5.60 | $5.30 | $5.15 | $5.00 | $4.80 | $4.65 | $4.30 |
| RJ22CW | PC pins | | 5.55 | 5.25 | 5.10 | 4.95 | 4.75 | 4.60 | 4.25 |
| RJ22CX | PC pins | | 5.55 | 5.25 | 5.10 | 4.95 | 4.75 | 4.60 | 4.25 |
| RJ22CL | Leads | | 5.50 | 5.20 | 5.05 | 4.90 | 4.70 | 4.55 | 4.20 |


RJ22CL


185PC

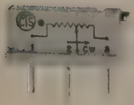
### SERIES 185 1-WATT, 25-TURN CERMET-ELEMENT TRIMMERS

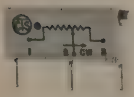
Meet or exceed MIL-R-22097E, Style RJ11, Char. C. Rugged construction with epoxy housing. Element fired above 600° C. Clutch stops. **Power Rating:** 1 watt at 85° C, derated to zero at 175° C. **Max. Oper. Voltage:** 700 VAC. **Tolerance:** ±10%. **Rotation:** 25 turns (±3). **Running Torque:** 0.1–4.0 in.-oz. **Size:** 1.250" x .290" x .364", less terminals. **Terminals:** PC pins or wire leads.

| CTS Type | Terminals | Resistance Values, Ohms (Specify) | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 185PC | PC | 100, 200, 500, 1K, 2K, 5K, 10K, 25K, 50K, 100K, 250K, 500K, 1 meg | $5.00 | $4.70 | $4.40 | $4.10 | $3.50 | $3.20 |
| 185WL | Leads | | 5.00 | 4.70 | 4.40 | 4.10 | 3.50 | 3.20 |
| 185 | Bushing mount for 185 series* | | .80 | .75 | .65 | .60 | .55 | .50 |

*Includes assembly screws and hardware.

190


191


192

### SERIES 190 1/2-WATT, 3/4" RECTILINEAR CERMET TRIMMERS

Cermet element, sealed construction in diallyl phthalate housing. Low temperature coefficient. Clutch stops. **Power Rating:** 1/2 watt at 85° C, derated to zero at 150° C. **Voltage Rating:** 300 VDC max. across end terminals. **Operating Temperature Range:** −55° C to +150° C. **Tolerance:** ±10% (1 meg, ±20%). **Rotation:** 20 turns (±3). **Running Torque:** 0.1–5.0 in.-oz. **Insulation Resistance:** 1000 megohms minimum, dry. **Size:** Type 190, .750" x .160" x .345"; Type 191, .750" x .280" x .360"; Type 192, .750" x .160" x .345". **Terminals:** PC pins.

| CTS Type | Resistance Values, Ohms (Specify) | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| 190PC | 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 25K, 50K, 100K, 250K, 500K or 1 meg | $1.94 | $1.84 | $1.75 | $1.71 | $1.65 | $1.51 | $1.34 |
| 191PC | | 1.94 | 1.84 | 1.75 | 1.71 | 1.65 | 1.55 | 1.38 |
| 192PC | | 1.94 | 1.84 | 1.75 | 1.71 | 1.65 | 1.55 | 1.38 |

RJ12CP

### MIL STYLE RJ12 1 1/4" RECTILINEAR, 3/4-WATT CERMET TRIMMERS

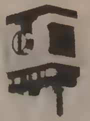
Approved to MIL-R-22097E, Style RJ12, Char. C. Cermet element, immersion proof construction in diallyl phthalate housing meeting construction requirements of Style RJ12. Clutch stops. Low temperature coefficient. **Power Rating:** 3/4 watt at 85° C derated to no load at 150° C. **Voltage Rating:** 350 VDC max. across end terminals. **Operating Temperature Range:** −55° C to +150° C. **Tolerance:** ±10% (1 meg, ±20%). **Rotation:** 23 turns (±3). **Running Torque:** 0.1–5.0 in-.oz. **Insulation Resistance:** 1000 megohms minimum, dry. **Size:** 1.250" x .190" x .315". **Terminals:** PC pins or wire leads.

| MIL Style | Terminals | Resistance Values, Ohms (Specify) | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|---|
| RJ12CL | Wire leads | 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 25K, 50K, 100K, 250K, 500K or 1 meg | $4.66 | $4.46 | $4.22 | $4.01 | $3.81 | $3.48 | $3.33 |
| RJ12CP | PC Pins | | 4.66 | 4.46 | 4.22 | 4.01 | 3.81 | 3.48 | 3.33 |
| RJ12CY* | PC Pins | | 4.57 | 4.37 | 4.14 | 3.93 | 3.74 | 3.41 | 3.27 |

*Same as RJ12CP except RJ11 terminal spacing.

# CTS® TRIMMER POTENTIOMETERS AND VARIABLE RESISTORS

## SINGLE-TURN TRIMMER POTENTIOMETERS AND VARIABLE RESISTORS


220

### SERIES 220 ⅛-WATT, COMPOSITION MINIATURE TRIMMER

iniature trimmer for PC applications. Carbon composition element. Double-wiping, self-cleaning ontactor construction; self-supporting terminals. Only 7/16" x 5/16" x ½" high. **Power Rating:** ⅛ watt t 55° C, derated to zero at 85° C (mounted on PC board). **Maximum Operating Voltage:** 500 VDC. **olerance:** ±20%. **Taper:** Linear. **Rotation Angle:** 300° (±5°). **Shaft:** .156" dia. x 1/16" long, with crewdriver slot.

| CTS Type | Resistance Values, Ohms (Specify) | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| 220S | 250, 500, 1K, 2K, 2.5K, 5K, 10K, 25K, 50K, 100K, 250K, 500K, 1 meg, 2.5 megs | $2.50 | $2.35 | $2.20 | $2.05 | $1.82 | $1.42 | $1.22 |

330

340

### SERIES 330 ⅜-WATT, CARBON-CERAMIC TRIMMER

iniature single-turn trimmer, only ½" diameter, with carbon-ceramic element. Humidity controlled, ith excellent stability. Drawn non-ferrous metal case, nickel plated; diallyl phthalate rotor. **Power ating:** ⅜ watt at 70° C, derated to zero at 150° C (mounted on PC board). **Max. Operating Voltage:** 00 VDC. **Tolerance:** ±10%. **Taper:** Linear. **Rotation Angle:** 295° (±5°). **Turning Torque:** 0.5 to 6 n.-oz. **Adjustment:** Screwdriver slot. **Size:** ½" dia. x 13/32" deep, plus terminals. **Terminals:** Standard 100" grid, .028" dia. PC pins with .030" standoffs.

| CTS Type | Resistance Values, Ohms (Specify) | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| 330PC | 100, 200, 500, 1K, 2K, 10K, 25K, 50K, 100K, 250K, 500K, 1 meg, 2 megs, 2.5 megs | $4.00 | $3.30 | $2.50 | $2.10 | $1.65 | $1.26 | $1.19 |

360S

360T

### SERIES 340 ¾-WATT, ¼" SQUARE CERMET TRIMMER

Enclosed construction, only ¼" square, with nickel-plated brass housing. Low temperature coefficient, ermet element, positive stop. **Power Rating:** ¾ watt at 25° C, derated to zero at 150° C; ½ watt at 5° C. **Voltage Rating:** 300 VDC max. across end terminals. **Tolerance:** ±20%. **Operating Temperature ange:** −55° C to +150° C. **Rotation:** 270° (±5°). **Running Torque:** 0.1–3.0 in.-oz. **Stops:** Positive; in.-oz. minimum stop strength. **Size:** .250" square x .220" high, less terminals. **Terminals:** PC pins.

| CTS Type | Resistance Values, Ohms (Specify) | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| 340PC | 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 25K, 50K, 100K, 250K, 500K | $2.10 | $1.90 | $1.75 | $1.69 | $1.58 | $1.44 | $1.35 |

362X

362Y

### SERIES 360 ½-WATT, SIDE AND TOP ADJUST CERMET TRIMMERS

op and side adjust .100", .150" and TO-5 pin spacings. Low temperature coefficient cermet element, lux sealed. Excellent .03% stability. Withstands chlorinated solvents. **Power Rating:** 1 watt at 25° C, watt at 85° C, derated linearly to zero at 125° C. **Voltage Rating:** 300 VDC max. across end terminals. **olerance:** ±20%. **Operating Temperature Range:** −55° C to +125° C. **Rotation:** 270° (±5°). **Rotational orque:** 0.1 to 5.0 in.-oz. **Stops:** Positive; 15 in.-oz. minimum stop strength. **Size:** Types 360S or 360T, ide or top adjust, .360" x .434" x .298" (.150" pin centers); Types 362S or 362T, side or top adjust, .355" x 312" x .300" (.100" pin centers); Types 362X (side) or 362Y (top) adjust, .355" x .312" x .300" (TO-5 pin rrangement). **Terminals:** PC pins.

| CTS Type | Adjust-ment | Resistance Values, Ohms (Specify) | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|---|
| 360S | Side | 50, 100, 200, 1K, 2K, 5K, 10K, 20K, 25K, 50K, 100K, 250K, 500K or 1 meg | $1.52 | $1.42 | $1.35 | $1.31 | $1.14 | $1.04 | $0.98 |
| 360T | Top | | 1.52 | 1.42 | 1.35 | 1.31 | 1.14 | 1.04 | .98 |
| 362S | Side | | 1.61 | 1.51 | 1.44 | 1.40 | 1.23 | 1.13 | 1.09 |
| 362T | Top | | 1.61 | 1.51 | 1.44 | 1.40 | 1.23 | 1.13 | 1.09 |
| 362X | Side | | 1.68 | 1.58 | 1.51 | 1.47 | 1.30 | 1.20 | 1.14 |
| 362Y | Top | | 1.70 | 1.60 | 1.53 | 1.49 | 1.32 | 1.22 | 1.16 |

385

550LT

### SERIES 385 ⅛-WATT, 11/32" DIAMETER CERMET TRIMMER

Excellent high frequency characteristics, high overload capacity. Infinite resolution. Diallyl phthalate ousing. **Power Rating:** ⅛ watt at 125° C, derated to zero at 175° C. **Max. Operating Voltage:** 500 VDC. **olerance:** ±10%. **Insulation Resistance:** 1000 megohms minimum, dry. **Taper:** Linear. **Rotation Angle:** 85° (±5°). **Torque:** 0.5 to 5 in.-oz., turning; 1 in.-lb. stop. **Terminals:** 1½" wire leads. **Size:** 11/32" dia. x 225" maximum.

| CTS Type | Resistance Values, Ohms (Specify) | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| 385PC | 100, 200, 500, 1K, 2K, 5K, 10K, 25K, 50K, 100K, 250K or 500K | $6.25 | $5.68 | $4.90 | $4.13 | $3.91 | $3.72 | $3.63 |

550R

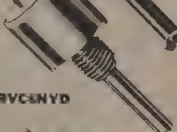
550S

### SERIES 550 2-WATT, ¾" DIAMETER CERMET VARIABLE RESISTORS

anel-mount controls offer high stability and reliability with low noise and long life. Excellent high requency characteristics, and overload capacity. Closed construction. Molded diallyl phthalate base ith molded-in terminal inserts. Terminals electrically bonded to termination pad. Infinite resolution. **ower Rating:** 2 watts at 70° C, derated to zero at 150° C. **Max. Operating Voltage:** 500 VDC. **Tolerance:** ±10% (1 meg, ±20%). **Taper:** Linear. **Rotation Angle:** 280° (±5°). **Size:** ¾" dia. x ½" deep, plus shaft .250" dia. shaft); locating lug .344" from center. **Mounting:** Bushing (⅜-32).

| CTS Type | Shaft Lgth. | Resistance Values, Ohms (Specify) | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|---|
| 550LT | ⅛"* | 50, 100, 250, 500, 1000, 2500, 5K, 10K, 25K, 50K, 100K, 250K, 500K or 1 meg | $3.06 | $2.56 | $2.11 | $1.86 | $1.63 |
| 550R | ½" | | 2.99 | 2.49 | 2.04 | 1.79 | 1.56 |
| 550S | 1⅝" | | 2.99 | 2.49 | 2.04 | 1.79 | 1.56 |

*Has ½" bushing; others, ⅜" bushing length.


RVC6NYD

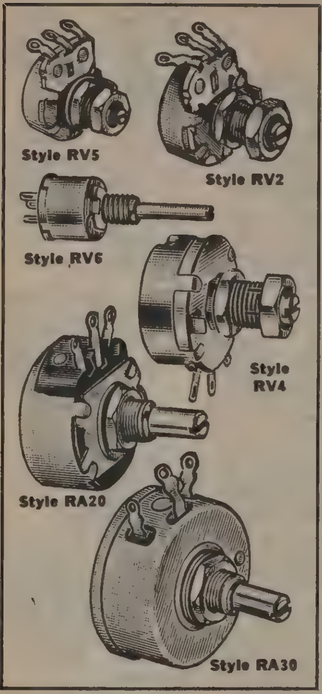
### MIL STYLE RVC6 ½" DIA. VARIABLE RESISTORS

Approved to MIL-R-23285, Style RVC6. Cermet element, infinite resolution. Excellent overload capability and high frequency characteristics. Rotational life, 50,000 cycles. **Power Rating:** ¾ watt at 85° C, derated o zero at 175° C. **Max. Operating Voltage:** 350 VDC. **Tolerance:** ±10%. **Rotation Angle:** 295° (±3°). **haft:** .125" dia.; RVC6NYD, .875" long including .250" bushing; RVC6LYA, .625" long including .500" ushing. **Bushing:** ¼-32 thread.

| MIL Type | Resistance Values, Ohms (Specify) | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| RVC6NYD | 100, 250, 500, 1K, 2.5K, 5K, 10K, 25K, 50K, 100K, 250K, 500K, 1 meg | $5.44 | $4.69 | $4.04 | $3.66 | $3.47 | $3.34 | $3.15 |
| RVC6LYA | | 5.47 | 4.72 | 4.07 | 3.69 | 3.50 | 3.37 | 3.18 |

RVC6LYA

# CTS Military Variable Resistors



## MIL-R-94C COMPOSITION VARIABLE RESISTORS

Approved to MIL-R-94C and available in common shaft lengths and values. **Rotational Life:** 10% max., 25,000 cycles. **Load Life:** 10% max., 1000 hours, rated load, 70° C. **Moisture Resistance:** 6% average, 10% max., Method 106 MIL-STD-202. **Low Temperature, Storage and Operation:** 2% max. **Thermal Cycling:** 6% max. **Shock and Vibration:** 2% max. **Temperature Range:** −63° C to +150° C.

### MIL STYLE RV5 ½-WATT, MINIATURE

**Style RV5N:** Linear resistance taper; ⅞″ slotted shaft with ¼″ lg. bushing. **Style RV5L:** Linear resistance taper; ½″ slotted shaft with ⅜″ lg. locking bushing.

| Ohms ±10% | MIL Style RV5NAYSD- | MIL Style RV5LAYSB- | Ohms ±10% | MIL Style RV5NAYSD- | MIL Style RV5LAYSB- |
|---|---|---|---|---|---|
| 250 | 251A | 251A | 50,000 | 503A | 503A |
| 500 | 501A | 501A | 100,000 | 104A | 104A |
| 1,000 | 102A | 102A | 250,000 | 254A | 254A |
| 2,500 | 252A | 252A | 500,000 | 504A | 504A |
| 5,000 | 502A | 502A | 1.0 meg.* | 105B | 105B |
| 10,000 | 103A | 103A | 2.5 meg.* | 255B | 255B |
| 25,000 | 253A | 253A | | | |

### MIL STYLE RV2 1-WATT

**Style RV2N:** Linear resistance taper; ⅞″ slotted shaft with ⅜″ lg. bushing. **Style RV2L:** Linear resistance taper; ⅝″ slotted shaft with ½″ lg. locking bushing.

| Ohms ±10% | MIL Style RV2NAYSD- | MIL Style RV2LAYSA- | Ohms ±10% | MIL Style RV2NAYSD- | MIL Style RV2LAYSA- |
|---|---|---|---|---|---|
| 100 | 101A | 101A | 25,000 | 253A | 253A |
| 250 | 251A | 251A | 50,000 | 503A | 503A |
| 500 | 501A | 501A | 100,000 | 104A | 104A |
| 1,000 | 102A | 102A | 250,000 | 254A | 254A |
| 2,500 | 252A | 252A | 500,000 | 504A | 504A |
| 5,000 | 502A | 502A | 1.0 meg.* | 105B | 105B |
| 10,000 | 103A | 103A | 2.5 meg.* | 255B | 255B |

### MIL STYLE RV6 ¾-WATT, MINIATURE

**Style RV6N:** Linear resistance taper; ⅞″ slotted shaft; ¼″ lg. bushing. **Style RV6L:** Linear resistance taper; ⅝″ slotted shaft; ½″ lg. locking bushing.

| Ohms ±10% | MIL Style RV6NAYSD- | MIL Style RV6LAYSA- | Ohms ±10% | MIL Style RV6NAYSD- | MIL Style RV6LAYSA- |
|---|---|---|---|---|---|
| 100 | 101A | 101A | 50,000 | 503A | 503A |
| 250 | 251A | 251A | 100,000 | 104A | 104A |
| 500 | 501A | 501A | 150,000 | 154A | 154A |
| 1,000 | 102A | 102A | 250,000 | 254A | 254A |
| 2,500 | 252A | 252A | 500,000 | 504A | 504A |
| 5,000 | 502A | 502A | 1.0 meg | 105A | 105A |
| 10,000 | 103A | 103A | 1.0 meg* | 105B | 105B |
| 15,000 | 153A | 153A | 2.0 meg* | 205B | 205B |
| 25,000 | 253A | 253A | 2.5 meg* | 255B | 255B |

*±20%.

## MIL-R-19B VARIABLE WIRE-WOUND RESISTORS

Approved to MIL-R-19B and available in common shaft lengths and values. **Rotational Life:** 5% max., 25,000 cycles. **Load Life:** 3% max., 1000 hours rated load, 40° C. **Moisture Resistance:** 10% max., Method 106, MIL-STD-202. **Low Temperature, Storage and Operation:** 4% max. **Thermal Cycling:** 4% max. **Shock and Vibration:** 2% max. **Temperature Range:** −63° C to +105° C

### MIL STYLE RA20 2-WATT

**Style RA20N:** Linear resistance taper; ⅞″ slotted shaft with ⅜″ long bushing. **Style RA20L:** Linear resistance taper; ⅝″ and ⅞″ slotted shaft with ½″ lg. locking bushing.

| Resistance, Ohms ±10% | ⅜″ Bushing, ⅞″ Shaft RA20NASD- | ½″ Bushing, ⅝″ Shaft RA20LASB- | ½″ Bushing, ⅞″ Shaft RA20LASD- |
|---|---|---|---|
| 3 | 3R0A | 3R0A | 3R0A |
| 6 | 6R0A | 6R0A | .............. |
| 8 | 8R0A | 8R0A | .............. |
| 10 | 100A | 100A | .............. |
| 15 | 150A | 150A | .............. |
| 20 | 200A | 200A | .............. |
| 25 | 250A | 250A | 250A |
| 35 | 350A | 350A | .............. |
| 50 | 500A | 500A | 500A |
| 75 | 750A | 750A | .............. |
| 100 | 101A | 101A | 101A |
| 150 | 151A | 151A | .............. |
| 200 | 201A | 201A | .............. |
| 250 | 251A | 251A | 251A |
| 350 | 351A | 351A | .............. |
| 500 | 501A | 501A | 501A |
| 750 | 751A | 751A | .............. |
| 1,000 | 102A | 102A | 102A |
| 2,500 | 252A | 252A | 252A |
| 5,000 | 502A | 502A | 502A |
| 7,500 | 752A | 752A | 752A |
| 10,000 | 103A | 103A | 103A |
| 15,000 | 153A | 153A | 153A |

### MIL STYLE RA30 4-WATT

**Style RA30N:** Linear resistance taper; ⅞″ slotted shaft with ⅜″ lg. bushing. **Style RA30L:** Linear resistance taper; ⅝″ slotted shaft with ½″ lg. locking bushing.

| Ohms ±10% | MIL Style RA30-NASD- | MIL Style RA30-LASB- | Ohms ±10% | MIL Style RA30-NASD- | MIL Style RA30-LASB- |
|---|---|---|---|---|---|
| 3 | 3R0A | 3R0A | 200 | 201A | 201A |
| 6 | 6R0A | 6R0A | 250 | 251A | 251A |
| 8 | 8R0A | 8R0A | 350 | 351A | 351A |
| 10 | 100A | 100A | 500 | 501A | 501A |
| 15 | 150A | 150A | 750 | 751A | 751A |
| 20 | 200A | 200A | 1,000 | 102A | 102A |
| 25 | 250A | 250A | 2,500 | 252A | 252A |
| 35 | 350A | 350A | 5,000 | 502A | 502A |
| 50 | 500A | 500A | 7,500 | 752A | 752A |
| 75 | 750A | 750A | 10,000 | 103A | 103A |
| 100 | 101A | 101A | 15,000 | 153A | 153A |
| 150 | 151A | 151A | 25,000 | 253A | 253A |

### MIL STYLE RV4 3-WATT

**Style RV4N:** Linear resistance taper; ⅞″ and 2½″ slotted shafts; ⅜″ lg. bushing. **Style RV4L:** Linear resistance taper; ⅝″ and ⅞″ slotted shafts; ½″ lg. locking bushing.

| Ohms ±10% | ⅜″ Bushing, ⅞″ Shaft RV4NAYSD- | ⅜″ Bushing, 2½″ Shaft RV4NAYSK- | ½″ Bushing, ⅝″ Shaft RV4LAYSA- | ½″ Bushing, ⅞″ Shaft RV4LAYSD- |
|---|---|---|---|---|
| 100 | 101A | 101A | 101A | 101A |
| 150 | 151A | .............. | 151A | .............. |
| 250 | 251A | 251A | 251A | 251A |
| 350 | 351A | .............. | 351A | .............. |
| 500 | 501A | 501A | 501A | 501A |
| 750 | 751A | .............. | 751A | .............. |
| 1,000 | 102A | 102A | 102A | 102A |
| 1,500 | 152A | .............. | 152A | .............. |
| 2,500 | 252A | 252A | 252A | 252A |
| 3,500 | 352A | .............. | 352A | .............. |
| 5,000 | 502A | 502A | 502A | 502A |
| 7,500 | 752A | .............. | 752A | .............. |
| 10,000 | 103A | 103A | 103A | 103A |
| 15,000 | 153A | .............. | 153A | .............. |
| 25,000 | 253A | 253A | 253A | 253A |
| 35,000 | 353A | .............. | 353A | .............. |
| 50,000 | 503A | 503A | 503A | 503A |
| 75,000 | 753A | .............. | 753A | .............. |
| 100,000 | 104A | 104A | 104A | 104A |
| 150,000 | 154A | .............. | 154A | .............. |
| 250,000 | 254A | .............. | 254A | .............. |
| 350,000 | 354A | .............. | 354A | .............. |
| 500,000 | 504A | .............. | 504A | .............. |
| 750,000 | 754A | .............. | 754A | .............. |
| 1.0 meg | 105A | 105A | 105A | 105A |

### PRICING INFORMATION

| MIL Style | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
| RV2L | $3.25 | $3.00 | $3.00 | $2.21 | $1.72 | $1.38 |
| RV2N | 3.25 | 3.00 | 3.00 | 2.13 | 1.64 | 1.30 |
| RV4LAYSA | 2.25 | 1.90 | 1.90 | 1.58 | 1.33 | .99 |
| RV4LAYSD | 2.25 | 1.90 | 1.90 | 1.58 | 1.33 | .99 |
| RV4NAYSD | 1.95 | 1.60 | 1.60 | 1.50 | 1.25 | .92 |
| RV4NAYSK | 1.95 | 1.60 | 1.60 | 1.50 | 1.25 | .92 |
| RV5L | 3.25 | 3.00 | 2.90 | 2.05 | 1.57 | 1.27 |
| RV5N | 3.25 | 3.00 | 2.82 | 1.97 | 1.49 | 1.19 |
| RV6L | 4.10 | 3.70 | 3.70 | 2.33 | 2.02 | 1.71 |
| RV6N | 4.10 | 3.65 | 3.65 | 2.19 | 1.90 | 1.61 |
| RA20L | 2.55 | 2.09 | 2.09 | 1.49 | 1.24 | .95 |
| RA20N | 2.55 | 2.01 | 2.01 | 1.41 | 1.16 | .88 |
| RA30L | 2.70 | 2.27 | 2.27 | 1.67 | 1.42 | 1.20 |
| RA30N | 2.70 | 2.19 | 2.19 | 1.59 | 1.34 | 1.12 |

# CTS® ECONOMY TRIMMERS AND ROTARY SELECTOR SWITCHES

## ECONOMY TRIMMERS

Type 115

Type P115

Type 117

Type U-201

Type X-201

### WIRE-WOUND TYPES 115, P115 AND 117

Fully enclosed, 2-watt trimmers; insulated rotors; long rotational life. Wide resistance range with ±10% tolerance, linear taper and 500 VDC max. Cross slot in nylon rotor for screwdriver adjustment or knob attachment. Has PC type terminals. Rotational angle, 270° ±5°. Type 115, printed circuit mounting; type P115, twist tab mounting; type 117, rivet ear mounting.

| CTS Number | | | Resis., Ohms | Net Each, Lots of |
|---|---|---|---|---|
| Type 115 | Type P115 | Type 117 | | |
| 115R5R0A | P115R5R0A | 117R5R0A | 5 | 1–24: $1.25 |
| 115R100A | P115R100A | 117R100A | 10 | 25-49: 1.00 |
| 115R250A | P115R250A | 117R250A | 25 | 50-99: .75 |
| 115R500A | P115R500A | 117R500A | 50 | 100–249: .60 |
| 115R101A | P115R101A | 117R101A | 100 | |
| 115R251A | P115R251A | 117R251A | 250 | |
| 115R501A | P115R501A | 117R501A | 500 | |
| 115R102A | P115R102A | 117R102A | 1000 | |
| 115R252A | P115R252A | 117R252A | 2500 | |
| 115R502A | P115R502A | 117R502A | 5000 | |
| 115R103A | P115R103A | 117R103A | 10K | |

### CARBON TYPES U-201 AND X-201

Miniature, ¼-watt carbon trimmers. Snap-in, self-supporting bracket mounted. Has ±20% tolerance, linear taper and 500 VDC max. Blue nylon knob, ¹⁹⁄₃₂" dia., slotted for front or rear screwdriver adjustment. With PC type terminals. Rotation angle, 260° ±5°. Type U-201 mounts with knob parallel to PC board; type X-201 with knob perpendicular to PC board.

| CTS Number | | Resis., Ohms | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|
| Type U-201 | Type X-201 | | 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
| U201R101B | X201R101B | 100 | 39c | 35c | 33c | 29c | 26c |
| U201R251B | X201R251B | 250 | 39c | 35c | 33c | 29c | 26c |
| U201R501B | X201R501B | 500 | 39c | 35c | 33c | 29c | 26c |
| U201R102B | X201R102B | 1000 | 39c | 35c | 33c | 29c | 26c |
| U201R252B | X201R252B | 2500 | 39c | 35c | 33c | 29c | 26c |
| U201R502B | X201R502B | 5000 | 39c | 35c | 33c | 29c | 26c |
| U201R103B | X201R103B | 10K | 39c | 35c | 33c | 29c | 26c |
| U201R253B | X201R253B | 25K | 39c | 35c | 33c | 29c | 26c |
| U201R503B | X201R503B | 50K | 39c | 35c | 33c | 29c | 26c |
| U201R104B | X201R104B | 100K | 39c | 35c | 33c | 29c | 26c |
| U201R254B | X201R254B | 250K | 39c | 35c | 33c | 29c | 26c |
| U201R504B | X201R504B | 500K | 39c | 35c | 33c | 29c | 26c |
| U201R105B | X201R105B | 1.0M | 39c | 35c | 33c | 29c | 26c |

## ROTARY SELECTOR SWITCHES

Standard, compact industrial rotary selector switches. Machine molded-in terminals for exact, immovable and permanent position in stator. Molded stator rugged for long life. Soldering heat can't loosen terminals; natural design barrier prevents solder flow into circuit elements. Long life contacts evenly silvered. Double wiping, self-cleaning rotor contacts. Stator contacts integral with terminals. Space saving design. **Detents:** Index plate 30° between positions with one fixed and one adjustable stop. **Finish:** 50-hour salt spray. **Size:** 1¹⁄₁₆" dia. x ³⁵⁄₆₄" th. body through one section; add ¼" space and ³⁄₁₆" section thickness for each additional section. Shaft, 1⅞" l. (from bushing) x ¼" dia. Bushing ⅜"-32 thread, ⅜" long. Mtg. hardware supplied. Glass alkyd resin stator and polycarbonate (Lexan)* rotor. Contacts laminated silver movable type. Terminals and stator are silver-plated brass. Operating temperature, 85° C. *Reg. DuPont trademark.

### COMPLETE SWITCHES

| Industrial No. | | No. Secs | Total Poles | No. of Positions | |
|---|---|---|---|---|---|
| Short | Non-Short | | | Short | Non-Short |
| T201 | T205 | 1 | 1 | 2–11 | 2–12 |
| T202 | T206 | 1 | 2 | 2–5 | 2–6 |
| T203 | T207 | 1 | 3 | 2–3 | 2–4 |
| T204 | T208 | 1 | 4 | 2 | 2–3 |
| ............ | T209 | 1 | 6 | .......... | 2 |
| T211 | T215 | 2 | 2 | 2–11 | 2–12 |
| T212 | T216 | 2 | 4 | 2–5 | 2–6 |
| T213 | T217 | 2 | 6 | 2–3 | 2–4 |
| T214 | T218 | 2 | 8 | 2 | 2–3 |
| ............ | T219 | 2 | 12 | .......... | 2 |
| T221 | T225 | 3 | 3 | 2–11 | 2–12 |
| T222 | T226 | 3 | 6 | 2–5 | 2–6 |
| T223 | T227 | 3 | 9 | 2–3 | 2–4 |
| T224 | T228 | 3 | 12 | 2 | 2–3 |
| ............ | T229 | 3 | 18 | .......... | 2 |
| T231 | T235 | 4 | 4 | 2–11 | 2–12 |
| T232 | T236 | 4 | 8 | 2–5 | 2–6 |
| T233 | T237 | 4 | 12 | 2–3 | 2–4 |
| T234 | T238 | 4 | 16 | 2 | 2–3 |
| ............ | T239 | 4 | 24 | .......... | 2 |

### WAFER SECTIONS

| | | | | | |
|---|---|---|---|---|---|
| T1 | T5 | 1 | 1 | 2–11 | 2–12 |
| T2 | T6 | 1 | 2 | 2–5 | 2–6 |
| T3 | T7 | 1 | 3 | 2–3 | 2–4 |
| T4 | T8 | 1 | 4 | 2 | 2–3 |
| ............ | T9 | 1 | 6 | .......... | 2 |

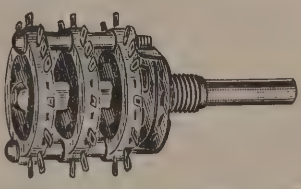
### SHAFT AND 30° DETENT ASSEMBLIES

**Standard Units:** As described in general data. **Starwheel Units:** Has starwheel detent for extremely long life and minimum turning torque variation. Double lever arm controls torque in both directions of rotation with practically no change in torque during 100,000 cycles of operation through 12 positions.

| Standard Unit No. | Total No. Positions | Suggested No. Secs. | Rear Shaft Lgth. | Starwheel Unit No. |
|---|---|---|---|---|
| T79 | 2–12 | 1 | ⁷⁄₃₂" | ............ |
| T80 | 2–12 | 1–3 | 1⁹⁄₃₂" | T180 |
| T81 | 2–12 | 4–6 | 2¹⁵⁄₁₆" | T181 |
| T82 | 2–12 | 7–10 | 5⁹⁄₆₄" | T182 |

### ATTACHABLE POWER SWITCHES

Reliable AC power switches for use with selector switches. Mount on rear frame of the selector switch, or between wafers using a specially designed bracket. Rated 3 amps, 125 VAC. **No. GC-21:** SPST. **No. VF-21:** SPDT. **No. WF-21:** DPST.



### SEALED SWITCH KITS

**CTS No. SSK-1**—Enclosed detent construction seals both the wafer sections and the detent mechanism of the switch against dust, dirt and moisture.

**CTS No. DSWK-1**—Open detent construction seals, protects wafer sections of selector switch against dust and dirt.

### SHIELDS AND MOUNTING BRACKETS

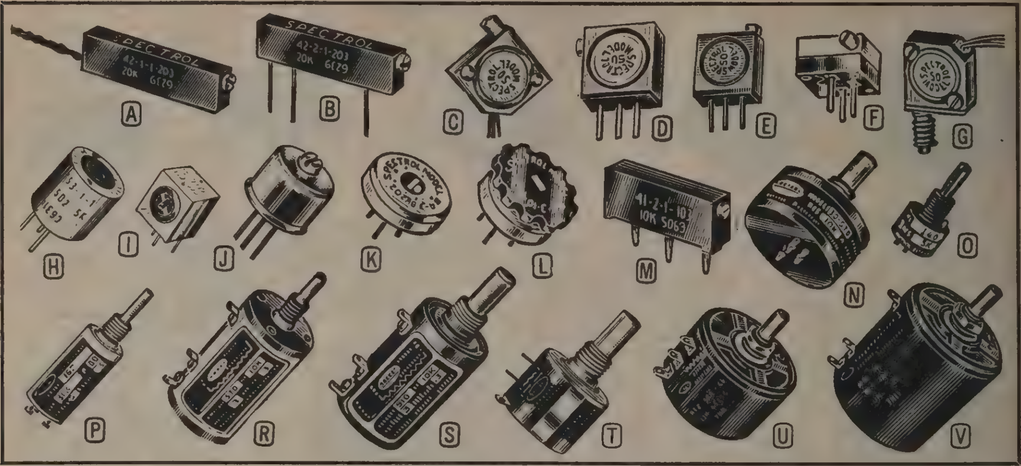
Shields provide shielding of switch sections from each other. Various size mounting brackets handle all mounting requirements.

| Stock Shields | | Mounting Brackets | |
|---|---|---|---|
| CTS Number | Description | CTS Number | Description |
| SSS-1 | Standard shields | SSS-4 | Pkg. 50, ¼" spacers |
| SSS-3 | Combination shield and mounting bracket | SSS-5 | Pkg. 50, ⅜" spacers |
| | | SSS-6 | Pkg. 50, ½" spacers |
| | | SSS-7 | Pkg. 50, ¾" spacers |
| | | SSS-8 | Pkg. 50, 1" spacers |

### OEM QUANTITY PRICES

| CTS Number | Net Each, Lots of | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
| T1 thru T9 | $1.08 | $1.00 | $0.77 | $0.72 | $0.65 | $0.54 | $0.48 |
| T79 | 1.25 | 1.15 | .90 | .83 | .75 | .73 | .69 |
| T80 | 1.42 | 1.35 | 1.10 | 1.00 | .93 | .85 | .82 |
| T81 | 2.30 | 2.15 | 1.85 | 1.65 | 1.45 | 1.35 | 1.29 |
| T82 | 3.60 | 3.45 | 3.00 | 2.65 | 2.35 | 2.10 | ...... |
| T180 | 3.90 | 3.85 | 2.80 | 2.60 | 2.35 | 2.05 | 1.85 |
| T181 | 4.60 | 4.30 | 3.60 | 3.25 | 2.90 | 2.65 | 2.40 |
| T182 | 5.70 | 5.35 | 4.50 | 4.05 | 3.65 | 3.45 | 3.15 |
| T201 thru T209 | 2.10 | 2.00 | 1.60 | 1.40 | 1.30 | 1.20 | 1.10 |
| T211 thru T219 | 3.25 | 3.20 | 2.50 | 2.25 | 2.10 | 2.00 | 1.85 |
| T221 thru T229 | 4.70 | 4.50 | 3.40 | 3.20 | 2.80 | 2.65 | 2.50 |
| T231 thru T239 | 5.80 | 5.70 | 4.60 | 4.10 | 3.75 | 3.35 | 3.20 |
| GC-21 | 1.50 | 1.40 | 1.10 | .90 | .75 | .65 | .55 |
| VF-21 | 1.85 | 1.50 | 1.20 | 1.10 | 1.00 | .75 | .65 |
| WF-21 | 1.85 | 1.50 | 1.20 | 1.10 | 1.00 | .75 | .65 |
| SSK-1 | 3.20 | 3.00 | 2.50 | 2.10 | 1.70 | 1.50 | 1.25 |
| DSWK-1 | 1.75 | 1.50 | 1.20 | 1.10 | .90 | .80 | .70 |
| SSS-1* | .40 | .35 | .30 | .25 | .20 | .18 | .17 |
| SSS-3* | 1.25 | 1.18 | 1.05 | .90 | .85 | .78 | .70 |
| SSS-4† | 1.50 | 1.30 | 1.10 | .95 | .85 | .65 | .55 |
| SSS-5† | 1.55 | 1.40 | 1.15 | 1.00 | .90 | .70 | .60 |
| SSS-6† | 1.65 | 1.50 | 1.25 | 1.10 | .95 | .75 | .65 |
| SSS-7† | 1.75 | 1.55 | 1.30 | 1.10 | .95 | .75 | .65 |
| SSS-8† | 1.80 | 1.70 | 1.60 | 1.40 | 1.15 | .95 | .85 |

# Spectrol Trimmer Potentiometers



## TRIMMER POTENTIOMETERS

Meet applicable portions of MIL-R-27208 (except Models 94 and 949) and MIL-R-22097B for Models 53 and 62, plus the following specifications: **End Resistance:** Models 53, 62, 78 and 949, 1% $R_T$ or 2 ohms, whichever is greater; all others, 2% $R_T$ or 1 ohm, whichever is greater. **Temperature Coefficient:** Models 41, 53, 62, 78 and 949 to 100 ppm/° C, depending on res.; Model 94, 100 ppm/° C; all others, 50 ppm °/C. **Noise:** Model 74, 1K; all others, 100 ohms equivalent peak noise during adjustment. **Moisture Resistance:** Resistance change: Model 53, ±5%; Model 62, sealed to permit cleaning with solvents; all others, ±(1% +0.05 ohm); insulation resistance, not less than 10 megohms. **Insulation Resistance:** Model 94, 500 megohms; Models 62, 78 and 949, 100 megohms; all others, 1000 megohms. **Vibration:** 30 G to 2 kHz. **Shock:** Model 80, 50 G for 11 msec; Model 949, not specified; all others, 100 G for 11 msec. **Load Life:** 1000 hours.

### HOW TO ORDER

Numbers shown are stock types.

**Prefix:** Indicates Model (e.g., **42**-1-1).

**First Suffix:** Indicates terminals (e.g., 42-**1**-1); **-1,** Teflon* insulated stranded 12″ leads (Models 53 and 62, round configuration with PC pins 180° from shaft head); **-2,** PC pins 90° from shaft head (Model 41, PC pins .100″ side spread); **-3,** PC pins 180° from shaft head (Model 41, PC pins .200″ side spread); **-4,** PC pins from base, horizontal mounting (Model 41, PC pins .100″ side spread, RJ11); **-5,** solder hooks 180° from shaft.

**Second Suffix:** Defines shaft and other features (e.g., 42-1-**1**): **-1,** slotted fillister head shaft (Model 53, slotted screwdriver shaft with stops), (Model 62, std. ±20% R.T. tol.); **-8,** 23-turn .083″ dia. shaft, stops, clutch and color-coded leads (Model 84, screwdriver adjust); **-10,** MIL version equivalent per separate price table (Model 84, knob adjust); **-11,** stops and clutch, slotted fillister head shaft.

**Final Suffix:** Specify resistance desired (e.g., 42-1-1-**100**), per EIA table below within range listed (per table on following page).

| Ohms | Suffix | Ohms | Suffix | Ohms | Suffix | Ohms | Suffix |
|---|---|---|---|---|---|---|---|
| 10 | **100** | 200 | **201** | 5K | **502** | 100K† | **104** |
| 20 | **200** | 500 | **501** | 10K | **103** | 200K† | **204** |
| 50 | **500** | 1000 | **102** | 20K | **203** | 500K† | **504** |
| 100 | **101** | 2000 | **202** | 50K | **503** | 1 meg† | **105** |

*Reg. DuPont trademark. †Available for Models 53, 62, 78, 949.

**Bushing Panel Mount:** Available for Models 42-1-1, 42-1-10, 44-1-1, 44-1-10, 50-1-1 (Fig. G), 55-1-8, 55-1-12, 74-1-1, 78-1-1, 78-5-1, 94-1-1, and 949-1-1. To order, add letter **P** to number (e.g., 42-1-1-104**P**); see additament table on following page for additional cost.

| Model | Fig. | Turns | Adjustment | Torque, Oz.-in. | Rotational Life, Cy. | Power | | Breakdown VAC | | Size, Inches, W. x D. x H. | Wt., gms. | Max. ° C* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | W | °C | Sea Level | 80,000′ | | | |
| **41-2-1** | M | 15 (±3) | Wiper assembly idles against stops | 5.0 max. | 200 min. without discontinuity | .75 | 25 | 1.0K | 250 | .750 x .16 x .310 | 1.2 | +125 |
| **41-3-1** | M | 15 (±3) | | 5.0 max. | | .75 | 25 | 1.0K | 250 | .750 x .16 x .310 | 1.2 | +125 |
| **41-4-1** | M | 15 (±3) | | 5.0 max. | | .75 | 25 | 1.0K | 250 | .750 x .16 x .310 | 1.2 | +125 |
| **42-1-1** | A | 22 (±5) | | .1 to 5.0 | 200 min. loaded; 500 without discontinuity unloaded | 1 | 70 | 1.5K | 350 | 1.250 x .190 x .315 | 4.3 | +175 |
| **42-2-1** | B | 22 (±5) | | | | 1 | 70 | 1.5K | 350 | 1.250 x .190 x .315 | 3.3 | +175 |
| **44-1-1** | A | 22 (±5) | | | | 1 | 70 | 1.5K | 350 | 1.250 x .280 x .315 | 4.5 | +175 |
| **44-2-1** | B | 22 (±5) | | | | 1 | 70 | 1.5K | 350 | 1.250 x .280 x .315 | 3.5 | +175 |
| **50-1-11** | C | 23 (±2) | Wiper assembly idles against stops. | 5.0 max. | | .75 | 85 | 500 | 250 | .375 x .375 x .190 | 2.0 | +150 |
| **50-2-11** | D | 23 (±2) | | | | .75 | 85 | 500 | 250 | .405 x .375 x .190 | 1.5 | +150 |
| **50-3-11** | E | 23 (±2) | | | | .75 | 85 | 500 | 250 | .405 x .375 x .190 | 1.5 | +150 |
| **50-4-11** | F | 23 (±2) | | | | .75 | 85 | 500 | 250 | .375 x .375 x .235 | 1.5 | +150 |
| **55-1-8** | C | 23 (±3) | | .1 to 5.0 max. | | 1.5 | 70 | 900 | 350 | .500 x .500 x .190 | 2.5 | +150 |
| **55-3-8** | E | 23 (±3) | | | | 1.5 | 70 | 900 | 350 | .530 x .500 x .190 | 2.5 | +150 |
| **55-4-8** | F | 23 (±3) | | | | 1.5 | 70 | 900 | 350 | .500 x .500 x .255 | 2.5 | +150 |
| **53-1-1** | H | 1 | 280° min. between stops | 5.0 max. | 200 min. without discontinuity | 0.5 | 85 | 1.0K | 250 | .344 dia. x .344 | 1.5 | +125 |
| **53-2-1** | I | 1 | | | | 0.5 | 85 | 1.0K | 250 | .313 x .344 x .355 | 1.5 | +125 |
| **62-1-1** | H | 1 | 270° nom. between stops | 5.0 max. | | .75 | 25 | 1.5K | 350 | .250 dia. x .180 | 1.0 | +125 |
| **62-2-1** | I | 1 | | | | .75 | 25 | 1.5K | 350 | .250 x .180 x .250 | 1.0 | +125 |
| **74-1-1** | B | 22 (±5) | Wiper assembly idles against stops | 5.0 max. | 500 min. w/o discontinuity | 1 | 70 | 1.0K | 250 | 1.250 x .280 x .315 | 4.5 | +175 |
| **74-2-1** | .... | 22 (±5) | | | | 1 | 70 | 1.0K | 250 | 1.250 x .280 x .315 | 3.5 | +175 |
| **78-1-1** | A | 22 (±5) | | | 200 min. without discontinuity | .75 | 70 | 500 rms | 250 rms | 1.250 x .195 x .320 | 2.8 | +125 |
| **78-2-1** | B | 22 (±5) | | | | .75 | 70 | 500 rms | 250 rms | 1.250 x .195 x .320 | 2.8 | +125 |
| **78-5-1** | .... | 22 (±5) | | | | .75 | 70 | 500 rms | 250 rms | 1.250 x .195 x .320 | 2.8 | +125 |
| **80-3-10** | J | 1 | Continuous | | 500 min. without discontinuity | 1 | 50 | 1.0K | 350 | .345 dia. x .241 | 1 | +150 |
| **84-3-8** | K | 1 | 320° min. between stops† | 0.1 to 5.0 max. | | 1.5 | 70 | 1.0K | 350 | .500 dia. x .180 | 1.7 | +175 |
| **84-3-10** | L | 1 | | | | 1.5 | 70 | 1.0K | 350 | .550 dia. x .216 | 1.7 | +175 |
| **94-1-1** | A | 22 (±5) | Same as Model 42 | .......... | .............. | .5 | 70 | 550 rms | ....... | 1¼ x 5/16 x 9/32 | 4.5 | +105 |
| **94-2-1** | B | 22 (±5) | | .......... | .............. | .5 | 70 | 550 rms | ....... | 1¼ x 5/16 x 9/32 | 3.5 | +105 |
| **949-1-1** | A | 22 (±5) | | 5.0 max. | 200 min. without discontinuity | .75 | 70 | 500 | 250 | 1¼ x 5/16 x 9/32 | 4.5 | +125 |
| **949-2-1** | B | 22 (±5) | | | | .75 | 70 | 500 | 250 | 1¼ x 5/16 x 9/32 | 3.5 | +125 |

*Operating temp.; min., −65° C. †Continuous rotation available.

## MODEL 87 MINIATURE ROTARY INDEXING SWITCHES

Single pole, 10-position, non-shorting design rated 250 mA at 28 VDC. Positive detent action and 36° indexing. **Insulation Resistance:** 1000 megohms. **Contact Resistance:** 0.05 ohm max. **Dielectric Withstanding:** 1000 VAC, sea level; 350 VAC, 80,000 ft. **Moisture Resistance:** Contact resistance change ±0.05 ohm; insul. resistance, 10 megs min. **Temp. Range:** −65° C to +150° C.

**Specify Model 87-11-19** (Fig. K, PC pins 180° from shaft and screwdriver adjust); **87-21-19** (Fig. L, same but knob adjust); or **87-31-10** (solder hooks 180° from shaft and 12–28 thrd. bushing panel mount). Double pole with 5 positions per pole max. and three pole with 3 positions per pole max. also available. Prices and specifications on request.

SEE FOLLOWING PAGE FOR PRICES

# Spectrol Potentiometers, Dials

## PRICES FOR TRIMMER POTENTIOMETERS AND ROTARY SWITCHES

### MIL SPECIFICATION TRIMMERS

| Spectrol Number | MIL Equiv. | Resis., Ohms | Net Each, Lots of* 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|---|
| 42-1-10 or 42-2-10 | RT12 | 50–10K | $5.38 | $4.98 | $4.62 | $4.34 | $4.03 |
| | | 20K | 5.93 | 5.49 | 5.09 | 4.73 | 4.44 |
| 55-1-10 | RT22 | 50–10K | 5.35 | 5.05 | 4.73 | 4.46 | 4.22 |
| | | 20K | 5.84 | 5.51 | 5.18 | 4.87 | 4.60 |
| 55-2-10<br>-3-10<br>-4-10 | RT22 | 50–10K | 4.81 | 4.53 | 4.25 | 3.99 | 3.84 |
| | | 20K | 5.28 | 4.98 | 4.68 | 4.38 | 4.20 |

**SEE PRECEDING PAGE FOR STOCK RESISTANCE VALUES**

| Spectrol Number | MIL Equiv. | Resis., Ohms | Net Each, Lots of* 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|---|
| 44-1-10 or 44-2-10 | RT11 | 50-10K | $5.38 | $4.98 | $4.62 | $4.34 | $4.03 |
| | | 20K | 5.93 | 5.49 | 5.09 | 4.73 | 4.44 |
| 50-4-10 | RT24 | 10-10K | 4.81 | 4.53 | 4.25 | 3.99 | 3.84 |

### STANDARD TRIMMERS AND ROTARY SWITCHES

| Model | Resistance, Ohms | Net Each, Lots of* 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|
| 41 | 10–1 meg | $1.85 | $1.76 | $1.65 | $1.55 | $1.44 |
| 42 | 10–10K | 5.75 | 5.24 | 4.90 | 4.56 | 4.39 |
| | 20K | 6.44 | 5.88 | 5.50 | 5.12 | 4.93 |
| | 50K | 6.95 | 6.34 | 5.93 | 5.52 | 5.32 |
| 44 | 10–10K | 5.56 | 5.07 | 4.74 | 4.42 | 4.25 |
| | 20K | 6.22 | 5.67 | 5.31 | 4.94 | 4.76 |
| | 50K | 6.73 | 6.14 | 5.74 | 5.35 | 5.15 |
| 50 | 10–10K | 6.80 | 6.20 | 5.80 | 5.40 | 5.20 |
| | 20K | 7.62 | 6.94 | 6.50 | 6.05 | 5.82 |
| | 50K | 8.23 | 7.50 | 7.02 | 6.53 | 6.29 |
| 53-1-1‡ | 10–1 meg | 1.65 | 1.58 | 1.49 | 1.40 | 1.33 |
| 53-2-1‡ | 10–1 meg | 1.65 | 1.58 | 1.49 | 1.40 | 1.33 |
| 53-1-2§ | 10–1 meg | 1.70 | 1.63 | 1.54 | 1.45 | 1.38 |
| 53-2-2§ | 10–1 meg | 1.70 | 1.63 | 1.54 | 1.45 | 1.38 |
| 55 | 10–10K | 5.78 | 5.27 | 4.93 | 4.59 | 4.42 |
| | 20K | 6.48 | 5.91 | 5.53 | 5.14 | 4.95 |
| | 50K | 6.99 | 6.37 | 5.96 | 5.55 | 5.34 |
| 62 | 10–1 meg | 1.72 | 1.63 | 1.54 | 1.45 | 1.37 |
| 74 | 10–10K | 4.93 | 4.50 | 4.21 | 3.92 | 3.77 |
| | 20K | 5.53 | 5.04 | 4.71 | 4.39 | 4.23 |
| | 50K | 5.97 | 5.44 | 5.09 | 4.74 | 4.56 |
| 78 | 10–1 meg | 3.00 | 2.85 | 2.70 | 2.57 | 2.43 |
| 80 | 10–10K | 3.74 | 3.41 | 3.19 | 2.97 | 2.86 |
| | 20K | 4.18 | 3.81 | 3.57 | 3.32 | 3.20 |
| | 50K | 4.52 | 4.12 | 3.86 | 3.59 | 3.46 |

| Model | Resistance, Ohms | Net Each, Lots of* 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|
| 84-3-8 | 10–10K | $3.32 | $3.02 | $2.83 | $2.63 | $2.54 |
| | 20K | 3.71 | 3.38 | 3.16 | 2.94 | 2.83 |
| | 50K | 4.01 | 3.66 | 3.42 | 3.19 | 3.07 |
| 84-3-10 | 10–10K | 4.00 | 3.64 | 3.41 | 3.17 | 3.06 |
| | 20K | 4.47 | 4.08 | 3.81 | 3.55 | 3.42 |
| | 50K | 4.83 | 4.40 | 4.12 | 3.83 | 3.69 |
| 87-11-19 | ............ | 4.13 | 3.77 | 3.52 | 3.28 | 3.16 |
| 87-21-19 | ............ | 4.79 | 4.37 | 4.09 | 3.81 | 3.67 |
| 87-31-10 | ............ | 5.29 | 4.82 | 4.51 | 4.20 | 4.04 |
| 94 | 50–10K | 3.15 | 2.87 | 2.68 | 2.50 | 2.41 |
| | 20K | 3.52 | 3.21 | 3.00 | 2.80 | 2.69 |
| 949 | 100–1 meg | 3.03 | 2.76 | 2.58 | 2.40 | 2.31 |

#### ADDITAMENTS

| | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|
| 42-1, 44-1 | Bushing panel mounts* | $0.87 | $0.79 | $0.74 | $0.69 | $0.66 |
| 50-1, 55-1 | | .87 | .79 | .74 | .69 | .66 |
| 74-1, 78-1, | | .87 | .79 | .74 | .69 | .66 |
| 78-5, 94-1, | | .87 | .79 | .74 | .69 | .66 |
| 949-1 | | .87 | .79 | .74 | .69 | .66 |
| All | Special† | 7.50 | 2.00 | 1.00 | .50 | .25 |

*Model number followed by **P** (e.g., 42-1-10-203**P**). †For non-standard resistance, add to price of next higher standard resistance unit. ‡±20% resistance tolerance. §±10% resistance tolerance.

**★LARGER QUANTITY PRICES AVAILABLE ON REQUEST**

## PRECISION POTENTIOMETERS

Specify resistance value desired, per table at right, when ordering.

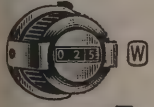
| Model No. | 132 | 140 | 162 | 500 | 510 | 534 | 830 | 860 |
|---|---|---|---|---|---|---|---|---|
| Fig. | N | O | P | R | S | T | U | V |
| Turns | 1 | 1 | 10 | 10 | 10 | 10 | 3 | 10 |
| Resist. Range, Ohms | 100—30K | 50—50K | 100—50K | 20—150K | 20—150K | 100—100K | 20—150K | 20—500K |
| Std. Linearity Tolerance, ±% | 0.5* | 1.0 | 0.3 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Std. Elect. Rotation | 352° | 320° | 3600° | 3600° | 3600° | 3600° | 1080° | 3600° |
| End Resistance, ± | 1.0%‡ | .25%‡ | .3%§ | .25%• | .25%• | .25%§ | .25%† | .25%• |
| Power Rating | 2.75 W | 2.0 W | 2.0 W | 3.0 W | 3.0 W | 2.0 W | 3.0 W | 8.0 W |
| Operating Temp. Range, °C | −55 to +105 | −55 to +125 | −55 to +125 | −55 to +125 | −55 to +105 | −55 to +125 | −55 to +125 | −55 to +125 |
| Body Diameter | 1 5/16" | 1/2" | 1/2" | 7/8" | 7/8" | 7/8" | 1 13/16" | 1 13/16" |
| Body Length | 5/8" | 5/16" | 1" | 1 15/16" | 1 15/16" | 3/4" | 1 7/16" | 2" |
| Shaft Diameter | 1/4" | 1/8" | 3/16" | 1/8" | 1/4" | 1/4" | 1/4" | 1/4" |
| Net Ea., 1-9 | $7.00 | $8.65 | $10.00 | $15.00 | $10.00 | $5.95 | $10.00 | $10.00 |
| 10-24 | 6.65 | 8.22 | 9.50 | 14.25 | 9.50 | 5.65 | 9.50 | 9.50 |
| 25-49 | 6.30 | 7.80 | 9.00 | 13.50 | 9.00 | 5.35 | 9.00 | 9.00 |
| 50-99 | 5.95 | 7.37 | 8.50 | 12.75 | 8.50 | 5.05 | 8.75 | 8.50 |
| 100-249 | 5.60 | 6.93 | 8.00 | 12.00 | 8.00 | 4.75 | 8.50 | 8.00 |
| 250-499 | 5.25 | 6.50 | 7.50 | 11.25 | 7.50 | 4.45 | 8.00 | 7.50 |

#### STOCK VALUES

| Ohms | Models |
|---|---|
| 20 | All but 132, 140, 162 |
| 50 | All but 132, 162 |
| 100 | All models |
| 200 | All models |
| 500 | All models |
| 1K | All models |
| 2K | All models |
| 5K | All models |
| 10K | All models |
| 20K | All models |
| 30K | 132, 162 |
| 50K | All but 132, 534 |
| 100K | 500, 510, 534, 830, 860 |
| 150K | 500, 510, 830 |
| 200K | 860 |
| 400K | 860 |
| 500K | 860 |

*200 ohms up. †Above 50 ohms. ‡Or 0.5 ohm, whichever is greater. §Or 1.0 ohm, whichever is greater. •Above 100 ohms.

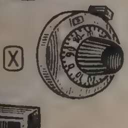
## PRECISION TURNS-COUNTING MULTIDIALS®



W

### MODEL 25 DIGITAL DIAL (FIG. W)

Displays large, well-defined digital readout in the viewing window. Choice of 3-wheel dial (reads to 1099 in 11 turns) or 4-wheel dial (reads to 9999 in 100 turns). Fine calibrations allow setting to within .33° accuracy. Two to one gear ratio between setting knob and device shaft allows extremely fine settings. Available for ¼" dia. shaft. Mounts directly to shaft with only two No. 4-40 hex set screws. Chrome plated metal parts; black plastic knob. Dia., 1¹³⁄₁₆".



X

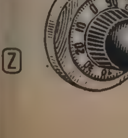
### MODEL 11 TURNS-COUNTING DIAL (FIG. X)

Accuracy of better than 0.1%. Each turn of shaft is indicated in precise increments of 1/100; each turn is totalled in easy-reading window. Locks with a finger-touch; releases easily. Ten turns. Available for ¼" and ⅛" shafts. Dia., 1"; protrusion from panel, ⅞". Satin chrome.

Y

### NEW MODEL 15 TURNS-COUNTING DIAL (FIG. Y)

Multidial registers a total count of 999; left counter indicates completed revolutions of drive sleeve; other two indicate percent of a partial revolution; graduation lines .060" long plus four intermediate lines .040" long between numerals. Clockwise rotation. White numerals .130" h. x .080" wide on black background. Dial accuracy (including backlash), both directions, within one graduation line (.02% full range). Precision 10-turn dial with 1/500-turn minor scale division. Knob, bezel and base in matte black plastic; satin-chromium plated cover. Size, 1.0" w. x 1.95" h. x 1.0" deep from mtg. surface including knob.



Z

### MODEL 21 TURNS-COUNTING DIAL (FIG. Z)

Multidial registers a total count of 1499; number in center of window (0 thru 14) indicates completed number of turns of the drive sleeves. Graduated circular dial indicates the percent of a partial turn of drive sleeve. Numerals 0.013" w. x 0.090" h., counter wheels; 0.018" w. x 0.109" h., graduated dial. Precision 15-turn dial with 1/100-turn minor scale division. Base and graduated dial satin chrome plated; turning knob and brake lever knob black plastic; numerals and index marks black. Size, 1¹³⁄₁₆" dia. x 1.0" d.

### PRICES FOR TURNS-COUNTING DIALS

Prices listed are for ¼" shaft; ⅛" shaft prices on request.

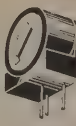
| Spectrol No. | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|
| 11 | $ 7.75 | $ 7.36 | $ 6.98 | $ 6.59 | $ 6.20 | $ 5.81 |
| 15 | 9.00 | 8.45 | 7.95 | 7.60 | 7.25 | 6.90 |
| 21 | 5.75 | 5.45 | 5.18 | 4.89 | 4.60 | 4.31 |
| 25 (3-wheel) | 14.25 | 13.54 | 12.83 | 12.11 | 11.40 | 10.69 |
| 25 (4-wheel) | 19.75 | 18.76 | 17.78 | 16.79 | 15.80 | 14.81 |

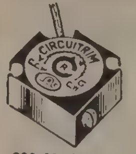
# IRC® Precision Resistors

**TRW®**
ELECTRONIC COMPONENTS

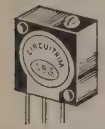
## CIRCUITRIM PRECISION WIRE-WOUND TRIMMERS

100, 150


106-2, 156-2


205-00, 255-00

205-10, 255-10, 700-10, 750-10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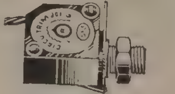
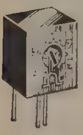

205-60, 255-60

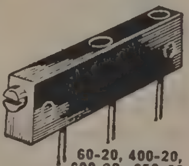
300


310

170

171

172


60-20, 400-20, 600-20, 650-20

Wire-wound precision trimmers meet or exceed all requirements of MIL-R-27208. Premium resistance wire and core material; specially designed winding devices. All openings on MIL style units are mechanically closed and sealed with epoxy.

### SERIES 100 ROUND TRIMMERS

Economical, reliable design with unique simplified mechanics without sacrifice of resolution or electrical characteristics. Military quality, sealed construction. **Power Rating:** 1 watt at 70° C. **Temperature Range:** −55° C to +150° C. **Tolerance:** ±5%. **Insulation Resistance:** 1000 megs min. at 500 VDC. **Moisture Resistance:** MIL-R-27208, Para. 3.16. **Dielectric Strength:** 1500 VAC. **Adjustment Turns:** 1 total. **Travel:** 315° nom. total mechanical. **Torque:** 7.5 oz.-in. max. **TC:** ±50 ppm/°C max. **Standard Stock Values:** 10, 20, 50, 100, 200, 500, 1000, 2000, 5000, 10K, 20K and 50K ohms.

| IRC No. | Size, Inches Dia. x Th. | Mounting Features |
|---|---|---|
| **100** | .500 x .235 | Pins .028″ dia. x .187″ lg. |
| **100-1** | .500 x .235 | Pins .028″ dia. x .300″ lg. |
| **106-2** | .563 x .312 x .500* | Vertical mt. with .020″ dia. PC pins |
| **106-4** | .563 x .312 x .500* | Vertical mt. with .030″ dia. PC pins |
| **108-2** | .563 x .312 x .500* | Fingertip adjust version of 106-2 |
| **108-4** | .563 x .312 x .500* | Fingertip adjust version of 106-4 |
| **110** | .563 x .325 | Fingertip adjust version of 100 |

*H. x D. x W.

### SERIES 205 SQUARE TRIMMERS

Meet MIL-R-27208 (RT-22) requirements. Exclusive slip-clutch protection; precious metal wiper. Silver brazed terminations and precision wire-wound element. **Power Rating:** 1 watt at 70° C, 0° at 175° C. **Resistance Tolerance:** ±5%. **Temperature Range:** −65° C to +175° C. **Insulation Resistance:** 1000 megohms min. at 500 VDC. **Moisture Resistance:** MIL-STD-202, Method 106. **Temp. Coefficient:** ±50 ppm/° C max. **Standard Stock Values:** 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K ohms.

**ORDERING INFORMATION**

| | | | |
|---|---|---|---|
| 205- | 2 | 0 | 8 |
| Ⓐ | Ⓑ | Ⓒ | Ⓓ |

Ⓐ **SERIES:** Series 205 offers economy design in diallyl phthalate case. Power rating, 1 watt at 70° C. Dielectric strength, 900 VAC. Torque, 5.0 oz.-in. max. Adjustment turns, 25 (±2) total.

Ⓑ **LEADS: 0**—Teflon insulated leads; **1**—Centered bottom PC pins; **2**—Edge PC pins; **3**—Off-centered bottom PC pins; **6**—Panel mount.

Ⓒ **ADJUSTMENT: 0**—Screwdriver slot, fillister head; **1**—Hex socket head.

Ⓓ **OTHER FEATURES: 0**—Red, green, yellow leads. **2**—Red, white, black Teflon covered leads. **5**—Pin lgth. ½″ lg. on -10 style. **7**—Screw 90° from leads (edge PC terminations only). **8**—Screw 180° from leads (edge PC terminations only).

### SERIES 300 CUBE TRIMMERS

Maximum component density, top or side screwdriver adjust, at 50% cost saving over conventional types. Fast-setting, permanent reference slider indicator with positive stops. Single-turn design is miniaturized version of Series 100 and its simplified mechanical linkage. **Resistance Tolerance:** ±5%. **Rotation:** 300° nominal, single turn. **Power Rating:** 0.6 watt at 60° C; 1.0 watt for Model 320. **Oper. Temperature:** −55° C to +150° C. **Torque:** 4 oz.-in. max. **Temp. Coefficient:** 70 ppm/°C max. **Stop Strength:** 8 oz.-in. min. **Noise:** 100 ohms max. during adjust. **Insulation Resistance:** 1000 megs min. at 500 VDC. **Size:** 5/16″ sq. gold plated pins. **Std. Stock Values:** 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K ohms. **Model 300**—Has pins opposite side from adjustment (at top). **Model 310**—Has pins at right angle from adjustment (at side).

### SERIES 400 (RT-12 SIZE) AND 600 (RT-11 SIZE)

### PRECISION RECTANGULAR TRIMMERS

Meets MIL-R-27208 environmental specifications. **Resistance Tolerance:** ±5%. **Power Rating:** 1 watt at 70° C; derate to zero at 150° C. **Insulation Resistance:** 1000 megs at 500 VDC. **Dielectric Strength:** 900 VAC. **Adjustment Turns:** 22 (±5) total. **Noise:** 100 ohms max. during adjustment. **End Resistance:** 1 ohm or 2% of resistance, whichever is greater. **Torque:** 0.1 oz.-in. min. to 8 oz.-in. max. **Temperature Coefficient:** ±50 ppm/°C max. **Temperature Range:** −65° C to +150° C. **Standard Stock Values:** 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K and 50K ohms. **Size:** Series 400, 1.25″ lg. x .190″ w. x .315″ h.; Series 600, 1.25″ lg. x .275″ w. x .315″ h. **Mounting:** Suffix -00, flexible, Teflon* insulated leads; suffix -10 (avail. only in Series 400), inline PC pins; suffix -20, staggered PC pins. For panel mt. version add suffix **M** (e.g., 600-00**M**) and price adder per table below.

*Registered DuPont trademark.

### SERIES 500

### COMMERCIAL/INDUSTRIAL TRIMMERS

Quality performance at lowest cost. Similar appearance to Series 100. Top or side adjust. **Resistance Tolerance:** ±10%. **Power Rating:** 2 watts at 50° C ambient; derate to 0° at +105° C. **Insulation Resistance:** 1000 megs at 500 VDC. **Temp. Coefficient:** ±70 ppm/° C max. **Torque:** 7.5 oz.-in. max. **Temp. Range:** −55° C to +125° C. **Adjustment Ratio:** 1:1. **Dielectric Strength:** 1000 VAC. **Mounting:** Model 500 same as Model 100; 506 same as 106-2. **Standard Stock Values:** 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K and 50K ohms.

### SERIES 700

### PRECISION SQUARE TRIMMERS

Meets MIL-R-27208 (RT-24) requirements. **Resistance Tolerance:** ±5%. **Power Rating:** ¾ watt at 85° C. **Adjustment Turns:** 21 (±2) total. Screwdriver slot adjustment, fillister head. **Temp. Coef.:** ±50 ppm/° C max. **Size:** ⅜″ sq. **Std. Stock Values:** 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K and 50K ohms. **Mounting:** 700-10 (RT-24C2P), bottom PC pins; 700-307, pins 90° from adjustment screw; 700-308, pins 180° from adjustment screw.

### SERIES 800

### PRECISION SQUARE TRIMMERS

Appearance similar to above. **Resistance Tolerance:** ±5%. **Power Rating:** 0.6 watt at 70° C. **Adjustment Turns:** 15 (±2) total. Screwdriver slot adjustment, fillister head. **Temp. Coef.:** ±50 ppm/° C max. **Size:** 5/16″ sq. **Std. Stock Values:** 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K and 20K ohms. **Mounting:** Model 800-20, pins 90° from adj. screw; 800-208, pins 180° from adj. screw.

### TRIMMER OEM PRICES

| IRC Number | Range, Ohms * | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| **100, 100-1** | 10–10K | **$3.30** | **$3.00** | **$2.70** | **$2.45** | **$2.30** | **$2.20** | **$2.05** |
| | 20K | **4.10** | **3.75** | **3.46** | **3.22** | **3.00** | **2.65** | **2.50** |
| | 50K | **4.40** | **4.00** | **3.65** | **3.40** | **3.20** | **3.00** | **2.95** |
| **106-2** | 10–10K | **3.80** | **3.42** | **3.17** | **2.98** | **2.85** | **2.72** | **2.60** |
| | 20K | **4.40** | **3.96** | **3.67** | **3.45** | **3.30** | **3.15** | **3.01** |
| | 50K | **5.00** | **4.50** | **4.17** | **3.92** | **3.75** | **3.52** | **3.43** |
| **106-4** | 10–10K | **7.00** | **6.55** | **6.10** | **5.63** | **5.18** | **4.62** | **4.26** |
| **108-2** | 10–10K | **7.00** | **6.55** | **6.10** | **5.63** | **5.18** | **4.62** | **4.26** |
| **108-4** | 10–10K | **7.00** | **6.55** | **6.10** | **5.63** | **5.18** | **4.62** | **4.26** |
| **110** | 10–10K | **3.80** | **3.42** | **3.17** | **2.98** | **2.85** | **2.72** | **2.60** |
| | 20K | **4.40** | **3.96** | **3.67** | **3.45** | **3.30** | **3.15** | **3.01** |
| | 50K | **5.00** | **4.50** | **4.17** | **3.92** | **3.75** | **3.52** | **3.43** |
| **205-00, -10, 205-105, -207, -208** | 10–10K | **4.72** | **4.48** | **4.25** | **4.00** | **3.78** | **3.39** | **3.16** |
| | 20K | **5.18** | **4.92** | **4.66** | **4.40** | **4.14** | **3.73** | **3.48** |
| | 50K | **5.65** | **5.37** | **5.09** | **4.80** | **4.52** | **4.25** | **4.04** |
| **Series 205 to RT-22** | 50–10K | **4.72** | **4.48** | **4.25** | **4.01** | **3.78** | **3.39** | **3.16** |
| | 20K | **5.18** | **4.92** | **4.66** | **4.40** | **4.14** | **3.73** | **3.48** |
| **205-60** | 10–10K | **8.36** | **7.79** | **7.23** | **6.67** | **6.12** | **5.57** | **5.01** |
| **205 Hex Skt Adder:** | | **.10** | **.09** | **.08** | **.08** | **.08** | **.08** | **.06** |
| **300** | 50–5K | **3.80** | **3.42** | **3.17** | **2.98** | **2.85** | **2.72** | **2.60** |
| | 10K | **4.80** | **4.32** | **4.00** | **3.76** | **3.60** | **3.43** | **3.28** |
| | 20K | **5.80** | **5.21** | **4.83** | **4.54** | **4.35** | **4.15** | **3.97** |
| **310** | 50–5K | **3.95** | **3.56** | **3.29** | **3.10** | **2.96** | **2.83** | **2.70** |
| | 10K | **4.95** | **4.45** | **4.12** | **3.88** | **3.71** | **3.55** | **3.38** |
| | 20K | **5.95** | **5.36** | **4.95** | **4.67** | **4.47** | **4.27** | **4.07** |
| **400-00, -10 -20; 600-00 and 600-20** | 10–10K | **5.45** | **5.00** | **4.62** | **4.29** | **4.00** | **3.53** | **3.34** |
| | 20K | **6.00** | **5.50** | **5.08** | **4.71** | **4.40** | **3.88** | **3.67** |
| | 50K | **6.56** | **6.02** | **5.55** | **5.16** | **4.81** | **4.25** | **4.01** |
| **400-()M or 600-()M Panel mt., Adder:** | | **1.25** | **1.06** | **.88** | **.75** | **.68** | **.60** | **.55** |
| **500** | 10–10K | **2.18** | **2.00** | **1.85** | **1.71** | **1.60** | **1.41** | **1.34** |
| | 20K | **2.40** | **2.20** | **2.03** | **1.89** | **1.76** | **1.55** | **1.47** |
| | 50K | **2.75** | **2.52** | **2.32** | **2.16** | **2.01** | **1.78** | **1.68** |
| **506** | 10–10K | **2.85** | **2.62** | **2.42** | **2.24** | **2.09** | **1.85** | **1.75** |
| | 20K | **3.15** | **2.88** | **2.66** | **2.47** | **2.31** | **2.04** | **1.92** |
| | 50K | **3.58** | **3.28** | **3.02** | **2.81** | **2.63** | **2.32** | **2.19** |
| **700-10, 700-307, 700-308** | 10–10K | **7.18** | **6.58** | **6.08** | **5.64** | **5.27** | **4.65** | **4.40** |
| | 20K | **8.13** | **7.45** | **6.88** | **6.39** | **5.96** | **5.26** | **4.97** |
| | 50K | **10.51** | **9.63** | **8.89** | **8.26** | **7.71** | **6.80** | **6.42** |
| **800-20 800-208** | 10–10K | **5.36** | **4.92** | **4.54** | **4.21** | **3.93** | **3.47** | **3.28** |
| | 20K | **6.36** | **5.83** | **5.38** | **5.00** | **4.67** | **4.12** | **3.90** |

*See Series listings for specific values available.

## CIRCUITRIM WIRE-WOUND TRIMMERS (CONT'D)

### SERIES 60 RECTANGULAR TRIMMERS

For commercial and industrial use; rugged mechanical construction. Has brazed multi-wire terminations. **Power Rating:** 1 watt at 70° C; derate to 0 at 125° C. **Temp. Range:** −55° C to +125° C. **Tolerance:** ±10%. **Adjustment Turns:** 22 ±5. **Noise:** 100 ohms max. during adjustment. **Min. Resistance:** 2 ohms or 1% of resistance, whichever is greater. **Torque:** 8 oz.-in. max. **Temp. Coefficient:** ±70 ppm/° C max. **Moisture Resistance:** MIL-STD-202, method 103, cond. A. **Standard Stock Values:** 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K.

**Model 60-00**—Teflon* insulated leads.
**Model 60-20**—With staggered PC pins.
**Model 60-201**—Staggered hook terminals.
**Panel Mount Versions**—Available for 60-00 and 60-201 models. To order, add suffix **M** to number (e.g., 60-00**M**); and price adders per pricing table. *Reg. DuPont TM.

### MODELS 910 & 930 MINIATURE RECTANGULAR TRIMMERS

Provides high quality performance in miniature, low cost design. Immersible to withstand normal cleaning operations. Meets MIL-STD-202, Method 103B humidity requirements. Silver brazed terminations; positive wiper drive. **Resistance Tolerance:** ±10%. **Power Rating:** 1.0 watt at 40° C. **Temperature Coefficient:** ±50 ppm/° C nom.; ±100 ppm/° C max. **Insulation Resistance:** 100 megohms min. at 500 VDC. **Operating Temperature:** −65° C to +125° C. **Noise:** 100 ohms max. during adjustment (ENR). **Adjustment Turns:** 20 nom. **Size:** 0.75″ lg. x .16″ w. x .31″ h. **Standard Stock Values:** 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K and 20K ohms. Staggered PC pins.

### MODEL 940 IC PACKAGE WIRE-WOUND TRIMMER

Leadscrew-activated wire-wound trimmer identical in size to popular dual-inline integrated circuit package. Lead screw is flush so trimmer may be automatically assembled in circuits; simplifies PC board layouts and production assembly. **Resistance Tolerance:** ±10%. **Power Rating:** 1 watt at 40° C. **Temperature Coefficient:** ±50 ppm/° C max. **Insulation Resistance:** 1000 megohms at 500 VDC. **Operating Temperature:** −65° C to +150° C. **Noise:** 100 ohms max. during adjustment (ENR). **Adjustment Turns:** 18 nom. **Size:** .760″ lg. x .250″ w. x .200″ h. **Dielectric Strength:** 900 VAC. **Torque:** 8 oz.-in. max. **Standard Stock Values:** 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K ohms.

## CIRCUITRIM METAL GLAZE TRIMMERS

Same physical configurations as available in IRC wire-wound trimmers, but employ Metal Glaze element. Smooth, tough and long wearing, it provides infinite resolution, higher resistance values and improved reliability. Negligible reactance makes it ideal for high frequency circuits. Gives "set and forget" stability even under severe shock and vibration. For physical size, terminal configurations and adjustment design, compare Metal Glaze trimmers with their equivalent wire-wound types, except Series 170 which has no wire-wound equivalent.

### SERIES 150 AND 160 ROUND TRIMMERS

Specifications same as Series 100 except: **Resistance Tolerance:** ±10% standard; ±5% and ±20% available. **Power Rating:** ¾ watt at 85° C, 0° at 150° C; 300 V max. **Contact Resistance Variation:** 3% or 20 ohms, whichever is greater. **Temperature Coefficient:** ±100 ppm/° C. **Standard Stock Values:** 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K ohms, 1 and 2 megohms.

### SERIES 170 ROUND TRIMMERS

Meet MIL-R-22097 Char. C requirements. Screwdriver adjust; .016″ dia. pins; Model 172 vertical mount. **Resis. Tol.:** ±20%; ±10% available. **Power Rating:** 0.5 W at 85° C; 300 V max. **Contact Resis. Variation:** 3% or 3 ohms, whichever is greater. **Temp. Coef:** ±100 ppm/° C max. **Dielectric Strength:** 600 VAC. **Adjustment Turns:** 1 total. **Torque:** 5.0 oz.-in. max. **Size:** Models 170, 171, .250″ dia. x .145″ thk.; Model 172, .312″ h. x .187″ d. x .250″ w. **Standard Stock Values:** 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, and 500K ohms 1 meg.

### SERIES 255 SQUARE TRIMMERS

Specifications similar to Series 205 wire-wound trimmers. Meets all environmental and life requirements of MIL-R-22097, Char. C, RJ-22. **Resistance Tolerance:** ±10% standard; ±5% and ±20% available. **Power Rating:** 1 watt at 70° C, 0° at 150° C; 300 V max. **Insulation Resistance:** 1000 megs at 500 VDC. **Dielectric Strength:** 900 VAC. **Adjustment Turns:** 24 (±2) total. **Torque:** 5.0 oz.-in. max. **Temperature Coefficient:** ±100 ppm/° C max. **Temperature Range:** −55° C to +150° C. **Standard Stock Values:** 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 50K, 100K, 200K, 500K ohms, 1 and 2 megohms.

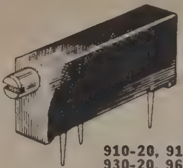
### SERIES 450 (RJ12) & 650 (RJ11) RECTANGULAR TRIMMERS TO MIL-R-22097 CHARACTERISTIC C

Specifications similar to Series 400 wire-wound trimmers. Meets or exceeds requirements of MIL-R-22097, Characteristic C **Resistance Tolerance:** ±10% standard; ±20% available. **Power Rating:** ¾ watt at 85° C; zero at 150° C; 300 V max. **Contact Resistance Variation:** 20 ohms or 3% of resistance, whichever is greater. **End Resistance:** 2 ohms max. **Torque:** 0.1 to 8.0 oz.-in. **Temperature Coefficient:** ±150 ppm/° C max. **Standard Stock Values:** 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K ohms and 1 megohm.

**Model 450-00 (RJ-12L)**—Teflon insulated leads. Size, 1.25″ lg. x .190″ w. x .315″ h.
**Model 450-10 (RJ-12P)**—Same, with inline PC pins.
**Model 450-20 (RJ-12Y)**—Same, staggered PC pins.
**Model 650-00 (RJ-11CL)**—Teflon insulated leads. Size, 1.25″ lg. x .275″ w. x .315″ h.
**Model 650-20 (RJ-11CP)**—Same, staggered PC pins.

### SERIES 550 COMMERCIAL/INDUSTRIAL TRIMMERS

Low-cost Metal Glaze ½″ round trimmers similar to Series 500. **Resistance Tolerance:** ±30%. **Power Rating:** ½ watt at 70° C. **Adjustment Turns:** 1. **Temperature Coefficient:** ±150 ppm/° C max. **Dielectric Strength:** 1000 VAC. **Torque:** 7.5 oz.-in. max. **Standard Stock Values:** 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K ohms, 1 and 2 megohms.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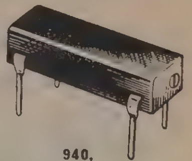
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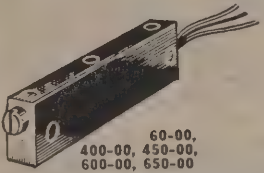
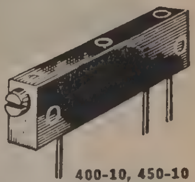

60-00, 400-00, 450-00, 600-00, 650-00


400-10, 450-10

## CIRCUITRIM METAL GLAZE TRIMMERS (CONT'D)

### SERIES 750 SQUARE TRIMMERS

Similar to Series 700 wire-wound trimmers. Meets MIL-R-22097, Char. C requirements. **Resistance Tolerance:** ±10% standard; ±20% available. **Power Rating:** ½ watt at 85° C, 0° at 150° C; 300 V max. **Adjustment Turns:** 19 (±2) total. **Temperature Coefficient:** ±100 ppm/° C max. **Standard Stock Values:** 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K ohms and 1 megohm.

**Model 750-10 (RJ-24P)**—With bottom PC pins.
**Model 750-307**—Pins 90° from adjustment screw.
**Model 750-308**—Pins 180° from adjustment screw.

### SERIES 850 SQUARE TRIMMERS

Similar to Series 800 wire-wound trimmers. **Resistance Tolerance:** ±10% std.; ±20% available. **Power Rating:** 0.3 watt at 70° C; 300 V max. **Adjustment Turns:** 13 (±2) total. Edge PC pins. **Temp. Coef:** ±100 ppm/° C. **Std. Stock Values:** 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K ohms and 1 meg.

**Model 850-20**—Pins 90° from adjustment screw.
**Model 850-208**—Pins 180° from adjustment screw.

### SERIES 960/980/989 RECTANGULAR MINIATURE TRIMMERS

Similar to Model 910 wire-wound trimmers. Meet MIL-STD-202, Method 103B, Condition A humidity requirements. Staggered PC pins. **Resistance Tolerance:** ±10%. **Power Rating:** ¾ watt at 40° C. **Temperature Coefficient:** ±100 ppm/° C max. **Stock Values:** 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K ohms, 1 megohm.

### SERIES 990 IC PACKAGE

Similar to Model 940 wire-wound trimmers. **Resistance Tolerance:** ±10%. **Power Rating:** ½ watt at 85° C, 300 V max. **Adjustment Turns:** 18 nom. **Temperature Coef.:** ±100 ppm/° C max. **Temp. Range:** −65° C to +150° C. **Std. Stock Values:** 10, 20, 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K, 200K, 500K ohms and 1 megohm.

### TRIMMER OEM PRICES (±10% TOLERANCE)

| IRC Number | Range Ohms* | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| 60-00 | 10–10K | $4.00 | $3.67 | $3.38 | $3.14 | $2.93 | $2.59 | $2.44 |
| | 20K, 50K | 5.45 | 5.00 | 4.62 | 4.29 | 4.00 | 3.53 | 3.34 |
| 60-20 | 10–10K | 2.90 | 2.65 | 2.45 | 2.28 | 2.13 | 1.88 | 1.78 |
| | 20K | 4.09 | 3.75 | 3.46 | 3.21 | 3.00 | 2.65 | 2.50 |
| 60-201 | 10–10K | 4.00 | 3.67 | 3.38 | 3.14 | 2.93 | 2.59 | 2.44 |
| | 20K, 50K | 5.45 | 5.00 | 4.62 | 4.29 | 4.00 | 3.53 | 3.34 |
| 60-00, 60-201M Adder: | | 1.25 | 1.06 | .88 | .75 | .68 | .60 | .55 |
| 150, -1 | 100–2 megs | 4.50 | 4.05 | 3.75 | 3.52 | 3.38 | 3.22 | 3.08 |
| 156-2 | 100–2 megs | 5.00 | 4.50 | 4.17 | 3.92 | 3.75 | 3.52 | 3.43 |
| 160 | 100–2 megs | 5.00 | 4.50 | 4.17 | 3.92 | 3.75 | 3.52 | 3.43 |
| 170, 171 | 10–1 meg | 1.75 | 1.66 | 1.57 | 1.50 | 1.45 | 1.40 | 1.31 |
| 172 | 10–1 meg | 2.50 | 2.38 | 2.25 | 2.15 | 2.07 | 2.00 | 1.88 |
| 255-00, -10, -207, -208 | All | 5.62 | 5.35 | 5.06 | 4.77 | 4.50 | 4.20 | 3.90 |
| 255-60 | All | 8.57 | 8.00 | 7.42 | 6.85 | 6.28 | 5.70 | 5.14 |
| 255 Hex Skt. Adder‡: | | .10 | .09 | .08 | .08 | .08 | .08 | .06 |
| 450-00 | All | 5.91 | 5.42 | 5.00 | 4.64 | 4.33 | 3.82 | 3.62 |
| 450-10 | All | 5.36 | 4.92 | 4.54 | 4.21 | 3.93 | 3.47 | 3.28 |
| 450-20 | All | 5.36 | 4.92 | 4.54 | 4.21 | 3.93 | 3.47 | 3.28 |
| 650-00 | All | 5.36 | 4.92 | 4.54 | 4.21 | 3.93 | 3.47 | 3.28 |
| 650-10 | All | 5.36 | 4.92 | 4.54 | 4.21 | 3.93 | 3.47 | 3.28 |
| 650-20 | All | 5.36 | 4.92 | 4.54 | 4.21 | 3.93 | 3.47 | 3.28 |
| 450-, 650-( ) M Adder: | | 1.25 | 1.06 | .88 | .75 | .68 | .60 | .55 |
| 550 | 10–2 megs | 2.20 | 2.02 | 1.86 | 1.73 | 1.61 | 1.42 | 1.35 |
| 556 | 10–2 megs | 2.87 | 2.63 | 2.43 | 2.26 | 2.11 | 1.86 | 1.76 |
| 750's | All | 6.50 | 6.18 | 5.85 | 5.72 | 5.52 | 5.18 | 4.90 |
| 850's | All | 5.36 | 4.92 | 4.54 | 4.21 | 3.93 | 3.47 | 3.28 |
| 910-20 | 10–20K | 1.85 | 1.71 | 1.54 | 1.46 | 1.26 | 1.10 | 1.05 |
| 930-20 | 10–20K | 1.85 | 1.71 | 1.54 | 1.46 | 1.26 | 1.10 | 1.05 |
| 940 | 10–20K | 3.75 | 3.35 | 3.00 | 2.80 | 2.60 | 2.45 | 2.35 |
| 960-20 | 10–1 meg | 1.85 | 1.71 | 1.54 | 1.46 | 1.26 | 1.10 | 1.05 |
| 980-20 | 10–1 meg | 1.85 | 1.71 | 1.54 | 1.46 | 1.26 | 1.10 | 1.05 |
| 989-20 | 10–1 meg | 1.95 | 1.84 | 1.75 | 1.71 | 1.65 | 1.55 | 1.45 |
| 990 | 10–1 meg | 3.75 | 3.35 | 3.00 | 2.80 | 2.60 | 2.45 | 2.35 |

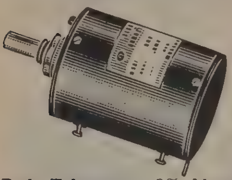
*See Series listings for specific values available. ‡255-()1() for hex socket; or, 255-()2() for longlead screw.

# Potentiometers, Dials

## PRECISION POTENTIOMETERS

Single-turn and multi-turn potentiometers include types for practically every precision requirement. Incorporate numerous design and construction features. Offers exceptional reliability.

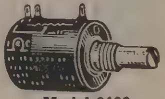
### TYPE HD-150 TEN-TURN POTENTIOMETER



Precision wire-wound pot combines reliability, ruggedness and small size. Gold alloy contacts running on coin silver are used for the common contacts and either a high palladium-platinum or a gold-silver alloy is used as the resistance element contactor. Supplied with black, mirror finish, grade XX phenolic case and end assembly. Dielectric strength is in excess of 900 volts rms, AC at 60 Hz across terminals and shaft. **Turns:** 10. **Resis. Tolerance:** ±3%. **Linear Tolerance:** ±0.25%. **Power Rating:** 5 watts at 40° (derated to zero at 100° C). **Torque:** 2 oz.-in. max. **Temperature Range:** −55° C to +100° C. **Diameter:** 1½". **See Table• for Standard Stock Values.**

### COMMERCIAL/INDUSTRIAL
### MODELS 8400 AND 8500 TEN-TURN POTENTIOMETERS

- **Excellent replacement or design-in pot for commercial industrial application**
- **Silver-brazed termination for rugged, dependable construction**
- **Withstands shocks up to 50 G**



Model 8400

Miniature, wire-wound potentiometer for commercial or industrial uses. Precision molded nylon housing and end plates. Precious metal wiper for long life; hard gold-plated center terminal contact. Long 20" winding provides high resolution, low temperature coefficient. Ribbon-welded, multi-wire terminals give low end resistance. **Turns:** 10. **Resistance Tolerance:** ±5%. **Linearity Tolerance:** ±0.25%, independent. **Power Rating:** 3 watts at 70° C ambient; derate to zero at 105° C. **Torque:** 1 oz.-in. max. **Dielectric Strength:** 1000 VAC. **Temperature Range:** −55° C to +105° C. **Size:** ⅞" dia. x 1⅛" d. behind panel. **See Table• for Standard Stock Values.**

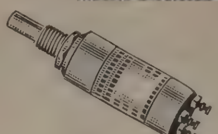
**IRC No. 8400**—Bushing ⅜"-32 NEF-2A thread ¼" long. Shaft ¼" dia. x ½" lg. with screwdriver slot.

**IRC No. 8500**—Bushing ¼"-32 NEF-2A. Shaft .124" dia. x ½" lg. with .030" w. x .045" d. screwdriver slot.

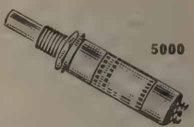
### MODELS 8403 AND 8503 THREE-TURN POTENTIOMETERS

Similar to 8400 and 8500 but 3 turns. **Power:** 2 watts at 40° C. **Resistance Tol.:** ±5%. **Standard Linearity:** ±0.5%. **Length:** 4 1/64". **See Table• for Standard Stock Values.**

### METAL-ENCASED POTENTIOMETERS



1000



5000

### TEN-TURN

Provide an accurate resistance element in a case only ½" in diameter. Resistance element wound on insulated copper core with provision-drawn wire of highest quality. Bushings of half-hard brass threaded ⅜"-32 NEF, ½" long standard. Nickel-plated brass cases and shaft. **Temperature Range:** −65° C to +125° C. **See Table• for Standard Stock Values.**

| IRC No. | Watts | Tolerance Resis. | Tolerance Linear | Electrical Rotation | Torque, Max. Start | Torque, Max. Running |
|---|---|---|---|---|---|---|
| 1000* | 3 | ±5% | ±0.5% | 3600° (+4°, −0°) | 2 oz.-in. | 2 oz.-in. |
| 7500‡ | 3 | ±5% | ±.25% | 3600° (+4°, −0°) | 2 oz.-in. | 2 oz.-in. |
| 5000 | 1.5 | ±5% | ±0.5% | 3600° (+4°, −0°) | 2 oz.-in. | 2 oz.-in. |
| **FIVE-TURN** | | | | | | |
| 1005* | 2 | ±5% | ±0.5% | 1800° (+4°, −0°) | 2 oz.-in. | 2 oz.-in. |
| 7505‡ | 2 | ±5% | ±0.5% | 1800° (+4°, −0°) | 2 oz.-in. | 2 oz.-in. |
| 5005 | 1 | ±5% | ±0.5% | 1800° (+4°, −0°) | 2 oz.-in. | 2 oz.-in. |

Diameter: *1-inch; ‡¾-inch.

### TYPE 7300 TEN-TURN POTENTIOMETER

Similar to Type 7500, but with hi-temp plastic case. **See Table• for Standard Stock Values.**

| | | | | | | |
|---|---|---|---|---|---|---|
| 7300 | 2 | ±5% | ±.25% | 3600° (+10°, −0°) | 2 oz.-in. | 2 oz.-in. |

### SINGLE TURN TYPES

For panel mount applications involving severe environmental or high temperature conditions. Will handle power requirements up to 3.5 watts. For all types, moisture sealed construction is available. Torque, starting and running is 2 oz.-in. maximum. Nickel-plated brass housing. **Power Rating:** (At 40° C) Model 151, 3.5 watts; Model 7501, 2.25 watts; Model 5001, 2 watts. **Temperature Range:** Model 151, −65° C to +150° C (derating to zero at +150° C); Models 7501 and 5001, −65° C to +150° C (derating to zero at +150° C). **See Table• for Standard Stock Values.**

| IRC No. | Dia., In. | Tolerance Resis. | Tolerance Linear | Mechanical Rotation | Insul. Resis.‡ | Wt. |
|---|---|---|---|---|---|---|
| 151 | 1½ | ±5% | ±0.5% | Continuous* | 1000 | 2 oz. |
| 7501 | ¾ | ±5% | ±1% | Continuous* | 1000 | 1 oz. |
| 5001 | ½ | ±5% | ±5% | 320° ±5° | 1000 | .27 oz. |

*Stops available. ‡Megs at 500 VDC.

### •STOCK VALUES AND PRICING

| IRC Model | Type | Standard Resistance Values, Ohms | Net Each, Lots of 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|---|
| 151 | 1-turn | 100, 500, 1K, 2.5K, 5K, 10K, 25K, 100K | $13.00 | $12.25 | $11.50 | $11.00 | $10.50 | $10.00 | $10.00 |
| 5001 | 1-turn | 10, 25, 50, 100, 500, 1K, 5K, 10K, 50K | 11.50 | 11.00 | 10.50 | 10.00 | 9.50 | 9.00 | 9.00 |
| 7501 | 1-turn | 50, 100, 250, 500, 1K, 5K, 10K, 50K | 10.00 | 9.50 | 9.00 | 8.50 | 8.00 | 7.75 | 7.75 |
| HD-150 | 10-turn —0.25%* | 500, 1K, 2K, 5K, 10K, 20K, 30K, 50K, 100K, 180K, 200K | 10.00 | 9.50 | 9.00 | 8.50 | 8.00 | 7.75 | 7.75 |
| HD-150 | 10-turn —0.05%* | 500, 1K, 5K, 10K, 20K, 30K, 50K, 100K, 200K, 250K, 300K, 500K, 600K | 13.50 | 12.50 | 11.80 | 11.10 | 10.45 | 9.75 | 9.25 |
| 1000 | 10-turn | 500, 1K, 2.5K, 5K, 10K, 25K, 50K, 100K, 200K | 14.50 | 13.50 | 12.75 | 12.00 | 11.50 | 11.00 | 11.00 |
| 1005 | 5-turn | 250, 500, 1K, 2.5K, 10K, 25K, 50K, 100K, 200K, 250K | 14.50 | 13.50 | 12.75 | 12.00 | 11.50 | 11.00 | 11.00 |
| 5000 | 10-turn | 100, 500, 1K, 2.5K, 5K, 10K, 25K, 50K, 100K | 14.50 | 13.50 | 12.75 | 12.00 | 11.50 | 11.00 | 11.00 |
| 5005 | 5-turn | 50, 100, 500, 1K, 2.5K, 5K, 10K, 25K, 50K | 14.50 | 13.50 | 12.75 | 12.00 | 11.50 | 11.00 | 11.00 |
| 7300 | 10-turn | 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 50K, 100K | 11.00 | 10.00 | 9.00 | 8.00 | 7.00 | 6.50 | 6.00 |
| 7500 | 10-turn | 100, 250, 500, 1K, 2.5K, 5K, 10K, 25K, 50K, 100K, 250K | 14.50 | 13.50 | 12.75 | 12.00 | 11.50 | 11.00 | 11.00 |
| 7505 | 5-turn | 100, 250, 500, 1K, 2.5K, 5K, 10K, 25K, 50K, 100K | 14.50 | 13.50 | 12.75 | 12.00 | 11.50 | 11.00 | 11.00 |
| 8400<br>8500 | 10-turn | 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 30K, 50K | 8.25<br>12.50 | 7.50<br>12.00 | 6.60<br>11.00 | 6.25<br>10.00 | 5.95<br>9.00 | 5.50<br>8.00 | 5.25<br>7.00 |
| 8403<br>8503 | 3-turn | 50, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, 30K, 50K | 14.50 | 13.50 | 12.75 | 12.00 | 11.50 | 11.00 | 11.00 |

*Linearity tolerance.

## REVODEX® MULTI-TURN POTENTIOMETER DIALS

Used to obtain or indicate a setting on multi-turn devices of ten turns or less. Especially suited to IRC three, five and ten turn precision potentiometers. The 1⅞" diameter models give a direct reading of the three digits. Dials read from 000 to 999. Virtually no backlash. A locking device is standard on 1⅞" models, optional on 1" dials.

| IRC Model* | Dia., In. | Pot. Shaft Dia., In. | Brake | Finish | Net Each, Lots of 1-9 | 10-24 | 25-99 | 100-199 | 200-499 |
|---|---|---|---|---|---|---|---|---|---|
| RD-411 | 1 | ¼ | No | Black | $7.65 | $7.27 | $6.89 | $6.50 | $6.12 |
| RD-412 | 1 | ¼ | Yes | Black | 8.25 | 7.84 | 7.43 | 7.01 | 6.60 |
| RD-421 | 1 | ⅛ | No | Black | 7.65 | 7.27 | 6.89 | 6.50 | 6.12 |
| RD-422 | 1 | ⅛ | Yes | Black | 8.25 | 7.84 | 7.43 | 7.01 | 6.60 |
| RD-461 | 1 | ¼ | No | Clear | 7.65 | 7.27 | 6.89 | 6.50 | 6.12 |
| RD-462 | 1 | ¼ | Yes | Clear | 8.25 | 7.84 | 7.43 | 7.01 | 6.60 |
| RD-471 | 1 | ⅛ | No | Clear | 7.65 | 7.27 | 6.89 | 6.50 | 6.12 |
| RD-472 | 1 | ⅛ | Yes | Clear | 8.25 | 7.84 | 7.43 | 7.01 | 6.60 |

*Ten-turn models are listed. For 15-turn version, change prefix to **RDK** (e.g., **RDK**-411) same price.

RD-400 Series

# IRC® Industrial Controls

**TRW** ELECTRONIC COMPONENTS

## TYPE WP AND WPRL WIRE-WOUND 5W INDUSTRIAL CONTROLS

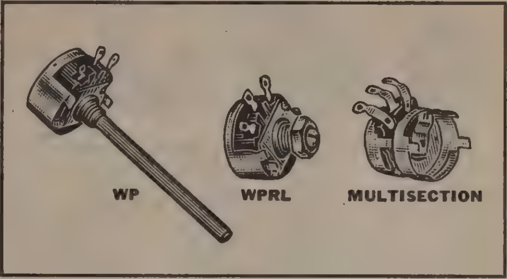
### STOCK VALUES TYPES WP AND WPRL CONTROLS AND MULTISECTIONS

| Ohms | Taper• | Max. Amps* | Type WP Control | Type WPRL Control | Multi-Sections |
|---|---|---|---|---|---|
| 2 | U | 1.414 | WP2† | WPRL2† | |
| 3 | U | 1.152 | WP3† | | |
| 5 | U | .895 | WP5† | WPRL5† | |
| 6 | U | .817 | WP6† | WPRL6† | |
| 8 | U | .707 | WP8† | WPRL8† | |
| 10 | U | .633 | WP10 | WPRL10† | |
| 15 | U | .517 | WP15† | WPRL15† | |
| 20 | U | .447 | WP20 | WPRL20† | |
| 25 | U | .400 | WP25† | WPRL25† | |
| 30 | U | .365 | WP30† | WPRL30† | |
| 40 | U | .316 | | WPRL40† | |
| 50 | U | .283 | WP50 | WPRL50 | WM50† |
| 60 | U | .258 | WP60† | WPRL60† | |
| 75 | U | .231 | WP75† | WPRL75† | |
| 100 | U | .200 | WP100 | WPRL100 | WM100 |
| 200 | U | .141 | WP200 | WPRL200 | WM200† |
| 250 | U | .126 | WP250† | WPRL250 | WM250 |
| 300 | U | .115 | WP300† | WPRL300† | |
| 400 | U | .100 | WP400† | WPRL400† | |
| 500 | U | .090 | WP500 | WPRL500 | WM500 |
| 750 | U | .073 | WP750† | WPRL750 | |
| 1000 | U | .063 | WP1000 | WPRL1000 | WM1000 |
| 1500 | U | .052 | WP1500† | WPRL1500† | WM1500† |
| 2000 | U | .045 | WP2000 | WPRL2000 | WM2000† |
| 2500 | U | .040 | WP2500† | WPRL2500† | WM2500† |
| 3000 | U | .036 | WP3000† | WPRL3000† | WM3000† |
| 4000 | U | .031 | WP4000† | WPRL4000† | |
| 5000 | U | .028 | WP5000 | WPRL5000 | WM5000† |
| 7500 | U | .023 | WP7500† | WPRL7500† | |
| 7500 | L | .016 | | | WM7500L† |
| 10K | U | .020 | WP10000 | WPRL10000 | WM10000† |
| 15K | U | .0163 | WP15000† | WPRL15000† | |
| 20K | U | .014 | WP20000† | WPRL20000 | |
| 25K | U | .0126 | WP25000 | WPRL25000 | |
| 30K | U | .0115 | WP30000† | WPRL30000† | |
| 40K | U | .010 | WP40000† | | |
| 50K | U | .0089 | WP50000 | WPRL50000 | |

Max. current for single control operating at 40° C ambient, nounted on metal chassis; multiple controls must be derated so ot spot temperature will not exceed 110° C on any winding. Non-stock items.

### •EXPLANATION OF TAPERS

Q, RQ and RQL Tapers: New number (1, 2, etc.) replaces old etter system (A, B, C, etc.). Both are shown for replacement onvenience. **1, A** or **2, A**—For potentiometers or rheostats where niform resistance change is required. **3, C**—Left-hand logarithmic aper for audio circuit control. **23, D** or **4, Q**—Right-hand semiogarithmic for use in contrast picture control circuits. Taper 4 lso for stereo tone and balance control. WP, WPRL and 5 W apers: **L**—Left-hand taper for TV focus circuits. **U**—For poentiometer or rheostat where uniform resistance change is equired.



Ideal for every commercial use with the advantages of fine quality and fast, local distributor delivery. Electrical rotation of these controls is the same with or without a switch. Bushing is cast aluminum. Terminals are heavily tinned for easy soldering; may be bent without control becoming noisy. Supplied as single controls. Dual tandem control combinations are readily available by the addition of IRC multisections.

**Type WP:** Wire-ground industrial control with ⅜-32 threaded bushing ⅜" lg. Full round ¼" dia. shaft approx. 3" lg. from mounting face. Linear taper. Tolerance, 10%. For 2, 3, 4 and 5 W requirements. Control 1⁵⁄₁₆" dia. x ⅜" d.

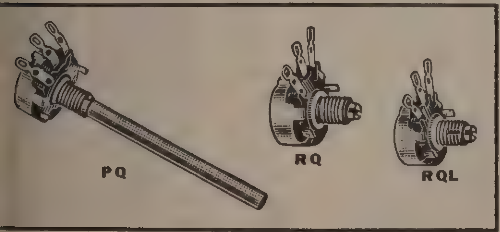
**Type WPRL:** Wire-wound industrial control with short, screwdriver slot shaft ¼" dia.; approx. ½" long from mounting face; ⅜" locking type bushing with nut. Linear taper. Tolerance, ±10%. For 2, 3, 4 and 5 W requirements. Control 1⁵⁄₁₆" dia. x ⅜" d.

**Type WM:** 5-watt, rear control multisections. When added to WP or WPRL single controls supply a wide selection of tandem dual controls. WM multisections do not operate power switches.

### NET PRICES

| IRC Type | Values, Ohms | Net Ea. |
|---|---|---|
| **WP Controls** | 2 thru 25,000<br>30,000 thru 50,000 | $1.59<br>1.95 |
| **WPRL Controls** | 2 thru 25,000<br>30,000 thru 50,000 | 1.80<br>2.10 |
| **WM Multisections** | All values | 1.59 |
| **AWS-1 SPST Add-on Switch** | For WP or WPRL | 1.20 |
| **AWS-2 DPST Add-on Switch** | For WP or WPRL | 1.30 |

## TYPE PQ, RQ AND RQL INDUSTRIAL Q CONTROLS



ffer commercial users every quality control feature plus fast, ocal distributor delivery. Available in a wide selection of resistnce values and shaft types. Electrical rotation is unchanged with r without switch. Cast aluminum bushing. Terminals heavily inned for easy soldering; may be bent without control becoming oisy. Resistance tolerance ±10% except as noted.

**ype PQ:** Full round ¼" shaft extending approx. 3" from mtg. ace; ⅜" lg. bushing. Rated ½-watt, 500 V max. Control ⁄₁₆" dia. x 2³⁄₆₄" d. Any model, Net Each.................. **$2.00**

**ype RQ:** Very short screwdriver slot shaft ¼" dia.; approx. ⁄₂" lg. from mtg. face; with ⅜" lg. bushing. Rated ½-watt. ontrol 1⁵⁄₁₆" dia. x 2³⁄₆₄" d. Any model, Net Each........ **$2.00**

**ype RQL:** 10% tolerance; with locking type bushing. Screwriver slot shaft ¼" dia. x ½" lg. from mtg. face; ⅜" split bushing nd locking nut. Rated ½-watt. Control 1⁵⁄₁₆" dia. x 2³⁄₆₄" d. ny model, Net Each.................................... **$2.20**

**ype M:** Universal wire-wound, rear control multisections for dding to PQ, RQ and RQL controls to provide ultiple-section tandem controls. Any model, Net Each. **$1.74**

### STOCK VALUES TYPES PQ, RQ AND RQL CONTROLS AND MULTISECTIONS

| Ohms | Taper• | Type PQ Control | Type RQ Control | Type RQL Control | Multi-Sections |
|---|---|---|---|---|---|
| 250 | 2, A | PQ11-201 | RQ11-201 | | |
| 500 | 1, A | PQ11-103 | RQ11-103 | RQL11-103 | M11-103 |
| 1000 | 2, A | PQ11-108 | RQ11-108 | RQL11-108 | M11-108 |
| 2000 | 2, A | PQ11-110 | RQ11-110 | RQL11-110* | M11-110 |
| 3000 | 2, A | PQ11-112 | RQ11-112 | RQL11-112* | M11-112* |
| 5000 | 2, A | PQ11-114 | RQ11-114 | RQL11-114 | M11-114 |
| 7500 | 2, A | PQ11-115* | RQ11-115* | | |
| 10K | 2, A | PQ11-116 | RQ11-116 | RQL11-116 | M11-116 |
| 10K | 3, C | PQ13-116 | RQ13-116 | | |
| 10K | 23, D | PQ14-116* | RQ14-116* | | |
| 10K | 4, Q | | | | M17-116* |
| 20K | 2, A | PQ11-119 | RQ11-119 | RQL11-119* | |
| 25K | 2, A | PQ11-120 | RQ11-120 | RQL11-120* | M11-120 |
| 25K | 23, D | PQ14-120* | RQ14-120* | | |
| 30K | 2, A | PQ11-121* | RQ11-121* | RQL11-121* | M11-121* |
| 50K | 2, A | PQ11-123 | RQ11-123 | RQL11-123* | M11-123* |
| 50K | 3, C | PQ13-123 | RQ13-123 | RQL13-123* | |
| 50K | 23, D | PQ14-123* | RQ14-123* | | |
| 100K | 2, A | PQ11-128 | RQ11-128 | RQL11-128 | M11-128 |
| 100K | 3, C | PQ13-128 | RQ13-128 | | M11-128* |
| 200K | 2, A | PQ11-129* | RQ11-129* | RQL11-129* | |
| 250K | 2, A | PQ11-130 | RQ11-130 | RQL11-130* | M11-130* |
| 250K | 3, C | PQ13-130 | RQ13-130 | RQL13-130* | M13-130* |
| 500K | 2, A | PQ11-133 | RQ11-133 | RQL11-133* | M11-133 |
| 500K | 3, C | PQ13-133 | RQ13-133 | RQL13-133* | M13-133* |
| 1 meg | 2, A | PQ11-137 | RQ11-137 | RQL11-137 | M11-137 |
| 1 meg | 3, C | PQ13-137 | RQ13-137 | RQL13-137 | M13-137* |
| 1.5 megs | 2, A | PQ11-138* | RQ11-138* | RQL11-138* | |
| 1.5 megs | 3, C | | | | M13-138* |
| 2 megs | 2, A | PQ11-139 | RQ11-139 | RQL11-139 | M11-139* |
| 2 megs | 3, C | PQ13-139* | RQ13-139* | RQL13-139* | M13-139* |
| 2.5 megs | 2, A | PQ11-239* | RQ11-239* | RQL11-239* | |
| 3 megs† | 2, A | PQ11-140 | RQ11-140 | RQL11-140* | |
| 3 megs† | 3, C | PQ13-140* | RQ13-140* | | M13-140* |
| 3 megs† | 4, Q | | | | M17-140* |
| 5 megs† | 2, A | PQ11-141 | RQ11-141 | RQL11-141* | M11-141* |
| 10 megs† | 2, A | PQ11-143 | RQ11-143 | RQL11-143* | M11-143* |

*Non stock item. †Tolerance ±20%.

# OHMITE Rheostats, Couplings

## VITREOUS ENAMELED RHEOSTATS, TANDEM COUPLING KITS

"E"

"E" Enclosed

6532 Kit

"N"

Wire-wound vitreous enameled rheostats with solid ceramic core. Pivoted, universal action. Metal-graphite contact brushes, varied to fit current and resistance. All Series "A" units are listed under UL Reexamination Service except silicone-ceramic coated types. Current ratings listed are in free air; when enclosed, currents should be reduced up to 50% depending on ventilation. *Silicone-ceramic coated.

**Model "E" Rheostats, 12½-Watt**—Rating on metal panel. Size, ⅞" dia. x 11/16" d. behind panel.

| No. | Res., Ohms | Net Each, Lots of 1-4 | 5-9 | 10-24 | 25-49 | 50Up |
|---|---|---|---|---|---|---|
| 0101 | 1 | $6.30 | $5.36 | $4.22 | $3.47 | $2.65 |
| 0102 | 2 | 6.30 | 5.36 | 4.22 | 3.47 | 2.65 |
| 0102A | 2.5 | 6.30 | 5.36 | 4.22 | 3.47 | 2.65 |
| 0103 | 3 | 6.30 | 5.36 | 4.22 | 3.47 | 2.65 |
| 0103A | 5 | 6.30 | 5.36 | 4.22 | 3.47 | 2.65 |
| 0104 | 6 | 6.30 | 5.36 | 4.22 | 3.47 | 2.65 |
| 0105 | 8 | 6.30 | 5.36 | 4.22 | 3.47 | 2.65 |
| 0106 | 10 | 6.30 | 5.36 | 4.22 | 3.47 | 2.65 |
| 0107 | 15 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0108 | 25 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0109 | 35 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0110 | 50 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0111 | 75 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0112 | 100 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0113 | 125 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0113A | 150 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0114 | 175 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0114A | 200 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0115 | 250 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0116 | 350 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0117 | 500 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0118 | 750 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0119 | 1000 | 6.30 | 5.36 | 4.22 | 3.47 | 2.65 |
| 0120 | 1500 | 6.30 | 5.36 | 4.22 | 3.47 | 2.65 |
| 0121 | 2500 | 6.30 | 5.36 | 4.22 | 3.47 | 2.65 |
| 0122* | 3500 | 7.60 | 6.46 | 5.09 | 4.18 | 3.19 |
| 0123* | 5000 | 7.60 | 6.46 | 5.09 | 4.18 | 3.19 |
| 4190* | 7500 | 7.90 | 6.72 | 5.29 | 4.35 | 3.32 |
| 4191* | 10K | 7.90 | 6.72 | 5.29 | 4.35 | 3.32 |
| 4192* | 12.5K | 8.60 | 7.31 | 5.76 | 4.73 | 3.61 |
| 4193* | 15K | 8.60 | 7.31 | 5.76 | 4.73 | 3.61 |

**Model "E" Enclosed Rheostats**—Same, but in corrosion-resistant dust-proof case. Use prefix **W** (**W**0101). Mt. on ⅛" panels.

| Range, Ohms | Net Each, Lots of 1-4 | 5-9 | 10-24 | 25 Up |
|---|---|---|---|---|
| 1–10 | $ 8.70 | $7.40 | $5.83 | $4.79 |
| 15–750 | 8.00 | 6.80 | 5.36 | 4.40 |
| 1K–2.5K | 8.70 | 7.40 | 5.83 | 4.79 |
| 3.5K*, 5K* | 9.60 | 8.16 | 6.43 | 5.28 |
| 7.5K*, 10K* | 9.80 | 8.33 | 6.57 | 5.39 |
| 12.5K*, 15K* | 11.70 | 9.95 | 7.84 | 6.44 |

**Model "H" Rheostats, Series A—25-Watt**—Size, 1 9/16" dia. x 1⅜" d. behind panel.

| No. | Res., Ohms | Net Each, Lots of 1-4 | 5-9 | 10-24 | 25-49 | 50Up |
|---|---|---|---|---|---|---|
| 0140 | 1 | $6.30 | $5.36 | $4.22 | $3.47 | $2.65 |
| 0141 | 2 | 6.30 | 5.36 | 4.22 | 3.47 | 2.65 |
| 0142 | 3 | 6.30 | 5.36 | 4.22 | 3.47 | 2.65 |
| 0143 | 6 | 6.30 | 5.36 | 4.22 | 3.47 | 2.65 |
| 0144 | 8 | 6.30 | 5.36 | 4.22 | 3.47 | 2.65 |
| 0145 | 10 | 6.30 | 5.36 | 4.22 | 3.47 | 2.65 |
| 0146 | 15 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0147 | 25 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0148 | 35 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0149 | 50 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0150 | 75 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0151 | 100 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0152 | 125 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0153 | 175 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0154 | 250 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0155 | 350 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0156 | 500 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0157 | 750 | 5.50 | 4.68 | 3.69 | 3.03 | 2.31 |
| 0158 | 1000 | 6.30 | 5.36 | 4.22 | 3.47 | 2.65 |
| 0159 | 1500 | 6.30 | 5.36 | 4.22 | 3.47 | 2.65 |
| 0160 | 2500 | 6.30 | 5.36 | 4.22 | 3.47 | 2.65 |
| 0161 | 3500 | 7.10 | 6.04 | 4.76 | 3.91 | 2.98 |
| 0162 | 5000 | 7.10 | 6.04 | 4.76 | 3.91 | 2.98 |
| 4200* | 7500 | 7.40 | 6.29 | 4.96 | 4.07 | 3.11 |
| 4201* | 10K | 7.40 | 6.29 | 4.96 | 4.07 | 3.11 |
| 4202* | 15K | 7.90 | 6.72 | 5.29 | 4.35 | 3.32 |
| 4203* | 20K | 8.40 | 7.14 | 5.63 | 4.62 | 3.53 |
| 4204* | 25K | 9.20 | 7.82 | 6.16 | 5.06 | 3.86 |

**Model "J" Rheostats, Series A—50-Watt**—Size, 2 5/16" dia. x 1⅜" d. behind panel.

| No. | Res., Ohms | Net Each, Lots of 1-4 | 5-9 | 10-24 | 25-49 | 50Up |
|---|---|---|---|---|---|---|
| 0308 | 0.5 | $7.40 | $6.29 | $4.96 | $4.07 | $3.11 |
| 0309 | 1 | 7.40 | 6.29 | 4.96 | 4.07 | 3.11 |
| 0310 | 2 | 7.40 | 6.29 | 4.96 | 4.07 | 3.11 |
| 0311 | 4 | 7.40 | 6.29 | 4.96 | 4.07 | 3.11 |
| 0312 | 6 | 7.40 | 6.29 | 4.96 | 4.07 | 3.11 |
| 0313 | 8 | 6.60 | 5.61 | 4.42 | 3.63 | 2.77 |
| 0314 | 12 | 6.60 | 5.61 | 4.42 | 3.63 | 2.77 |
| 0315 | 16 | 6.60 | 5.61 | 4.42 | 3.63 | 2.77 |
| 0316 | 22 | 6.60 | 5.61 | 4.42 | 3.63 | 2.77 |
| 0317 | 35 | 6.60 | 5.61 | 4.42 | 3.63 | 2.77 |
| 0318 | 50 | 6.60 | 5.61 | 4.42 | 3.63 | 2.77 |
| 0319 | 80 | 6.60 | 5.61 | 4.42 | 3.63 | 2.77 |
| 0320 | 125 | 6.60 | 5.61 | 4.42 | 3.63 | 2.77 |
| 0321 | 150 | 6.60 | 5.61 | 4.42 | 3.63 | 2.77 |
| 0322 | 225 | 6.60 | 5.61 | 4.42 | 3.63 | 2.77 |
| 0323 | 300 | 6.60 | 5.61 | 4.42 | 3.63 | 2.77 |
| 0324 | 500 | 6.60 | 5.61 | 4.42 | 3.63 | 2.77 |
| 0325 | 800 | 7.00 | 5.95 | 4.69 | 3.85 | 2.94 |
| 0326 | 1000 | 7.00 | 5.95 | 4.69 | 3.85 | 2.94 |
| 0327 | 1600 | 7.00 | 5.95 | 4.69 | 3.85 | 2.94 |
| 0328 | 2500 | 7.00 | 5.95 | 4.69 | 3.85 | 2.94 |
| 0329 | 3500 | 7.40 | 6.29 | 4.96 | 4.07 | 3.11 |
| 0330 | 5000 | 7.40 | 6.29 | 4.96 | 4.07 | 3.11 |
| 0331 | 8K | 7.40 | 6.29 | 4.96 | 4.07 | 3.11 |
| 0332 | 10K | 7.40 | 6.29 | 4.96 | 4.07 | 3.11 |
| 4210* | 15K | 8.40 | 7.14 | 5.63 | 4.62 | 3.53 |
| 4211* | 20K | 9.40 | 7.99 | 6.30 | 5.17 | 3.95 |
| 4212* | 25K | 10.40 | 8.84 | 6.97 | 5.72 | 4.37 |
| 4213* | 30K | 11.50 | 9.78 | 7.71 | 6.33 | 4.83 |
| 4214* | 40K | 13.20 | 11.22 | 8.84 | 7.26 | 5.54 |
| 4215* | 50K | 14.70 | 12.50 | 9.85 | 8.09 | 6.17 |

**Model "G" Rheostats, Series A—75-Watt**—Size, 2¾" dia. x 1¾" d. behind panel.

| No. | Res., Ohms | Net Each, Lots of 1-4 | 5-9 | 10-24 | 25 Up |
|---|---|---|---|---|---|
| 1100 | 0.5 | $ 9.80 | $8.33 | $6.57 | $5.39 |
| 1101 | 1 | 9.80 | 8.33 | 6.57 | 5.39 |
| 1102 | 2 | 9.80 | 8.33 | 6.57 | 5.39 |
| 1103 | 3 | 9.80 | 8.33 | 6.57 | 5.39 |
| 1104 | 5 | 9.80 | 8.33 | 6.57 | 5.39 |
| 1105 | 7.5 | 9.80 | 8.33 | 6.57 | 5.39 |
| 1106 | 10 | 9.80 | 8.33 | 6.57 | 5.39 |
| 1107 | 16 | 8.30 | 7.06 | 5.56 | 4.57 |
| 1108 | 25 | 8.30 | 7.06 | 5.56 | 4.57 |
| 1109 | 50 | 8.30 | 7.06 | 5.56 | 4.57 |
| 1110 | 75 | 8.30 | 7.06 | 5.56 | 4.57 |
| 1111 | 100 | 8.30 | 7.06 | 5.56 | 4.57 |
| 1112 | 200 | 8.30 | 7.06 | 5.56 | 4.57 |
| 1113 | 300 | 8.30 | 7.06 | 5.56 | 4.57 |
| 1114 | 400 | 8.30 | 7.06 | 5.56 | 4.57 |
| 1115 | 500 | 8.30 | 7.06 | 5.56 | 4.57 |
| 1116 | 750 | 9.80 | 8.33 | 6.57 | 5.39 |
| 1117 | 1000 | 9.80 | 8.33 | 6.57 | 5.39 |
| 1118 | 1500 | 9.80 | 8.33 | 6.57 | 5.39 |
| 1119 | 2000 | 9.80 | 8.33 | 6.57 | 5.39 |
| 1120 | 2500 | 9.80 | 8.33 | 6.57 | 5.39 |
| 1121 | 5000 | 10.40 | 8.84 | 6.97 | 5.72 |
| 1122 | 7500 | 11.30 | 9.61 | 7.57 | 6.22 |
| 1123 | 10K | 11.30 | 9.61 | 7.57 | 6.22 |

**Model "K" Rheostats, Series A—100-Watt**—Size, 3⅛" dia. x 1¾" d. behind panel.

| | | | | | |
|---|---|---|---|---|---|
| 0440 | 0.5 | $10.60 | $ 9.01 | $7.10 | $5.83 |
| 0441 | 1 | 10.60 | 9.01 | 7.10 | 5.83 |
| 0442 | 2 | 10.60 | 9.01 | 7.10 | 5.83 |
| 0443 | 3 | 10.60 | 9.01 | 7.10 | 5.83 |
| 0444 | 5 | 10.60 | 9.01 | 7.10 | 5.83 |
| 0445 | 7.5 | 10.60 | 9.01 | 7.10 | 5.83 |
| 0446 | 10 | 10.60 | 9.01 | 7.10 | 5.83 |
| 0447 | 16 | 9.70 | 8.25 | 6.50 | 5.34 |
| 0448 | 25 | 9.70 | 8.25 | 6.50 | 5.34 |
| 0449 | 50 | 9.70 | 8.25 | 6.50 | 5.34 |
| 0450 | 75 | 9.70 | 8.25 | 6.50 | 5.34 |
| 0451 | 100 | 9.70 | 8.25 | 6.50 | 5.34 |
| 0452 | 200 | 9.70 | 8.25 | 6.50 | 5.34 |
| 0453 | 300 | 9.70 | 8.25 | 6.50 | 5.34 |
| 0454 | 400 | 9.70 | 8.25 | 6.50 | 5.34 |
| 0455 | 500 | 9.70 | 8.25 | 6.50 | 5.34 |
| 0456 | 750 | 9.70 | 8.25 | 6.50 | 5.34 |
| 0457 | 1000 | 10.60 | 9.01 | 7.10 | 5.83 |
| 0458 | 1500 | 10.60 | 9.01 | 7.10 | 5.83 |
| 0459 | 2000 | 10.60 | 9.01 | 7.10 | 5.83 |
| 0460 | 2500 | 10.60 | 9.01 | 7.10 | 5.83 |
| 0461 | 5000 | 13.10 | 11.14 | 8.78 | 7.21 |
| 0462 | 7500 | 14.20 | 12.07 | 9.51 | 7.81 |
| 0463 | 10K | 14.90 | 12.67 | 9.98 | 8.20 |

**Model "L" Rheostats, Series A—150-Watt**—Size, 4" dia. x 2" d. behind panel.

| No. | Res., Ohms | Net Each, Lots of 1-4 | 5-9 | 10-24 | 25 Up |
|---|---|---|---|---|---|
| 0524 | 0.5 | $13.90 | $11.82 | $ 9.31 | $ 7.65 |
| 0525 | 1 | 13.90 | 11.82 | 9.31 | 7.65 |
| 0526 | 2 | 13.90 | 11.82 | 9.31 | 7.65 |
| 0527 | 3 | 13.90 | 11.82 | 9.31 | 7.65 |
| 0528 | 5 | 13.90 | 11.82 | 9.31 | 7.65 |
| 0529 | 7.5 | 13.90 | 11.82 | 9.31 | 7.65 |
| 0530 | 10 | 13.90 | 11.82 | 9.31 | 7.65 |
| 0531 | 15 | 13.90 | 11.82 | 9.31 | 7.65 |
| 0532 | 25 | 12.90 | 10.97 | 8.64 | 7.10 |
| 0533 | 35 | 12.90 | 10.97 | 8.64 | 7.10 |
| 0534 | 50 | 12.90 | 10.97 | 8.64 | 7.10 |
| 0535 | 75 | 12.90 | 10.97 | 8.64 | 7.10 |
| 0536 | 100 | 12.90 | 10.97 | 8.64 | 7.10 |
| 0537 | 150 | 12.90 | 10.97 | 8.64 | 7.10 |
| 0538 | 200 | 12.90 | 10.97 | 8.64 | 7.10 |
| 0539 | 250 | 12.90 | 10.97 | 8.64 | 7.10 |
| 0540 | 350 | 12.90 | 10.97 | 8.64 | 7.10 |
| 0541 | 500 | 12.90 | 10.97 | 8.64 | 7.10 |
| 0542 | 750 | 13.90 | 11.82 | 9.31 | 7.65 |
| 0543 | 1250 | 13.90 | 11.82 | 9.31 | 7.65 |
| 0544 | 1800 | 14.90 | 12.67 | 9.98 | 8.20 |
| 0545 | 2250 | 14.90 | 12.67 | 9.98 | 8.20 |
| 0546 | 3000 | 14.90 | 12.67 | 9.98 | 8.20 |
| 0547 | 4500 | 16.00 | 13.60 | 10.72 | 8.80 |
| 0548 | 7500 | 17.75 | 15.09 | 11.89 | 9.76 |
| 0549 | 10K | 21.75 | 18.49 | 14.57 | 11.96 |

**Model "P" Rheostats, Series A—225-Watt**—Size, 5" dia. x 2⅛" d. behind panel. Net Ea., 1–2. **$20.75**; Net Ea., 3 Up. **$17.64**

**Model "N" Rheostats, Series A—300-Watt**—Size, 6" dia. x 2⅜" d. behind panel. Net Ea., 1–2. **$23.25**; Net Ea., 3 Up. **$19.76**

| Resis., Ohms | Model "P" | Model "N" | Resis., Ohms | Model "P" | Model "N" |
|---|---|---|---|---|---|
| 1 | 1250 | 0650 | 150 | 1262 | 0662 |
| 2 | 1251 | 0651 | 200 | 1263 | 0663 |
| 3 | 1252 | 0652 | 300 | 1264 | 0664 |
| 4 | 1253 | 0653 | 400 | 1265 | 0665 |
| 5 | 1254 | 0654 | 700 | 1266 | 0666 |
| 7.5 | 1255 | 0655 | 900 | 1267 | 0667 |
| 10 | 1256 | 0656 | 1200 | 1268 | 0668 |
| 15 | 1257 | 0657 | 1500 | 1269 | 0669 |
| 25 | 1258 | 0658 | 1750 | 1270 | 0670 |
| 50 | 1259 | 0659 | 2000 | 1270A | 0670A |
| 75 | 1260 | 0660 | 2500 | 1271 | 0671 |
| 100 | 1261 | 0661 | | | |

**Model "R" Rheostats, 500-Watt**—Size, 8" dia. x 2⅛" d. behind panel.
Net Ea., 1–2. **$27.00**; Net Ea., 3 Up. **$22.95**

**Model "T" Rheostats, 750-Watt**—Size, 10" dia. x 3" d. behind panel.
Net Ea., 1–2. **$39.00**; Net Ea., 3 Up. **$34.85**

**Model "U" Rheostats, 1000-Watt**—Size, 12" dia. x 3" d. behind panel.
Net Ea., 1–2. **$46.00**; Net Ea., 3 Up. **$41.40**

| Resis., Ohms | Model "R" | Model "T" | Model "U" |
|---|---|---|---|
| 1 | 0849 | 1300 | 1450 |
| 1.5 | 0850 | 1301 | 1451 |
| 2 | 0851 | 1302 | 1452 |
| 2.5 | 0852 | 1303 | 1453 |
| 3 | 0853 | 1304 | 1454 |
| 4 | 0854 | 1305 | 1455 |
| 5 | 0855 | 1306 | 1456 |
| 8 | 0856 | 1307 | 1457 |
| 10 | | 1308 | 1458 |
| 12.5 | 0857 | 1309 | 1459 |
| 16 | 0858 | 1310 | 1460 |
| 25 | 0859 | 1311 | 1461 |
| 40 | 0860 | | |
| 50 | 0872 | 1312 | 1462 |
| 75 | | | 1463 |
| 80 | 0861 | 1313 | |
| 100 | | 1314 | 1464 |
| 125 | 0862 | | |
| 160 | | 1315 | |
| 175 | 0863 | | 1465 |
| 200 | | 1316 | |
| 225 | | | 1466 |
| 250 | 0864 | | |
| 300 | | 1317 | 1467 |
| 325 | 0865 | | |
| 400 | | 1318 | 1468 |
| 500 | 0866 | | 1469 |
| 600 | | 1319 | |
| 750 | 0867 | 1320 | 1470 |
| 1000 | 0868 | | 1471 |
| 1200 | | 1321 | |
| 1500 | 0869 | | 1472 |
| 1800 | | 1322 | |
| 2000 | 0870 | 1322A | |
| 2500 | 0871 | 1323 | 1473 |

**Tandem Coupling Kits**—Includes steel "U" frame, coupling with set screw, mica washer, Allen wrench and instructions.

| No. | For Models | Net Each, Lots of 1-4 | 5-9 | 10-24 | 25 Up |
|---|---|---|---|---|---|
| 6532 | H, J | $2.75 | $2.34 | $1.84 | $1.51 |
| 6533 | G, K, L | 3.45 | 2.93 | 2.31 | 1.90 |
| 6591 | E | 2.75 | 2.34 | 1.84 | 1.51 |

# MIL/EIA Standard Resistance Values

## STANDARD PRECISION RESISTANCE VALUES

### MILITARY STANDARD 90169A (MIL-BELL)

**Tolerances:** ±1% available in all values listed; figures with * are also available in ±2% values; figures with † are also available in ±2% and ±5% values.

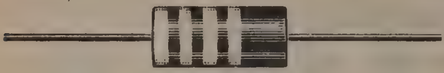
| Ohms | Ohms | Ohms | Ohms | Ohms | Ohms | Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|---|---|---|---|---|---|
| 1.00† | 5.11† | 26.1† | 133† | 681† | 3,480† | 17.8K† | 90.9K† | 464K† | 2.37 meg.† |
| 1.02 | 5.23 | 26.7 | 137 | 698 | 3,570 | 18.2K | 93.1K | 475K | 2.43 meg. |
| 1.05* | 5.36* | 27.4* | 140* | 715* | 3,650* | 18.7K* | 95.3K* | 487K* | 2.49 meg.* |
| 1.07 | 5.49 | 28.0 | 143 | 732 | 3,740 | 19.1K | 97.6K | 499K | 2.55 meg. |
| 1.10† | 5.62† | 28.7† | 147† | 750† | 3,830† | 19.6K† | 100K† | 511K† | 2.61 meg.† |
| 1.13 | 5.76 | 29.4 | 150 | 768 | 3,920 | 20.0K | 102K | 523K | 2.67 meg. |
| 1.15* | 5.90* | 30.1* | 154* | 787* | 4,020* | 20.5K* | 105K* | 536K* | 2.74 meg.* |
| 1.18 | 6.04 | 30.9 | 158 | 806 | 4,120 | 21.0K | 107K | 549K | 2.80 meg. |
| 1.21† | 6.19† | 31.6† | 162† | 825† | 4,220† | 21.5K† | 110K† | 562K† | 2.87 meg.† |
| 1.24 | 6.34 | 32.4 | 165 | 845 | 4,320 | 22.1K | 113K | 576K | 2.94 meg. |
| 1.27* | 6.49* | 33.2* | 169* | 866* | 4,420* | 22.6K* | 115K* | 590K* | 3.01 meg.* |
| 1.30 | 6.65 | 34.0 | 174 | 887 | 4,530 | 23.2K | 118K | 604K | 3.09 meg. |
| 1.33† | 6.81† | 34.8† | 178† | 909† | 4,640† | 23.7K† | 121K† | 619K† | 3.16 meg.† |
| 1.37 | 6.98 | 35.7 | 182 | 931 | 4,750 | 24.3K | 124K | 634K | 3.24 meg. |
| 1.40* | 7.15* | 36.5* | 187* | 953* | 4,870* | 24.9K* | 127K* | 649K* | 3.32 meg.* |
| 1.43 | 7.32 | 37.4 | 191 | 976 | 4,990 | 25.5K | 130K | 665K | 3.40 meg. |
| 1.47† | 7.50† | 38.3† | 196† | 1,000† | 5,110† | 26.1K† | 133K† | 681K† | 3.48 meg.† |
| 1.50 | 7.68 | 39.2 | 200 | 1,020 | 5,230 | 26.7K | 137K | 698K | 3.57 meg. |
| 1.54* | 7.87* | 40.2* | 205* | 1,050* | 5,360* | 27.4K* | 140K* | 715K* | 3.65 meg.* |
| 1.58 | 8.06 | 41.2 | 210 | 1,070 | 5,490 | 28.0K | 143K | 732K | 3.74 meg. |
| 1.62† | 8.25† | 42.2† | 215† | 1,100† | 5,620† | 28.7K† | 147K† | 750K† | 3.83 meg.† |
| 1.65 | 8.45 | 43.2 | 221 | 1,130 | 5,760 | 29.4K | 150K | 768K | 3.92 meg. |
| 1.69* | 8.66* | 44.2* | 226* | 1,150* | 5,900* | 30.1K* | 154K* | 787K* | 4.02 meg.* |
| 1.74 | 8.87 | 45.3 | 232 | 1,180 | 6,040 | 30.9K | 158K | 806K | 4.12 meg. |
| 1.78† | 9.09† | 46.4† | 237† | 1,210† | 6,190† | 31.6K* | 162K† | 825K† | 4.22 meg.† |
| 1.82 | 9.31 | 47.5 | 243 | 1,240 | 6,340 | 32.4K | 165K | 845K | 4.32 meg. |
| 1.87* | 9.53* | 48.7* | 249* | 1,270* | 6,490* | 33.2K* | 169K* | 866K* | 4.42 meg.* |
| 1.91 | 9.76 | 49.9 | 255 | 1,300 | 6,650 | 34.0K | 174K | 887K | 4.53 meg. |
| 1.96† | 10.0† | 51.1† | 261† | 1,330† | 6,810† | 34.8K† | 178K† | 909K† | 4.64 meg.† |
| 2.00 | 10.2 | 52.3 | 267 | 1,370 | 6,980 | 35.7K | 182K | 931K | 4.75 meg. |
| 2.05* | 10.5* | 53.6* | 274* | 1,400* | 7,150* | 36.5K* | 187K* | 953K* | 4.87 meg.* |
| 2.10 | 10.7 | 54.9 | 280 | 1,430 | 7,320 | 37.4K | 191K | 976K | 4.99 meg. |
| 2.15† | 11.0† | 56.2† | 287† | 1,470† | 7,500† | 38.3K† | 196K† | 1.00 meg.† | 5.11 meg.† |
| 2.21 | 11.3 | 57.6 | 294 | 1,500 | 7,680 | 39.2K | 200K | 1.02 meg. | 5.23 meg. |
| 2.26* | 11.5* | 59.0* | 301* | 1,540* | 7,870* | 40.2K* | 205K* | 1.05 meg.* | 5.36 meg.* |
| 2.32 | 11.8 | 60.4 | 309 | 1,580 | 8,060 | 41.2K | 210K | 1.07 meg. | 5.49 meg. |
| 2.37† | 12.1† | 61.9† | 316† | 1,620† | 8,250† | 42.2K† | 215K† | 1.10 meg.† | 5.62 meg.† |
| 2.43 | 12.4 | 63.4 | 324 | 1,650 | 8,450 | 43.2K | 221K | 1.13 meg. | 5.76 meg. |
| 2.49* | 12.7* | 64.9* | 332* | 1,690* | 8,660* | 44.2K* | 226K* | 1.15 meg.* | 5.90 meg.* |
| 2.55 | 13.0 | 66.5 | 340 | 1,740 | 8,870 | 45.3K | 232K | 1.18 meg. | 6.04 meg. |
| 2.61† | 13.3† | 68.1† | 348† | 1,780† | 9,090† | 46.4K† | 237K† | 1.21 meg.† | 6.19 meg.† |
| 2.67 | 13.7 | 69.8 | 357 | 1,820 | 9,310 | 47.5K | 243K | 1.24 meg. | 6.34 meg. |
| 2.74* | 14.0* | 71.5* | 365* | 1,870* | 9,530* | 48.7K* | 294K* | 1.27 meg.* | 6.49 meg.* |
| 2.80 | 14.3 | 73.2 | 374 | 1,910 | 9,760 | 49.9K | 255K | 1.30 meg. | 6.65 meg. |
| 2.87† | 14.7† | 75.0† | 383† | 1,960† | 10.0K† | 51.1K† | 261K† | 1.33 meg.† | 6.81 meg.† |
| 2.94 | 15.0 | 76.8 | 392 | 2,000 | 10.2K | 52.3K | 267K | 1.37 meg. | 6.98 meg. |
| 3.01* | 15.4* | 78.7* | 402* | 2,050* | 10.5K* | 53.6K* | 274K* | 1.40 meg.* | 7.15 meg.* |
| 3.09 | 15.8 | 80.6 | 412 | 2,100 | 10.7K | 54.9K | 280K | 1.43 meg. | 7.32 meg. |
| 3.16† | 16.2† | 82.5† | 422† | 2,150† | 11.0K† | 56.2K† | 287K† | 1.47 meg.† | 7.50 meg.† |
| 3.24 | 16.5 | 84.5 | 432 | 2,210 | 11.3K | 57.6K | 294K | 1.50 meg. | 7.68 meg. |
| 3.32* | 16.9* | 86.6* | 442* | 2,260* | 11.5K* | 59.0K* | 301K* | 1.54 meg.* | 7.87 meg.* |
| 3.40 | 17.4 | 88.7 | 453 | 2,320 | 11.8K | 60.4K | 309K | 1.58 meg. | 8.06 meg. |
| 3.48† | 17.8† | 90.9† | 464† | 2,370† | 12.1K† | 61.9K† | 316K† | 1.62 meg.† | 8.25 meg.† |
| 3.57 | 18.2 | 93.1 | 475 | 2,430 | 12.4K | 63.4K | 324K | 1.65 meg. | 8.45 meg. |
| 3.65* | 18.7* | 95.3* | 487* | 2,490* | 12.7K* | 64.9K* | 332K* | 1.69 meg.* | 8.66 meg.* |
| 3.74 | 19.1 | 97.6 | 499 | 2,550 | 13.0K | 66.5K | 340K | 1.74 meg. | 8.87 meg. |
| 3.83† | 19.6† | 100† | 511† | 2,610† | 13.3K† | 68.1K† | 348K† | 1.78 meg.† | 9.09 meg.† |
| 3.92 | 20.0 | 102 | 523 | 2,670 | 13.7K | 69.8K | 357K | 1.82 meg. | 9.31 meg. |
| 4.02* | 20.5* | 105* | 536* | 2,740* | 14.0K* | 71.5K* | 365K* | 1.87 meg.* | 9.53 meg.* |
| 4.12 | 21.0 | 107 | 549 | 2,800 | 14.3K | 73.2K | 374K | 1.91 meg. | 9.76 meg. |
| 4.22† | 21.5† | 110† | 562† | 2,870† | 14.7K† | 75.0K† | 383K† | 1.96 meg.† | 10.0 meg.† |
| 4.32 | 22.1 | 113 | 576 | 2,940 | 15.0K | 76.8K | 392K | 2.00 meg. |  |
| 4.42* | 22.6* | 115* | 590* | 3,010* | 15.4K* | 78.7K* | 402K* | 2.05 meg.* |  |
| 4.53 | 23.2 | 118 | 604 | 3,090 | 15.8K | 80.6K | 412K | 2.10 meg. |  |
| 4.64† | 23.7† | 121† | 619† | 3,160† | 16.2K† | 82.5K† | 422K† | 2.15 meg.† |  |
| 4.75 | 24.3 | 124 | 634 | 3,240 | 16.5K | 84.5K | 432K | 2.21 meg. |  |
| 4.87* | 24.9* | 127* | 649* | 3,320* | 16.9K* | 86.6K* | 442K* | 2.26 meg.* |  |
| 4.99 | 25.5 | 130 | 665 | 3,400 | 17.4K | 88.7K | 453K | 2.32 meg. |  |

## EIA STANDARD RESISTANCE VALUES

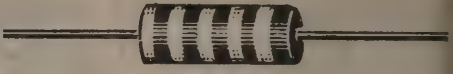
**Tolerances:** ±5% available in all values listed; **Bold face figures** are also available in ±10% values.

| Ohms | Ohms | Ohms | Ohms | Ohms | Ohms | Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|---|---|---|---|---|---|
| **2.7** | 13 | **68** | 360 | **1,800** | 9,100 | **47,000** | 0.24 meg. | **1.2 meg.** | 6.2 meg. |
| 3.0 | **15** | 75 | **390** | 2,000 | **10,000** | 51,000 | **0.27 meg.** | 1.3 meg. | **6.8 meg.** |
| **3.3** | 16 | **82** | 430 | **2,200** | 11,000 | **56,000** | 0.30 meg. | **1.5 meg.** | 7.5 meg. |
| 3.6 | **18** | 91 | **470** | 2,400 | **12,000** | 62,000 | **0.33 meg.** | 1.6 meg. | **8.2 meg.** |
| **3.9** | 20 | **100** | 510 | **2,700** | 13,000 | **68,000** | 0.36 meg. | **1.8 meg.** | 9.1 meg. |
| 4.3 | **22** | 110 | **560** | 3,000 | **15,000** | 75,000 | **0.39 meg.** | 2.0 meg. | **10.0 meg.** |
| **4.7** | 24 | **120** | 620 | **3,300** | 16,000 | **82,000** | 0.43 meg. | **2.2 meg.** | 11.0 meg. |
| 5.1 | **27** | 130 | **680** | 3,600 | **18,000** | 91,000 | **0.47 meg.** | 2.4 meg. | **12.0 meg.** |
| **5.6** | 30 | **150** | 750 | **3,900** | 20,000 | **0.1 meg.** | 0.51 meg. | **2.7 meg.** | 13.0 meg. |
| 6.2 | **33** | 160 | **820** | 4,300 | **22,000** | 0.11 meg. | **0.56 meg.** | 3.0 meg. | **15.0 meg.** |
| **6.8** | 36 | **180** | 910 | **4,700** | 24,000 | **0.12 meg.** | 0.62 meg. | **3.3 meg.** | 16.0 meg. |
| 7.5 | **39** | 200 | **1,000** | 5,100 | **27,000** | 0.13 meg. | **0.68 meg.** | 3.6 meg. | **18.0 meg.** |
| **8.2** | 43 | **220** | 1,100 | **5,600** | 30,000 | **0.15 meg.** | 0.75 meg. | **3.9 meg.** | 20.0 meg. |
| 9.1 | **47** | 240 | **1,200** | 6,200 | **33,000** | 0.16 meg. | **0.82 meg.** | 4.3 meg. | **22.0 meg.** |
| **10** | 51 | **270** | 1,300 | **6,800** | 36,000 | **0.18 meg.** | 0.91 meg. | **4.7 meg.** |  |
| 11 | **56** | 300 | **15,00** | 7,500 | **39,000** | 0.20 meg. | **1.0 meg.** | 5.1 meg. |  |
| **12** | 62 | **330** | 1,600 | **8,200** | 43,000 | **0.22 meg.** | 1.1 meg. | **5.6 meg.** |  |

# ALLEN-BRADLEY HOT-MOLDED FIXED COMPOSITION RESISTORS



Style RC



Style RCR

## INDUSTRIAL GRADE AND MIL-R-11 STYLE RC

Allen-Bradley hot molded fixed composition resistors are high quality units for general purpose use. Small size, uniformity, ruggedness and moderate cost make them equally useful in military, industrial, and consumer product applications. Permanent color coding. Meet all requirements for MIL-R-11. Minimum resistance under MIL spec is 2.7 ohms for ¼, ½, and 1 watt; 10 ohms for ⅛ watt and 2 watts. Meet salt water and high humidity requirements. Unexcelled for low noise level. Can be used at full wattage ratings at 70° C ambient temperature.

| A-B Type | MIL-R-11 Style | Resistance, Range, Ohms | 5% Tolerance | | | | | 10% Tolerance | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Net Each, Lots of | | | Net/M,Lots | | Net Each, Lots of | | | Net/M,Lots |
| | | | 1-99 | 100-249 | 250-499 | 500-999 | 1,000-4,999 | 1-99 | 100-249 | 250-499 | 500-999 | 1,000-4,999 |
| BB | RC05 | 2.7 to 9.1 | $0.31 | $0.154 | $0.143 | $0.132 | $104.50 | $0.22 | $.0108 | $0.097 | $0.086 | $74.80 |
| | | 10 to 22 M | .28 | .14 | .13 | .12 | 95.00 | .20 | .098 | .088 | .078 | 68.00 |
| CB | RC07 | 2.7 to 9.1 | .11 | .08 | .069 | .058 | 40.70 | .07 | .055 | .044 | .033 | 22.00 |
| | | 10 to 22 M | .10 | .073 | .063 | .053 | 37.00 | .06 | .05 | .04 | .03 | 20.00 |
| EB | RC20 | 1.0 to 2.4 | .13 | .065 | .057 | .048 | 41.80 | .07 | .044 | .036 | .028 | 20.90 |
| | | 2.7 to 22 M | .12 | .059 | .052 | .044 | 38.00 | .06 | .04 | .033 | .025 | 19.00 |
| GB | RC32 | 2.7 to 22 M | .18 | .084 | .077 | .069 | 61.50 | .09 | .053 | .046 | .038 | 30.50 |
| HB | RC42 | 10 to 22 M | .30 | .15 | .143 | .135 | 100.00 | .19 | .096 | .089 | .081 | 52.00 |

## MIL-R-39008 STYLE RCR

Allen-Bradley hot molded fixed composition resistors meet all requirements for MIL-R-39008. Style RCR resistors have established reliability to the "S" level or 0.001% failure rate per 1,000 hours. Failure rate level symbolized on resistor by means of fifth color band; e.g., "S" = yellow. Can be used at full wattage ratings at 70° C ambient temperature.

| MIL-R-39008 Style | Resistance Range, Ohms | 5% Tolerance | | | | | 10% Tolerance | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Net Each, Lots of | | | Net/M,Lots | | Net Each, Lots of | | | Net/M,Lots |
| | | 1-99 | 100-249 | 250-499 | 500-999 | 1,000-4,999 | 1-99 | 100-249 | 250-499 | 500-999 | 1,000-4,999 |
| RCR05 | 2.7 to 9.1 | $0.32 | $0.16 | $0.147 | $0.136 | $108.00 | $0.23 | $0.11 | $0.10 | $0.088 | $77.00 |
| | 10 to 22 M | .29 | .145 | .134 | .124 | 98.00 | .21 | .101 | .091 | .08 | 70.00 |
| RCR07 | 2.7 to 9.1 | .11 | .083 | .071 | .061 | 42.00 | .07 | .06 | .045 | .034 | 23.00 |
| | 10 to 22 M | .10 | .075 | .065 | .055 | 38.00 | .06 | .052 | .041 | .031 | 21.00 |
| RCR20 | 2.7 to 22 M | .12 | .061 | .054 | .045 | 39.00 | .06 | .041 | .034 | .026 | 20.00 |
| RCR32 | 2.7 to 22 M | .19 | .087 | .079 | .071 | 64.00 | .09 | .055 | .047 | .039 | 32.00 |
| RCR42 | 10 to 22 M | .31 | .155 | .147 | .139 | 103.00 | .20 | .099 | .092 | .083 | 54.00 |

## REEL-PACKAGED FIXED COMPOSITION RESISTORS

Allen-Bradley resistors are available in both body taped and double-lead taped reels at additional charge as indicated; charge for the reel is the same whether or not the reel is full. Quantities available only in multiples of 100 pieces above minimum. **Note**—Long-term storage of reel-packaged resistors is not recommended, due to normal adhesive aging.

### STOCK VALUE DECADE

Multiply values listed below by 1, 10, 100, etc. for exact values in desired range. **Tolerance:** ±5% available in all values listed; **boldface values** are also available in ±10%.

| Ohms | Ohms | Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|---|---|
| **1.0*** | **1.5*** | **2.2*** | **3.3** | **4.7** | **6.8** |
| 1.1* | 1.6* | 2.4* | 3.6 | 5.1 | 7.5 |
| **1.2*** | **1.8*** | **2.7** | **3.9** | **5.6** | **8.2** |
| 1.3* | 2.0* | 3.0 | 4.3 | 6.2 | 9.1 |

*Does not apply to MIL-R-11 or MIL-R-39008 resistors.

### BODY TAPED

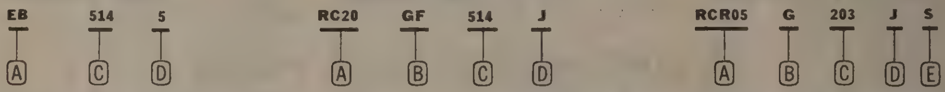
| A-B Type | MIL-R-11 Style | MIL-R-39008 Style | Min. Order Qty. | Max. No. per Reel | Added Charge per Reel |
|---|---|---|---|---|---|
| BB | RC05 | RCR05 | 500 | 1,000 | None |
| | | | 1,100 | 4,000 | None |
| CB | RC07 | RCR07 | 1,000 | 2,500 | $1.25 |
| EB | RC20 | RCR20 | 1,000 | 2,500 | 1.25 |
| GB | RC32 | RCR32 | 500 | 2,000 | 1.60 |
| HB | RC42 | RCR42 | 500 | 1,000 | 1.50 |

### DOUBLE-LEAD TAPED

| A-B Type | MIL-R-11 Style | MIL-R-39008 Style | Min. Order Qty. | Max. No. per Reel | Added Charge per Reel |
|---|---|---|---|---|---|
| BB | RC05 | RCR05 | 500 | 500 | None |
| | | | 600 | 2,000 | None |
| CB | RC07 | RCR07 | 1,000 | 2,500 | $2.00 |
| EB | RC20 | RCR20 | 1,000 | 2,500 | 2.00 |
| GB | RC32 | RCR32 | 500 | 2,000 | 2.20 |
| HB | RC42 | RCR42 | 500 | 1,000 | 2.50 |

## HOW TO ORDER

INDUSTRIAL GRADE — MIL-R-11 STYLE RC — MIL-R-39008 STYLE RCR



Ⓐ A-B Type No. or MIL Style No.

| A-B Type | MIL-R-11 Style | MIL-R-39008 Style | Rating, Watts | V | Dimen., In. Lgth. x Dia. |
|---|---|---|---|---|---|
| BB | RC05 | RCR05 | ⅛ | 150 | .145 x .062 |
| CB | RC07 | RCR07 | ¼ | 250 | .250 x .090 |
| EB | RC20 | RCR20 | ½ | 350 | .375 x .140 |
| GB | RC32 | RCR32 | 1 | 500 | .562 x .225 |
| HB | RC42 | .............. | 2 | 750 | .688 x .312 |

Ⓒ Three-digit number represents resistance. First two digits are significant figures, third is number of zeros that follow. **For values less than 10 ohms:** Industrial Grade; substitute **G** for third digit, making desired resistance value the first two digits multiplied by 0.1—e.g., **27G** = 2.7 ohms; for MIL-R-11 and MIL-R-39008 substitute **R** for decimal point—e.g., **2R7** = 2.7 ohms.

Ⓓ Tolerance: Code for ±5% is **5** for Industrial Grade, **J** for MIL types; ±10% is **1** for Industrial Grade, **K** for MIL types.

Ⓑ For MIL types only; maximum ambient temperature and resistance-temperature characteristic per MIL-R-11 or MIL-R-39008. At 70° C maximum ambient operating temperature, 100% rated wattage can be dissipated.

**Resistance-Temperature Characteristic per MIL Spec**
See Allen-Bradley Bulletin 5000 for Typical Performance

| Nominal Resistance, Ohms | Max. allowable change from resistance at 25° C ambient temp. | |
|---|---|---|
| | At −55° C | At +105° C |
| 1,000 and under | ± 6.5% | ± 5% |
| 1,100 to 10,000 | ±10% | ± 6% |
| 11,000 to 0.1 meg | ±13% | ± 7.5% |
| 0.11 meg to 1.0 meg | ±15% | ±10% |

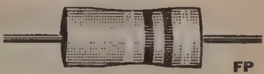
Ⓔ MIL-R-39008 resistors only; expresses Failure Rate Level at 50% rated wattage in % per 1,000 hours: M = 1.0%, P = 0.1%, R = 0.01%, S = 0.001%.

# CORNING® Resistors

Body Configuration: Conformal coating is tightly controlled to extend over the shoulder of the cap only—not down to the leads (Meniscus control). Prices apply to standard values only.

C

RN700
1101F
NATO
NA, NC


FP

## METAL-OXIDE FILM RESISTORS

### TYPE C LOW MULTI-WATTAGE TYPES

TC: ±100 ppm/° C from −55° C to +175° C. At ΔR Max.: Moisture resistance, ±0.5%; temp. cycle, short time overload and low temp. operation, ±0.25%; shock and vibration, ±0.10%.

| Corning Style | MIL Type | MIL Spec. MIL-R- | Wattage at $T_A$ | | Max. Voltage | Size, In. Dia. x L. | Std. Tol. ± | Resistance Range, Ohms | Net Each, Lots of | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 70° C | 125° C | | | | | 1-49 | 50-99 | 100-249 | 250-499 | 500-999 | 1000-4999 | 5000 Up | 10,000 Up |
| **C3** | ....... | 22684 | ⅛ | ...... | 200 | .062 x .145 | 1% | 10-150K | $1.25 | $0.74 | $0.43 | $0.33 | $0.33 | $0.24† | ...... | ....... |
| | | | 1/10 | 1/20 | | | 2% | 10-150K | .64 | .50 | .32 | .22 | .167 | .156 | $0.145 | ....... |
| | | | | | | | 5% | 10-150K | .34 | .226 | .15 | .135 | .125 | .095 | .093 | ....... |
| | | | | | | | 10% | 10-150K | .32 | .21 | .14 | .10 | .085 | .068 | .066 | ....... |
| **C4** | RL07S | 22684 | ¼ | ⅛* | 250 | .090 x .225 | 1% | 10-301K | .60 | .60 | .25 | .15 | .15 | .125 | .098 | $0.084 |
| | | | ⅛ | 1/10 | | | 2% | 10-301K | .30 | .30 | .20 | .125 | .125 | .10 | .089 | .079 |
| | | | | | | | 5% | 10-301K | .29 | .29 | .18 | .115 | .115 | .089 | .078 | .068 |
| **C5** | RL20S | 22684 | ½ | ¼* | 350 | .148 x .355 | 1% | 10-50 | .82 | .82 | .30 | .21 | .21 | .14 | .125 | .105 |
| | | | ¼ | ⅛ | | | | 51-150K | .60 | .60 | .25 | .15 | .15 | .125 | .098 | .084 |
| | | | | | | | | 151K-1 meg | .82 | .82 | .30 | .21 | .21 | .14 | .125 | .105 |
| | | | | | | | 2% | 10-50 | .38 | .38 | .26 | .17 | .17 | .11 | .101 | .094 |
| | | | | | | | | 51-150K | .30 | .30 | .20 | .125 | .125 | .09 | .081 | .074 |
| | | | | | | | | 151K-1 meg | .38 | .38 | .26 | .17 | .17 | .11 | .101 | .094 |
| | | | | | | | 5% | 10-50 | .37 | .37 | .24 | .15 | .15 | .09 | .081 | .074 |
| | | | | | | | | 51-150K | .28 | .28 | .18 | .09 | .09 | .065 | .063 | .059 |
| | | | | | | | | 151K-1 meg | .37 | .37 | .24 | .15 | .15 | .09 | .081 | .074 |

*Commercial rating. †1000 Up.

### 1 AND 2 WATT GENERAL PURPOSE TYPES

TC: ±200 ppm/° C from −55° C to +150° C. At ΔR Max.: Moisture resistance, ±1.5% (2% for C42S); temp. cycle, short time overload, low temp. operation, shock and vibration, ±0.5%.

| Corning Style | MIL Type | MIL Spec. MIL-R- | Wattage 70° C | Wattage 125° C | Max. Voltage | Size, In. Dia. x L. | Std. Tol. ± | Resistance Range, Ohms | 1-49 | 50-99 | 100-249 | 250-499 | 500-999 | 1000-4999 | 5000 Up | 10,000 Up |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **C32** | RL32S | 22684 | 1 | ...... | 500 | .190 x .562 | 2% | 10-51 | $0.329 | $0.329 | $0.259 | $0.201 | $0.169 | $0.119 | ...... | ....... |
| | | | | | | | | 52-470K | .30 | .30 | .24 | .18 | .12 | .095 | ...... | ....... |
| | | | | | | | | 471K-1 meg | .34 | .34 | .26 | .21 | .17 | .10 | ...... | ....... |
| | | | | | | | 5% | 10-51 | .32 | .32 | .25 | .195 | .12 | .112 | ...... | ....... |
| | | | | | | | | 52-470K | .25 | .25 | .20 | .15 | .10 | .067 | ...... | ....... |
| | | | | | | | | 471K-1 meg | .28 | .28 | .22 | .17 | .12 | .095 | ...... | ....... |
| **C42S** | RL42S | 22684 | 2 | ...... | 500 | .315 x .687 | 2% | 10-1.5 megs | .399 | .399 | .366 | .299 | .22 | .157* | ...... | ....... |
| | | | | | | | 5% | 10-1.5 megs | .30 | .30 | .275 | .225 | .16 | .118* | ...... | ....... |

*1000 Up.

### TYPE NA PRECISION TYPES

TC: ±100 ppm/° C from −55° C to +175° C. At ΔR Max.: Moisture resistance, ±0.5%; temp. cycle, short time overload and low temp. operation, ±0.25%; shock and vibration, ±0.10%.

| Corning Style | MIL Type | MIL Spec. MIL-R- | Wattage at $T_A$ | | Max. Voltage | Size, In. Dia. x L. | Std. Tol. ± | Resistance Range Ohms | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 70°C | 125°C | | | | | 1-24 | 25-99 | 100-249 | 250-999 | 1000-9999 | 10,000 Up |
| **NA55** | RN55D | 10509 | ⅛ | 1/10 | 200 | .090 x .225 | 1%† | 10-29.4 | $1.00 | $0.46 | $0.24 | $0.16 | $0.12 | $0.10 |
| | | | ¼* | ⅛* | | | | 30.1-301K | .94 | .44 | .21 | .14 | .11 | .088 |
| **NA60** | RN60D | 10509 | ¼ | ⅛ | 300 | .148 x .355 | 1%† | 10-49.9 | 1.00 | .46 | .24 | .17 | .13 | .10 |
| | | | ½* | ¼* | | | | 51.1-1 meg | .94 | .44 | .21 | .14 | .11 | .088 |
| **NA65** | RN65D | 10509 | ½ | ¼ | 350 | .190 x .554 | 1%† | 10-49.9 | 1.00 | .46 | .24 | .17 | .13 | .10 |
| | | | | | | | | 51.1-1 meg | .94 | .44 | .21 | .14 | .11 | .088 |
| | | | | | | | | 1.02 megs-2 megs | 1.00 | .46 | .24 | .17 | .13 | .10 |
| **NA70** | RN70D | 10509 | ¾ | ½ | 500 | .248 x .719 | 1% | 51.1-1 meg | 1.00 | .55 | .24 | .17 | .13 | .10 |

*Commercial rating.

### †AVAILABLE IN ±0.5% TOLERANCE

| Corning Style | Resistance Range, Ohms | Corning Style | Resistance Range, Ohms | Corning Style | Resistance Range, Ohms | Add to Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 1-24 | 25-99 | 100-999 | 1000 Up |
| **NA55** | 49.9-150K | **NA60** | 49.9-499K | **NA65** | 49.9-1 meg | $0.20 | $0.15 | $0.10 | $0.05 |

### TYPE NC PRECISION TYPES

TC: ±50 ppm/° C from −55° C to +175° C. At ΔR Max.: Moisture resistance, ±0.5%; temp. cycle, short time overload and low temp. operation, ±0.25%; shock and vibration, ±0.10%.

| Corning Style | MIL Type | MIL Spec. MIL-R | Wattage at $T_A$ | | Max. Voltage | Size, In. Dia. x L. | Std. Tol. ± | Resistance Range Ohms | Net Each, Lots of | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 70° C | 125° C | | | | | 1-24 | 25-99 | 100-249 | 250-499 | 500-999 | 1000 Up | 10,000 Up |
| **NC3** | RN50C | 10509 | 1/10 | 1/20 | 200 | .062 x .145 | 1% | 100-100K | $2.05 | $0.80 | $0.45 | $0.42 | $0.37 | $0.32 | ...... |
| **NC4** | RN55C | 10509 | ⅛ | 1/10 | 200 | .090 x .225 | .5% | 49.9-150K | 1.24 | .63 | .32 | .236 | .236 | .158 | $0.15 |
| | | | | | | | 1% | 49.9-301K | 1.04 | .48 | .22 | .136 | .136 | .108 | .10 |
| **NC5** | RN60C | 10509 | ¼ | ⅛ | 250 | .148 x .355 | .5% | 49.9-499K | 1.24 | .63 | .32 | .236 | .236 | .158 | .15 |
| | | | | | | | 1% | 49.9-1 meg | 1.04 | .48 | .22 | .136 | .136 | .108 | .10 |
| **NC6** | RN65C | 10509 | ½ | ¼ | 300 | .190 x .554 | .5% | 49.9-1 meg | 1.24 | .63 | .32 | .236 | .236 | .158 | .15 |
| | | | | | | | 1% | 49.9-2 megs | 1.04 | .48 | .22 | .136 | .136 | .108 | .10 |

## GLASS TIN OXIDE, FLAME PROOF, LOW POWER RESISTORS

FP style resistors are specially suited for circuitry where functions, environments and duty cycles demand low-power resistors with exceptional frequency characteristics, low end cost and the ability to withstand overloads. Under extreme overloads up to 100 times rated power the FP resistor will open but will not exhibit any flame. Change in resistance will not exceed ±0.5% when tested per MIL-R-22684B. Average change due to normal soldering is ±0.1% with max. change less than 0.5%. All leads hot tinned to facilitate soldering. Voltage coefficient 0.001%/volt. TC: ±200 ppm/° C, −55° C to +150° C except FP½ and FP1, ±150 ppm/° C. Standard tolerance ±2%, ±5% and ±10%.

### QUANTITY PRICES ON APPLICATION

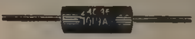
| Corning Style | Wattage Rating | | Voltage Rating | Size, In. Dia. x L. | Resistance Range Ohms | Corning Style | Wattage Rating | | Voltage Rating | Size, In. Dia. x L. | Resistance Range Ohms |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 40° C | 70° C | | | | | 40° C | 70° C | | | |
| **FP½*** | ....... | ½ | 350 | .138 x .360 | 10-470K | **FP4** | 5 | 4 | 500 | .315 x 1.530 | 16-90K |
| **FP1*** | ........ | 1 | 500 | .190 x .560 | 10-1 meg | **FP5** | 7 | 5 | 600 | .315 x 1.710 | 24-90K |
| **FP2*** | 3 | 2 | 500 | .315 x .687 | 9-1.5 megs | **FP7** | ........ | 7 | 700 | .315 x 2.040 | 24-90K |
| **FP3** | 4 | 3 | 500 | .315 x .900 | 9-40K | **FP10** | 10 | ...... | 700 | .315 x 2.040 | 24-90K |

*Available in MIL qualified parts.

# Precision Resistors

## CORNING® ESTABLISHED RELIABILITY RESISTORS

Designed for the many military applications where both established reliability and value are critical. **MIL-R-39017** semi-precision fixed film; this specification supersedes MIL-R-22684. **MIL-R-55182** precision fixed film; this specification supersedes MIL-R-10509. Prices apply to standard values only.



### SEMI-PRECISION MIL-R-39017

TC: 100 ppm/° C. At ΔR Max.: Temp. cycle and low temp. operation, ±0.25%; shock and vibration, ±0.10% (HC3, ±0.25%); short time overload, ±0.25% (HC3, ±0.50%); moisture, ±0.50%. Load Life: Qualification ΔR/2000 hrs., ±2%; failure rate ΔR/10,000 hrs., ±4%. Prices given are for **R** level 0.1%/1000 hrs., except HC6 **M** level 1%/1000 hrs.

| Corning Style | MIL Type | Wattage Rating at 70° C | Max. Voltage | Size, Inch Dia. x L. | Std. Tol. ‡ | Resistance Range, Ohms | Net Each, Lots of 25-49 | 50-99 | 100-249 | 250-499 | 500-999 | 1000-4999 | 5000-9999 | 10,000 Up |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HC3** | RLR05C | ⅛ | 200 | .062 x .145 | 2% | 10–99 | $0.94 | $0.77 | $0.64 | $0.45 | $0.45 | $0.38 | $0.35 | ...... |
| | | | | | | 100–150K | .85 | .70 | .58 | .41 | .41 | .35 | .32 | ...... |
| | | | | | 5% | 10–99 | .75 | .65 | .54 | .38 | .38 | .33 | .30 | ...... |
| | | | | | | 100–150K | .69 | .59 | .49 | .35 | .35 | .30 | .27 | ...... |
| **HC4** | RLR07C | ¼ | 250 | .090 x .225 | 2% | 10–150K | ........ | .43 | .35 | .205 | .205 | .165 | .15 | $0.14 |
| | | | | | 5% | 10–150K | ........ | .41 | .33 | .195 | .195 | .155 | .14 | .135 |
| **HC5** | RLR20C | ½ | 350 | .148 x .355 | 2% | 10–470K | ........ | .38 | .31 | .175 | .175 | .155 | .14 | .135 |
| | | | | | | 471K–1 meg | ........ | .42 | .34 | .195 | .195 | .17 | .155 | .145 |
| | | | | | 5% | 10–470K | ........ | .36 | .29 | .165 | .165 | .145 | .135 | .13 |
| | | | | | | 471K–1 meg | ........ | .40 | .32 | .185 | .185 | .16 | .15 | .14 |
| **HC6** | RLR32C | 1 | 500 | .190 x .554 | 2% | 10–51 | 1.02 | .79 | .69 | .48 | .39 | .315 | .27 | .225 |
| | | | | | | 52–470K | .90 | .71 | .63 | .44 | .35 | .285 | .24 | .195 |
| | | | | | | 471K–1 meg | 1.02 | .79 | .69 | .48 | .39 | .315 | .27 | .225 |
| | | | | | 5% | 10–51 | 1.00 | .77 | .66 | .465 | .375 | .30 | .26 | .215 |
| | | | | | | 52–470K | .88 | .65 | .55 | .385 | .305 | .255 | .21 | .18 |
| | | | | | | 471K–1 meg | 1.00 | .77 | .66 | .465 | .375 | .30 | .26 | .215 |

### PRECISION MIL-R-55182

TC: 50 ppm/° C HH Series; 100 ppm/° C, HK Series. MIL-R-55182 parts receive a 100% overload and temperature cycle: Overload, 5 x rated wattage for 1 hour at 25° C; reject parts with combined ΔR > ±0.20%. At ΔR Max.: Shock and vibration, ±0.10%; moisture, ±0.4%. Load Life: Qualification R/2000 hrs. ±0.5%; R/10,000 hrs. ±2%. RN**C** copper lead material; direct one-way substitute for RN**R** lead type provided all other characteristics are equal or better. Tolerance of ±0.5% available; prices on request. MIL-R-55182 supersedes MIL-R-10509.

| Corning Style | MIL Type | Failure Rate Level | Wattage Rating at 125° C | Max. Voltage | Size, In. Dia. x L. | Std. Tol. ± | Resistance Range, Ohms | Net Each, Lots of 1-24 | 10-24 | 25-49 | 50-99 | 100-249 | 250-999 | 1000 Up |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **HH4** | RN**C**55H | R* | 1/10 | 200 | .090 x .225 | 1% | 49.9–100K | $2.45 | ..... | $1.61 | $1.10 | $0.87 | $0.78 | $0.66 |
| **HK4** | RN**C**55K | M | 1/10 | 200 | .090 x .225 | 1% | 49.9–100K | ...... | $1.70 | .92 | .75 | .57 | .48 | .41 |
| **HH5** | RN**C**60H | R* | ⅛ | 250 | .148 x .355 | 1% | 49.9–499K | 2.20 | ..... | 1.32 | 1.05 | .83 | .77 | .62 |
| **HK5** | RN**C**60K | M | ⅛ | 250 | .148 x .355 | 1% | 49.9–499K | ...... | 1.44 | .85 | .70 | .51 | .46 | .39 |

*Per MIL-R-55182 **R** level rate is substitutable for **P** and **M** level.

## ERIE RESISTORS

### BLUE CHIP® METAL-GLAZE RESISTORS

Require only .03″ in 2″ of board area. Radial lead construction allows easier assembly, both in printed board and many point-to-point wiring applications. Because they are not spiralled to adjust resistance, they have no hot spots and are more reliable. Encapsulated with Jet Seal, a hard glossy polymeric, which protects the resistor mechanically and environmentally. **Tolerance:** 1%. **Working Voltage:** 100 VDC maximum continuous. **Temperature Range:** −55° C to +125° C.

### ⅛ WATT

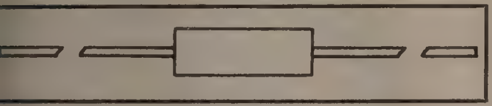
| Erie No. 7531-001- | TCR, PPM/°C | Resistance, Ohms | Net Each, Lots of 1-24 | 25-99 | 100-249 | 250-499 | 500-999 | 1000-9999 |
|---|---|---|---|---|---|---|---|---|
| **108-1000F** | 100 | 100 | $0.63 | $0.50 | $0.28 | $0.26 | $0.24 | $0.185 |
| **108-1500F** | 100 | 150 | .63 | .50 | .28 | .26 | .24 | .185 |
| **108-2000F** | 100 | 200 | .63 | .50 | .28 | .26 | .24 | .185 |
| **108-2200F** | 100 | 220 | .63 | .50 | .28 | .26 | .24 | .185 |
| **108-5000F** | 100 | 500 | .63 | .50 | .28 | .26 | .24 | .185 |
| **108-5100F** | 100 | 510 | .63 | .50 | .28 | .26 | .24 | .185 |
| **108-1201F** | 100 | 1.2 K | .63 | .50 | .28 | .26 | .24 | .185 |
| **108-2001F** | 100 | 2.0 K | .63 | .50 | .28 | .26 | .24 | .185 |
| **108-2201F** | 100 | 2.2 K | .63 | .50 | .28 | .26 | .24 | .185 |
| **108-4701F** | 100 | 4.7 K | .63 | .50 | .28 | .26 | .24 | .185 |
| **108-5001F** | 100 | 5.0 K | .63 | .50 | .28 | .26 | .24 | .185 |
| **108-1002F** | 100 | 10.0 K | .63 | .50 | .28 | .26 | .24 | .185 |
| **208-1502F** | 200 | 15.0 K | .61 | .49 | .27 | .25 | .23 | .18 |
| **208-2002F** | 200 | 20.0 K | .61 | .49 | .27 | .25 | .23 | .18 |
| **208-3302F** | 200 | 33.0 K | .61 | .49 | .27 | .25 | .23 | .18 |
| **208-5002F** | 200 | 50.0 K | .61 | .49 | .27 | .25 | .23 | .18 |
| **208-1003F** | 200 | 100.0 K | .61 | .49 | .27 | .25 | .23 | .18 |
| **308-1004F** | 300 | 1.0 meg | .68 | .54 | .30 | .28 | .26 | .20 |

### ¼ WATT

| Erie No. 7531-002- | TCR, PPM/°C | Resistance, Ohms | Net Each, Lots of 1-24 | 25-99 | 100-249 | 250-499 | 500-999 | 1000-9999 |
|---|---|---|---|---|---|---|---|---|
| **104-75R0F** | 100 | 75 | $0.775 | $0.60 | $0.335 | $0.31 | $0.29 | $0.22 |
| **104-1000F** | 100 | 100 | .775 | .60 | .335 | .31 | .29 | .22 |
| **104-2000F** | 100 | 200 | .775 | .60 | .335 | .31 | .29 | .22 |
| **104-2200F** | 100 | 220 | .775 | .60 | .335 | .31 | .29 | .22 |
| **104-4700F** | 100 | 470 | .775 | .60 | .335 | .31 | .29 | .22 |
| **104-5000F** | 100 | 500 | .775 | .60 | .335 | .31 | .29 | .22 |
| **104-7500F** | 100 | 750 | .775 | .60 | .335 | .31 | .29 | .22 |
| **104-1001F** | 100 | 1.0 K | .775 | .60 | .335 | .31 | .29 | .22 |
| **104-1201F** | 100 | 1.2 K | .775 | .60 | .335 | .31 | .29 | .22 |
| **104-1501F** | 100 | 1.5 K | .775 | .60 | .335 | .31 | .29 | .22 |
| **104-2001F** | 100 | 2.0 K | .775 | .60 | .335 | .31 | .29 | .22 |
| **104-2201F** | 100 | 2.2 K | .775 | .60 | .335 | .31 | .29 | .22 |
| **104-3301F** | 100 | 3.3 K | .775 | .60 | .335 | .31 | .29 | .22 |
| **104-4701F** | 100 | 4.7 K | .775 | .60 | .335 | .31 | .29 | .22 |
| **104-5001F** | 100 | 5.0 K | .775 | .60 | .335 | .31 | .29 | .22 |
| **104-6801F** | 100 | 6.8 K | .775 | .60 | .335 | .31 | .29 | .22 |
| **104-1002F** | 100 | 10.0 K | .775 | .60 | .335 | .31 | .29 | .22 |
| **204-1502F** | 200 | 15.0 K | .73 | .59 | .325 | .30 | .275 | .215 |
| **204-2002F** | 200 | 20.0 K | .73 | .59 | .325 | .30 | .275 | .215 |
| **204-1003F** | 200 | 100.0 K | .73 | .59 | .325 | .30 | .275 | .215 |
| **304-5003F** | 300 | 500.0 K | .815 | .65 | .36 | .335 | .31 | .24 |
| **304-1004F** | 300 | 1.0 meg | .815 | .65 | .36 | .335 | .31 | .24 |

**FOR REALLY FAST SERVICE IN MAJOR EAST-COAST CITIES, CHECK YOUR LOCAL DIRECTORY FOR cramer TOLL-FREE TELEPHONE SERVICE**

## TYPE MC EPOXY-ENCAPSULATED PRECISION METAL-FILM RESISTORS



- MEET OR EXCEED ALL REQUIREMENTS OF SPECIFICATION MIL-R-10509F FOR CHARACTERISTIC C, D, E AND F
- RUGGED CONSTRUCTION
- FULLY INSULATED

RUGGED CAP-AND-LEAD CONSTRUCTION • PRECISION RESISTANCE TOLERANCES • TOUGH EPOXY COATING

### TYPE MC METAL-FILM RESISTORS ±1% TOLERANCE

ower ratings apply at or below 125° C ambient temperature except **D** types at 70° C ambient temperature. For higher temperature er to Power Dissipation Derating Curves.

| TI Type | MIL Type | Power Rating TI W | Power Rating MIL W | Max WV V | Resistance Value Range ($T_A = 25°$ C) | Size, Inches Dia. x L. | Net Each, Lots of 25-99 | 100-249 | 250-499 | 500 Up |
|---|---|---|---|---|---|---|---|---|---|---|
| MC50C | RN50C | 1/10 | 1/20 | 200 | 49.9 ohms to 100K | 0.065 x 0.155 | $1.01 | $0.60 | $0.55 | $0.51 |
| MC50D | ........... | 1/8 | ........ | | 49.9 ohms to 100K | | .77 | .49 | .40 | .37 |
| MC50E | ........... | 1/10 | ........ | | 49.9 ohms to 100K | | 2.35 | 1.60 | 1.38 | 1.36 |
| MC55C | RN55C | 1/8 | 1/10 | 250 | 49.9 ohms to 100K | 0.095 x 0.250 | .58 | .30 | .17 | .16 |
| MC55D | RN55D | 1/4 | 1/8 | | 10.0 ohms to 301K | | .44 | .21 | .14 | .135 |
| MC55E | RN55E | 1/8 | 1/10 | | 49.9 ohms to 100K | | .98 | .70 | .58 | .53 |
| MC60C | RN60C | 1/4 | 1/8 | 300 | 24.9 ohms to 600K | 0.140 x 0.375 | .58 | .30 | .17 | .16 |
| MC60D | RN60D | 3/8 | 1/4 | | 10.0 ohms to 1 meg | | .44 | .21 | .14 | .135 |
| MC60E | RN60E | 1/4 | 1/8 | | 24.9 ohms to 600K | | .98 | .70 | .58 | .53 |
| MC65C | RN65C | 1/2 | 1/4 | 350 | 24.9 ohms to 1 meg | 0.171 x 0.575 | .58 | .30 | .17 | .16 |
| MC65D | RN65D | 1 | 1/2 | | 10.0 ohms to 1 meg | | .44 | .21 | .14 | .135 |
| MC65E | RN65E | 1/2 | 1/4 | | 24.9 ohms to 1 meg | | .98 | .70 | .58 | .53 |
| MC65F | RN65F | 1/2 | 1/2 | | 24.9 ohms to 1 meg | | .58 | .30 | .17 | .16 |

### ADDITIONAL ORDERING INFORMATION

**andard Symbolization:** Includes TI type number, resistance lue, tolerance and TC, depending upon wattage size and space ailable. MIL type symbolization is used when applicable.

**ilitary Devices:** Available in accordance with the requirements MIL-R-10509F.

**lerance:** Standard stock tolerance is ±1% (F). Tolerances of 0.5% (D), ±0.25% (C) and ±0.1% (B) are also available. C—D series is also available with ±2% (G) tolerance. Prices ted above are for ±1% tolerance. For other tolerances, prices e as follows:

| Tolerance ± | MIL | Metal Film, Add Each, Lots 1-24 | 25-99 | 100-249 | 250 Up |
|---|---|---|---|---|---|
| 1% | B | $0.50 | $0.40 | $0.25 | $0.20 |
| 25% | C | .35 | .30 | .20 | .15 |
| 5% | D | .20 | .15 | .10 | .05 |
| 0% | G | Deduct 5% | | | |

**andard Values:** The following resistance values are standard d in most cases are available from stock. Nonstandard values ll be manufactured to specific requirements; prices on request. andard resistance values are obtained from the MIL-BELL cade table by multiplying by multiples of 10. Example: 1.33 n represent 13.3 ohms, 133 ohms, 1.33K, 133K or 1.33 megs.

**MIL-BELL DECADE TABLE**
**0.1%, 0.25%, ½%, 1% AND 2% TOLERANCES**

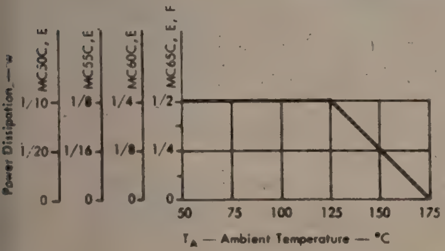
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.00 | 1.21 | 1.47 | 1.78 | 2.15 | 2.61 | 3.16 | 3.83 | 4.64 | 5.62 | 6.81 | 8.25 |
| 1.02 | 1.24 | 1.50 | 1.82 | 2.21 | 2.67 | 3.24 | 3.92 | 4.75 | 5.76 | 6.98 | 8.45 |
| 1.05 | 1.27 | 1.54 | 1.87 | 2.26 | 2.74 | 3.32 | 4.02 | 4.87 | 5.90 | 7.15 | 8.66 |
| 1.07 | 1.30 | 1.58 | 1.91 | 2.32 | 2.80 | 3.40 | 4.12 | 4.99 | 6.04 | 7.32 | 8.87 |
| 1.10 | 1.33 | 1.62 | 1.96 | 2.37 | 2.87 | 3.48 | 4.22 | 5.11 | 6.19 | 7.50 | 9.09 |
| 1.13 | 1.37 | 1.65 | 2.00 | 2.43 | 2.94 | 3.57 | 4.32 | 5.23 | 6.34 | 7.68 | 9.31 |
| 1.15 | 1.40 | 1.69 | 2.05 | 2.49 | 3.01 | 3.65 | 4.42 | 5.36 | 6.49 | 7.87 | 9.53 |
| 1.18 | 1.43 | 1.74 | 2.10 | 2.55 | 3.09 | 3.74 | 4.53 | 5.49 | 6.65 | 8.06 | 9.76 |

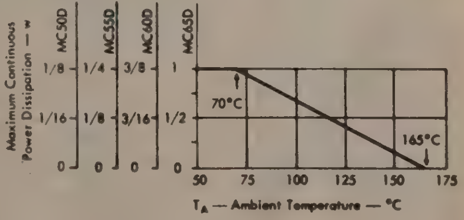
**Temperature Coefficient:** Special tracking requirements, temperature ranges, etc., are available.

| TC Code Designation | Comparable MIL-R-10509F Characteristic | TC Range | Temperature Range |
|---|---|---|---|
| T-1 | D | ±100 ppm/° C | −55° C to +175° C |
| T-2 | C and F | ± 50 ppm/° C | −55° C to +175° C |
| T-9 | E | ± 25 ppm/° C | −55° C to +175° C |
| T-10 | ............ | ± 10 ppm/° C | +25° C to +150° C |

**High- and Low-Value Availability:** The range of available resistance values is dependent upon temperature coefficient, e.g., the available range is extended for temperature coefficient of 100 ppm compared to 25 ppm.

### POWER DISSIPATION DERATING CURVES





### PERFORMANCE CHARACTERISTICS

sistance-value stability is affected by power dissipation in erational-environment tests. Following are two typical exples. In one, the more stable MC series is tested to a lower MIL-R-10509 application demonstrating maximum stability. In the other example, the lower-cost MC—D series is tested at its maximum TI-rated power to demonstrate its excellent stability under these extreme power conditions. Unless otherwise noted, data is percent change from initial resistance.

| Test per Applicable MIL-R-10509F Procedure | MC50—MC60 (C, E), MC65 (C, E, F) MIL-R-10509F Char. E Limits | MC50—MC60 (C, E), MC65 (C, E, F) TI Typical Performance | MC50D, MC55D, MC60D, MC65D MIL-R-10509F Char. D Limits | MC50D, MC55D, MC60D, MC65D TI Typical Performance |
|---|---|---|---|---|
| 00-Hour Load Life | ±0.50% max. | +0.14% avg. | ±1.0% | +0.30% avg.* |
| oisture Resistance | ±0.50% max. | +0.15% avg. | ±1.5% | +0.40% avg.* |
| w-Temperature Operation | ±0.25% max. | < ±0.05% | ±0.50% | +0.10% avg. |
| mperature Cycling | ±0.25% max. | < ±0.05% | ±0.50% | < ±0.05% |
| ort-Time Overload | ±0.25% max. | < ±0.05% | ±0.50% | +0.10% avg.* |
| fect of Soldering | ±0.10% max. | < ±0.05% | ±0.50% | < ±0.05% |
| sulation Resistance | > $10^{10}$ ohms | > $10^{12}$ ohms | > $10^{10}$ ohms | > $10^{12}$ ohms* |
| ock | ±0.25% max. | < ±0.05% | ±0.50% | < ±0.05% |
| bration | ±0.25% max. | < ±0.05% | ±0.50% | < ±0.05% |

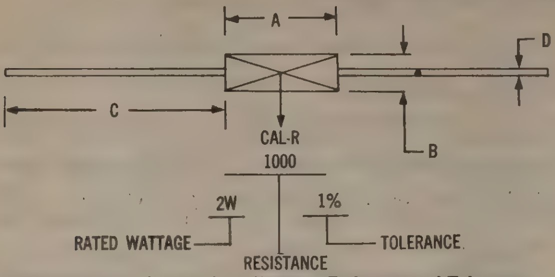
perated at maximum TI-rated power.

**CAL-R INC.**

a subsidiary of CapTech, Inc.

# PRECISION AND POWER RESISTORS

## TYPE SA PRECISION POWER RESISTORS



**When Ordering, Specify Type, Wattage, Resistance and Tolerance**

Meet or exceed applicable requirements of MIL-R-26E and MIL-R-39007. Copperweld* leads standard: Nickel "A" or Alloy 180 available. Core-alumina and steatite ceramics. Silicone coating gives maximum wire protection and extra high resistance to moisture. Inductive types (SA and SAV) are single layer space wound with largest wire permissible. Non-inductive types (SAX and SAVX) feature dual balanced windings for minimum inductance. **Tolerance:** ±5.0% to ±0.01% (±1% standard for off-the-shelf delivery); special matching available to ±0.001% tolerance. **Temperature Coefficient:** 20 ppm/° C standard; up to 5 ppm/° C available. **Dielectric Strength:** Greater than 1000 VAC. **Failure Rate:** Less than .006% per 1000 hours at +25° C with 60% confidence. **Shock Resistance:** SA and SAX types thermal shockproof from −55° to +275° C. SAV and SAVX types, −55° to +350° C. **Stability:** Consistent with tolerance; all parts stabilized in production. Less than 0.1% drift in 2000 hours operation at full wattage rating for 1% tolerance parts.

### STANDARD RESISTANCE AND TOLERANCE RANGES

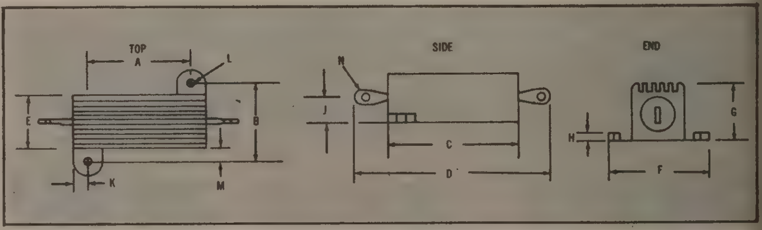
| Series SA* | | Series SAV* | | MIL Equiv. MIL-R-26E and 39007 | Size, Inches | | | D | | Max. Resistance, Ohms# at Tol. of | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cal-R Type No. | Rated Watts† | Cal-R Type No. | Rated Watts‡ | | A (±.062) | B (±.032§) | C (±.062) | Dia. (±.002) | Ga. | ±1% and higher | ±0.5%, 0.25%, 0.1% & 0.05% |
| SA01 | 0.4 | SAV03 | 0.5 | .............................. | .250 | .078 | 1½ | .020 | 24 | 1400 | 950 |
| SA02 | 0.5 | SAV06 | 0.6 | RW81U, RWR81 | .250 | .085 | 1½ | .020 | 24 | 2000 | 1200 |
| SA04 | 0.75 | SAV09 | 0.9 | .............................. | .312 | .078 | 1½ | .020 | 24 | 3000 | 1300 |
| SA05 | 0.8 | SAV12 | 1.2 | .............................. | .312 | .094 | 1½ | .020 | 24 | 4900 | 2400 |
| SA10 | 0.9 | SAV22 | 2.2 | .............................. | .344 | .094 | 1½ | .020 | 24 | 5000 | 2500 |
| SA15 | 1.0 | SAV25 | 2.5 | RW70U, RW80U, RWR80 | .406 | .094 | 1½ | .020 | 24 | 7000 | 3500 |
| SA17 | 1.0 | SAV26 | 2.6 | .............................. | .531 | .094 | 1½ | .020 | 24 | 10K | 5000 |
| SA20 | 2.0 | SAV33 | 3.0 | .............................. | .500 | .156 | 1½ | .032 | 20 | 15K | 7500 |
| SA30 | 2.5 | SAV41 | 4.1 | RW69V | .500 | .188 | 2 | .032 | 20 | 20K | 10K |
| SA31 | 3.0 | SAV45 | 4.5 | RWR89, RW79U | .560 | .187 | 2 | .032 | 20 | 25K | 12K |
| SA32 | 2.0 | SAV46 | 4.6 | RWR71 | .812 | .188 | 2 | .032 | 20 | 40K | 20K |
| SA35 | 3.0 | SAV52 | 5.2 | .............................. | .625 | .250 | 2 | .040 | 18 | 35K | 17K |
| SA50 | 5.0 | SAV74 | 7.4 | RWR74, RWR74U, RWR84 | .875 | .312 | 2 | .040 | 18 | 60K | 30K |
| SA55 | 5.5 | SAV82 | 8.2 | RW67V | 1.00 | .313 | 2 | .040 | 18 | 70K | 35K |
| SA70 | 7.0 | SAV96 | 9.6 | .............................. | 1.219 | .312 | 2 | .040 | 18 | 90K | 45K |
| SA95 | 9.5 | SAV106 | 11.0 | RW55V | 1.375 | .469 | 1½ | .040 | 18 | 160K | 80K |
| SA100 | 10.0 | SAV145 | 14.5 | RWR78, RW78U, RW68V | 1.781 | .375 | 2 | .040 | 18 | 200K | 100K |
| SA125 | 12.5 | SAV150 | 15.0 | RW56V | 2.000 | .469 | 1½ | .040 | 18 | 250K | 140K |

*Also available in non-inductive types (SAX and SAVX). †Nominal, based on 275° C maximum; hot spot at 25° C ambient; (char. U). ‡Nominal, based on 350° C maximum; hot spot at 25° C ambient; (char. Y). §Tolerance for non-inductive types below 150 ohms, ±.062". #Based on .0007" min. wire dia. non-inductive maximum resistances are one-half of listed values. *Reg. Copperweld Steel Corp. TM.

## TYPE MC POWER RESISTORS

Meet or exceed all requirements of MIL-R-18546D, including "N" characteristic, and MIL-R-39009. Hot tin dipped Copperweld leads for maximum solderability. Completely welded, terminal to terminal. High density extruded aluminum housing provides superior heat conduction; deep finned for maximum heat dissipation under natural and forced convection. High uniformity, single layer space wound, to give maximum core coverage for even heat dissipation. MCX (non-inductive) types have dual balanced windings for minimum inductance. Steatite ceramic core, centerless ground for uniformity. Silicone coated resistance element gives maximum wire protection and extra high resistance to moisture. **Tolerance:** ±5.0% to ±0.05% (±1% standard for off-shelf delivery). **Temperature Coefficient:** 20 ppm/° C standard; up to 5 ppm/° C available. **Dielectric Strength:** Greater than 1000 VAC on MC-100 and MC-250; greater than 2000 VAC on MC-500. **Stability:** Consistent with tolerance; all parts stabilized in production. Less than 0.5% drift in 1000 hours operation at full Cal-R wattage rating for 1% tolerance.

### IN MIL-R SIZES



### STANDARD RESISTANCE AND TOLERANCE RANGES

| Cal-R Type No.* | Mil Equiv. MIL-R-18546C, MIL-R-39009 | Rating, Watts | | Wt., Grams | | Resistance Range, Ohms†, at Tolerance of | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Normal Cal-R | Mil-R | MC | MCX | ±1% up | ±0.5% | ±0.25% | ±0.1% | ±0.05% |
| MC-80 | RE 60 (N), RER 60 | 8 | 5 | 3.0 | 3.3 | 0.5 to 20K | 1 to 10K | 2.5 to 10K | 3 to 10K | 5 to 10K |
| MC-100 | RE 65 (N), RER 65 | 10 | 10 | 6.5 | 8.8 | 0.5 to 25K | 1 to 10K | 2.5 to 10K | 3 to 10K | 5 to 10K |
| MC-250 | RE 70 (N), RER 70 | 25 | 20 | 12.5 | 16.5 | 0.1 to 70K | 0.2 to 30K | 0.3 to 30K | 0.5 to 30K | 1 to 30K |
| MC-500 | RE 75 (N), RER 75 | 50 | 30 | 27 | 30.8 | 0.1 to 200K | 0.2 to 80K | 0.3 to 80K | 0.5 to 80K | 1 to 80K |

*Available in non-inductive types (code symbol "X" for Cal-R, "N" for Mil). †Non-inductive maximum resistances are one-half of listed values.

### TYPE MC DIMENSIONS

| Type | Dimensions, Inches | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | J | K | L | M | N |
| MC-80 | .444 | .490 | .600 | 1.125 | .334 | .646 | .317 | .075 | .139 | .078 | .093 | .078 | .050 |
| MC-100 | .562 | .625 | .750 | 1.375 | .438 | .873 | .408 | .094 | .172 | .093 | .093 | .094 | .086 |
| MC-250 | .719 | .781 | 1.063 | 1.938 | .500 | 1.094 | .531 | .094 | .219 | .171 | .125 | .141 | .086 |
| MC-500 | 1.563 | .844 | 1.969 | 1.781 | .563 | 1.156 | .625 | .094 | .281 | .203 | .125 | .141 | .086 |
| TOL. ± | .005 | .005 | .016 | .063 | .031 | .031 | .031 | .016 | .031 | .010 | .005 | .016 | .015 |

**PRICES AVAILABLE ON REQUEST**

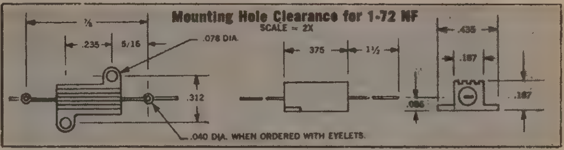
# POWER AND PRECISION RESISTORS AND NETWORKS

## TYPE T-3 AND T-5 POWER RESISTORS

### STANDARD RESISTANCE AND TOLERANCE

Non-inductive types, T-5X and T-3X, also available.

| Cal-R Type No. | Resistance Range, Ohms, at Tolerance of | | | | |
|---|---|---|---|---|---|
| | ±1% Up | ±0.5% | ±0.25% | ±0.1% | ±0.05% |
| T-5 | 1–5000 | 1–5000 | 5–3000 | 10–2500 | 10–2500 |
| T-3 | 3K–300K | 3K–300K | 3K–300K | 3K–300K | 3K–300K |


Mounting Hole Clearance for 1-72 NF
SCALE = 2X
⅞
.235
5/16
.078 DIA.
.312
.040 DIA. WHEN ORDERED WITH EYELETS.
375
1½
.435
.187
.086
.187

### TYPE T-5 (5 WATTS)

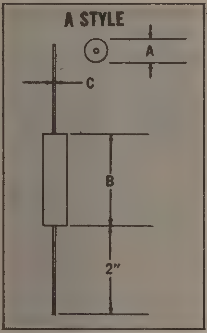
High density extruded aluminum housing offers superior heat conduction; deep finned for maximum heat dissipation. High uniformity, single layer space wound to give maximum core coverage for even dissipation. T-5X (non-inductive) types have dual balanced windings for minimum inductance. Alumina ceramic core, centerless ground for uniformity. Copperweld* leads, hot tin dipped; gold plated Dumet or "A" nickel leads available. **Tolerance:** ±5.0% to ±0.05% (±1% standard for off-shelf delivery). **Temperature Coefficient:** 30 ppm/° C standard; up to 5 ppm/° C available. **Stability:** Less than 0.5% drift in 1000 hours operation at full Cal-R wattage rating for 1% tolerance. All parts stabilized in production. **Dielectric Strength:** Greater than 500 VAC. Weight, 0.8 gram.

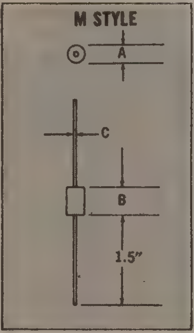
*Registered Copperweld Steel Corp. trademark.

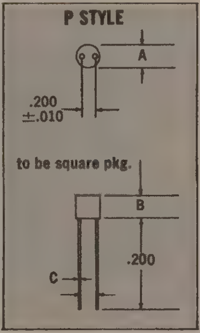
### TYPE T-3 (3 WATTS)

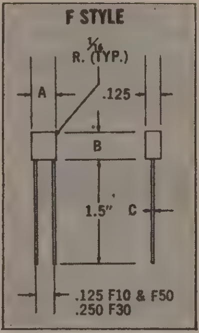
Reverse pie wound, with all pies filled for maximum heat dissipation. Unique recessed end cap isolates winding termination from all lead stress. Protective overcoating covering entire resistor before molding insures maximum protection and secures winding without introducing stress. Resistor element is encased in non-burning epoxy by transfer molding. Copperweld leads, hot tin dipped; gold plated Dumet or "A" nickel available. **Tolerance:** ±1% to ±0.005% absolute; to ±0.002% matching tolerance for matched sets. **Temperature Coefficient:** 10 ppm/° C standard; from 6000 ppm to 2 ppm/° C available. **Stability:** All parts stabilized in production, including 1% parts; components available with stability of .002% per year. **Windings:** Multiple pie reversed type to minimize inductance; special windings available to provide fast rise times. **Working Voltage:** 200 VAC max. Wt., 0.8 gram.

## PRECISION RESISTORS









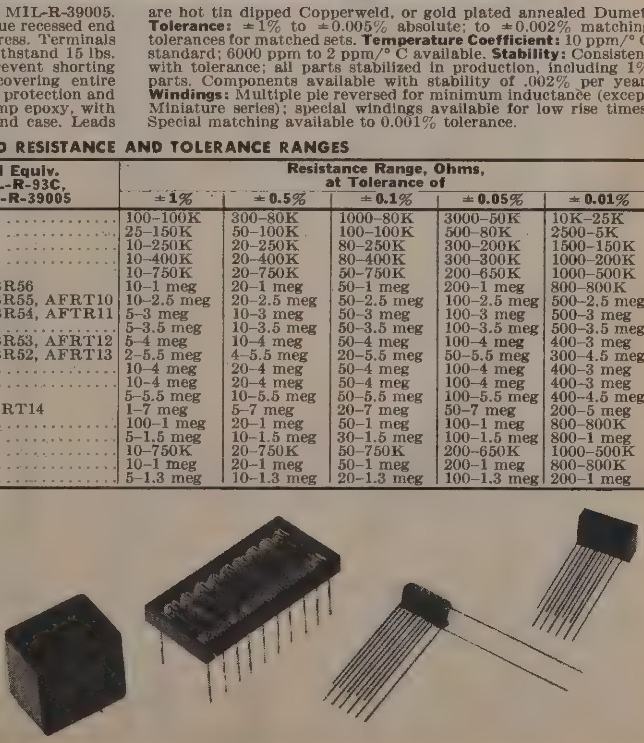
Meet or exceed all requirements of MIL-R-93C and MIL-R-39005. All pies filled for maximum heat dissipation. Unique recessed end cap isolates winding termination from all lead stress. Terminals welded to end cap for maximum strength; will withstand 15 lbs. linear pull. Double slots tangent to mandrel prevent shorting between pie windings. Protective overcoating covering entire resistor before molding insures maximum moisture protection and secures winding without introducing stress. Hi-temp epoxy, with matching coefficient of expansion between core and case. Leads are hot tin dipped Copperweld, or gold plated annealed Dumet. **Tolerance:** ±1% to ±0.005% absolute; to ±0.002% matching tolerances for matched sets. **Temperature Coefficient:** 10 ppm/° C standard; 6000 ppm to 2 ppm/° C available. **Stability:** Consistent with tolerance; all parts stabilized in production, including 1% parts. Components available with stability of .002% per year. **Windings:** Multiple pie reversed for minimum inductance (except Miniature series); special windings available for low rise times. Special matching available to 0.001% tolerance.

### STANDARD RESISTANCE AND TOLERANCE RANGES

| Cal-R Type No. | Size, Inches | | | Rated Watts | Mil Equiv. MIL-R-93C, MIL-R-39005 | Resistance Range, Ohms, at Tolerance of | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A (±.010) | B (±.010) | C AWG | | | ±1% | ±0.5% | ±0.1% | ±0.05% | ±0.01% |
| M10 | .080 | .200 | 26 | .05 | ........................ | 100–100K | 300–80K | 1000–80K | 3000–50K | 10K–25K |
| M20 | .100 | .200 | 26 | .06 | ........................ | 25–150K | 50–100K | 100–100K | 500–80K | 2500–5K |
| M30 | .125 | .250 | 24 | .08 | ........................ | 10–250K | 20–250K | 80–250K | 300–200K | 1500–150K |
| M40 | .125 | .375 | 24 | .10 | ........................ | 10–400K | 20–400K | 80–400K | 300–300K | 1000–200K |
| A2525 | .250 | .250 | 20 | .2 | RBR75 | 10–750K | 20–750K | 50–750K | 200–650K | 1000–500K |
| A2537 | .250 | .375 | 20 | .25 | RB56, RBR56 | 10–1 meg | 20–1 meg | 50–1 meg | 200–1 meg | 800–800K |
| A2550 | .250 | .500 | 20 | .25 | RB55, RBR55, AFRT10 | 10–2.5 meg | 20–2.5 meg | 50–2.5 meg | 100–2.5 meg | 500–2.5 meg |
| A2575 | .250 | .750 | 20 | .35 | RB54, RBR54, AFTR11 | 5–3 meg | 10–3 meg | 50–3 meg | 100–3 meg | 500–3 meg |
| A25100 | .250 | 1.00 | 20 | .4 | ........................ | 5–3.5 meg | 10–3.5 meg | 50–3.5 meg | 100–3.5 meg | 500–3.5 meg |
| A3775 | .375 | .750 | 20 | .5 | RB53, RBR53, AFRT12 | 5–4 meg | 10–4 meg | 50–4 meg | 100–4 meg | 400–3 meg |
| A37100 | .375 | 1.00 | 20 | 1.0 | RB52, RBR52, AFRT13 | 2–5.5 meg | 4–5.5 meg | 20–5.5 meg | 50–5.5 meg | 300–4.5 meg |
| A5050 | .500 | .500 | 20 | .5 | ........................ | 10–4 meg | 20–4 meg | 50–4 meg | 100–4 meg | 400–3 meg |
| A5062 | .500 | .625 | 20 | .5 | ........................ | 10–4 meg | 20–4 meg | 50–4 meg | 100–4 meg | 400–3 meg |
| A5070 | .812 | .312 | 20 | .5 | RBR76 | 5–5.5 meg | 10–5.5 meg | 50–5.5 meg | 100–5.5 meg | 400–4.5 meg |
| A50100 | .500 | 1.00 | 20 | 1.0 | RB57, AFRT14 | 1–7 meg | 5–7 meg | 20–7 meg | 50–7 meg | 200–5 meg |
| P2531 | .250 | .312 | 22 | .12 | ........................ | 100–1 meg | 20–1 meg | 50–1 meg | 100–1 meg | 800–800K |
| P3750 | .375 | .500 | 22 | .35 | ........................ | 5–1.5 meg | 10–1.5 meg | 30–1.5 meg | 100–1.5 meg | 800–1 meg |
| F10 | .250 | .250 | 20 | .125 | ........................ | 10–750K | 20–750K | 50–750K | 200–650K | 1000–500K |
| F30 | .500 | .250 | 20 | .25 | ........................ | 10–1 meg | 20–1 meg | 50–1 meg | 200–1 meg | 800–800K |
| F50 | .250 | .500 | 20 | .25 | ........................ | 5–1.3 meg | 10–1.3 meg | 20–1.3 meg | 100–1.3 meg | 200–1 meg |

## PRECISION NETWORKS

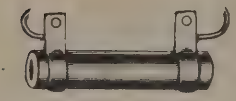
Precision assemblies, packaged to meet the most exacting specifications, allowing the circuit designer maximum freedom without costly packaging problems. **Resistance Values:** 1 ohm thru 5 megohms. **Full Scale Accuracy:** To ±0.005%. **Temperature Coefficient Tracking:** To 1 ppm/° C. **Temperature Coefficient Absolute:** To 2 ppm/° C. **Standard Temperature Coefficient:** 0 to ±10 ppm/° C. **Ambient Temperature Range:** −55° to +125° C. **Stability:** To 10 ppm per year. **Fast Recovery Time:** To within .02% of final value, within 100 nsec.



**PRICES AVAILABLE ON REQUEST**

# Clarostat Vitreous-Enamel Resistors

## GREENOHM V™ FIXED POWER RESISTORS



Vitreous enamel, wire-wound power resistors are engineered to meet or exceed MIL-R-26 specifications. Wire windings are finest grade resistance alloy. Designed for utmost reliability and stability under adverse conditions. Teal green enamel finish withstands overheating without peeling or cracking. Tolerance, ±5% except values under 1 ohm, ±10% VPR types (up to 20 watts) have wire lead and lug terminals, illustrated at left. VP and VK types (25 watts and up) have lug terminals, and mounting bracket. **Core Size:** VPR-5-F, 1" x 5/16" dia.; VPR-10-F, 1¾" x 5/16" dia.; VPR-20-H, 2" x 7/16" dia.; VP-25-K 2" x 9/16" dia.; VP-50-K, 4" x 9/16" dia.; VK-100-N, 6½" x ¾" dia.; VK-160-W, 8½" x 1⅛" dia.; VK-200-W, 10½" x 1⅛" dia.

### STOCK VALUES—WITH WIRE LEAD AND LUG TERMINALS

#### 8-WATT SERIES VPR-5-F

| Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|
| 1 | 50 | 750 | 4500 |
| 1.5 | 75 | 800 | 5000 |
| 2 | 100 | 900 | 6000 |
| 3 | 125 | 1000 | 7000 |
| 4 | 150 | 1100 | 7500 |
| 5 | 200 | 1200 | 8000 |
| 7.5 | 225 | 1250 | 9000 |
| 10 | 250 | 1500 | 10K |
| 12 | 300 | 1750 | 12.5K |
| 15 | 350 | 2000 | 15K |
| 20 | 400 | 2250 | 17.5K |
| 25 | 450 | 2500 | 20K |
| 30 | 500 | 3000 | 22.5K |
| 35 | 600 | 3500 | 25K |
| 40 | 700 | 4000 | |

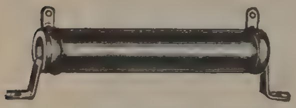
#### 12-WATT SERIES VPR-10-F

| Ohms | Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|---|
| 0.4 | 30 | 500 | 3000 | 13.5K |
| 1 | 35 | 600 | 3500 | 14.3K |
| 1.2 | 40 | 700 | 4000 | 15K |
| 1.3 | 50 | 750 | 4500 | 16K |
| 1.5 | 75 | 800 | 5000 | 17.5K |
| 2 | 100 | 900 | 6000 | 18K |
| 3 | 125 | 1000 | 7000 | 20K |
| 4 | 150 | 1100 | 7500 | 22.5K |
| 5 | 200 | 1200 | 8000 | 25K |
| 7.5 | 225 | 1250 | 8500 | 30K |
| 10 | 250 | 1500 | 9000 | 35K |
| 12 | 300 | 1750 | 10K | 40K |
| 15 | 350 | 2000 | 11K | 45K |
| 20 | 400 | 2250 | 12K | 50K |
| 25 | 450 | 2500 | 12.5K | |

#### 20-WATT SERIES VPR-20-H

| Ohms | Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|---|
| 0.4 | 350 | 1850 | 7500 | 55K |
| 0.6 | 400 | 2000 | 8000 | 60K |
| 0.8 | 500 | 2250 | 9000 | 65K |
| 5 | 650 | 2400 | 10K | 70K |
| 10 | 700 | 2500 | 12.5K | 75K |
| 25 | 750 | 2750 | 15K | 80K |
| 50 | 800 | 3000 | 20K | 85K |
| 75 | 850 | 3500 | 25K | 90K |
| 100 | 1000 | 4000 | 30K | 95K |
| 150 | 1200 | 4500 | 35K | 100K |
| 200 | 1250 | 5000 | 40K | |
| 250 | 1500 | 6000 | 45K | |
| 300 | 1750 | 7000 | 50K | |

### STOCK VALUES—WITH LUG TERMINALS AND MOUNTING BRACKET



#### 25-WATT SERIES VP-25-K

| Ohms | Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|---|
| 1 | 50 | 800 | 5000 | 30K |
| 2 | 75 | 1000 | 6000 | 35K |
| 3 | 100 | 1500 | 7500 | 40K |
| 4 | 150 | 2000 | 10K | 50K |
| 5 | 200 | 2500 | 12K | 60K |
| 10 | 250 | 3000 | 15K | 70K |
| 15 | 500 | 3500 | 20K | 80K |
| 25 | 750 | 4000 | 25K | 100K |

#### 50-WATT SERIES VP-50-K

| Ohms | Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|---|
| 1 | 100 | 1000 | 7500 | 50K |
| 2 | 150 | 1250 | 8000 | 75K |
| 3 | 200 | 1500 | 10K | 100K |
| 4 | 250 | 2000 | 12K | 125K |
| 5 | 300 | 2500 | 15K | 150K |
| 10 | 400 | 3000 | 20K | 175K |
| 25 | 500 | 4000 | 25K | 200K |
| 50 | 750 | 5000 | 30K | 225K |
| 75 | 800 | 6000 | 35K | 250K |

#### 100-WATT SERIES VK-100-N

| Ohms | Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|---|
| 1 | 75 | 750 | 7500 | 60K |
| 2 | 100 | 1000 | 10K | 75K |
| 3 | 125 | 1500 | 15K | 100K |
| 4 | 150 | 2000 | 20K | 200K |
| 5 | 200 | 2500 | 25K | |
| 10 | 250 | 3000 | 30K | |
| 25 | 300 | 4000 | 40K | |
| 50 | 500 | 5000 | 50K | |

#### 160-WATT SERIES VK-160-W

| Ohms | Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|---|
| 1 | 50 | 750 | 7500 | 50K |
| 2 | 75 | 1000 | 10K | 60K |
| 3 | 100 | 1500 | 15K | 75K |
| 4 | 125 | 2000 | 20K | 100K |
| 5 | 150 | 2500 | 25K | |
| 10 | 250 | 3000 | 30K | |
| 25 | 500 | 5000 | 40K | |

#### 200-WATT SERIES VK-200-W

| Ohms | Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|---|
| 1 | 50 | 750 | 7500 | 40K |
| 2 | 75 | 1000 | 10K | 50K |
| 3 | 100 | 1500 | 12K | 60K |
| 4 | 150 | 2000 | 15K | 75K |
| 5 | 200 | 2500 | 20K | 100K |
| 10 | 250 | 3000 | 25K | |
| 25 | 500 | 5000 | 30K | |

### "GREENOHM V" FIXED RESISTOR PRICES

| Series | Range, Ohms | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-99 | 100-249 | 250-499 | 500-999 |
| **VPR-5-F**<br>**8-Watt** | 1.0–1000 | $0.51 | $0.44 | $0.35 | $0.288 | $0.255 | $0.237 |
| | 1100–5000 | .54 | .47 | .38 | .305 | .27 | .251 |
| | 6000–10K | .57 | .49 | .40 | .321 | .284 | .264 |
| | 12.5K–20K | .64 | .56 | .45 | .362 | .32 | .298 |
| | 22.5K–25K | .73 | .63 | .51 | .413 | .364 | .339 |
| **VPR-10-F**<br>**12-Watt** | 0.4 | .89 | .78 | .62 | .505 | .447 | .416 |
| | 1.0–1000 | .56 | .49 | .39 | .316 | .279 | .261 |
| | 1100–5000 | .60 | .52 | .42 | .337 | .298 | .277 |
| | 6000–10K | .68 | .60 | .48 | .387 | .342 | .319 |
| | 11K–20K | .77 | .67 | .54 | .438 | .387 | .36 |
| | 22.5K–35K | .81 | .71 | .57 | .46 | .406 | .378 |
| | 40K–50K | .91 | .79 | .63 | .515 | .455 | .424 |
| **VPR-20-H**<br>**20-Watt** | 0.4–0.8 | .93 | .81 | .65 | .525 | .465 | .433 |
| | 5–1000 | .64 | .55 | .44 | .359 | .317 | .295 |
| | 1200–5000 | .65 | .57 | .46 | .37 | .327 | .305 |
| | 6000–10K | .77 | .67 | .54 | .439 | .388 | .361 |
| | 12.5K–20K | .80 | .69 | .55 | .449 | .397 | .37 |
| | 25K–40K | .93 | .81 | .65 | .524 | .464 | .431 |
| | 45K–60K | 1.07 | .94 | .75 | .608 | .538 | .501 |
| | 65K–75K | 1.13 | .99 | .79 | .641 | .567 | .528 |
| | 80K–100K | 1.22 | 1.06 | .85 | .688 | .608 | .566 |
| **VP-25-K**<br>**25-Watt** | 1.0–1000 | .67 | .59 | .47 | .381 | .337 | .314 |
| | 1500–5000 | .70 | .61 | .49 | .397 | .351 | .327 |
| | 6000–10K | .80 | .69 | .55 | .449 | .397 | .37 |
| | 12K–20K | .84 | .73 | .59 | .476 | .421 | .392 |
| | 25K–40K | .97 | .85 | .68 | .549 | .486 | .453 |
| | 50K–60K | 1.13 | .98 | .79 | .64 | .566 | .526 |
| | 70K | 1.33 | 1.16 | .92 | .751 | .665 | .619 |
| | 80K–100K | 1.54 | 1.34 | 1.07 | .874 | .773 | .719 |
| **VP-50-K**<br>**50-Watt** | 1.0–1000 | 1.04 | .90 | .72 | .587 | .518 | .482 |
| | 1250–5000 | 1.06 | .93 | .74 | .602 | .532 | .496 |
| | 6000–10K | 1.15 | 1.00 | .80 | .649 | .574 | .535 |
| | 12K–20K | 1.26 | 1.10 | .88 | .713 | .631 | .587 |
| | 25K–35K | 1.46 | 1.27 | 1.01 | .823 | .728 | .677 |
| | 50K | 1.62 | 1.41 | 1.12 | .916 | .811 | .754 |
| | 75K | 1.84 | 1.60 | 1.28 | 1.04 | .921 | .857 |
| | 100K | 2.00 | 1.73 | 1.39 | 1.13 | .999 | .929 |
| | 125K | 2.29 | 1.99 | 1.59 | 1.29 | 1.15 | 1.06 |
| | 150K | 2.56 | 2.23 | 1.79 | 1.45 | 1.28 | 1.19 |
| | 175K | 2.84 | 2.47 | 1.99 | 1.61 | 1.43 | 1.32 |
| | 200K | 2.99 | 2.60 | 2.08 | 1.69 | 1.50 | 1.40 |
| | 225K–250K | 3.19 | 2.77 | 2.22 | 1.81 | 1.60 | 1.48 |
| **VK-100-N**<br>**100-Watt** | 1.0–1000 | 1.61 | 1.40 | 1.12 | .91 | .81 | ........ |
| | 1500–5000 | 1.73 | 1.50 | 1.20 | .98 | .86 | ........ |
| | 7500–10K | 1.84 | 1.60 | 1.28 | 1.04 | .92 | ........ |
| | 15K–20K | 1.96 | 1.70 | 1.36 | 1.11 | .98 | ........ |
| | 25K–60K | 2.07 | 1.80 | 1.44 | 1.17 | 1.04 | ........ |
| | 75K | 2.19 | 1.90 | 1.52 | 1.24 | 1.09 | ........ |
| | 100K | 2.44 | 2.12 | 1.70 | 1.38 | 1.22 | ........ |
| | 200K | 4.02 | 3.48 | 2.78 | 2.26 | 2.00 | ........ |
| **VK-160-W**<br>**160-Watt** | 1.0–1000 | 2.53 | 2.20 | 1.76 | 1.43 | 1.27 | ........ |
| | 1500–5000 | 2.58 | 2.24 | 1.79 | 1.46 | 1.29 | ........ |
| | 7500–10K | 2.83 | 2.46 | 1.97 | 1.60 | 1.41 | ........ |
| | 15K–20K | 3.06 | 2.66 | 2.13 | 1.73 | 1.53 | ........ |
| | 25K–60K | 3.22 | 2.80 | 2.24 | 1.82 | 1.61 | ........ |
| | 75K | 3.34 | 2.90 | 2.32 | 1.89 | 1.67 | ........ |
| | 100K | 3.45 | 3.00 | 2.40 | 1.95 | 1.73 | ........ |
| **VK-200-W**<br>**200-Watt** | 1.0–1000 | 2.76 | 2.40 | 1.92 | 1.56 | 1.38 | ........ |
| | 1500–5000 | 2.81 | 2.44 | 1.95 | 1.59 | 1.40 | ........ |
| | 7500–10K | 2.94 | 2.56 | 2.05 | 1.66 | 1.47 | ........ |
| | 12K–20K | 3.05 | 2.66 | 2.13 | 1.73 | 1.53 | ........ |
| | 25K–60K | 3.17 | 2.76 | 2.21 | 1.79 | 1.59 | ........ |
| | 75K | 3.34 | 2.90 | 2.32 | 1.89 | 1.67 | ........ |
| | 100K | 3.52 | 3.06 | 2.45 | 1.99 | 1.76 | ........ |

# Clarostat Vitreous-Enamel Resistors

## GREENOHM V™ ADJUSTABLE POWER RESISTORS

### STOCK VALUES

**12-WATT SERIES VP-10-FA**

| Ohms | Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|---|
| 1 | 50 | 500 | 2500 | 8000 |
| 2 | 75 | 600 | 3000 | 8500 |
| 3 | 100 | 750 | 3500 | 9000 |
| 5 | 150 | 800 | 4000 | 10K |
| 7.5 | 200 | 1000 | 4500 | |
| 10 | 250 | 1250 | 5000 | |
| 15 | 300 | 1500 | 6000 | |
| 20 | 350 | 2000 | 7000 | |
| 25 | 400 | 2250 | 7500 | |

**25-WATT SERIES VP-25-KA**

| Ohms | Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|---|
| 1 | 50 | 750 | 3500 | 9000 |
| 2 | 75 | 800 | 4000 | 10K |
| 3 | 100 | 1000 | 4500 | 12K |
| 5 | 150 | 1250 | 5000 | 15K |
| 7.5 | 200 | 1500 | 6000 | 20K |
| 10 | 250 | 2000 | 7000 | 25K |
| 15 | 300 | 2250 | 7200 | |
| 20 | 400 | 2500 | 7500 | |
| 25 | 500 | 3000 | 8000 | |

Same construction as Greenohm V fixed resistors. Tolerance, ±10%. **Core Size:** VP-10-FA, 1¾" x 5⁄16" dia.; VP-25-KA, 2" x 9⁄16" dia.; VP-50-KA, 4" x 9⁄16" dia.; VP-75-KA, 6" x 9⁄16" dia.; VK-100-NA, 6½" x ¾" dia.; VK-160-WA, 8½" x 1⅛" dia.; VK-200-WA, 10½" x 1⅛" dia.

**50-WATT SERIES VP-50-KA**

| Ohms | Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|---|
| 1 | 100 | 1250 | 6000 | 25K |
| 2 | 150 | 1500 | 7000 | 30K |
| 3 | 200 | 2000 | 7200 | 35K |
| 4 | 250 | 2250 | 7500 | 40K |
| 5 | 300 | 2500 | 8000 | 50K |
| 10 | 400 | 3000 | 9000 | 60K |
| 20 | 500 | 3500 | 10K | 75K |
| 25 | 750 | 4000 | 12K | 80K |
| 50 | 800 | 4500 | 15K | 100K |
| 75 | 1000 | 5000 | 20K | |

**75-WATT SERIES VP-75-KA**

| Ohms | Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|---|
| 1 | 200 | 2000 | 7200 | 35K |
| 2 | 250 | 2250 | 7500 | 40K |
| 3 | 300 | 2500 | 8000 | 45K |
| 4 | 400 | 3000 | 9000 | 50K |
| 5 | 500 | 3500 | 10K | 60K |
| 10 | 750 | 4000 | 12K | 80K |
| 15 | 800 | 4500 | 15K | 100K |
| 25 | 1000 | 5000 | 20K | |
| 50 | 1250 | 6000 | 25K | |
| 100 | 1500 | 7000 | 30K | |

**100-WATT SERIES VK-100-NA**

| Ohms | Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|---|
| 1 | 25 | 400 | 3500 | 40K |
| 2 | 50 | 500 | 5000 | 50K |
| 3 | 100 | 750 | 10K | 75K |
| 4 | 150 | 1000 | 15K | 100K |
| 5 | 200 | 1500 | 20K | |
| 10 | 250 | 2000 | 25K | |
| 15 | 300 | 2500 | 30K | |

**160-WATT SERIES VK-160-WA**

| Ohms | Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|---|
| 1 | 10 | 250 | 5000 | 30K |
| 2 | 25 | 500 | 10K | 40K |
| 3 | 50 | 1000 | 15K | 50K |
| 4 | 100 | 1500 | 20K | 75K |
| 5 | 150 | 2500 | 25K | 100K |

**200-WATT SERIES VK-200-WA**

| Ohms | Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|---|
| 1 | 20 | 200 | 2500 | 30K |
| 2 | 25 | 250 | 5000 | 40K |
| 3 | 50 | 300 | 10K | 50K |
| 4 | 75 | 500 | 15K | 75K |
| 5 | 100 | 1000 | 20K | 100K |
| 10 | 150 | 1500 | 25K | |

### ADJUSTABLE POWER RESISTOR PRICES

| Series | Range, Ohms | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-99 | 100-249 | 250-499 | 500-999 |
| **VP-10-FA 12-Watt** | 1.0–1000 | $0.73 | $0.66 | $0.57 | $0.50 | $0.47 | $0.45 |
| | 1250–5000 | .77 | .69 | .60 | .52 | .48 | .46 |
| | 6000–10K | .85 | .77 | .65 | .57 | .53 | .50 |
| **VP-25-KA 25-Watt** | 1.0–1000 | .82 | .74 | .62 | .531 | .487 | .464 |
| | 1250–5000 | .85 | .76 | .64 | .547 | .501 | .477 |
| | 6000–10K | .95 | .84 | .70 | .599 | .547 | .52 |
| | 12K–20K | .99 | .88 | .74 | .626 | .571 | .542 |
| | 25K | 1.12 | 1.00 | .83 | .699 | .636 | .603 |
| **VP-50-KA 50-Watt** | 1.0–1000 | 1.24 | 1.10 | .92 | .787 | .718 | .682 |
| | 1250–5000 | 1.26 | 1.13 | .94 | .802 | .732 | .696 |
| | 6000–10K | 1.35 | 1.20 | 1.00 | .849 | .774 | .735 |
| | 12K–20K | 1.46 | 1.30 | 1.08 | .913 | .831 | .787 |
| | 25K–40K | 1.66 | 1.47 | 1.21 | 1.02 | .928 | .877 |
| | 50K–60K | 1.82 | 1.61 | 1.32 | 1.12 | 1.01 | .954 |
| | 75K–80K | 2.04 | 1.80 | 1.48 | 1.24 | 1.12 | 1.06 |
| | 100K | 2.22 | 1.93 | 1.59 | 1.33 | 1.20 | 1.13 |
| **VP-75-KA 75-Watt** | 1.0–1000 | 1.75 | 1.55 | 1.29 | 1.10 | 1.00 | ......... |
| | 1250–5000 | 1.79 | 1.59 | 1.32 | 1.12 | 1.02 | ......... |
| | 6000–10K | 1.84 | 1.63 | 1.35 | 1.15 | 1.04 | ......... |
| | 12K–20K | 1.88 | 1.67 | 1.39 | 1.17 | 1.07 | ......... |
| | 25K–60K | 2.09 | 1.85 | 1.53 | 1.29 | 1.17 | ......... |
| | 80K–100K | 2.37 | 2.09 | 1.72 | 1.45 | 1.31 | ......... |
| **VK-100-NA 100-Watt** | 1.0–1000 | 1.91 | 1.70 | 1.42 | 1.21 | 1.11 | ......... |
| | 1500–5000 | 2.03 | 1.80 | 1.50 | 1.28 | 1.16 | ......... |
| | 10K | 2.14 | 1.90 | 1.58 | 1.34 | 1.22 | ......... |
| | 15K–20K | 2.26 | 2.00 | 1.66 | 1.41 | 1.28 | ......... |
| | 25K–50K | 2.37 | 2.10 | 1.74 | 1.47 | 1.34 | ......... |
| | 75K | 2.49 | 2.20 | 1.82 | 1.54 | 1.39 | ......... |
| | 100K | 2.74 | 2.42 | 2.00 | 1.68 | 1.52 | ......... |
| **VK-160-WA 160-Watt** | 1.0–1000 | 2.88 | 2.55 | 2.11 | 1.78 | 1.62 | ......... |
| | 1500–5000 | 2.93 | 2.59 | 2.14 | 1.81 | 1.64 | ......... |
| | 10K | 3.18 | 2.81 | 2.32 | 1.95 | 1.76 | ......... |
| | 15K–20K | 3.41 | 3.05 | 2.48 | 2.08 | 1.88 | ......... |
| | 25K–50K | 3.57 | 3.15 | 2.58 | 2.17 | 1.96 | ......... |
| | 75K | 3.69 | 3.25 | 2.67 | 2.24 | 2.02 | ......... |
| | 100K | 3.80 | 3.35 | 2.75 | 2.30 | 2.08 | ......... |
| **VK-200-WA 200-Watt** | 1.0–1000 | 3.26 | 2.90 | 2.42 | 2.06 | 1.88 | ......... |
| | 1500–5000 | 3.31 | 2.94 | 2.45 | 2.09 | 1.90 | ......... |
| | 10K | 3.44 | 3.06 | 2.55 | 2.16 | 1.97 | ......... |
| | 15K–20K | 3.55 | 3.16 | 2.63 | 2.23 | 2.03 | ......... |
| | 25K–50K | 3.67 | 3.26 | 2.71 | 2.29 | 2.09 | ......... |
| | 75K | 3.84 | 3.40 | 2.82 | 2.39 | 2.17 | ......... |
| | 100K | 4.02 | 3.56 | 2.95 | 2.49 | 2.26 | ......... |

## AXIAL LEAD VITREOUS RESISTORS

deal for printed circuit, terminal board, and point-to-point wiring applications. Space-aving design, due to elimination of mounting brackets and terminal lugs. Standard esistance tolerance, ±5%. Designed for critical applications, providing high stability nd reliability under widely variable environmental conditions. Finished in vitreous hade of teal green. Available in three sizes: 3, 5 or 10 watts. **Size:** VC3D, ¼" dia. x ½" ong; VC5E, ⅜" dia. x 1" long; VC10F, 7⁄16" dia. x 1⅞" long. Leads 1½" long, .032" dia.

### STOCK VALUES

| Ohms | Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|---|
| 1 | 50 | 470 | 2500 | 12K* |
| 1.5 | 56 | 500 | 2700 | 12.5K |
| 2 | 68 | 560 | 3000 | 13.5K* |
| 3 | 75 | 600 | 3300 | 15K |
| 4 | 82 | 680 | 3500 | 16K* |
| 5 | 100 | 700 | 3900 | 17.5K |
| 7.5 | 120 | 750 | 4000 | 18K |
| 10 | 125 | 800 | 4500 | 20K |
| 12 | 150 | 820 | 4700 | 22K |
| 15 | 180 | 900 | 5000 | 22.5K |
| 18 | 200 | 1000 | 5600 | 25K |
| 20 | 220 | 1100 | 6000 | 27K* |
| 22 | 225 | 1200 | 6800 | 30K* |
| 25 | 250 | 1250 | 7000 | 33K* |
| 27 | 270 | 1300* | 7500 | 35K* |
| 30 | 300 | 1500 | 8000 | 39K* |
| 33 | 330 | 1750 | 8200 | 40K* |
| 35 | 350 | 1800 | 8500* | 45K* |
| 39 | 390 | 2000 | 9000 | 47K* |
| 40 | 400 | 2200 | 10K | 50K* |
| 47 | 450 | 2250 | 11K* | |

Available in 10-watt series VC10F only.

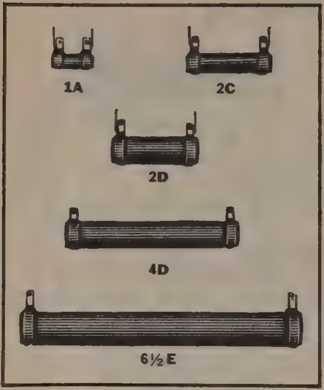
### PRICES

When ordering, specify resistance value desired from stock values shown at left.

| Series | Range, Ohms | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-99 | 100-249 | 250-499 | 500-999 |
| **VC3D 3-Watt** | 1.0–100 | $0.54 | $0.46 | $0.37 | $0.30 | $0.266 | $0.247 |
| | 120–2500 | .49 | .43 | .34 | .276 | .245 | .228 |
| | 2700–5000 | .56 | .48 | .39 | .312 | .276 | .257 |
| | 5600–7500 | .60 | .52 | .41 | .34 | .297 | .277 |
| | 8000–10K | .70 | .61 | .49 | .397 | .351 | .326 |
| **VC5E 5-Watt** | 1.0–1000 | .54 | .46 | .37 | .30 | .266 | .247 |
| | 1100–5000 | .56 | .48 | .39 | .312 | .276 | .257 |
| | 5600–10K | .60 | .52 | .41 | .34 | .297 | .277 |
| | 12.5K–15K | .69 | .56 | .44 | .36 | .319 | .297 |
| | 17.5K–20K | .73 | .63 | .50 | .409 | .361 | .336 |
| | 22K–25K | .96 | .83 | .66 | .541 | .478 | .445 |
| **VC10F 10-Watt** | 1.0–1000 | .58 | .50 | .40 | .33 | .287 | .267 |
| | 1100–5000 | .64 | .56 | .44 | .36 | .319 | .297 |
| | 5600–10K | .70 | .61 | .49 | .397 | .351 | .327 |
| | 11K–20K | .80 | .69 | .56 | .454 | .401 | .374 |
| | 22K–40K | .90 | .79 | .63 | .51 | .452 | .42 |
| | 45K–50K | 1.06 | .92 | .74 | .60 | .536 | .494 |

# IRC WIREWOUND POWER RESISTORS

TRW ELECTRONIC COMPONENTS



## FIXED RESISTORS

Exclusive Resisteg® coating assures superior stability; withstands transverse load far in excess of 25 lbs. without mechanical or electrical damage. Rated in accordance with latest MIL specs which limit resistor hot spot to 350° C when suspended horizontally in free air.

**No Derating**—even at high resistance values, these resistors operate at full rated power. **Clean Terminals**—Heat resistant type are carefully processed for easy soldering. **Quality Cores**—Selected ceramic material withstands shock and moisture.

**Premium Windings Uniformly Spaced**—Heavy gauge wire handles overloads without burnouts. Low temperature curing prevents wire shifting; eliminates hotspots and arcing. **Easy Mounting**—Spring loaded, push-in type metal brackets are standard on all sizes. **Resisteg Coat**—Smooth gray finish is craze proof, salt free and chip resistant. **Clear Marking**—Type numbers, resistance value and wattage permanently marked on resistor.

**Type 1A:** Rated 5 watts. Core 1″ lg. x 5/16″ dia. Terminals: 13A. No mtg. hardware supplied. Resistance tolerance, ±5%.

**Type 1¾ A:** Rated 12 watts. Core 1¾″ lg. x 5/16″ dia. Terminals: 13A. No mtg. hardware supplied. Resistance tolerance, ±5%.

**Type 2C:** Rated 20 watts. Core 2″ lg. x 7/16″ dia. Terminals: 13A. No mtg. hardware supplied. Resistance tolerance, ±5%.

**Type 2D:** Rated 25 watts. Core 2″ lg. x 9/16″ dia. Terminals: 12A. Resistance tolerance, ±5%.

**Type 4D:** Rated 50 watts. Core 4″ lg. x 9/16″ dia. Terminals: 12A. Resistance tolerance, ±5%.

**Type 6½E:** Rated 100 watts. Core 6½″ lg. x ¾″ dia. Terminals: 12A. Resistance tolerance, ±5%.

**Type 8½H:** Rated 175 watts. Core 8½″ lg. x 1⅛″ dia. Terminals: 4A. Resistance tolerance, ±5%.

**Type 10½H:** Rated 225 watts. Core 10½″ lg. x 1⅛″ dia. Terminals: 4A. Resistance tolerance, ±5%.

| IRC Type | Standard Values in Ohms | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-99 | 100-249 | 250-499 | 500-999 | 1000 Up |
| 1A | 1, 1.5, 2, 3, 4, 5, 7.5, 10, 12, 15, 20, 25, 30, 35, 40, 50, 75, 100, 125, 150, 200, 225, 250, 300, 350, 400, 450, 500, 600, 700, 750, 800, 900, 1000 | $0.52 | $0.44 | $0.36 | $0.31 | $0.26 |
| | 1100, 1200, 1250, 1500, 1750, 2000, 2250, 2500, 3000, 3500, 4000, 4500, 5000 | .55 | .47 | .39 | .33 | .28 |
| | 6000, 7000, 7500, 8000, 9000, 10K | .58 | .49 | .41 | .35 | .29 |
| | 12.5K, 15K | .65 | .55 | .46 | .39 | .33 |
| 1¾ A | 1, 1.5, 2, 3, 4, 5, 7.5, 10, 12, 15, 20, 25, 30, 35, 40, 50, 75, 100, 125, 150, 200, 225, 250, 300, 350, 400, 450, 500, 600, 700, 750, 800, 900, 1000 | .57 | .48 | .40 | .34 | .29 |
| | 1100, 1200, 1250, 1500, 1750, 2000, 2250, 2500, 3000, 3500, 4000, 4500, 5000 | .61 | .52 | .43 | .37 | .31 |
| | 6000, 7000, 7500, 8000, 8500, 9000, 10K | .70 | .60 | .49 | .42 | .35 |
| | 11K, 12K, 12.5K, 13.5K, 15K, 16K, 17.5K, 18K, 20K | .79 | .67 | .55 | .47 | .40 |
| | 22.5K, 25K, 30K, 35K, 40K | .83 | .71 | .58 | .50 | .42 |
| | 45K and 50K | .93 | .79 | .65 | .56 | .47 |
| 2C | 1, 2, 3, 4, 5, 10, 25, 50, 75, 100, 150, 200, 250, 300, 350, 400, 500, 650, 700, 750, 800, 900, 1000 | .68 | .58 | .48 | .41 | .34 |
| | 1200, 1250, 1500, 1750, 2000, 2250, 2500, 2750, 3000, 3500, 4000, 4500, 5000 | .70 | .60 | .49 | .42 | .35 |
| | 6000, 7000, 7500, 8000, 9000, 10K | .83 | .71 | .58 | .50 | .42 |
| | 12.5K, 15K, 20K | .85 | .72 | .60 | .51 | .43 |
| | 25K, 30K, 35K, 40K | .99 | .84 | .69 | .59 | .50 |
| | 45K, 50K, 55K, 60K | 1.15 | .98 | .81 | .69 | .58 |
| | 65K, 70K, 75K, 80K | 1.37 | 1.16 | .96 | .82 | .69 |
| 2D | 1, 2, 3, 4, 5, 10, 15, 25, 50, 75, 100, 150, 200, 250, 500, 750, 800, 1000 | .72 | .61 | .50 | .43 | .36 |
| | 1500, 2000, 2500, 3000, 3500, 4000, 5000 | .75 | .64 | .53 | .45 | .38 |
| | 6000, 7500, 10K | .85 | .72 | .60 | .51 | .43 |
| | 12K, 15K, 20K | .90 | .77 | .63 | .54 | .45 |
| | 25K, 30K, 35K, 40K | 1.04 | .88 | .73 | .62 | .52 |
| | 50K, 60K | 1.21 | 1.03 | .85 | .73 | .61 |
| | 70K, 80K | 1.42 | 1.21 | .99 | .85 | .71 |
| | 100K | 1.64 | 1.39 | 1.15 | .98 | .82 |
| 4D | 1, 2, 3, 4, 5, 10, 25, 50, 75, 100, 150, 200, 250, 500, 750, 800, 1000 | 1.11 | .94 | .78 | .67 | .56 |
| | 1500, 2000, 2500, 3000, 4000, 5000 | 1.14 | .97 | .80 | .68 | .57 |
| | 7500, 8000, 10K | 1.23 | 1.05 | .86 | .74 | .62 |
| | 12K, 15K, 20K | 1.35 | 1.15 | .95 | .81 | .68 |
| | 25K, 35K | 1.54 | 1.31 | 1.08 | .92 | .77 |
| | 50K | 1.72 | 1.46 | 1.20 | 1.03 | .86 |
| | 75K | 1.97 | 1.67 | 1.38 | 1.18 | .99 |
| | 100K | 2.13 | 1.81 | 1.49 | 1.28 | 1.07 |
| | 125K | 2.57 | 2.18 | 1.80 | 1.54 | 1.29 |
| | 150K | 2.70 | 2.30 | 1.89 | 1.62 | 1.35 |
| | 175K | 2.79 | 2.37 | 1.95 | 1.67 | 1.40 |
| | 200K | 2.89 | 2.46 | 2.02 | 1.73 | 1.45 |
| | 250K | 3.24 | 2.75 | 2.27 | 1.94 | 1.62 |
| | 300K | 3.62 | 3.08 | 2.53 | 2.17 | 1.81 |
| 6½ E | 1, 2, 3, 4, 5, 10, 25, 50, 75, 100, 125, 150, 250, 500, 750, 1000 | 1.54 | 1.31 | 1.08 | .92 | .77 |
| | 1500, 2000, 2500, 3000, 5000 | 1.60 | 1.36 | 1.12 | .96 | .80 |
| | 7500, 10K | 1.73 | 1.47 | 1.21 | 1.04 | .87 |
| | 15K, 20K | 1.87 | 1.59 | 1.31 | 1.12 | .94 |
| | 25K, 30K, 40K | 2.13 | 1.81 | 1.49 | 1.28 | 1.07 |
| | 50K, 60K | 2.21 | 1.88 | 1.55 | 1.33 | 1.11 |
| | 75K | 2.45 | 2.08 | 1.72 | 1.47 | 1.23 |
| | 100K | 2.75 | 2.34 | 1.93 | 1.65 | 1.38 |
| 8½ H | 1, 2, 3, 4, 5, 10, 25, 50, 75, 100, 125, 150, 250, 500, 750, 1000 | 2.28 | 1.94 | 1.60 | 1.37 | 1.14 |
| | 1500, 2000, 2500, 3000, 5000 | 2.32 | 1.97 | 1.62 | 1.39 | 1.16 |
| | 7500, 10K | 2.53 | 2.15 | 1.77 | 1.52 | 1.27 |
| | 15K, 20K | 2.71 | 2.30 | 1.90 | 1.63 | 1.36 |
| | 25K, 30K, 40K | 2.80 | 2.38 | 1.96 | 1.68 | 1.40 |
| | 50K, 60K | 2.89 | 2.46 | 2.02 | 1.73 | 1.45 |
| | 75K | 3.08 | 2.62 | 2.16 | 1.85 | 1.54 |
| | 100K | 3.26 | 2.77 | 2.28 | 1.96 | 1.63 |
| 10½ H | 1, 2, 3, 4, 5, 10, 25, 50, 75, 100, 150, 250, 500, 750, 1000 | 2.46 | 2.09 | 1.72 | 1.48 | 1.23 |
| | 1500, 2000, 2500, 3000, 5000 | 2.53 | 2.15 | 1.77 | 1.52 | 1.27 |
| | 7500, 10K | 2.71 | 2.30 | 1.90 | 1.63 | 1.36 |
| | 15K, 20K | 2.89 | 2.46 | 2.02 | 1.73 | 1.45 |
| | 25K, 30K, 40K | 2.98 | 2.53 | 2.09 | 1.79 | 1.49 |
| | 50K, 60K | 3.08 | 2.62 | 2.16 | 1.85 | 1.54 |
| | 75K | 3.26 | 2.77 | 2.28 | 1.96 | 1.63 |
| | 100K | 3.46 | 2.94 | 2.42 | 2.08 | 1.73 |

# IRC® WIREWOUND POWER RESISTORS

**TRW®**
ELECTRONIC COMPONENTS

## FIXED MILITARY RESISTORS

Vith military stamping; no hardware. acked 1 per box. Terminals: RW30, W31, RW33 and RW35, 12A; RW29 and W32, 13A; all others, 4A. Resis. tolernce, ±5%.

**ype RW29:** Rated 12 watts. Core 1¾" . x 5⁄16" dia. Range: All values, 1–5,600 hms.

**ype RW30:** Rated 12 watts. Core 1" lg. 7⁄16" dia. Range: All values, 1–2,400 ohms.

**Type RW31:** Rated 15 watts. Core 1½" lg. x 7⁄16" dia. All values, 1–10K ohms.

**Type RW32:** Rated 20 watts. Core 2" lg. x 7⁄16" dia. All values, 1–10,000 ohms.

**Type RW33:** Rated 26 watts. Core 3" lg. x 7⁄16" dia. All values, 1–18,000 ohms.

**Type RW35:** Rated 60 watts. Core 4" lg. x ¾" dia. All values, 1–20,000 ohms.

**Type RW36:** Rated 80 watts. Core 4" lg. x 1⅛" dia. All values, 1–20K ohms.

**Type RW37:** Rated 120 watts. Core 6" lg. x 1⅛" dia. All values, 1–20K ohms.

**Type RW38:** Rated 160 watts. Core 8" lg. x 1⅛" dia. All values, 1–20K ohms.

**Type RW47:** Rated 225 watts. Core 10½" lg. x 1⅛" dia. All values, 1–20K ohms.

| MIL Type | Range, Ohms* | Net Each, Lots of 1-99 | 100-249 | 250-499 | 500-999 | 1000 Up |
|---|---|---|---|---|---|---|
| **RW29** | 1–1000 | $0.57 | $0.48 | $0.40 | $0.34 | $0.29 |
| | 1100–5000 | .61 | .52 | .43 | .37 | .31 |
| | 5600 | .70 | .60 | .49 | .42 | .35 |
| **RW30** | 1–1000 | .54 | .46 | .38 | .32 | .27 |
| | 1100–2400 | .57 | .48 | .40 | .34 | .29 |
| **RW31** | 1–1000 | .57 | .48 | .40 | .34 | .29 |
| | 1100–5000 | .61 | .52 | .43 | .37 | .31 |
| | 5600–10K | .70 | .60 | .49 | .42 | .35 |
| **RW32** | 1–1000 | .68 | .58 | .48 | .41 | .34 |
| | 1100–5000 | .70 | .60 | .49 | .42 | .35 |
| | 5600–10K | .83 | .71 | .58 | .50 | .42 |
| **RW33** | 1–1000 | .86 | .73 | .60 | .52 | .43 |
| | 1100–5000 | .93 | .79 | .65 | .56 | .47 |
| | 5600–10K | 1.07 | .91 | .75 | .64 | .54 |
| | 11K–18K | 1.12 | .95 | .78 | .67 | .56 |
| **RW35** | 1–1000 | 1.19 | 1.01 | .83 | .71 | .60 |
| | 1100–5000 | 1.28 | 1.09 | .90 | .77 | .64 |
| | 5600–10K | 1.42 | 1.21 | .99 | .85 | .71 |
| | 11K–20K | 1.54 | 1.31 | 1.08 | .92 | .77 |
| **RW36** | 1–1000 | 1.43 | 1.22 | 1.00 | .86 | .72 |
| | 1100–5000 | 1.52 | 1.29 | 1.06 | .91 | .76 |
| | 5600–10K | 1.65 | 1.40 | 1.16 | .99 | .83 |
| | 11K–20K | 1.79 | 1.52 | 1.25 | 1.07 | .90 |

| MIL Type | Range, Ohms* | Net Each, Lots of 1-99 | 100-249 | 250-499 | 500-999 | 1000 Up |
|---|---|---|---|---|---|---|
| **RW37** | 1–1000 | $1.82 | $1.55 | $1.27 | $1.09 | $0.91 |
| | 1100–5000 | 1.88 | 1.60 | 1.32 | 1.13 | .94 |
| | 5600–10K | 2.04 | 1.73 | 1.43 | 1.22 | 1.02 |
| | 11K–20K | 2.23 | 1.90 | 1.56 | 1.34 | 1.12 |
| **RW38** | 1–1000 | 2.28 | 1.94 | 1.60 | 1.37 | 1.14 |
| | 1100–5000 | 2.32 | 1.97 | 1.62 | 1.39 | 1.16 |
| | 5600–10K | 2.53 | 2.15 | 1.77 | 1.52 | 1.27 |
| | 11K–20K | 2.71 | 2.30 | 1.90 | 1.63 | 1.36 |
| **RW47** | 1–1000 | 2.46 | 2.09 | 1.72 | 1.48 | 1.23 |
| | 1100–5000 | 2.53 | 2.15 | 1.77 | 1.52 | 1.27 |
| | 5600–10K | 2.71 | 2.30 | 1.90 | 1.63 | 1.36 |
| | 11K–20K | 2.89 | 2.46 | 2.02 | 1.73 | 1.45 |

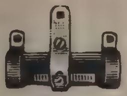
### *STOCK VALUE DECADE TABLE

Available for the ranges shown for each type in the following values or multiples of 10, 100 and 1000 (i.e., 1.0, 10, 100 and 1000 ohms).

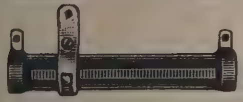
| | | | | | |
|---|---|---|---|---|---|
| 1.0 | 1.5 | 2.2 | 3.3 | 4.7 | 6.8 |
| 1.1 | 1.6 | 2.4 | 3.6 | 5.1 | 7.5 |
| 1.2 | 1.8 | 2.7 | 3.9 | 5.6 | 8.2 |
| 1.3 | 2.0 | 3.0 | 4.3 | 6.2 | 9.1 |

## ADJUSTABLE WIREWOUND POWER RESISTORS

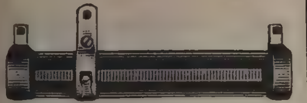
**1¾AA**



**2DA**



**4DA**



**5EA**

**ype 1¾ AA:** Rated 12 watts. Core 1¾" . x 5⁄16" dia. Terminals: 12A. With type A" adjustable band. Resistance tolernce, ±10%.

**ype 2DA:** Rated 25 watts. Core 2" lg. x 16" dia. Terminals: 12A. With adjust. and. Resistance tolerance, ±10%.

**ype 4DA:** Rated 50 watts. Core 4" lg. x 16" dia. Terminals: 12A. With adj. band. esistance tolerance, ±10%.

**ype 5EA:** Rated 75 watts. Core 5" lg. x 4" dia. Terminals: 12A. With adj. band. esistance tolerance, ±10%.

**ype 6½EA:** Rated 100 watts. Core 6½" . x ¾" dia. Terminals: 12A. With adj. and. Resistance tolerance, ±10%.

**ype 8½ HA:** Rated 175 watts. Core 8½" . x 1⅛" dia. Terminals: 4A. With adj. and. Resistance tolerance, ±10%.

**ype 10½HA:** Rated 225 watts. Core 0½" lg. x 1⅛" dia. Terminals: 4A. With dj. band. Resistance tolerance, ±10%.

| IRC Type | Standard Values in Ohms | Net Each, Lots of 1-99 | 100-249 | 250-499 | 500-999 | 1000 Up |
|---|---|---|---|---|---|---|
| **1¾AA** | 1, 2, 3, 5, 7.5, 10, 15, 20, 25, 50, 75, 100, 150, 200, 250, 300, 350, 400, 500, 600, 750, 800, 1000 | $1.14 | $0.96 | $0.80 | $0.68 | $0.58 |
| | 1250, 1500, 2000, 2250, 2.5K, 3K, 3.5K, 4K, 4.5K, 5K | 1.18 | 1.00 | .83 | .71 | .60 |
| | 6000, 7000, 7500, 8000, 8500, 9000, 10K | 1.27 | 1.08 | .89 | .76 | .64 |
| **2DA** | 1, 2, 3, 5, 7.5, 10, 15, 20, 25, 50, 75, 100, 150, 200, 250, 300, 400, 500, 750, 800, 1000 | 1.29 | 1.09 | .90 | .77 | .65 |
| | 1250, 1500, 2000, 2250, 2.5K, 3K, 3.5K, 4K, 4.5K, 5K | 1.32 | 1.12 | .93 | .79 | .67 |
| | 6K, 7K, 7.5K, 8K, 9K, 10K | 1.42 | 1.20 | 1.00 | .85 | .72 |
| | 12K, 15K, 20K | 1.47 | 1.25 | 1.03 | .88 | .74 |
| | 25K | 1.61 | 1.36 | 1.13 | .96 | .81 |
| **4DA** | 1, 2, 3, 4, 5, 10, 25, 50, 75, 100, 150, 200, 250, 300, 400, 500, 750, 800, 1000 | 1.68 | 1.42 | 1.18 | 1.01 | .85 |
| | 1250, 1500, 2000, 2250, 2.5K, 3K, 3.5K, 4K, 4.5K, 5K | 1.71 | 1.45 | 1.20 | 1.02 | .86 |
| | 6K, 7K, 7.5K, 8K, 9K, 10K | 1.80 | 1.53 | 1.26 | 1.08 | .91 |
| | 12K, 15K, 20K | 1.92 | 1.63 | 1.35 | 1.15 | .97 |
| | 25K, 30K, 40K | 2.11 | 1.79 | 1.48 | 1.26 | 1.06 |
| | 50K, 60K | 2.29 | 1.94 | 1.60 | 1.37 | 1.15 |
| | 80K | 2.54 | 2.15 | 1.78 | 1.52 | 1.28 |
| | 100K | 2.70 | 2.29 | 1.89 | 1.62 | 1.36 |
| **5EA** | 1, 2, 3, 4, 5, 10, 25, 50, 100, 250, 500, 1000 | 1.86 | 1.58 | 1.30 | 1.11 | .94 |
| | 1500, 2500, 5000 | 1.95 | 1.65 | 1.37 | 1.17 | .98 |
| | 10K | 2.09 | 1.77 | 1.46 | 1.25 | 1.05 |
| | 15K, 20K | 2.22 | 1.88 | 1.56 | 1.33 | 1.12 |
| | 25K, 30K, 40K | 2.41 | 2.04 | 1.69 | 1.44 | 1.21 |
| | 50K | 2.60 | 2.21 | 1.82 | 1.56 | 1.31 |
| | 75K | 2.87 | 2.44 | 2.01 | 1.72 | 1.44 |
| | 100K | 3.10 | 2.63 | 2.17 | 1.86 | 1.56 |
| **6½EA** | 1, 2, 3, 4, 5, 10, 25, 50, 100, 250, 500, 1000 | 2.11 | 1.79 | 1.48 | 1.26 | 1.06 |
| | 1500, 2500, 5000 | 2.17 | 1.84 | 1.52 | 1.30 | 1.09 |
| | 10K | 2.30 | 1.95 | 1.61 | 1.38 | 1.16 |
| | 15K, 20K | 2.44 | 2.07 | 1.71 | 1.46 | 1.23 |
| | 25K, 30K, 40K | 2.70 | 2.29 | 1.89 | 1.62 | 1.36 |
| | 50K | 2.78 | 2.36 | 1.95 | 1.67 | 1.40 |
| | 75K | 3.02 | 2.56 | 2.12 | 1.81 | 1.52 |
| | 100K | 3.32 | 2.82 | 2.33 | 1.99 | 1.67 |
| **8½HA** | 1, 2, 3, 4, 5, 10, 25, 50, 100, 250, 500, 1000 | 3.16 | 2.69 | 2.22 | 1.90 | 1.58 |
| | 1500, 2500, 5000 | 3.20 | 2.72 | 2.24 | 1.92 | 1.60 |
| | 10K | 3.41 | 2.90 | 2.39 | 2.05 | 1.71 |
| | 15K, 20K | 3.59 | 3.05 | 2.52 | 2.16 | 1.80 |
| | 25K, 30K, 40K | 3.68 | 3.13 | 2.58 | 2.21 | 1.84 |
| | 50K | 3.77 | 3.21 | 2.64 | 2.26 | 1.89 |
| | 75K | 3.96 | 3.37 | 2.78 | 2.38 | 1.98 |
| | 100K | 4.14 | 3.52 | 2.90 | 2.49 | 2.07 |
| **10½HA** | 1, 2, 3, 4, 5, 10, 25, 50, 100, 250, 500, 1000 | 3.34 | 2.84 | 2.34 | 2.01 | 1.67 |
| | 1500, 2500, 5000 | 3.41 | 2.90 | 2.39 | 2.05 | 1.71 |
| | 10K | 3.59 | 3.05 | 2.52 | 2.16 | 1.80 |
| | 15K, 20K | 3.77 | 3.21 | 2.64 | 2.26 | 1.89 |
| | 25K, 30K, 40K | 3.86 | 3.28 | 2.71 | 2.32 | 1.93 |
| | 50K | 3.96 | 3.37 | 2.78 | 2.38 | 1.98 |
| | 75K | 4.14 | 3.52 | 2.90 | 2.49 | 2.07 |
| | 100K | 4.34 | 3.69 | 3.04 | 2.61 | 2.17 |

# IRC® Precision Resistors

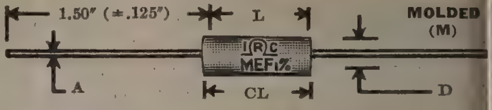
TRW® ELECTRONIC COMPONENTS

## MIL-R-10509 HIGH STABILITY PRECISION METAL FILM RESISTORS

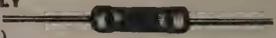
### FILM TYPE AND TOLERANCES

Film Type "MF" designates Evaporated Metal Film resistors from IRC Burlington Division. Film Type "MG" designates Metal Glaze from IRC Boone Division. Metal Film, Type MF, resistors are supplied in standard tolerances of ±1.0%, ±0.5%, ±0.25% and ±0.1%. Closer tolerances are available on special order. Metal Glaze, Type MG, resistors are supplied in ±1.0% tolerance only.

**See below for other resistor characteristics.**



MOLDED (M)



CONFORMALLY COATED (C)

| IRC Type | MIL Style | MIL Char. | IRC TC Code | Std. Resistance Range Ohms | Extended Resistance Range* Ohms | Watts at 70° C IRC | Watts at 70° C MIL | Watts at 125° C IRC | Watts at 125° C MIL | Volts MIL Max. | Dimensions, Inches Lg. L | Dimensions, Inches Dia. D | Dimensions, Inches Clean Lead CL | Dimensions, Inches Leads A AWG | Film Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **UC** | ...... | ...... | T0, T2 | 50–10K | ...... | ¼ | ...... | ⅛ | ...... | 200 | .145 | .057 | .150 | #30† | MF# |
| **MMC** | RN50 | ......<br>C, E | T0<br>T2, T9 | 10–100K<br>49.9–100K | ......<br>...... | ½ | ⅛ | ¼ | 1/20 | 200 | .172 | .075 | .200 | #26§ | MF# |
| **TO55** | RN55 | D | T0 | 10–499K | ...... | ½ | ⅛ | ¼ | 1/10 | 200 | .265 | .090 | .265 | #22 | MG |
| **CEA** | RN55 | D<br>C, E | T0<br>T2, T9 | 10–499K<br>30.1–499K | 500K–1.5 megs<br>500K–1.5 megs | ½ | ⅛ | ¼ | 1/10 | 200 | .281 | .100 | .325 | #22 | MF# |
| **CCM** | RN55 | D<br>C, E | T0<br>T2, T9 | 20–301K<br>49.9–301K | ......<br>...... | ¾ | ⅛ | ⅜ | 1/10 | 200 | .281 | .098 | .325 | #22 | MF# |
| **TO60** | RN60 | D | T0 | 10–1 meg | ...... | ¾ | ¼ | ⅜ | ⅛ | 250 | .400 | .140 | .400 | #22 | MG |
| **CCA** | RN60 | D<br>C, E | T0<br>T2, T9 | 10–1 meg<br>49.9–1 meg | 1.1 megs–3 megs<br>1.1 megs–3 megs | ½ | ¼ | ¼ | ⅛ | 250 | .431 | .160 | .545 | #22 | MF# |
| **MEA** | RN60 | D<br>C, E | T0<br>T2, T9 | 10–499K<br>30.1–499K | 500K–1.5 megs<br>500K–1.5 megs | ¾ | ¼ | ⅜ | ⅛ | 250 | .421 | .140 | .545 | #22 | MF |
| **MEB** | RN65 | D<br>C, E | T0<br>T2, T9 | 10–1 meg<br>49.9–1 meg | 1.1 megs–3 megs<br>1.1 megs–3 megs | 1 | ½ | ½ | ¼ | 300 | .609 | .218 | .733 | #22 | MF |
| **CCB** | RN65 | D<br>C, E | T0<br>T2, T9 | 10–1.5 megs<br>49.9–1.5 megs | ......<br>...... | ¾ | ½ | ½ | ¼ | 350 | .625 | .200 | .734 | #22 | MF# |
| **MEC** | RN70 | D<br>C, E | T0<br>T2, T9 | 10–1.5 megs<br>24.9–1.5 megs | 1.51 megs–5 megs<br>1.51 megs–5 megs | 1½ | ¾ | ¾ | ½ | 350 | .739 | .281 | .863 | #20 | MF |
| **CEC** | ...... | ......<br>...... | T0<br>T2, T9 | 10–1.5 megs<br>24.9–1.5 megs | 1.51 megs–5 megs<br>1.51 megs–5 megs | 1 | ...... | ½ | ...... | 350 | .625 | .200 | .734 | #20 | MF# |
| **MEF** | RN75 | B<br>C, E | T0<br>T2, T9 | 49.9–4 megs<br>49.9–4 megs | 4.1 megs–18 megs<br>4.1 megs–18 megs | ...... | ...... | 1 | 1 | 500 | 1.125 | .415 | 1.253 | #20 | MF |
| **MEH** | RN80 | B<br>...... | T0<br>T2, T9 | 100–10 megs<br>100–10 megs | 10.1 megs–45 megs<br>10.1 megs–45 megs | 2 | 2 | ...... | ...... | 750 | 2.274 | .415 | 2.378 | #20 | MF |

***Extended Resistance Ranges:** Where resistance values are listed in this column, Metal Film resistors are available to the upper value shown in T0, T2 and T9. Substantially higher values are available in TR and TE Temperature Coefficients on special order. †Gold plated Dumet leads, 1.00″. §Lead length, 1.00″. #Body type C; all others, M.

### TEMPERATURE COEFFICIENTS

High stability Metal Film resistors are available in the following temperature coefficients.

| MIL-R-10509 Char. | IRC TC Code | Temperature Coefficient† | Temperature Span |
|---|---|---|---|
| D* | T0 | 0±100 ppm/° C | −55° C to +165° C |
| C* | T2 | 0±50 ppm/° C | −55° C to +175° C |
| E* | T9 | 0±25 ppm/° C | −55° C to +175° C |
| | T3 | 0 to +100 ppm/° C | −55° C to +165° C |
| | T4 | 0 to −100 ppm/° C | −55° C to +165° C |
| | T5 | 0±25 ppm/° C | +25° C to +145° C |
| | T6 | 0 to +50 ppm/° C | −55° C to +165° C |
| | T7 | 0 to −50 ppm/° C | −55° C to +165° C |
| | T8 | 0±25 ppm/° C<br>0±35 ppm/° C | +25° C to +165° C<br>−55° C to +25° C |
| | TR | 0 to +100 ppm/° C<br>0 to −250 ppm/° C | −55° C to +165° C<br>−55° C to +165° C |
| | TE | 0 to +100 ppm/° C<br>0 to −500 ppm/° C | −55° C to +165° C<br>−55° C to +165° C |

*Standard types; all others are special. †Parts per million per degree centigrade, (100 ppm=0.01%).

### VOLTAGE COEFFICIENT

When measured between 1/10 and full rated voltage, voltage coefficient is typically less than 0.5 ppm/volt, for all values. On low and medium value resistors, the voltage coefficient is essentially zero.

### ELECTRICAL NOISE

All Metal Film resistors demonstrate inherently low noise levels due to the minute size of the individual particles which comprise the film. TRW/IRC Metal Film resistors average 0.10 microvolt per volt (−20 dB) over the standard resistance ranges for a decade of frequency, with low and intermediate values below 0.05 microvolt per volt (−30 dB). Recently developed processing techniques, however, permit a substantial improvement in the higher ranges for applications which require low noise levels; available on special order only.

### FREQUENCY RESPONSE

TRW/IRC Metal Film resistors demonstrate high frequency response which is essentially flat to 5 MHz. Non-helixed units are available for applications employing higher frequencies, on special order.

### LOAD STABILITY

The ΔR due to operation at rated load for 1000 hours is typically less than ±0.1%. Special pre-conditioning (Burn-In, Temperature Cycling, etc.) is available to meet customer specifications.

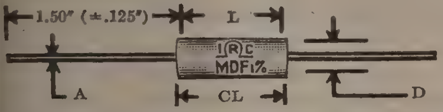
### INDUSTRIAL PRICING

| IRC Type | MIL Type | TC Code | Resistance Range Ohms | Net Each, Lots of 1-24 | 25-99 | 100-249 | 250-999* |
|---|---|---|---|---|---|---|---|
| **UC** | ....... | T0<br>T2 | 50–10K<br>50–10K | $2.50<br>4.00 | $1.50<br>3.00 | $1,00<br>1.50 | $0.90<br>1.35 |
| **MMC** | RN50 | T0<br>T2<br>T9 | 20–100K<br>49.9–100K<br>49.9–100K | 2.00<br>2.00<br>2.50 | 1.00<br>1.00<br>1.50 | .43<br>.48<br>.93 | .34<br>.39<br>.76 |
| **TO55** | RN55 | T0 | 10–499K | 1.34 | .67 | .21 | .14 |
| **CEA** | RN55 | T0<br>T2<br>T9 | 10–499K<br>30.1–499K<br>30.1–499K | 1.34<br>2.00<br>2.50 | .67<br>1.00<br>1.50 | .21<br>.28<br>.65 | .14<br>.17<br>.45 |
| **CCM** | RN55 | T0<br>T2<br>T9 | 20–301K<br>30.1–301K<br>30.1–301K | 2.00<br>2.00<br>2.50 | 1.00<br>1.00<br>1.50 | .39<br>.45<br>.89 | .18<br>.24<br>.47 |
| **TO60** | RN60 | T0 | 10–1 meg | 1.34 | .67 | .21 | .14 |
| **CCA** | RN60 | T0<br>T2<br>T9 | 10–1 meg<br>30.1–1 meg<br>49.9–1 meg | 1.34<br>2.00<br>2.50 | .67<br>1.00<br>1.50 | .21<br>.31<br>.65 | .14<br>.21<br>.45 |
| **MEA** | RN60 | T0<br>T2<br>T9 | 10–499K<br>30.1–499K<br>30.1–499K | 2.00<br>2.00<br>2.50 | 1.00<br>1.00<br>1.50 | .28<br>.40<br>.80 | .16<br>.32<br>.58 |
| **MEB** | RN65 | T0<br>T2<br>T9 | 10–1 meg<br>30.1–1 meg<br>49.9–1 meg | 2.00<br>2.00<br>2.50 | 1.00<br>1.00<br>1.50 | .24<br>.30<br>.75 | .16<br>.21<br>.45 |
| **CCB** | RN65 | T0<br>T2<br>T9 | 10–1.5 megs<br>30.1–1.5 megs<br>49.9–1.5 megs | 2.00<br>2.00<br>2.50 | 1.00<br>1.00<br>1.50 | .25<br>.43<br>.75 | .16<br>.21<br>.45 |
| **MEC** | RN70 | T0<br>T2<br>T9 | 10–1.5 megs<br>24.9–1.5 megs<br>24.9–1.5 megs | 2.00<br>2.00<br>2.50 | 1.00<br>1.00<br>1.50 | .24<br>.30<br>.75 | .16<br>.21<br>.45 |
| **CEC** | ....... | T0<br>T2<br>T9 | 10–1.5 megs<br>24.9–1.5 megs<br>24.9–1.5 megs | 2.00<br>2.00<br>2.50 | 1.00<br>1.00<br>1.50 | .23<br>.29<br>.75 | .15<br>.19<br>.45 |
| **MEF** | RN75 | T0<br>T2<br>T9 | 49.9–4 megs<br>49.9–4 megs<br>49.9–4 megs | 2.50<br>2.50<br>5.00 | 1.50<br>1.50<br>3.00 | .67<br>1.00<br>2.20 | .54<br>.75<br>2.00 |
| **MEH** | RN80 | T0<br>T2<br>T9 | 100–10 megs<br>100–10 megs<br>100–10 megs | 2.50<br>5.00<br>5.00 | 2.00<br>3.00<br>3.00 | .97<br>1.23<br>2.37 | .89<br>1.05<br>2.05 |
| **Close Tolerance Adders for:** | | | ±0.1%<br>±0.25%<br>±0.5% | .50<br>.35<br>.20 | .40<br>.30<br>.15 | .35<br>.25<br>.15 | .30<br>.20<br>.10 |

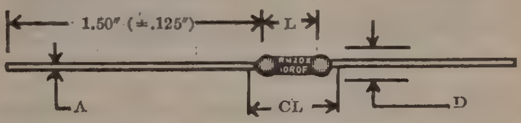
★**Larger Quantity Prices on Request.**

## MIL-R-10509 DEPOSITED CARBON FILM RESISTORS

**MOLDED (M)**



**CONFORMALLY COATED (C)** **PAINT COATED (P)**



| IRC Type | MIL Style | MIL Char. | MIL Resistance Range | IRC, Std. Resistance Range* | MIL Power Rating at 40° C | MIL Power Rating at 70° C | MIL Power Rating at 125° C | MIL Volts | Max. Dimensions, Inches L | D | CL | A, AWG | Body Type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DCC** | RN20 | X | 10–2 megs | 10–25 megs | ½ | ½ | ...... | 350 | .625 | .200 | .750 | #20 | C |
| **DCF** | RN25 | X | 10–2.49 megs | 10–50 megs | 1 | ...... | ...... | 500 | 1.00 | .328 | 1.250 | #20 | P |
| **DCH** | RN30 | X | 30.1–10 megs | 15–100 megs | 2 | ...... | ...... | 750 | 2.124 | .328 | 2.375 | #20 | P |
| **MDA** | RN60 | D | 10–1 meg | 10–5 megs | ...... | ¼ | ⅛ | 300 | .421 | .140 | .545 | #22 | M |
| **MDB** | RN65 | D | 10–2 megs | 10–5 megs | ...... | ½ | ¼ | 350 | .604 | .218 | .733 | #22 | M |
| **MDC** | RN70 | D | 10–2.49 megs | 10–25 megs | ...... | 1 | ½ | 500 | .739 | .281 | .863 | #20 | M |
| **MDF** | RN75 | B | 10–5.11 megs | 10–50 megs | ...... | 1 | ...... | 500 | 1.125 | .415 | 1.253 | #20 | M |
| **MDH** | RN80 | B | 30.1–10 megs | 15–100 megs | ...... | 2 | ...... | 750 | 2.254 | .415 | 2.378 | #20 | M |

*These high resistance values, being above the highest MIL-R-10509 top values, have higher temperature coefficients, but otherwise are esigned to meet the requirements of the specification. These high values must be measured carefully under controlled conditions of umidity and temperature, to reduce possible variations due to test conditions and temperature coefficients. The temperature coefficient f deposited carbon is always negative and increases with resistance, therefore values above approximately 2 times MIL maximum will e supplied with a standard tolerance of ±2.0%.

### TOLERANCE

Standard tolerance is ±1.0%, except as xplained above. ±0.5% tolerance is available at a slight additional cost and on imited resistance values.

### VOLTAGE COEFFICIENT

This factor is negligible. Statistically, the voltage coefficient is less than 10 ppm/V.

### FREQUENCY RESPONSE

TRW/IRC Deposited Carbon resistors emonstrate high frequency response which s essentially flat to 5 MHz.

### SHELF LIFE

Shifts in resistance value due to storage at room temperature are less than 0.25%.

### TEMPERATURE COEFFICIENT

The temperature coefficient of Deposited Carbon resistors is always negative and ranges from −150 ppm/° C to −500 ppm/° C in the standard MIL resistance values.

### INDUSTRIAL PRICING

| IRC Type | MIL Type | Resistance Range, Ohms | Tol. ±%* | Net Each, Lots of 1-24 | 25-99 | 100-249 | 250-999* |
|---|---|---|---|---|---|---|---|
| **DCC** | RN20X | 10–1.5 megs | 1 | $2·00 | $1·00 | $0·33 | $0·23 |
| | | 1.51 megs–2.5 megs | 1 | 2·50 | 1·50 | ·37 | ·27 |
| | | 2.51 megs–5 megs | 1 | 2·50 | 1·50 | ·46 | ·36 |
| | | 5.1 megs–25 megs | 2 | 2·50 | 1·50 | ·57 | ·47 |
| **DCF** | RN25X | 10–10 megs | 1 | 2·00 | 1·00 | ·46 | ·38 |
| | | 10.1 megs–50 megs | 2 | 2·50 | 1·50 | ·77 | ·69 |
| **DCH** | RN30X | 15–20 megs | 1 | 2·00 | 1·00 | ·77 | ·63 |
| | | 20.1 megs–50 megs | 2 | 2·50 | 1·50 | 1·05 | ·70 |
| | | 50.1 megs–100 megs | 2 | 2·50 | 1·50 | 1·17 | 1·13 |
| **MDA** | RN60D | 10–1 meg | 1 | 2·00 | 1·00 | ·26 | ·19 |
| | | 1.01 megs–5 megs | 2 | 2·50 | 1·50 | ·40 | ·30 |
| **MDB** | RN65D | 10–1 meg | 1 | 2·00 | 1·00 | ·33 | ·23 |
| | | 1.01 megs–2 megs | 1 | 2·50 | 1·50 | ·50 | ·29 |
| | | 2.01 megs–5 megs | 2 | 2·50 | 1·50 | ·53 | ·34 |
| **MDC** | RN70D | 10–1.5 megs | 1 | 2·00 | 1·00 | ·33 | ·23 |
| | | 1.51 megs–2.49 megs | 1 | 2·50 | 1·50 | ·37 | ·27 |
| | | 2.5 megs–5 megs | 1 | 2·50 | 1·50 | ·46 | ·36 |
| | | 5.1 megs–25 megs | 2 | 2·50 | 1·50 | ·57 | ·47 |
| **MDF** | RN75B | 10–4 megs | 1 | 2·50 | 1·50 | ·74 | ·60 |
| | | 4.1 megs–10 megs | 1 | 2·50 | 1·50 | 1·05 | ·70 |
| | | 10.1 megs–50 megs | 2 | 2·50 | 1·50 | 1·02 | ·82 |
| **MDH** | RN80B | 15–10 megs | 1 | 2·50 | 1·50 | 1·13 | 1·03 |
| | | 10.1 megs–20 megs | 1 | 2·50 | 1·50 | 1·40 | 1·37 |
| | | 20.1 megs–100 megs | 2 | 2·50 | 1·50 | 1·40 | 1·37 |

*±0.5% tolerance available for ±1% parts listed and ±1% tolerance available for ±2% parts listed at 50% increase in price. ★**Larger Quantity Prices on Request.**

## SPECIAL PRODUCTS

### LOW TC, TIGHT TOLERANCE

Ultra stable metal film resistors are available in temperature coefficients of ±15, ±10 and ±5 ppm/° C with standard tolerances of ±1.0%, ±0.5%, ±0.25%, ±0.1%, ±0.05%, ±0.02% and ±0.01%. The "AR" series of resistor is designed and built to be a no-compromise replacement for precision wire-wound resistors. Possessing all of the characteristics formerly available only in precision wire-wounds (i.e., low temperature coefficients, non-measurable noise, low voltage coefficient and stability under stress), the series also maintains all of the unique characteristics of metal film (i.e., high frequency performance, reliability, pulse stability and resistance/size ratio). Available on special order in the following wattage/max. resistance ratings: 1/20 watt/100K; 1/10 watt/250K; ⅛ watt/500K and ¼ watt/1 meg. Matching available to ±0.001% tolerance and ±0.5 ppm TCR track.

### PRECISION POWER

The "BR" series of resistors is designed to replace wire-wounds in the areas of low power (1 to 3 watts) and semi-precision (±1.0% to ±0.1% tolerance and ±100 ppm to ±25 ppm/° C TC). Maintaining the unique advantages of metal film (i.e., high frequency performance, reliability, pulse stability and resistance/size ratio), this series offers much higher resistance values, much higher voltages, smaller sizes and more uniform heat dissipation (no 350° C hot spots) than comparably rated wire-wounds.

### HIGH TEMPERATURE, HIGH VOLTAGE

For use in design application area where both high temperature and high voltage are present (to 340° C and 15,000 volts), the IRC/TRW "CR" series resistor provides an answer. This series employs a proprietary Carbon Alloy film of such hardness that no protective coating is necessary; consequently there is no outgassing or contamination of any operating environment, whether it be vacuum, oil, inert or air. Although the resistor derates at somewhere above 340° C, it will withstand operating environment temperatures to 1600° F (870° C) and return to within 10% of its original resistance value when the environment cools. Available to wattage ratings of 3 watts at 200° C, resistance values to 200 megs and ±5% tolerance.

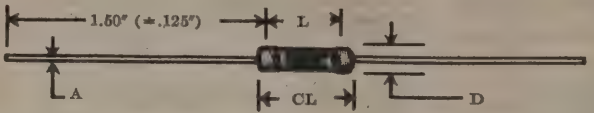
### NETWORKS AND LADDERS

Subminiature, precision TaNFilm* flat resistor networks and ladders are available in a variety of standard designs and packages including dual-in-line pack, flat pack, conformal coated or unencapsulated for wirebonding or beam lead attachment. TaNFilm is deposited by continuous sputtering process resulting in a very uniform film so that resistors track within 5 ppm/° C over the full temperature range. TaNFilm is inherently immune to electrolytic attack since the manufacturing process passivates each resistor with an anodized surface layer. Tolerance from ±1.0% to ±0.03%; TCR of 0 to −80 ppm/° C; resistance values from 20–100K ohms.

*Registered TRW Inc. TM.

# IRC® Precision Resistors TRW® ELECTRONIC COMPONENTS

## MIL-R-55182D ESTABLISHED RELIABILITY METAL FILM RESISTORS



CONFORMALLY COATED (C)

| MIL Type | MIL Char. | Failure Rate | IRC Type | Resistance Range Ohms | Watts at 125° C | Voltage Rating | Net Each, Lots of 1-4 | 5-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RNR50 & RNC50 | K (T0) | M<br>P, R<br>S | MMC | 49.9–100K | 1/20 | 200 | $3.10<br>3.90<br>4.75 | $1.90<br>2.40<br>2.95 | $1.45<br>1.85<br>2.30 | $1.01<br>1.26<br>1.54 | $0.77<br>1.01<br>1.27 | $0.71<br>.94<br>1.18 | $0.67<br>.89<br>1.11 |
| | H (T2) | M<br>P, R<br>S | MMC | 49.9–100K | | | 3.20<br>4.00<br>4.85 | 2.05<br>2.55<br>3.10 | 1.60<br>2.00<br>2.45 | 1.17<br>1.42<br>1.70 | .83<br>1.07<br>1.33 | .74<br>.97<br>1.21 | .70<br>.92<br>1.14 |
| | J (T9) | M<br>P, R<br>S | MMC | 49.9–100K | | | 3.96<br>4.76<br>5.61 | 3.61<br>4.11<br>4.66 | 2.42<br>2.82<br>3.27 | 2.36<br>2.61<br>2.89 | 1.62<br>1.86<br>2.12 | 1.41<br>1.64<br>1.88 | 1.39<br>1.61<br>1.83 |
| RNR55 & RNC55 | K (T0) | M<br>P, R<br>S | CCM | 49.9–200K | 1/10 | 200 | 2.80<br>3.60<br>4.45 | 1.65<br>2.15<br>2.70 | 1.01<br>1.41<br>1.86 | .79<br>1.04<br>1.32 | .60<br>.84<br>1.10 | .53<br>.76<br>1.00 | .49<br>.71<br>.93 |
| | H (T2) | M<br>P, R<br>S | CCM | 49.9–200K | | | 2.95<br>3.75<br>4.60 | 1.78<br>2.28<br>2.83 | 1.10<br>1.50<br>1.95 | .87<br>1.12<br>1.40 | .64<br>.88<br>1.14 | .56<br>.79<br>1.03 | .50<br>.72<br>.94 |
| | J (T9) | M<br>P, R<br>S | CCM | 49.9–200K | | | 3.10<br>3.90<br>4.75 | 2.01<br>2.51<br>3.06 | 1.41<br>1.81<br>2.26 | 1.18<br>1.43<br>1.71 | .90<br>1.14<br>1.40 | .72<br>.95<br>1.19 | .66<br>.88<br>1.10 |
| RNR60 & RNC60 | K (T0) | M<br>P, R<br>S | CCA | 49.9–499K | ⅛ | 250 | 2.58<br>3.38<br>4.23 | 1.60<br>2.10<br>2.65 | .99<br>1.39<br>1.84 | .71<br>.96<br>1.24 | .58<br>.82<br>1.08 | .52<br>.75<br>.99 | .48<br>.70<br>.92 |
| | H (T2) | M<br>P, R<br>S | CCA | 49.9–499K | | | 2.75<br>3.55<br>4.40 | 1.67<br>2.17<br>2.72 | 1.05<br>1.45<br>1.90 | .80<br>1.05<br>1.33 | .62<br>.86<br>1.12 | .54<br>.77<br>1.01 | .49<br>.71<br>.93 |
| | J (T9) | M<br>P, R<br>S | CCA | 49.9–499K | | | 2.88<br>3.68<br>4.53 | 1.84<br>2.34<br>2.89 | 1.26<br>1.66<br>2.11 | 1.08<br>1.33<br>1.61 | .71<br>.95<br>1.21 | .66<br>.89<br>1.13 | .63<br>.85<br>1.07 |
| RNR65 & RNC65 | K (T0) | M<br>P, R<br>S | CCB | 49.9–1 meg | ¼ | 300 | 2.58<br>3.38<br>4.23 | 1.60<br>2.10<br>2.65 | .99<br>1.39<br>1.84 | .71<br>.96<br>1.24 | .58<br>.82<br>1.08 | .52<br>.75<br>.99 | .48<br>.70<br>.92 |
| | H (T2) | M<br>P, R<br>S | CCB | 49.9–1 meg | | | 2.75<br>3.55<br>4.40 | 1.67<br>2.17<br>2.72 | 1.05<br>1.45<br>1.90 | .80<br>1.05<br>1.33 | .62<br>.86<br>1.12 | .54<br>.77<br>1.01 | .49<br>.71<br>.93 |
| | J (T9) | M<br>P, R<br>S | CCB | 49.9–1 meg | | | 2.88<br>3.68<br>4.53 | 1.84<br>2.34<br>2.89 | 1.26<br>1.66<br>2.11 | 1.12<br>1.33<br>1.61 | .77<br>.95<br>1.21 | .66<br>.89<br>1.13 | .63<br>.85<br>1.07 |
| **Close Tolerance Adders for:** | | | | | B (±0.1%)<br>D (±0.5%) | | 1.36<br>.29 | .94<br>.24 | .65<br>.20 | .45<br>.17 | .38<br>.15 | .30<br>.12 | .26<br>.10 |

★ **Larger Quantity Prices on Request.**

### FAILURE RATE LEVELS

At 60% confidence level.

| Level | Failure Rate |
|---|---|
| M | 1.0% per 1000 hrs. |
| P | 0.1% per 1000 hrs. |
| R | 0.01% per 1000 hrs. |
| S | 0.001% per 1000 hrs, |

### PHYSICAL DIMENSIONS

Identical with the same IRC type listed under MIL-R-10509 on another page.

### VOLTAGE COEFFICIENT

When measured between one-tenth and full rated voltage is less than 0.5 ppm/volt for all values. MIL-R-55182 permits a maximum of 50 ppm/volt.

### RELIABILITY

Based on the data accumulated in over 170 million government monitored test hours, TRW/IRC Established Reliability resistors have demonstrated a failure rate level of 0.0006%/1000 hrs. The change in resistance during 10,000 Hour Life testing has averaged 0.30%; MIL-R-55182 permits a maximum of 2.00%.

### TEMPERATURE COEFFICIENTS

| MIL Char. | IRC TC Code | Temperature Coefficient |
|---|---|---|
| K | T0 | ±100 ppm/° C |
| H | T2 | ±50 ppm/° C |
| J | T9 | ±25 ppm/° C |

### LEADS

RNR (Solderable) and RNC (Solderable/Weldable—Type C of MIL-STD-1276) are standard. RNN (Weldable—Type N-2 of MIL-STD-1276) also available.

### FREQUENCY RESPONSE

TRW/IRC Metal Film resistors demonstrate high frequency response which is essentially flat to 5 MHz.

### ELECTRICAL NOISE

Evaporated Metal Film resistors are particularly well suited in all applications requiring extremely low noise. Low and intermediate resistance values of TRW/IRC resistors demonstrate noise levels below 0.05 microvolt per volt (−30 dB), while the higher ranges average 0.10 microvolt per volt (−20 dB) over a decade of frequency.

### COMPARISON OF PERFORMANCE

The following table compares the various environmental condition tests required by MIL-R-55182 and MIL-R-10509 with the typical performance of TRW/IRC Metal Film resistors.

| Environmental Condition | MIL-R-55182 MIL Max. (K, H, J Char.) | MIL-R-55182 IRC Typ. | MIL-R-10509 MIL Max. (D Char.) | MIL-R-10509 IRC Typ. | MIL-R-10509 MIL Max. (C, E Char.) | MIL-R-10509 IRC Typ. |
|---|---|---|---|---|---|---|
| Temperature Cycling | 0.20% | 0.02% | 0.5% | 0.02% | 0.25% | 0.02% |
| Low Temperature Operation | 0.15% | 0.03% | 0.5% | 0.03% | 0.25% | 0.03% |
| Short Time Overload | 0.20% | 0.05% | 0.5% | 0.05% | 0.25% | 0.05% |
| Dielectric Withstanding Voltage | 0.15% | 0.05% | 0.5% | 0.05% | 0.25% | 0.05% |
| Resistance to Soldering Heat | 0.10% | 0.02% | 0.5% | 0.1% | 0.1% | 0.05% |
| Moisture Resistance | 0.40% | 0.15% | 1.5% | 0.25% | 0.5% | 0.15% |
| Shock, Medium Impact | 0.20% | 0.05% | 0.5% | 0.05% | 0.25% | 0.05% |
| Vibration, High Frequency | 0.20% | 0.02% | 0.5% | 0.02% | 0.25% | 0.02% |
| 1000 Hour Life | . . . . . . | . . . . . . | 1.0% | 0.05% | 0.5% | 0.15% |
| 2000 Hour Life | 0.50% | 0.10% | . . . . . . | . . . . . . | . . . . . . | . . . . . . |
| 10,000 Hour Life | 2.00% | 0.30% | . . . . . . | . . . . . . | . . . . . . | . . . . . . |
| High Temperature Exposure | 0.50% | 0.10% | . . . . . . | . . . . . . | . . . . . . | . . . . . . |

# MEMCOR Wire-Wound Resistors

## TYPE VL WIRE-WOUND AXIAL LEAD VITREOUS ENAMELED RESISTORS

peration to 300° C. Body Size (dia. x lg.), 3-W, ⁷⁄₃₂″ x ¹⁷⁄₃₂″; 5-W, ⁵⁄₁₆″ x 1¹⁄₆₄″; 10-W, ″ x 1²⁵⁄₃₂″. Tolerance, ±5%.

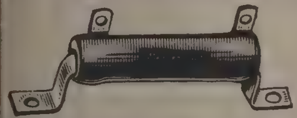
### STOCK VALUES: 3-WATT, VL3; 5-WATT, VL5; 10-WATT, VL10

| hms | 3-W | 5-W | 10-W | Ohms | 3-W | 5-W | 10-W | Ohms | 3-W | 5-W | 10-W |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2701 | 2801A | 2901A | 100 | 2726 | 2826 | 2926 | 1400 | 2750B | 2849B | ....... |
| 1.3 | ....... | ....... | 2901D | 120 | 2727 | 2827 | 2927 | 1500 | 2751 | 2850 | 2950 |
| 1.5 | 2702 | 2802 | 2902 | 130 | 2727A | ....... | ....... | 1800 | 2752 | ....... | ....... |
| 2 | 2703 | 2803 | ....... | 150 | 2728 | 2828 | 2928 | 2000 | 2753 | 2852 | 2952 |
| 2.2 | 2703A | ....... | ....... | 160 | 2728A | 2828A | ....... | 2200 | 2754 | 2853 | ....... |
| 2.4 | ....... | 2803B | ....... | 180 | 2729 | ....... | ....... | 2400 | 2754A | ....... | ....... |
| 3 | 2704 | 2804 | 2904 | 200 | 2730 | 2830 | 2930 | 2500 | 2755 | 2854 | 2954 |
| 3.9 | 2704C | ....... | ....... | 220 | 2731 | 2831 | 2931 | 3000 | 2757 | 2856 | 2956 |
| 4 | 2705 | 2805 | ....... | 225 | 2732 | ....... | ....... | 3300 | 2758 | 2857 | ....... |
| 5 | 2706 | 2806 | ....... | 250 | 2733 | 2832 | 2932 | 3500 | 2758A | ....... | ....... |
| 5.6 | 2706B | ....... | ....... | 270 | 2734 | 2833 | ....... | 3600 | 2758B | ....... | ....... |
| 6.2 | ....... | ....... | 2906C | 300 | 2735 | 2834 | 2934 | 4000 | 2760 | 2859 | 2959 |
| 6.8 | 2706D | ....... | ....... | 330 | 2736 | 2835 | ....... | 4700 | 2761 | ....... | ....... |
| 7.5 | 2707 | 2807 | 2907 | 350 | 2736A | 2835A | ....... | 5000 | 2762 | 2860A | 2961 |
| 10 | 2708 | 2808 | 2908 | 390 | 2737 | ....... | ....... | 5600 | ....... | ....... | 2962 |
| 12 | ....... | 2809 | ....... | 400 | 2738 | 2837 | 2937 | 6000 | 2764 | 2863 | 2963 |
| 15 | ....... | 2810 | 2910 | 430 | 2738A | ....... | ....... | 7000 | 2766 | ....... | 2965 |
| 18 | ....... | 2811 | ....... | 450 | 2738B | 2837B | ....... | 7500 | 2767 | ....... | 2966 |
| 20 | 2712 | 2812 | 2912 | 470 | 2739 | 2838 | ....... | 8200 | ....... | 2868 | ....... |
| 22 | 2713 | ....... | ....... | 500 | 2740 | 2839 | 2939 | 9000 | ....... | 2869 | 2969 |
| 25 | 2714 | 2814 | 2914 | 510 | ....... | 2839A | ....... | 9100 | ....... | ....... | 2969A |
| 30 | 2716 | 2816 | 2916 | 560 | 2741 | 2840 | ....... | 10K | 2771 | 2870 | ....... |
| 33 | 2717 | 2817 | ....... | 600 | 2742 | 2841 | ....... | 13K | ....... | 2871A | ....... |
| 35 | ....... | ....... | 2917A | 620 | 2742A | ....... | 2941A | 15K | ....... | 2872 | 2972 |
| 39 | 2718 | ....... | ....... | 680 | 2743 | 2842 | ....... | 18K | ....... | 2873 | ....... |
| 40 | 2719 | 2819 | 2919 | 750 | 2745 | 2844 | ....... | 20K | ....... | 2874 | ....... |
| 47 | 2720 | ....... | ....... | 800 | 2746 | 2845 | ....... | 25K | ....... | 2876 | ....... |
| 50 | 2721 | 2821 | 2921 | 820 | 2747 | ....... | ....... | 27K | ....... | ....... | 2977 |
| 60 | 2723 | ....... | ....... | 1000 | 2749 | 2848 | 2948 | 35K | ....... | ....... | 2979A |
| 68 | 2723B | ....... | ....... | 1100 | 2749A | ....... | ....... | 40K | ....... | ....... | 2981 |
| 75 | 2724 | 2824 | 2924 | 1200 | 2750 | 2849 | ....... | | | | |
| 82 | 2725 | 2825 | ....... | 1300 | 2750A | ....... | ....... | | | | |

### PRICE TABLES

| Range, Ohms | Net Each, Lots of* | | | |
|---|---|---|---|---|
| | 1-24 | 25-99 | 100-249 | 250-499 |
| **3-WATT VL3** | | | | |
| 1-1000 | $0.59 | $0.41 | $0.31 | $0.26 |
| 1001-5000 | .61 | .44 | .32 | .28 |
| 5001-10K | .80 | .55 | .42 | .34 |
| **5-WATT VL5** | | | | |
| 1-1000 | $0.61 | $0.44 | $0.32 | $0.28 |
| 1001-5000 | .68 | .48 | .35 | .30 |
| 5001-10K | .81 | .56 | .43 | .35 |
| 10.1K-20K | .99 | .68 | .51 | .43 |
| 20.1K-25K | 1.04 | .73 | .55 | .46 |
| **10-WATT VL10** | | | | |
| 1-1000 | $0.78 | $0.54 | $0.41 | $0.34 |
| 1001-5000 | .90 | .64 | .47 | .41 |
| 5001-10K | .93 | .65 | .48 | .42 |
| 10.1K-20K | 1.05 | .71 | .55 | .45 |
| 20.1K-40K | 1.13 | .79 | .59 | .50 |

## WIRE-WOUND VITREOUS ENAMELED FIXED RESISTORS



eature welded lugs solidly anchored to ithstand vibration; hot tin-dipped for asy soldering. Shock-absorbing mounting rackets. Multi-layer vitreous enamel coatng locks the uniformly-wound resistance ire in position; seals out moisture. High emperature stability and compatible coefficient of expansion prevents crazing and racking. FRL5, 10 and 20 types are light enough to be mounted by the attached leads. FR types have mounting brackets. **Standard Tolerances:** ±5% all values.

### TYPE FRL AND FR DIMENSIONS

| Size Watts | Core, In. Dia. x Lg. | Mtg. Ctr. | Lug. No. | With Brackets 1441- |
|---|---|---|---|---|
| 5 | ⁵⁄₁₆ x 1 | ....... | * | ....... |
| 10 | ⁵⁄₁₆ x 1¾ | ....... | * | ....... |
| 20 | ⁷⁄₁₆ x 2 | ....... | * | ....... |
| 25 | ⁹⁄₁₆ x 2 | 2¾ | 12 | 005-001 |
| 50 | ⁹⁄₁₆ x 4 | 4¾ | 12 | 005-001 |
| 100 | ¾ x 6½ | 7⅜ | 12 | 006-001 |
| 160 | 1⅛ x 8½ | 9⅜ | 14 | 007-001 |
| 200 | 1⅛ x 10½ | 11⅜ | 14 | 007-001 |

*FRL version has 1²¹⁄₃₂″ wire leads.

### STOCK VALUES

**5-WATT FRL5**

| hms | No. | Ohms | No. | Ohms | No. |
|---|---|---|---|---|---|
| 1 | 1002 | 125 | 1020 | 1500 | 1039 |
| 2 | 1004 | 150 | 1021 | 2000 | 1041 |
| 3 | 1005 | 200 | 1022 | 2250 | 1042 |
| 4 | 1006 | 225 | 1023 | 2500 | 1043 |
| 5 | 1007 | 250 | 1024 | 3000 | 1044 |
| 7.5 | 1008 | 300 | 1025 | 3500 | 1045 |
| 10 | 1009 | 350 | 1026 | 4000 | 1046 |
| 15 | 1011 | 400 | 1027 | 4500 | 1047 |
| 20 | 1012 | 450 | 1028 | 5000 | 1048 |
| 25 | 1013 | 500 | 1029 | 6000 | 1049 |
| 30 | 1014 | 600 | 1030 | 7500 | 1051 |
| 35 | 1015 | 700 | 1031 | 8000 | 1052 |
| 40 | 1016 | 750 | 1032 | 10K | 1054 |
| 50 | 1017 | 800 | 1033 | 12.5K | 1055 |
| 75 | 1018 | 900 | 1034 | 15K | 1056 |
| 80 | 1018A | 1000 | 1035 | 25K | 1060 |
| 100 | 1019 | 1200 | 1037 | | |

**10-WATT FRL10**

| | | | | | |
|---|---|---|---|---|---|
| .5 | 1101 | 150 | 1121 | 2250 | 1142 |
| 1 | 1102 | 200 | 1122 | 2500 | 1143 |
| 1.5 | 1103 | 225 | 1123 | 3000 | 1144 |
| 2 | 1104 | 250 | 1124 | 3500 | 1145 |
| 3 | 1105 | 300 | 1125 | 4000 | 1146 |
| 4 | 1106 | 350 | 1126 | 4500 | 1147 |
| 5 | 1107 | 400 | 1127 | 5000 | 1148 |
| 7.5 | 1108 | 450 | 1128 | 6000 | 1149 |
| 10 | 1109 | 500 | 1129 | 7500 | 1151 |
| 12 | 1110 | 600 | 1130 | 8000 | 1152 |
| 15 | 1111 | 750 | 1132 | 8500 | 1153 |
| 20 | 1112 | 800 | 1133 | 10K | 1155 |
| 25 | 1113 | 900 | 1134 | 12K | 1157 |
| 30 | 1114 | 1000 | 1135 | 15K | 1161 |
| 40 | 1116 | 1200 | 1137 | 20K | 1165 |
| 50 | 1117 | 1250 | 1138 | 25K | 1167 |
| 75 | 1118 | 1500 | 1139 | 30K | 1168 |
| 100 | 1119 | 1750 | 1140 | 40K | 1170 |
| 125 | 1120 | 2000 | 1141 | 50K | 1172 |

**20-WATT FRL20**

| | | | | | |
|---|---|---|---|---|---|
| .5 | 1201 | 500 | 1218 | 3000 | 1235 |
| 1 | 1202 | 650 | 1219 | 3500 | 1236 |
| 3 | 1203 | 750 | 1221 | 4000 | 1237 |
| 5 | 1204 | 1000 | 1224 | 55K | 1254 |
| 10 | 1205 | 1250 | 1226 | 70K | 1257 |
| 200 | 1213 | 1500 | 1227 | 85K | 1260 |
| 250 | 1214 | 1750 | 1228 | 95K | 1262 |
| 300 | 1215 | 2000 | 1230 | 100K | 1263 |

**25-WATT FR25**

| Ohms | No. | Ohms | No. | Ohms | No. |
|---|---|---|---|---|---|
| 1 | 1301 | 100 | 1311 | 5000 | 1329 |
| 2 | 1302 | 150 | 1312 | 7500 | 1331 |
| 3 | 1303 | 200 | 1313 | 10K | 1332 |
| 4 | 1304 | 250 | 1314 | 12K | 1333 |
| 5 | 1305 | 500 | 1317 | 15K | 1334 |
| 10 | 1306 | 1000 | 1321 | 25K | 1336 |
| 15 | 1307 | 1500 | 1323 | 50K | 1340 |
| 25 | 1308 | 2000 | 1324 | 100K | 1345 |
| 50 | 1309 | 2500 | 1325 | | |
| 75 | 1310 | 3000 | 1326 | | |

**50-WATT FR50**

| | | | | | |
|---|---|---|---|---|---|
| 1 | 1401 | 75 | 1409 | 1000 | 1419 |
| 2 | 1402 | 100 | 1410 | 4000 | 1424 |
| 3 | 1403 | 150 | 1411 | 5000 | 1425 |
| 4 | 1404 | 200 | 1412 | 10K | 1429 |
| 5 | 1405 | 250 | 1413 | 150K | 1442 |
| 10 | 1406 | 300 | 1414 | 225K | 1445 |
| 25 | 1407 | 500 | 1416 | | |
| 50 | 1408 | 750 | 1417 | | |

**100-WATT FR100**

| | | | | | |
|---|---|---|---|---|---|
| 1 | 1501 | 100 | 1510 | 20K | 1529 |
| 2 | 1502 | 150 | 1512 | 35K | 1532 |
| 5 | 1505 | 250 | 1513 | 50K | 1534 |
| 10 | 1506 | 500 | 1514 | 60K | 1535 |
| 25 | 1507 | 1000 | 1516 | 70K | 1536 |
| 50 | 1508 | 3000 | 1521 | 75K | 1537 |
| 75 | 1509 | 5000 | 1525 | 100K | 1538 |

**160-WATT FR160**

| | | | | | |
|---|---|---|---|---|---|
| 2 | 1602 | 150 | 1612 | 35K | 1632 |
| 5 | 1605 | 250 | 1614 | 80K | 1637 |
| 10 | 1606 | 500 | 1615 | 100K | 1638 |
| 100 | 1611 | 750 | 1616 | | |

**200-WATT FR200**

| | | | | | |
|---|---|---|---|---|---|
| 5 | 1705 | 150 | 1711 | 20K | 1727 |
| 10 | 1706 | 250 | 1712 | 25K | 1728 |
| 25 | 1707 | 500 | 1713 | 100K | 1735 |
| 50 | 1708 | 1000 | 1715 | | |
| 100 | 1710 | 15K | 1726 | | |

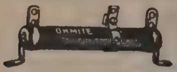
### PRICE TABLES

| Range, Ohms | Net Each, Lots of* | | | |
|---|---|---|---|---|
| | 1-24 | 25-99 | 100-249 | 250-499 |
| **5-WATT FRL5** | | | | |
| .5-1 | $1.00 | $0.70 | $0.53 | $0.44 |
| 1.1-1000 | .68 | .48 | .35 | .30 |
| 1001-5000 | .74 | .53 | .40 | .33 |
| 5001-10K | .76 | .54 | .41 | .34 |
| 10.1K-20K | .89 | .63 | .47 | .40 |
| 20.1K-25K | .94 | .65 | .48 | .42 |
| **10-WATT FRL10** | | | | |
| .5-1 | $1.06 | $0.74 | $0.56 | $0.47 |
| 1.1-1000 | .74 | .53 | .40 | .33 |
| 1001-5000 | .81 | .56 | .43 | .35 |
| 5001-10K | .90 | .64 | .47 | .41 |
| 10.1K-20K | 1.05 | .74 | .56 | .46 |
| 20.1K-40K | 1.14 | .80 | .59 | .50 |
| 40.1K-50K | 1.20 | .88 | .66 | .56 |
| **20-WATT FRL20** | | | | |
| .5-1 | $1.14 | $0.80 | $0.59 | $0.50 |
| 1.1-1000 | .90 | .64 | .47 | .41 |
| 1001-5000 | .81 | .56 | .43 | .35 |
| 40.1K-60K | 1.46 | 1.03 | .77 | .64 |
| 60.1K-80K | 1.76 | 1.24 | .94 | .78 |
| 80.1K-100K | 1.93 | 1.35 | 1.02 | .86 |
| **25-WATT FR25** | | | | |
| .5-1 | $1.30 | $0.90 | $0.69 | $0.57 |
| 1.1-1000 | .94 | .65 | .48 | .42 |
| 1001-5000 | .86 | .68 | .51 | .43 |
| 5001-10K | 1.16 | .81 | .62 | .51 |
| 10.1K-20K | 1.23 | .86 | .65 | .55 |
| 20.1K-40K | 1.29 | .95 | .72 | .59 |
| 40.1K-60K | 1.61 | 1.13 | .85 | .72 |
| 80.1K-100K | 2.09 | 1.48 | 1.10 | .92 |
| **50-WATT FR50** | | | | |
| .5-1 | $1.95 | $1.35 | $1.02 | $0.86 |
| 1.1-1000 | 1.41 | 1.00 | .75 | .63 |
| 1001-5000 | 1.49 | 1.04 | .78 | .65 |
| 5001-10K | 1.58 | 1.09 | .83 | .69 |
| 125.1K-150K | 3.54 | 2.48 | 1.87 | 1.55 |
| 200.1K-250K | 4.19 | 2.83 | 2.21 | 1.90 |
| **100-WATT FR100** | | | | |
| .5-1 | $2.96 | $2.06 | $1.55 | $1.31 |
| 1.1-3 | 2.88 | 2.01 | 1.52 | 1.28 |
| 3.1-1000 | 2.03 | 1.43 | 1.07 | .89 |
| 1001-5000 | 2.09 | 1.48 | 1.10 | .92 |
| 10.1K-20K | 2.44 | 1.71 | 1.30 | 1.08 |
| 20.1K-40K | 2.78 | 1.95 | 1.46 | 1.23 |
| 40.1K-60K | 2.90 | 2.04 | 1.53 | 1.29 |
| 60.1K-75K | 3.06 | 2.15 | 1.62 | 1.35 |
| 75.1K-100K | 3.54 | 2.48 | 1.86 | 1.55 |
| **160-WATT RF160** | | | | |
| 1-5 | $4.31 | $3.01 | $2.27 | $1.90 |
| 5.1-1000 | 3.09 | 2.16 | 1.63 | 1.36 |
| 20.1K-40K | 3.74 | 2.63 | 1.97 | 1.65 |
| 75.1K-100K | 4.38 | 3.06 | 2.31 | 1.90 |
| **200-WATT FR200** | | | | |
| 1-5 | $4.84 | $3.39 | $2.64 | $2.12 |
| 5.1-1000 | 3.33 | 2.33 | 1.76 | 1.46 |
| 10.1-20K | 3.93 | 2.75 | 2.08 | 1.74 |
| 20.1K-40K | 4.19 | 2.93 | 2.21 | 1.84 |
| 75.1K-100K | 4.69 | 3.28 | 2.48 | 2.07 |

***Larger Quantity Prices on Request.**

**ASK FOR TYPE "AR" 10 THROUGH 200 WATTS ADJUSTABLE WIRE-WOUND RESISTORS, "R" 12.5 AND 25 WATT RHEOSTATS; AVAILABLE FROM STOCK. FULL INFORMATION ON REQUEST.**

# OHMITE Resistors



## VITREOUS ENAMELED RESISTORS

**Dividohm® Adjustable Type:** Vitreous enameled on ceramic cores with narrow strip of the wire-turns forming a contact surface for the embossed contact of a screwdriver—adjustable lug. A patented percentage of the resistance scale is stamped on the units to make it easy to set the lug at the desired value. **Fixed Resistors:** Lug type, wire-wound on ceramic cores. Wattage ratings are for use in free air.

### STOCK VALUE ORDERING NUMBERS

| Ohms | Dividohm Adjustable Resistor Type 210 | | | | | | | Fixed Resistor Type 270 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 12-Watt | 25-Watt | 50-Watt | 75-Watt | 100-Watt | 175-Watt | 225-Watt | 25-Watt | 50-Watt | 100-Watt | 175-Watt | 225-Watt |
| 1 | 1001 | 0360 | 0560 A | 0769 A | 0956 A | 1156 A | 1356 A | 0200J | 0400J | 0600C | 0700C | 0900C |
| 2 | 1002 | 0360 B | 0560 B | 0769 B | 0956 B | 1156 B | 1356 B | 0200K | 0400K | 0600D | 0700D | 0900D |
| 3 | 1003 | 0361 | 0560 C | 0769 C | 0956 C | 1156 C | 1356 C | 0200L | 0400L | 0600E | 0700E | 0900E |
| 4 | | | 0560D | 0769 D | 0956D | 1156D | 1356D | 0200N | 0400N | 0600F | 0700F | 0900F |
| 5 | 1004 | 0362 | 0560 | 0769 | 0956 | 1156 | 1356 | 0200A | 0400A | 0600A | 0700A | 0900A |
| 7.5 | 1005 | 0362 B | | | | | | | | | | |
| 10 | 1006 | 0363 | 0561 | 0770 | 0957 | 1157 | 1357 | 0200B | 0400B | 0600B | 0700B | 0900B |
| 15 | 1007 | 0364 | | 0771 | | | | 0200R | | | | |
| 20 | 1008 | 0364 B | | | | | | | | | | |
| 25 | 1009 | 0365 | 0562 | 0772 | 0958 | 1158 | 1358 | 0200C | 0400C | 0601 | 0701 | 0901 |
| 50 | 1010 | 0366 | 0563 | 0773 | 0959 | 1159 | 1359 | 0200D | 0400D | 0602 | 0702 | 0902 |
| 75 | 1011 | 0367 | 0564 | | | | | 0200E | 0400E | 0603 | 0703 | 0903 |
| 100 | 1012 | 0368 | 0565 | 0774 | 0960 | 1160 | 1360 | 0200F | 0400F | 0604 | 0704 | 0904 |
| 125 | | | | | | | | | | 0604B | 0704B | |
| 150 | 1013 | 0369 | 0566 | | | | | 0200G | 0400 G | 0605 | 0705 | 0905 |
| 200 | 1014 | 0370 | 0567 | 0774 B | | | | 0200 H | 0400 H | | | |
| 250 | 1015 | 0371 | 0568 | 0775 | 0960 B | 1160 B | 1360 B | 0201 | 0401 | 0606 | 0706 | 0906 |
| 300 | 1016 | 0371 B | 0568 B | 0775 B | | | | | | | | |
| 350 | 1017 | | | | | | | | | | | |
| 400 | 1018 | 0371 C | 0568 C | 0775 C | | | | | | | | |
| 500 | 1019 | 0372 | 0569 | 0776 | 0961 | 1161 | 1361 | 0202 | 0402 | 0607 | 0707 | 0907 |
| 600 | 1020 | | | | | | | | | | | |
| 750 | 1021 | 0373 | 0570 | 0777 | | | | 0203 | 0403 | 0608 | 0708 | 0908 |
| 800 | 1022 | 0374 | 0571 | 0777 B | | | | 0204 | 0404 | | | |
| 1000 | 1023 | 0375 | 0572 | 0778 | 0962 | 1162 | 1362 | 0205 | 0405 | 0609 | 0709 | 0909 |
| 1250 | 1024 | 0375 B | 0572 B | 0778 B | | | | | | | | |
| 1500 | 1025 | 0376 | 0573 | 0779 | 0962 B | 1162 B | 1362 B | 0206 | 0406 | 0610 | 0710 | 0910 |
| 2000 | 1026 | 0377 | 0574 | 0780 | | | | 0207 | 0407 | 0611 | 0711 | 0911 |
| 2250 | 1027 | 0377 B | 0574 B | 0780 B | | | | | | | | |
| 2500 | 1028 | 0378 | 0575 | 0781 | 0963 | 1163 | 1363 | 0208 | 0408 | 0612 | 0712 | 0912 |
| 3000 | 1029 | 0379 | 0576 | 0781 B | | | | 0209 | 0409 | 0613 | 0713 | 0913 |
| 3500 | 1030 | 0380 | 0576B | 0782 | | | | 0210 | | | | |
| 4000 | 1031 | 0381 | 0577 | 0782 B | | | | 0211 | 0410 | | | |
| 4500 | 1032 | 0381 B | 0577 B | 0782 C | | | | | | | | |
| 5000 | 1033 | 0382 | 0578 | 0783 | 0964 | 1164 | 1364 | 0212 | 0411 | 0614 | 0714 | 0914 |
| 6000 | 1034 | 0383 | 0578 B | 0783 B | | | | 0213 | | | | |
| 7000 | 1035 | 0383 B | 0578 C | 0783 C | | | | | | | | |
| 7500 | 1036 | 0384 | 0579 | 0784 | | | | 0214 | 0412 | 0615 | 0715 | 0915 |
| 8000 | 1037 | 0384 B | 0580 | 0784 B | | | | | 0413 | | | |
| 8500 | 1038 | | | | | | | | | | | |
| 9000 | 1039 | 0384 C | 0580 B | 0784 C | | | | | | | | |
| 10K | 1040 | 0385 | 0581 | 0785 | 0965 | 1165 | 1365 | 0215 | 0414 | 0616 | 0716 | 0916 |
| 12K | | 0386 | 0582 | 0785 B | | | | 0216 | 0415 | | | |
| 15K | | 0387 | 0583 | 0786 | 0966 | 1166 | 1366 | 0217 | 0416 | 0617 | 0717 | 0917 |
| 20K | | 0388 | 0584 | 0787 | 0967 | 1167 | 1367 | 0218 | 0417 | 0618 | 0718 | 0918 |
| 25K | | 0389 | 0585 | 0788 | 0968 | 1168 | 1368 | 0219 | 0418 | 0619 | 0719 | 0919 |
| 30K | | | 0586 | 0789 | 0969 | 1169 | 1369 | 0220 | | 0620 | 0720 | 0920 |
| 35K | | | | 0790 | | | | 0221 | 0419 | | | |
| 40K | | | 0587 | 0791 | 0970 | 1170 | 1370 | 0222 | | 0621 | 0721 | 0921 |
| 45K | | | | 0792 | | | | | | | | |
| 50K | | | 0588 | 0793 | 0971 | 1171 | 1371 | 0224 | 0420 | 0622 | 0722 | 0922 |
| 60K | | | 0589 | 0794 | | | | 0225 | | 0623 | 0723 | 0923 |
| 70K | | | | | | | | 0226 | | | | |
| 75K | | | | | 0972 | 1172 | 1372 | | 0421 | 0624 | 0724 | 0924 |
| 80K | | | 0590 | 0795 | | | | 0227 | | | | |
| 100K | | | 0591 | 0796 | 0973 | 1173 | 1373 | 0229 | 0422 | 0625 | 0725 | 0925 |

**Fixed Resistor Type 270, 50 Watt Only**

| Ohms | No. | Ohms | No. | Ohms | No. | Ohms | No. | Ohms | No. |
|---|---|---|---|---|---|---|---|---|---|
| 125K | 0423 | 150K | 0424 | 175K | 0425 | 200K | 0426 | 250K | 0428 |

### FIXED 12-WATT NO. 270-12*

Limited space prevents full listing. Write for details, stock values.

| Values, Ohms | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|
| | 1-9 | 10-49 | 50-99 | 100-249 | 250-499 | 500 Up |
| .51 | $1.05 | $0.89 | $0.74 | $0.58 | $0.47 | $0.44 |
| 1-1K | .74 | .63 | .52 | .41 | .33 | .31 |
| 1.2K-4.7K | .79 | .67 | .55 | .43 | .36 | .33 |
| 4.6K-10K | .89 | .76 | .62 | .49 | .40 | .37 |
| 12K-18K | 1.05 | .89 | .74 | .58 | .47 | .44 |
| 22K-39K | 1.10 | .94 | .77 | .61 | .50 | .46 |
| 47K, 51K | 1.20 | 1.02 | .84 | .66 | .54 | .50 |

### DIVIDOHM® ADJUSTABLE 12-WATT NO. 210-12*

| | | | | | | |
|---|---|---|---|---|---|---|
| 1-1K | $1.50 | $1.28 | $1.05 | $0.83 | $0.68 | $0.63 |
| 1.25K-5K | 1.55 | 1.32 | 1.09 | .85 | .70 | .65 |
| 6K-10K | 1.70 | 1.45 | 1.19 | .94 | .77 | .71 |

### FIXED 25-WATT NO. 270-25

Core, 2" x 9/16"; with No. 9 brackets. Mounting centers 2¾".

| | | | | | | |
|---|---|---|---|---|---|---|
| 1-1K | $0.92 | $0.78 | $0.64 | $0.51 | $0.41 | $0.39 |
| 1.5K-5K | .95 | .81 | .67 | .52 | .43 | .40 |
| 6K-10K | 1.15 | .98 | .81 | .63 | .52 | .48 |
| 12K-20K | 1.20 | 1.02 | .84 | .66 | .54 | .50 |
| 25K-40K | 1.30 | 1.11 | .91 | .72 | .59 | .55 |
| 50K, 60K | 1.55 | 1.32 | 1.09 | .85 | .70 | .65 |
| 70K 80K | 1.80 | 1.53 | 1.26 | .99 | .81 | .76 |
| 100K | 2.05 | 1.74 | 1.44 | 1.13 | .92 | .86 |

### DIVIDOHM ADJUSTABLE 25-WATT NO. 210-25

Core, 2" x 9/16"; with No. 9 brackets. Mounting centers, 2¾".

| | | | | | | |
|---|---|---|---|---|---|---|
| 1-1K | $1.65 | $1.40 | $1.16 | $0.91 | $0.74 | $0.69 |
| 1.25K-5K | 1.70 | 1.45 | 1.19 | .94 | .77 | .71 |
| 6K-10K | 1.80 | 1.53 | 1.26 | .99 | .81 | .76 |
| 12K-20K | 1.90 | 1.62 | 1.33 | 1.05 | .86 | .80 |
| 25K | 2.05 | 1.74 | 1.44 | 1.13 | .92 | .86 |

*Core, 1¾" x 5/16"; with No. 5 brackets; mtg. centers, 2 3/16".

### FIXED 50-WATT NO. 270-50

Core, 4" x 9/16"; with No. 9 bracket Mounting centers, 4¾".

| Values, Ohms | Net Each, Lots of | | | |
|---|---|---|---|---|
| | 1-9 | 10-49 | 50-99 | 100 Up |
| 1 | $1.95 | $1.66 | $1.37 | $1.07 |
| 2-5000 | 1.45 | 1.23 | 1.02 | .86 |
| 7500-10K | 1.55 | 1.32 | 1.09 | .85 |
| 12K-20K | 1.70 | 1.45 | 1.19 | .94 |
| 25K and 35K | 1.95 | 1.66 | 1.37 | 1.07 |
| 50K | 2.20 | 1.87 | 1.54 | 1.21 |
| 75K | 2.50 | 2.13 | 1.75 | 1.38 |
| 100K | 2.70 | 2.30 | 1.89 | 1.49 |
| 125K | 3.25 | 2.76 | 2.28 | 1.79 |
| 150K | 3.45 | 2.93 | 2.42 | 1.90 |
| 175K | 3.60 | 3.06 | 2.52 | 1.98 |
| 200K | 3.75 | 3.19 | 2.63 | 2.06 |
| 250K | 4.10 | 3.49 | 2.87 | 2.26 |

### ADJUSTABLE 50-WATT NO. 210-50

Core, brkt. and mtg. ctrs., same as above

| | | | | |
|---|---|---|---|---|
| 1 | $2.80 | $2.38 | $1.96 | $1.54 |
| 2-1000 | 2.20 | 1.87 | 1.54 | 1.21 |
| 1250-5000 | 2.25 | 1.91 | 1.58 | 1.24 |
| 6000-10K | 2.30 | 1.96 | 1.61 | 1.27 |
| 12K-20K | 2.40 | 2.04 | 1.68 | 1.32 |
| 25K-40K | 2.70 | 2.30 | 1.89 | 1.49 |
| 50K and 60K | 2.90 | 2.47 | 2.03 | 1.60 |
| 80K | 3.25 | 2.76 | 2.28 | 1.79 |
| 100K | 3.45 | 2.93 | 2.42 | 1.90 |

### ADJUSTABLE 75-WATT NO. 210-75

Core, 6" x 9/16"; with No. 9 brackets Mounting centers, 6¾".

| | | | | |
|---|---|---|---|---|
| 1 and 2 | $3.15 | $2.68 | $2.21 | $1.73 |
| 3-5000 | 2.55 | 2.17 | 1.79 | 1.40 |
| 6000-10K | 2.65 | 2.25 | 1.86 | 1.46 |
| 12K-20K | 2.80 | 2.38 | 1.96 | 1.54 |
| 25K-40K | 3.00 | 2.55 | 2.10 | 1.65 |
| 45K-60K | 3.35 | 2.85 | 2.35 | 1.84 |
| 80K | 3.65 | 3.10 | 2.56 | 2.01 |
| 100K | 3.85 | 3.27 | 2.70 | 2.12 |

### FIXED 100-WATT NO. 270-100

Core, 6½" x ¾"; with No. 12 brackets.

| | | | | |
|---|---|---|---|---|
| 1-3 | $2.80 | $2.38 | $1.96 | $1.54 |
| 4-1000 | 2.00 | 1.70 | 1.40 | 1.10 |
| 1500-5000 | 2.05 | 1.74 | 1.44 | 1.13 |
| 7500 and 10K | 2.20 | 1.87 | 1.54 | 1.21 |
| 15K and 20K | 2.35 | 2.00 | 1.65 | 1.29 |
| 25K-40K | 2.70 | 2.30 | 1.89 | 1.49 |
| 50K and 60K | 2.80 | 2.38 | 1.96 | 1.54 |
| 75K | 3.05 | 2.59 | 2.14 | 1.68 |
| 100K | 3.45 | 2.93 | 2.42 | 1.90 |

### ADJUSTABLE 100-WATT NO. 210-100

Core, 6½" x ¾"; with No. 12 brackets. Mounting centers, 7⅜".

| | | | | |
|---|---|---|---|---|
| 1-3 | $3.60 | $3.06 | $2.52 | $1.98 |
| 4-1000 | 2.80 | 2.38 | 1.96 | 1.54 |
| 1500-5000 | 2.85 | 2.42 | 2.00 | 1.57 |
| 10K | 3.05 | 2.59 | 2.14 | 1.68 |
| 15K and 20K | 3.20 | 2.72 | 2.24 | 1.76 |
| 25K-40K | 3.55 | 3.02 | 2.49 | 1.95 |
| 50K | 3.65 | 3.10 | 2.56 | 2.01 |
| 75K | 3.95 | 3.36 | 2.77 | 2.17 |
| 100K | 4.35 | 3.70 | 3.05 | 2.39 |

### FIXED (270-175) AND ADJUSTABLE (210-175) 175-WATT

Core, 8½" x 1⅛"; with No. 18 brackets. Mtg. centers, 9⅜".

| Values, Ohms | Fixed, Net Ea., Lots | | | | Adjustable, Net Ea., Lots | | | |
|---|---|---|---|---|---|---|---|---|
| | 1-9 | 10-49 | 50-99 | 100 Up | 1-9 | 10-49 | 50-99 | 100 Up |
| 1-5 | $4.20 | $3.57 | $2.94 | $2.31 | $5.35 | $4.55 | $3.75 | $2.94 |
| 10 | 2.80 | 2.38 | 1.96 | 1.54 | 4.15 | 3.53 | 2.91 | 2.28 |
| 25-1K | 3.00 | 2.55 | 2.10 | 1.65 | 4.15 | 3.53 | 2.91 | 2.28 |
| 1.5K-5K | 3.10 | 2.64 | 2.17 | 1.71 | 4.20 | 3.57 | 2.94 | 2.31 |
| 7.5K, 10K | 3.35 | 2.85 | 2.35 | 1.84 | 4.40 | 3.74 | 3.08 | 2.42 |
| 15K, 20K | 3.50 | 2.98 | 2.45 | 1.93 | 4.70 | 4.00 | 3.29 | 2.59 |
| 25K-40K | 3.65 | 3.10 | 2.56 | 2.01 | 4.85 | 4.12 | 3.40 | 2.67 |
| 50K, 60K | 3.75 | 3.19 | 2.63 | 2.06 | 4.95 | 4.21 | 3.47 | 2.72 |
| 75K | 4.00 | 3.40 | 2.80 | 2.20 | 5.20 | 4.42 | 3.64 | 2.86 |
| 100K | 4.25 | 3.61 | 2.98 | 2.34 | 6.45 | 5.48 | 4.52 | 3.55 |

### FIXED (270-225) AND ADJUSTABLE (210-225) 225-WATT

Core, 10½" x 1⅛"; with No. 18 brackets. Mtg. centers, 11⅜".

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1-5 | $4.70 | $4.00 | $3.29 | $2.59 | $6.00 | $5.10 | $4.20 | $3.30 |
| 10-1K | 3.30 | 2.81 | 2.31 | 1.82 | 4.60 | 3.91 | 3.22 | 2.53 |
| 1.5K-5K | 3.35 | 2.85 | 2.35 | 1.84 | 4.70 | 4.00 | 3.29 | 2.59 |
| 7.5K, 10K | 3.75 | 3.19 | 2.63 | 2.06 | 4.95 | 4.21 | 3.47 | 2.72 |
| 15K, 20K | 3.80 | 3.23 | 2.66 | 2.09 | 4.95 | 4.21 | 3.47 | 2.72 |
| 25K-40K | 4.05 | 3.44 | 2.84 | 2.23 | 5.30 | 4.51 | 3.71 | 2.92 |
| 50K, 60K | 4.20 | 3.57 | 2.94 | 2.31 | 5.50 | 4.68 | 3.85 | 3.03 |
| 75K | 4.55 | 3.87 | 3.19 | 2.50 | 5.70 | 4.85 | 3.99 | 3.14 |
| 100K | 4.70 | 4.00 | 3.29 | 2.59 | 6.00 | 5.10 | 4.20 | 3.30 |

### ADJUSTABLE LUGS

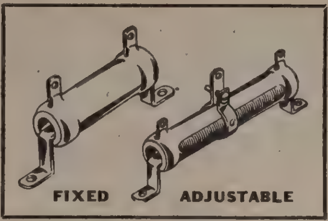
| Core Dia. | Screwdriver Lug | | | | Bakelite Knob Lug | | | |
|---|---|---|---|---|---|---|---|---|
| | No.* | Net* | No.† | Net* | No.* | Net* | No.† | Net* |
| 5/16" | 2115 | 21c | 2116 | 50c | | | | |
| 9/16" | 2121 | 21c | 2123 | 50c | 2122 | 45c | 2124 | 71c |
| ¾" | 2125 | 21c | 2127 | 50c | 2126 | 45c | 2128 | 71c |
| 1⅛" | 2133 | 32c | 2135 | 61c | 2134 | 53c | 2136 | 84c |

*Standard. †Silver contact button. ***Larger quantities on request.**

# Ward Leonard Resistors

## VITROHM® FIXED AND ADJUSTOHM® ADJUSTABLE RESISTORS

Vitrohm Resistors feature ceramic cores, resistance wire with a low-temperature coefficient of resistivity and a vitreous enamel coating developed by Ward Leonard for toughness, hardness, moisture and acid resistance, and good heat conductance. Terminals are tightly clamped to the core and spot-welded. Resistance wire is secured to terminal band by silver-brazing or spot welding. ADJUSTOHM resistors are furnished with one screw-driver type adjustable band terminal. Mounting brackets furnished with all resistors, except 5F, 10F and 20F, furnished only on request. **Tolerances:** Fixed, ± 5%; adjustable, +10%, −5% (entire resistor less band). **Stock Values On Request.**



### RESISTOR DIMENSIONS

| Type | Size, In. | Mtg. |
|---|---|---|
| 8/5F* | 1 x 5/16 | ...... |
| 10/8F* | 1½ x 5/16 | ...... |
| 12/10A† | 1¾ x 5/16 | ...... |
| 15/12F* | 1½ x 7/16 | ...... |
| 20/15F* | 2 x 7/16 | ...... |
| 25/20F‡ | 2 x 9/16 | 2⅝″ |
| 30/25F‡ and 30/25A† | 2 x ⅝ | 2⅝″ |
| 35/30F‡ | 3 x 9/16 | 3⅝″ |
| 50/35F‡ and 50/35A† | 4 x 9/16 | 4⅝″ |
| 70/50F‡ and 70/50A† | 4½ x ¾ | 5¼″ |
| 100/70F‡ | 6½ x ¾ | 7¼″ |
| 130/100F‡ and A† | 6½ x 1⅛ | 7¼″ |
| 160/130F‡ | 7½ x 1⅛ | 8¼″ |
| 180/160F‡ and A† | 8½ x 1⅛ | 9¼″ |
| 225/200F‡ and A† | 10½ x 1⅛ | 11¼″ |

*Lugs and wire leads. †Lugs and sliding band. ‡Lug terminals. 30/25A, 2 x ⅝″.

## FIXED RESISTORS

### 8/5-WATT TYPE 8/5F

| Resistance Range, Ohms | Net Each, Lots of | | |
|---|---|---|---|
| | 1-24 | 25-99 | 100-249 |
| 1–1000 | $0.57 | $0.40 | $0.34 |
| 1100–5000 | .59 | .41 | .35 |
| 6000–10K | .63 | .44 | .38 |

### 10/8-WATT TYPE 10/8F

| | | | |
|---|---|---|---|
| 1–1000 | $0.59 | $0.41 | $0.36 |
| 1100–5000 | .62 | .43 | .37 |
| 6000–10K | .69 | .48 | .41 |
| 11K–20K | .75 | .53 | .45 |
| 20K–30K | .83 | .58 | .50 |

### 12/10-WATT TYPE 12/10F

| | | | |
|---|---|---|---|
| 1–1000 | $0.61 | $0.43 | $0.37 |
| 1100–5000 | .65 | .46 | .39 |
| 6000–10K | .76 | .53 | .46 |
| 11K–20K | .84 | .59 | .51 |
| 22.5K–40K | .87 | .61 | .52 |
| 45K–50K | 1.00 | .70 | .60 |

### 15/12-WATT TYPE 15/12F

| | | | |
|---|---|---|---|
| 1–1000 | $0.66 | $0.46 | $0.40 |
| 1100–5000 | .70 | .49 | .42 |
| 6000–10K | .82 | .58 | .49 |
| 11K–20K | .87 | .61 | .52 |
| 22.5K–40K | .96 | .67 | .58 |
| 45K–50K | 1.12 | .78 | .67 |

### 20/15-WATT TYPE 20/15F

| Resistance Range, Ohms | Net Each, Lots of | | |
|---|---|---|---|
| | 1-24 | 25-99 | 100-249 |
| 1–1000 | $0.72 | $0.50 | $0.43 |
| 1200–5000 | .75 | .53 | .45 |
| 6000–10K | .88 | .62 | .53 |
| 12.5K–20K | .90 | .63 | .54 |
| 25K–40K | 1.06 | .74 | .64 |
| 45K-60K | 1.23 | .86 | .74 |
| 65K–70K | 1.46 | 1.02 | .88 |

### 25/20-WATT TYPE 25/20F

| | | | |
|---|---|---|---|
| 1–1000 | $0.77 | $0.54 | $0.46 |
| 1250–5000 | .80 | .56 | .48 |
| 6000–10K | .90 | .63 | .54 |
| 12K–20K | .97 | .68 | .58 |
| 25K–40K | 1.11 | .78 | .67 |
| 50K–60K | 1.30 | .91 | .78 |
| 65K–80K | 1.51 | 1.06 | .91 |
| 85K–100K | 1.75 | 1.22 | 1.05 |

### 30/25-WATT TYPE 30/25F

| | | | |
|---|---|---|---|
| 1–1000 | $0.89 | $0.62 | $0.53 |
| 1250–5000 | .92 | .64 | .55 |
| 6000–10K | 1.07 | .75 | .64 |
| 12K–20K | 1.15 | .80 | .69 |
| 25K–40K | 1.25 | .88 | .75 |
| 50K–60K | 1.40 | .98 | .84 |
| 70K–80K | 1.99 | 1.39 | 1.19 |
| 100K | 2.36 | 1.65 | 1.41 |

### 35/30-WATT TYPE 35/30F

| | | | |
|---|---|---|---|
| 1–1000 | $1.10 | $0.77 | $0.66 |
| 1250–5000 | 1.12 | .79 | .67 |
| 6000–10K | 1.21 | .85 | .73 |
| 12K–20K | 1.36 | .95 | .82 |
| 25K–40K | 1.60 | 1.12 | .96 |
| 50K–60K | 1.81 | 1.27 | 1.09 |
| 70K–80K | 2.19 | 1.54 | 1.32 |
| 100K | 2.36 | 1.65 | 1.41 |

### 50/35-WATT TYPE 50/35F

| Resistance Range, Ohms | Net Each, Lots of | | |
|---|---|---|---|
| | 1-24 | 25-99 | 100-249 |
| 1–2 | $1.58 | $1.11 | $0.95 |
| 3–1000 | 1.13 | .79 | .68 |
| 1500–5000 | 1.17 | .82 | .70 |
| 6000–10K | 1.23 | .86 | .74 |
| 12K–20K | 1.35 | .94 | .81 |
| 25K–40K | 1.65 | 1.15 | .99 |
| 45K–60K | 1.84 | 1.29 | 1.10 |
| 75K | 1.92 | 1.34 | 1.15 |
| 100K–125K | 2.14 | 1.50 | 1.28 |
| 150K | 2.18 | 1.53 | 1.31 |
| 175K–200K | 2.47 | 1.73 | 1.48 |
| 225K–250K | 2.64 | 1.85 | 1.58 |

### 70/50-WATT TYPE 70/50F

| | | | |
|---|---|---|---|
| 1–4 | $1.67 | $1.17 | $1.00 |
| 5–1000 | 1.19 | .83 | .71 |
| 1500–5000 | 1.23 | .86 | .74 |
| 6000–10K | 1.33 | .93 | .80 |
| 12K–20K | 1.46 | 1.02 | .88 |
| 25K–40K | 1.66 | 1.16 | 1.00 |
| 45K–60K | 1.85 | 1.30 | 1.11 |
| 75K | 2.12 | 1.49 | 1.28 |
| 100K–125K | 2.70 | 1.89 | 1.62 |
| 150K | 2.88 | 2.01 | 1.72 |
| 175K–200K | 3.00 | 2.10 | 1.80 |
| 225K–250K | 3.50 | 2.45 | 2.10 |

### 100/70-WATT TYPE 100/70F

| | | | |
|---|---|---|---|
| 1–5 | $2.25 | $1.58 | $1.35 |
| 10–1000 | 1.60 | 1.12 | .96 |
| 1250–5000 | 1.65 | 1.15 | .99 |
| 7500–10K | 1.80 | 1.26 | 1.08 |
| 15K–20K | 1.94 | 1.36 | 1.15 |
| 25K–40K | 2.20 | 1.54 | 1.32 |
| 50K–60K | 2.30 | 1.61 | 1.38 |
| 70K–75K | 2.52 | 1.77 | 1.51 |
| 100K | 2.85 | 2.00 | 1.71 |

### 130/100-WATT TYPE 130/100F

| | | | |
|---|---|---|---|
| 1–5 | $2.55 | $1.79 | $1.53 |
| 10–1000 | 1.82 | 1.28 | 1.09 |
| 1250–5000 | 1.90 | 1.33 | 1.14 |
| 7500–10K | 2.01 | 1.40 | 1.20 |
| 15K–20K | 2.21 | 1.55 | 1.32 |
| 25K–40K | 2.40 | 1.68 | 1.44 |
| 50K–60K | 2.76 | 1.93 | 1.65 |
| 70K–75K | 2.90 | 2.03 | 1.74 |
| 100K | 3.07 | 2.15 | 1.84 |

### 160/130-WATT TYPE 160/130F

| | | | |
|---|---|---|---|
| 1–10 | $2.73 | $1.91 | $1.64 |
| 15–1000 | 1.93 | 1.35 | 1.16 |
| 1500–5000 | 2.01 | 1.40 | 1.20 |
| 7500–10K | 2.16 | 1.51 | 1.30 |
| 15K–20K | 2.26 | 1.58 | 1.36 |
| 25K–40K | 2.47 | 1.73 | 1.48 |
| 50K–60K | 2.81 | 1.97 | 1.68 |
| 75K–80K | 3.07 | 2.15 | 1.84 |
| 100K | 3.37 | 2.36 | 2.02 |

### 180/160-WATT TYPE 180/160F

| | | | |
|---|---|---|---|
| 1–10 | $2.87 | $2.01 | $1.72 |
| 15–1000 | 2.05 | 1.44 | 1.23 |
| 1500–5000 | 2.12 | 1.49 | 1.28 |
| 7500–10K | 2.31 | 1.62 | 1.38 |
| 15K–20K | 2.33 | 1.63 | 1.40 |
| 25K–40K | 2.53 | 1.76 | 1.51 |
| 50K–60K | 2.85 | 1.99 | 1.71 |
| 75K–80K | 3.25 | 2.27 | 1.95 |
| 100K | 3.67 | 2.57 | 2.20 |

### 225/200-WATT TYPE 225/200F

| | | | |
|---|---|---|---|
| 1–10 | $3.00 | $2.10 | $1.80 |
| 25–1000 | 2.15 | 1.50 | 1.29 |
| 1500–5000 | 2.20 | 1.54 | 1.32 |
| 7500–10K | 2.27 | 1.59 | 1.36 |
| 15K–20K | 2.50 | 1.75 | 1.50 |
| 25K–40K | 2.84 | 1.99 | 1.71 |
| 50K–60K | 2.86 | 2.00 | 1.72 |
| 75K | 3.18 | 2.22 | 1.90 |
| 100K | 3.53 | 2.47 | 2.11 |

## ADJUSTABLE RESISTORS

### 12/10-WATT TYPE 12/10A

| Resistance Range, Ohms | Net Each, Lots of | | |
|---|---|---|---|
| | 1-24 | 25-99 | 100-249 |
| 1 | $1.89 | $1.32 | $1.14 |
| 2–1000 | 1.56 | 1.09 | .94 |
| 1100–5000 | 1.59 | 1.11 | .96 |
| 6000–10K | 1.71 | 1.20 | 1.02 |

### 30/25-WATT TYPE 30/25A

| | | | |
|---|---|---|---|
| 1–2 | $2.22 | $1.56 | $1.33 |
| 3-1000 | 1.78 | 1.25 | 1.07 |
| 1250–5000 | 1.81 | 1.26 | 1.08 |
| 6000–10K | 2.00 | 1.40 | 1.20 |
| 12K–20K | 2.10 | 1.47 | 1.26 |
| 25K | 2.22 | 1.56 | 1.33 |

### 50/35-WATT TYPE 50/35A

| | | | |
|---|---|---|---|
| 1–5 | $2.60 | $1.82 | $1.56 |
| 10–1000 | 2.10 | 1.47 | 1.26 |
| 1250–5000 | 2.15 | 1.50 | 1.29 |
| 6000–10K | 2.21 | 1.55 | 1.33 |
| 12K–20K | 2.35 | 1.64 | 1.41 |
| 25K–40K | 2.68 | 1.87 | 1.60 |
| 50K–60K | 2.88 | 2.01 | 1.73 |
| 75K–80K | 2.97 | 2.09 | 1.79 |
| 100K | 3.09 | 2.16 | 1.85 |

### 70/50-WATT TYPE 70/50A

| | | | |
|---|---|---|---|
| 1–5 | $2.78 | $1.94 | $1.66 |
| 10–1000 | 2.25 | 1.58 | 1.35 |
| 1250–5000 | 2.29 | 1.61 | 1.38 |
| 6000–10K | 2.40 | 1.68 | 1.44 |
| 12K–20K | 2.55 | 1.78 | 1.53 |
| 25K–40K | 2.77 | 1.94 | 1.66 |
| 50K–60K | 2.98 | 2.09 | 1.79 |
| 75K–80K | 3.27 | 2.29 | 1.96 |
| 100K | 3.91 | 2.73 | 2.34 |

### 130/100-WATT TYPE 130/100A

| | | | |
|---|---|---|---|
| 1–10 | $4.05 | $2.83 | $2.43 |
| 25–1000 | 3.24 | 2.26 | 1.94 |
| 1500–5000 | 3.33 | 2.33 | 2.00 |
| 6000–10K | 3.45 | 2.42 | 2.07 |
| 15K–20K | 3.67 | 2.57 | 2.21 |
| 25K–40K | 3.88 | 2.70 | 2.32 |
| 50K–60K | 4.28 | 3.00 | 2.56 |
| 75K | 4.43 | 3.10 | 2.65 |
| 100K | 4.62 | 3.24 | 2.77 |

### 180/160-WATT TYPE 180/160A

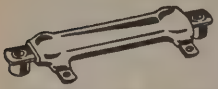
| | | | |
|---|---|---|---|
| 1–25 | $4.66 | $3.26 | $2.80 |
| 50–1000 | 3.76 | 2.64 | 2.26 |
| 1500–5000 | 3.83 | 2.67 | 2.29 |
| 6000–10K | 4.04 | 2.83 | 2.42 |
| 15K–20K | 4.06 | 2.84 | 2.44 |
| 25K–40K | 4.28 | 2.99 | 2.56 |
| 50K–60K | 4.64 | 3.25 | 2.78 |
| 75K–80K | 5.08 | 3.55 | 3.04 |
| 100K | 5.54 | 3.89 | 3.33 |

### 225/200-WATT TYPE 225/200A

| | | | |
|---|---|---|---|
| 1–25 | $5.19 | $3.63 | $3.11 |
| 50–1000 | 4.26 | 2.98 | 2.55 |
| 1500–5000 | 4.31 | 3.02 | 2.59 |
| 7500–10K | 4.39 | 3.08 | 2.63 |
| 15K–20K | 4.64 | 3.25 | 2.78 |
| 25K–40K | 5.01 | 3.50 | 3.00 |
| 50K–60K | 5.04 | 3.54 | 3.03 |
| 75K | 5.39 | 3.78 | 3.24 |
| 100K | 5.77 | 4.03 | 3.46 |
| 125K | 6.24 | 4.38 | 3.75 |
| 150K | 6.36 | 4.44 | 3.80 |

# Ward Leonard Resistors

## STRIPOHM RESISTORS



Vitrohm® construction, but flat design for use where allowable space for component mounting is extremely limited. Strip shape, low silhouette mounting and terminal arrangement permits extra space saving. Suitable for multiple stacking by using 3/32" washers. Push-in type mounting brackets are supplied. **Wattage Ratings:** 20S, 20 watts; 30S, 30 watts; 40S, 40 watts; 55S, 55 watts; 65S, 65 watts and 75S, 75 watts—all in free air based on 300° C rise, 40° C ambient with resistor mounted horizontally on vertical steel plate 12" sq. x .040" th. **Tolerance** ±5%.

### STOCK VALUES

| Ohms | Ohms | Ohms | Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|---|---|---|
| 1 | 25 | 250 | 1250 | 3500 | 15,000 | 40,000 |
| 3 | 50 | 400 | 1500 | 4000 | 20,000 | 50,000 |
| 5 | 100 | 500 | 2000 | 5000 | 25,000 | 60,000 |
| 10 | 150 | 750 | 2500 | 7500 | 30,000 | 65,000 |
| 15 | 200 | 1000 | 3000 | 10,000 | 35,000 | |

### 10-WATT TYPE 10S

**Size:** 1¼" long x 21/32" wide over lugs. Mounting centers, 1".

| Resistance Range, Ohms | Net Each, Lots of 1-24 | 25-99 | 100 Up |
|---|---|---|---|
| 1–1,000 | $1.17 | $0.82 | $0.70 |
| 1,250–5,000 | 1.22 | .85 | .73 |
| 7,500–10,000 | 1.24 | .87 | .74 |

### 15-WATT TYPE 15S

**Size:** 1½" long x 21/32" wide over lugs. Mounting centers, 1¼".

| Resistance Range, Ohms | Net Each, Lots of 1-24 | 25-99 | 100 Up |
|---|---|---|---|
| 1–1,000 | $1.19 | $0.83 | $0.71 |
| 1,250–5,000 | 1.24 | .87 | .74 |
| 7,500–10,000 | 1.28 | .90 | .77 |
| 15,000 | 1.33 | .93 | .80 |

### 20-WATT TYPE 20S

**Size:** 2 11/16" long x ⅞" wide over lugs. Mounting centers, 2 5/16".

| Resistance Range, Ohms | Net Each, Lots of 1-24 | 25-99 | 100 Up |
|---|---|---|---|
| 1–1,000 | $1.21 | $0.85 | $0.73 |
| 1,250–5,000 | 1.25 | .88 | .75 |
| 7,500–10,000 | 1.30 | .91 | .78 |
| 15,000–20,000 | 1.32 | .92 | .79 |
| 30,000–40,000 | 1.40 | .98 | .84 |
| 50,000 | 1.46 | 1.02 | .88 |

### 30-WATT TYPE 30S

**Size:** 2½" long x 1 5/16" wide over lugs. Mounting centers, 2".

| Resistance Range, Ohms | Net Each, Lots of 1-24 | 25-99 | 100 Up |
|---|---|---|---|
| 1–1,000 | $1.33 | $0.93 | $0.80 |
| 1,250–5,000 | 1.42 | 1.00 | .85 |

### 40-WATT TYPE 40S

**Size:** 3¼" long x 1 5/16" wide over lugs. Mounting centers, 2¾".

| Resistance Range, Ohms | Net Each, Lots of 1-24 | 25-99 | 100 Up |
|---|---|---|---|
| 1–2 | $1.90 | $1.33 | $1.14 |
| 3–1,000 | 1.36 | .95 | .82 |
| 1,250–5,000 | 1.41 | .99 | .85 |
| 7,500–10,000 | 1.53 | 1.07 | .92 |
| 15,000 | 1.62 | 1.13 | .97 |

### 55-WATT TYPE 55S

**Size:** 4¾" long x 1 5/16" wide over lugs. Mounting centers, 4¼".

| Resistance Range, Ohms | Net Each, Lots of 1-24 | 25-99 | 100 Up |
|---|---|---|---|
| 1–3 | $2.09 | $1.47 | $1.26 |
| 5–1,000 | 1.49 | 1.04 | .89 |
| 1,250–5,000 | 1.64 | 1.15 | .98 |
| 7,500–10,000 | 1.74 | 1.22 | 1.04 |
| 15,000–20,000 | 1.94 | 1.36 | 1.17 |
| 25,000–30,000 | 2.22 | 1.56 | 1.34 |

### 65-WATT
### TYPE 65S

**Size:** 6" long x 1 5/16" wide over lugs. Mounting centers, 6".

| Resistance Range, Ohms | Net Each, Lots of 1-24 | 25-99 | 100 Up |
|---|---|---|---|
| 1–3 | $2.40 | $1.68 | $1.44 |
| 5–1,000 | 1.72 | 1.20 | 1.03 |
| 1,250–5,000 | 1.77 | 1.24 | 1.06 |
| 7,500–10,000 | 1.95 | 1.36 | 1.17 |
| 15,000–20,000 | 2.09 | 1.47 | 1.26 |
| 25,000–40,000 | 2.53 | 1.77 | 1.52 |
| 50,000 | 2.76 | 1.93 | 1.65 |

### 75-WATT
### TYPE 75S

**Size:** 7¼" long x 1 5/16" wide over lugs. Mounting centers, 6¾".

| Resistance Range, Ohms | Net Each, Lots of 1-24 | 25-99 | 100 Up |
|---|---|---|---|
| 1–5 | $2.53 | $1.77 | $1.51 |
| 10–1,000 | 1.81 | 1.27 | 1.09 |
| 1,250–5,000 | 1.87 | 1.31 | 1.12 |
| 7,500–10,000 | 2.05 | 1.44 | 1.23 |
| 15,000–20,000 | 2.25 | 1.57 | 1.35 |
| 25,000–40,000 | 2.47 | 1.73 | 1.48 |
| 50,000–60,000 | 2.64 | 1.85 | 1.58 |
| 65,000 | 2.80 | 1.96 | 1.68 |

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## AXIOHM® LO-WATTAGE WIRE-WOUND RESISTORS

### PRICES

| W-L Type | W | Size, In. Dia. x Lg. | Resistance, Ohms | Net Each, Lots of 1-24 | 25-99 | 100-249 |
|---|---|---|---|---|---|---|
| 1X | 1 | 3/32 x 13/32 | 1–1000 | $0.69 | $0.47 | $0.41 |
| | | | 1100–2000 | .73 | .51 | .44 |
| | | | 2200–3000 | .86 | .60 | .52 |
| | | | 3300–4300 | 1.04 | .73 | .63 |
| | | | 4700–6800 | 1.23 | .86 | .74 |
| | | | 7500 | 1.50 | 1.05 | .90 |
| 2X | 2 | 3/16 x ⅜ | 1–1000 | .53 | .37 | .32 |
| | | | 1100–3000 | .55 | .39 | .33 |
| | | | 3300–3900 | .66 | .46 | .40 |
| | | | 4300–5100 | .79 | .55 | .48 |
| 3X | 3 | 3/16 x ½ | 1–1000 | .48 | .34 | .29 |
| | | | 1100–6500 | .52 | .36 | .31 |
| | | | 6800–9000 | .66 | .46 | .40 |
| | | | 10,000 | .79 | .55 | .47 |
| 4X | 4 | 3/16 x 1 1/16 | 1–1000 | .50 | .35 | .30 |
| | | | 1100–5000 | .54 | .38 | .32 |
| | | | 5600–10K | .60 | .42 | .36 |
| 5XM | 5 | 3/16 x 1 5/16 | 1–1000 | .52 | .36 | .31 |
| | | | 1100–5000 | .57 | .40 | .34 |
| | | | 5600–10K | .61 | .43 | .37 |
| | | | 11K–15K | .67 | .47 | .40 |
| | | | 16K–20K | .87 | .61 | .52 |
| | | | 22K–27K | 1.04 | .73 | .63 |
| 7X | 7 | 5/16 x 1 | 1–1000 | .55 | .39 | .33 |
| | | | 1100–5000 | .61 | .43 | .37 |
| | | | 6000–10K | .64 | .45 | .38 |
| | | | 11K–20K | .71 | .50 | .43 |
| | | | 25K–27K | .95 | .67 | .57 |
| 10XM | 10 | 5/16 x 1¾ | 1–1000 | .66 | .46 | .40 |
| | | | 1100–5000 | .76 | .53 | .46 |
| | | | 6000–10K | .79 | .55 | .47 |
| | | | 11K–20K | .87 | .61 | .52 |
| | | | 22.5K–45K | .94 | .66 | .56 |
| | | | 50,000 | 1.12 | .79 | .67 |
| 12.5X | 12½ | ⅜ x 1¾ | 1–1000 | .73 | .51 | .44 |
| | | | 1100–5000 | .84 | .59 | .51 |
| | | | 6000–10K | .87 | .61 | .52 |
| | | | 11K–20K | .96 | .67 | .58 |
| | | | 22.5K–45K | 1.04 | .73 | .62 |
| | | | 50,000 | 1.23 | .86 | .74 |

Rugged construction has high quality ceramic core and vitreous enamel coating overall. Axial leads are hot tin dipped and permanently anchored. Ratings are based on 325° C max. "free air" temperature rise in ambient temperature not exceeding 25° C. Standard tolerance, ±5%.

### TYPES 1X AND 2X STOCK VALUES

| Ohms | Ohms | Ohms | Ohms | Ohms | Ohms | Ohms | Ohms |
|---|---|---|---|---|---|---|---|
| 1 | 13 | 36 | 91 | 240 | 560 | 1500 | 3900 |
| 1.5 | 15 | 39 | 100 | 250 | 620 | 1600 | 4300 |
| 2 | 16 | 43 | 110 | 270 | 680 | 1800 | 4700 |
| 3 | 18 | 47 | 120 | 300 | 750 | 2000 | 5100 |
| 4 | 20 | 51 | 130 | 330 | 820 | 2200 | 5600§ |
| 5 | 22 | 56 | 150 | 360 | 910 | 2400 | 6200§ |
| 7.5 | 24 | 62 | 160 | 390 | 1000 | 2500 | 6800§ |
| 10 | 27 | 68 | 180 | 430 | 1100 | 2700 | 7500§ |
| 11 | 30 | 75 | 200 | 470 | 1200 | 3000 | |
| 12 | 33 | 82 | 220 | 510 | 1300 | 3300 | |

### TYPES 3X TO 12.5X STOCK VALUES

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 25 | 100 | 390• | 1000 | 3300* | 8000 | 20,000 |
| 1.5 | 27* | 120* | 400 | 1100 | 3500 | 8200* | 22,000‡ |
| 2 | 30 | 125 | 450 | 1200 | 3900* | 8500† | 22,500† |
| 3 | 33• | 150 | 470* | 1250 | 4000 | 9000 | 25,000 |
| 4 | 35 | 180• | 500 | 1500 | 4500 | 10,000 | 27,000‡ |
| 5 | 39‡ | 200 | 560* | 1750 | 4700* | 11,000 | 30,000† |
| 7.5 | 40 | 220* | 600 | 1800* | 5000 | 12,000 | 35,000† |
| 10 | 47* | 225 | 680* | 2000 | 5600* | 12,500 | 40,000† |
| 12 | 50 | 250 | 700 | 2200* | 6000 | 13,500▲ | 45,000† |
| 15 | 56* | 270* | 750 | 2250 | 6500# | 15,000 | 50,000† |
| 18* | 68• | 300 | 800 | 2500 | 6800* | 16,000▲ | |
| 20 | 75 | 330• | 820* | 2700* | 7000 | 17,500 | |
| 22* | 82* | 350 | 900 | 3000 | 7500 | 18,000▲ | |

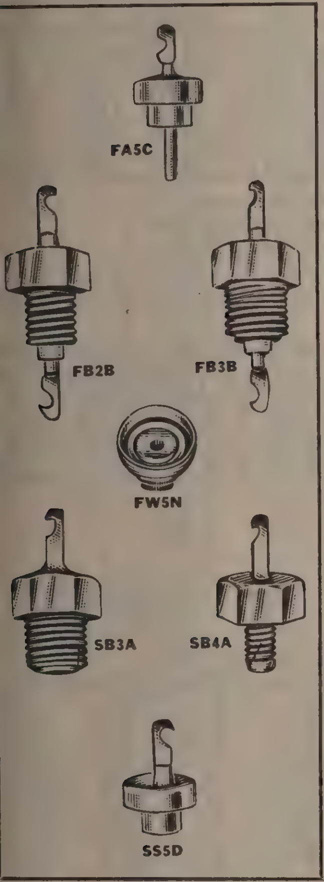
*Not available in 7X, 10XM or 12.5X types. †Available only in 10XM and 12.5X types. ‡Available only in 5XM type. §Not available in 2X type. •Not available in 10XM or 12.5X types. #Available only in 3X and 4X types. ▲Not available in 7X types.

# ALLEN-BRADLEY CAPACITORS AND FILTERS

## DISCOIDAL FEED-THRU AND STAND-OFF CAPACITORS

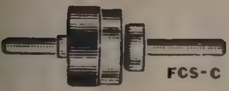
nique and superior performance is offered by these discoidal eed-thru capacitors. Where tubular feed-thru capacitors are subect to parallel resonances, the discoidal feed-thru capacitor offers esonant-free performance to 1 GHz. All are rated at 500 WVDC, 5° C except FW5N, 300 WVDC. Derate to 50% of WVDC at 85° C) for use to 125° C. All capacitors meet MIL-C-11015 here applicable. Hollow eyelet of FW5N provides direct lead ltering. **Tolerances Available:** ±10%, ±20% and GMV (Guarnteed Minimum Value, −0, +100%). Mounting hardware upplied.

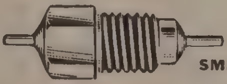
| A-B Type | Con-struction | Mounting | Mtg. Hole Dia., In. | Mtg. Hardware Washer | Mtg. Hardware Nut |
|---|---|---|---|---|---|
| **FA5C** | Feed-thru | Solder | .191 | M-6447 | ......... |
| **FB2B** | | 12-32 Bolt | .228 | M-6351 | M-6377 |
| **FB3B** | | ¼-32 Bolt | .261 | M-6359 | M-6381 |
| **FW5N** | | Solder | .191 | M-6447 | ......... |
| **SB3A** | Stand-off | ¼-32 Bolt | .261 | M-6359 | M-6381 |
| **SB4A** | | 6-40 Bolt | .147 | M-6347 | M-6369 |
| **SS5D** | | Solder | .191 | M-6447 | ......... |

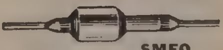


| A-B Type No. | Tol. | Cap., pF | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|
| **FA5C-1001** | 10% | 10 | $0.31 | $0.18 | $0.16 | $0.14 | $0.12 |
| **FA5C-1002** | 20% | 10 | .30 | .17 | .15 | .13 | .11 |
| **FA5C-3301** | 10% | 33 | .31 | .18 | .16 | .14 | .12 |
| **FA5C-3302** | 20% | 33 | .30 | .17 | .15 | .13 | .11 |
| **FA5C-4701** | 10% | 47 | .31 | .18 | .16 | .14 | .12 |
| **FA5C-4702** | 20% | 47 | .30 | .17 | .15 | .13 | .11 |
| **FA5C-470W** | GMV | 47 | .29 | .16 | .14 | .12 | .10 |
| **FA5C-6801** | 10% | 68 | .31 | .18 | .16 | .14 | .12 |
| **FA5C-6802** | 20% | 68 | .30 | .17 | .15 | .13 | .11 |
| **FA5C-1011** | 10% | 100 | .31 | .18 | .16 | .14 | .12 |
| **FA5C-1012** | 20% | 100 | .30 | .17 | .15 | .13 | .11 |
| **FA5C-101W** | GMV | 100 | .29 | .16 | .14 | .12 | .10 |
| **FA5C-4711** | 10% | 470 | .31 | .18 | .16 | .14 | .12 |
| **FA5C-4712** | 20% | 470 | .27 | .14 | .12 | .10 | .08 |
| **FA5C-471W** | GMV | 470 | .29 | .16 | .14 | .12 | .10 |
| **FA5C-6812** | 20% | 680 | .30 | .17 | .15 | .13 | .11 |
| **FA5C-102W** | GMV | 1,000 | .27 | .14 | .12 | .10 | .08 |
| **FB2B or FB3B-1001** | 10% | 10 | 1.34 | .70 | .61 | .51 | .45 |
| **FB2B or FB3B-1002** | 20% | 10 | 1.33 | .69 | .60 | .50 | .44 |
| **FB2B or FB3B-3301** | 10% | 33 | 1.34 | .70 | .61 | .51 | .45 |
| **FB2B or FB3B-3302** | 20% | 33 | 1.33 | .69 | .60 | .50 | .44 |
| **FB2B or FB3B-4701** | 10% | 47 | 1.34 | .70 | .61 | .51 | .45 |
| **FB2B or FB3B-4702** | 20% | 47 | 1.33 | .69 | .60 | .50 | .44 |
| **FB2B or FB3B-6801** | 10% | 68 | 1.34 | .70 | .61 | .51 | .45 |
| **FB2B or FB3B-6802** | 20% | 68 | 1.33 | .69 | .60 | .50 | .44 |
| **FB2B or FB3B-1011** | 10% | 100 | 1.34 | .70 | .61 | .51 | .45 |
| **FB2B or FB3B-1012** | 20% | 100 | 1.33 | .69 | .60 | .50 | .44 |
| **FB2B or FB3B-101W** | GMV | 100 | 1.32 | .68 | .59 | .49 | .43 |
| **FB2B or FB3B-4711** | 10% | 470 | 1.34 | .70 | .61 | .51 | .45 |
| **FB2B or FB3B-4712** | 20% | 470 | 1.31 | .67 | .58 | .48 | .42 |
| **FB2B or FB3B-471W** | GMV | 470 | 1.32 | .68 | .59 | .49 | .43 |
| **FB2B or FB3B-6812** | 20% | 680 | 1.33 | .69 | .60 | .50 | .44 |
| **FB2B or FB3B-102W** | GMV | 1,000 | 1.31 | .67 | .58 | .48 | .42 |
| **FW5N-4701** | 10% | 47 | .31 | .18 | .16 | .14 | .12 |
| **FW5N-4702** | 20% | 47 | .30 | .17 | .15 | .13 | .11 |
| **FW5N-1011** | 10% | 100 | .31 | .18 | .16 | .14 | .12 |
| **FW5N-101W** | GMV | 100 | .29 | .16 | .14 | .13 | .10 |
| **FW5N-4712** | 20% | 470 | .27 | .14 | .12 | .10 | .08 |
| **FW5N-471W** | GMV | 470 | .29 | .16 | .14 | .13 | .10 |
| **FW5N-102W** | GMV | 1,000 | .27 | .14 | .12 | .10 | .08 |
| **SB3A or SB4A-1001** | 10% | 10 | 1.10 | .58 | .50 | .41 | .37 |
| **SB3A or SB4A-1002** | 20% | 10 | 1.09 | .57 | .49 | .40 | .36 |
| **SB3A or SB4A-3301** | 10% | 33 | 1.10 | .58 | .50 | .41 | .37 |
| **SB3A or SB4A-3302** | 20% | 33 | 1.09 | .57 | .49 | .40 | .36 |
| **SB3A or SB4A-4701** | 10% | 47 | 1.10 | .58 | .50 | .41 | .37 |
| **SB3A or SB4A-4702** | 20% | 47 | 1.09 | .57 | .49 | .40 | .36 |
| **SB3A or SB4A-6801** | 10% | 68 | 1.10 | .58 | .50 | .41 | .37 |
| **SB3A or SB4A-6802** | 20% | 68 | 1.09 | .57 | .49 | .40 | .36 |
| **SB3A or SB4A-1011** | 10% | 100 | 1.10 | .58 | .50 | .41 | .37 |
| **SB3A or SB4A-1012** | 20% | 100 | 1.09 | .57 | .49 | .40 | .36 |
| **SB3A or SB4A-101W** | GMV | 100 | 1.08 | .56 | .48 | .39 | .35 |
| **SB3A or SB4A-4711** | 10% | 470 | 1.10 | .58 | .50 | .41 | .37 |
| **SB3A or SB4A-4712** | 20% | 470 | 1.07 | .55 | .47 | .38 | .34 |
| **SB3A or SB4A-471W** | GMV | 470 | 1.08 | .56 | .48 | .39 | .35 |
| **SB3A or SB4A-6812** | 20% | 680 | 1.09 | .57 | .49 | .40 | .36 |
| **SB3A or SB4A-102W** | GMV | 1,000 | 1.07 | .55 | .47 | .38 | .34 |
| **SB3A or SB4A-152W** | GMV | 1,500 | 1.08 | .56 | .48 | .39 | .35 |
| **SS5D-4712** | 20% | 470 | .45 | .25 | .20 | .17 | .15 |
| **SS5D-102W** | GMV | 1,000 | .45 | .25 | .20 | .17 | .15 |

## HIGH FREQUENCY LOW-PASS FILTERS


FCS-C


SMFB


SMFO

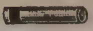
Ceramic EMI feed-thru filters provide low shunt impedance to ground for unwanted interference. Indicated attenuation is minimum value from 100 MHz to 10 GHz measured per MIL-STD-220 with series resistor of 50 ohms (no series resistor used for FCS-C) at 0 VDC and 0 amps DC. Maximum RF current 0.25 amp, feed-thru terminal resistance is .01 ohm maximum. Mounting hardware supplied.

| A-B Type No. | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|
| **FCS-C** | $0.75 | $0.70 | $0.65 | $0.53 | $0.50 |
| **SMFB-A1** | 2.20 | 2.06 | 1.87 | 1.54 | 1.43 |
| **SMFB-A2** | 2.20 | 2.06 | 1.87 | 1.54 | 1.43 |
| **SMFB-A4** | 2.20 | 2.06 | 1.87 | 1.54 | 1.43 |
| **SMFO-1** | 1.60 | 1.48 | 1.36 | 1.12 | 1.04 |
| **SMFO-2** | 1.60 | 1.48 | 1.36 | 1.12 | 1.04 |

| A-B Type No. | Min. Attenuation at 25° C | Min. Attenuation at Max. Temp. | Min. Cap. Value (pF) | Max. Temp. | Max. WVDC | Feed-thru Current (Amps) | Mounting | Mtg. Hole Dia., In. | Mounting Hardware |
|---|---|---|---|---|---|---|---|---|---|
| **FCS-C** | 25 dB | 20 dB | 1,000 | 85° C | 500 | 25 | Solder | .191 | M-6447 Washer |
| **SMFB-A1** | 35 dB | 35 dB | 1,300 | 125° C | 200 | 10 | 12-32 Bolt | .228 | M-6377 Nut<br>M-6351 Washer |
| **SMFB-A2** | 60 dB | 50 dB | 5,500 | 85° C | 200 | 10 | | | |
| **SMFB-A4** | 50 dB | 45 dB | 2,500 | 125° C | 500 | 10 | | | |
| **SMFO-1** | 35 dB | 35 dB | 1,300 | 125° C | 200 | 10 | Solder | .093 | M-6446 Washer |
| **SMFO-2** | 60 dB | 50 dB | 5,500 | 85° C | 200 | 10 | | | |

# ALLEN-BRADLEY CAPACITORS AND FILTERS

## TYPE CL MULTI-LAYER CERAMIC FEED-THRU CAPACITORS


**Actual Size**

Unique coaxial tubular capacitors consist of concentric layers of an Allen-Bradley proprietary ceramic formulation and concentric layers of noble metals; yields low inductance when compared to conventional rolled dielectric capacitors. Fired capacitors produce true monolithic structures impervious to moisture and contamination. High capacitance-to-volume ratio results in significantly smaller size than equivalent conventional rolled dielectric capacitors. **Temp. Range:** −55° C to +125° C. **Voltage-Temperature Characteristics:** ±65% at 0 volts; +35%, −90% at rated voltage. **Dissipation Factor:** 4% at .1 V rms, 25°, 1 kHz. Dielectric withstanding voltage is three times WVDC.

**MINIMUM INSERTION LOSS, dB**

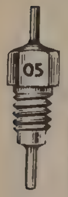
Per MIL-STD-220. At rated WVDC from −55° C to +125° C insertion loss is typically 6 dB less than indicated.

| Cap., µF | Frequency 30 kHz | 50 kHz | 100 kHz | 1 MHz | 10 MHz | 100 MHz | 1 GHz |
|---|---|---|---|---|---|---|---|
| .05 | ...... | ...... | ...... | 16 | 33 | 40 | 45 |
| .08 | ...... | ...... | ...... | 20 | 36 | 42 | 50 |
| .09 | ...... | ...... | ...... | 20 | 36 | 42 | 50 |
| .12 | ...... | ...... | ...... | 24 | 41 | 45 | 55 |
| .3 | ...... | 8 | 13 | 32 | 47 | 50 | 64 |
| 1.0 | 10 | 15 | 20 | 40 | 52 | 56 | 69 |

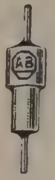
| A-B Type | Tol. | Cap., µF | WVDC | Insul. Res., Megs | Size, Inches Length | O.D. | I.D. | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CL001DA503P** | GMV | .05 | 100 | 10,000 | .330* | .072† | .047‡ | $2.45 | $2.20 | $1.95 | $1.77 | $1.42 |
| **CL002DA503P** | GMV | .05 | 100 | 10,000 | .330* | .063‡ | .037‡ | 2.31 | 2.05 | 1.82 | 1.57 | 1.33 |
| **CL003DA903P** | GMV | .09 | 100 | 5,500 | .330* | .081‡ | .047‡ | 2.80 | 2.50 | 2.20 | 1.90 | 1.60 |
| **CL003HA503P** | GMV | .05 | 200 | 10,000 | .330* | .081‡ | .047‡ | 2.84 | 2.53 | 2.25 | 1.93 | 1.65 |
| **CL004HA124P** | GMV | .12 | 200 | 4,000 | .445§ | .095† | .047‡ | 4.20 | 3.75 | 3.55 | 2.86 | 2.41 |
| **CL005HA803P** | GMV | .08 | 200 | 6,000 | .330* | .110‡ | .069# | 3.29 | 2.94 | 2.60 | 2.25 | 1.87 |
| **CL006BA304P** | GMV | .3 | 50 | 1,200 | .330• | .105† | .047‡ | 4.97 | 4.45 | 3.92 | 3.40 | 2.87 |
| **CL007BA105M** | 20% | 1.0 | 50 | 700 | .450• | .105† | .047‡ | 6.97 | 6.25 | 5.50 | 4.75 | 4.00 |

*±.015. †±.005. ‡±.003. §±.010. #±.004. •±.011.

## TYPES MT AND MS MULTI-LAYER CERAMIC FEED-THRU CAPACITORS



**MT**



**MS**

Bolt (**MT**) and solder eyelet (**MS**) mounted low inductance units have high capacitance for superior bypassing from 50 kHz to 1 GHz; primarily for DC operation. **Oper. Temp. Range:** −55° C to +125° C, no voltage derating. **DC Feed-Thru Current:** 10 A. **Dissipation Factor:** 4%. Supplied with hardware. Extra hardware: Lockwasher, **7c;** mounting nut, **5c;** solder washer, **2c.**

**MINIMUM INSERTION LOSS, dB**

At 25° C, 0 VDC (per MIL-STD-220).

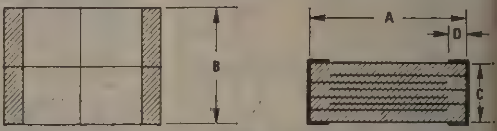
| Cap., µF | Frequency 30 kHz | 50 kHz | 100 kHz | 1 MHz | 10 MHz | 100 MHz | 500 MHz | 1 GHz |
|---|---|---|---|---|---|---|---|---|
| .05 | ...... | ...... | ...... | 16 | 33 | 45 | 47 | 50 |
| .3 | ...... | 8 | 13 | 32 | 47 | 60 | 70 | 72 |
| 1.0 | 10 | 15 | 20 | 40 | 52 | 70 | 78 | 80 |

| A-B Type | Tol. | Cap., µF* | WV DC | Insul. Res., Megs | Mtg. Hole Dia., In. | Mtg. Hardware Washer | Nut | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MT001DA503P** | GMV | .05 | 100 | 10,000 | .177 | M8018 | M8015 | $3.25 | $3.13 | $2.75 | $2.25 | $2.10 |
| **MT002BA105M** | GMV | .3 | 50 | 1,200 | .203 | M6365 | M6373 | 5.60 | 5.40 | 4.75 | 3.88 | 3.62 |
| **MT003BA105M** | 20% | 1.0 | 50 | 700 | .203 | M6365 | M6373 | 7.79 | 7.50 | 6.60 | 5.42 | 5.08 |
| **MS001DA503P** | GMV | .05 | 100 | 10,000 | .140 | M8731 | ...... | 3.13 | 3.00 | 2.60 | 2.12 | 1.98 |
| **MS002BA304P** | GMV | .3 | 50 | 1,200 | .171 | M6219 | ...... | 5.37 | 5.19 | 4.57 | 3.72 | 3.48 |
| **MS003BA105M** | 20% | 1.0 | 50 | 700 | .171 | M6219 | ...... | 7.62 | 7.35 | 6.46 | 5.27 | 4.93 |

*At 1kHz.

## TYPE MB CHIP CAPACITORS

Advanced manufacturing process combines ceramic dielectric and noble metal electrodes into a truly monolithic structure with increased mechanical strength and material homogeneity, virtually lamination-free; small and uniform size, convenient temperature characteristics and ease of bonding make them applicable to most thick and thin film applications. **Operating Temp. Range:** −55° C to +125° C. **Temperature Characteristics:** Designated by seventh digit of A-B Type No.; **A,** +22%, −56%; **B,** 0±30 ppm/° C; **C,** ±15%; **D,** ±22%.

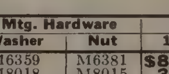


| A-B Type | Tol. | Cap., pF | WVDC | Dimensions, Inches A* | B* | C† | D‡ | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MB005BB101K** | 10% | 100 | 50 | .180 | .050 | .050 | .025 | $0.494 | $0.467 | $0.447 | $0.421 | $0.368 |
| **MB005DB101K** | 10% | 100 | 100 | .180 | .050 | .050 | .025 | .571 | .54 | .517 | .487 | .426 |
| **MB005HB101K** | 10% | 100 | 200 | .180 | .050 | .050 | .025 | .709 | .671 | .642 | .605 | .529 |
| **MB005BB221K** | 10% | 220 | 50 | .180 | .050 | .050 | .025 | .704 | .666 | .638 | .60 | .525 |
| **MB005DB221K** | 10% | 220 | 100 | .180 | .050 | .050 | .025 | .898 | .85 | .814 | .766 | .671 |
| **MB005HB221K** | 10% | 220 | 200 | .180 | .050 | .050 | .025 | 1.358 | 1.285 | 1.231 | 1.159 | 1.014 |
| **MB005BB471K** | 10% | 470 | 50 | .180 | .050 | .050 | .025 | 1.221 | 1.156 | 1.107 | 1.042 | .912 |
| **MB005DC471K** | 10% | 470 | 100 | .180 | .050 | .050 | .025 | .394 | .372 | .356 | .336 | .294 |
| **MB005HC471K** | 10% | 470 | 200 | .180 | .050 | .050 | .025 | .399 | .378 | .361 | .34 | .297 |
| **MB005BC102K** | 10% | 1,000 | 50 | .180 | .050 | .050 | .025 | .42 | .398 | .38 | .358 | .314 |
| **MB005DC102K** | 10% | 1,000 | 100 | .180 | .050 | .050 | .025 | .456 | .432 | .414 | .389 | .34 |
| **MB005HC102K** | 10% | 1,000 | 200 | .180 | .050 | .050 | .025 | .418 | .395 | .379 | .356 | .312 |
| **MB005BC222K** | 10% | 2,200 | 50 | .180 | .050 | .050 | .025 | .442 | .418 | .40 | .377 | .33 |
| **MB005DC222K** | 10% | 2,200 | 100 | .180 | .050 | .050 | .025 | .471 | .446 | .427 | .402 | .352 |
| **MB005HC222K** | 10% | 2,200 | 200 | .180 | .050 | .050 | .025 | .565 | .535 | .512 | .482 | .422 |
| **MB005BD472M** | 20% | 4,700 | 50 | .180 | .050 | .050 | .025 | .467 | .442 | .423 | .398 | .348 |
| **MB006DD472M** | 20% | 4,700 | 100 | .180 | .080 | .075 | .025 | .535 | .506 | .485 | .456 | .399 |
| **MB006HD472M** | 20% | 4,700 | 200 | .180 | .080 | .075 | .025 | .646 | .612 | .586 | .551 | .482 |
| **MB006BD103M** | 20% | 10,000 | 50 | .180 | .080 | .075 | .025 | .618 | .585 | .561 | .528 | .462 |
| **MB006DD103M** | 20% | 10,000 | 100 | .180 | .080 | .075 | .025 | .68 | .644 | .617 | .58 | .508 |
| **MB007HD103M** | 20% | 10,000 | 200 | .225 | .250 | .075 | .025 | 1.043 | .987 | .945 | .89 | .778 |
| **MB006BD223M** | 20% | 22,000 | 50 | .180 | .080 | .075 | .025 | .864 | .818 | .784 | .737 | .645 |
| **MB006DA223M** | 20% | 22,000 | 100 | .180 | .080 | .075 | .025 | .649 | .614 | .588 | .554 | .485 |
| **MB007HA223M** | 20% | 22,000 | 200 | .225 | .250 | .075 | .025 | .924 | .874 | .836 | .778 | .689 |
| **MB006BA473M** | 20% | 47,000 | 50 | .180 | .080 | .075 | .025 | .825 | .781 | .748 | .704 | .616 |
| **MB007DA473M** | 20% | 47,000 | 100 | .225 | .250 | .075 | .025 | 1.26 | 1.19 | 1.14 | 1.075 | .94 |
| **MB007HA473M** | 20% | 47,000 | 200 | .225 | .250 | .075 | .025 | 1.597 | 1.511 | 1.447 | 1.362 | 1.192 |
| **MB007BA104M** | 20% | 100,000 | 50 | .225 | .250 | .075 | .025 | 1.547 | 1.464 | 1.402 | 1.32 | 1.155 |
| **MB007DA104M** | 20% | 100,000 | 100 | .225 | .250 | .075 | .025 | 1.759 | 1.665 | 1.595 | 1.501 | 1.313 |
| **MB007HA104M** | 20% | 100,000 | 200 | .225 | .250 | .075 | .025 | 2.408 | 2.279 | 2.183 | 2.054 | 1.797 |

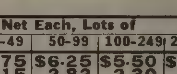
*±.010. †Max. ‡±.015.

## TYPES BE AND SF RFI/EMI FEED-THRU SUPPRESSION FILTERS

For superior filtering from 1 MHz to 10 GHz. Bolt-mounted pi filters are a combination of ferrite inductors and ceramic capacitors. **Oper. Temp. Range:** −55° C to +125° C. **DC Feed-Thru Current:** 10 A. **Min. Insertion Loss, dB, per MIL-STD-220 at 0 V:** Type **BE** (at 25° C), 18 at 1 MHz, 65 at 10 MHz, 75 from 25 MHz to 10 GHz; Type **SF** (−55° C to +125° C), 50 from 100 MHz to 10 GHz.



**BE**



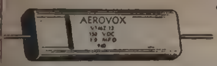
**SF**

| A-B Type | Min. Cap., µF | WVDC | ‡ | Insul. Resis., Megs | Mtg. Hole Dia., In. | Mtg. Hardware Washer | Nut | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **BE001DA104P** | .1* | 100 | 250§ | 5,000• | .261 | M6359 | M6381 | $8.25 | $7.75 | $6.25 | $5.50 | $4.60 |
| **SF001HA552P** | .0055† | 200 | 500# | 20,000▴ | .177 | M8018 | M8015 | 3.36 | 3.15 | 2.82 | 2.30 | 2.10 |

*At .1 V rms. †At 2.5 V rms. ‡Dielectric withstanding voltage, VDC, charging current less than 50 mA for §1 sec; #5 sec. •Min. at WVDC, 25° C, 2 sec, charging current less than 50 mA. ▴Min. initial after 120 sec at WVDC, 25° C, through 1 meg protective resistance.

AEROVOX Hi-Q®

# Film Capacitors

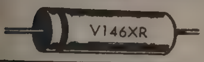


## TYPE V146Z AND V146ZR METALLIZED MYLAR* "WRAP AND FILL" CAPACITORS

Ultra-miniature, instrument-quality capacitors feature light weight, long stable life and high insulation resistance. Self-healing. Flat style permits mounting in banks. Tolerance, ±10%; closer tolerances on request. Power factor will not exceed 1%. *Reg. DuPont TM.

| Cap., µF | WVDC | Type V146Z Flat Style | | Type V146ZR Tubular Style | | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Number | Th. x W. x Lgth. | Number | Dia. x Lgth. | 1-24 | 25-49 | 50-99 | 100-249 |
| .1 | 100 | V146Z-160 | .125″ x .234″ x 9/16″ | V146ZR-111 | .170″ x 11/16″ | $0.812 | $0.542 | $0.406 | $0.325 |
| .15 | 100 | V146Z-161 | .156″ x .265″ x 9/16″ | V146ZR-112 | .190″ x 11/16″ | .876 | .585 | .438 | .35 |
| .22 | 100 | V146Z-162 | .156″ x .250″ x 11/16″ | V146ZR-113 | .215″ x 11/16″ | .972 | .649 | .486 | .389 |
| .33 | 100 | V146Z-163 | .203″ x .312″ x 11/16″ | V146ZR-114 | .265″ x 11/16″ | 1.104 | .737 | .552 | .442 |
| .47 | 100 | V146Z-164 | .250″ x .359″ x 11/16″ | V146ZR-115 | .315″ x 11/16″ | 1.136 | .758 | .568 | .454 |
| .68 | 100 | V146Z-165 | .218″ x .328″ x 15/16″ | V146ZR-116 | .280″ x 1″ | 1.224 | .817 | .612 | .49 |
| 1.0 | 100 | V146Z-166 | .265″ x .375″ x 15/16″ | V146ZR-117 | .325″ x 1″ | 1.38 | .921 | .69 | .552 |
| 1.5 | 100 | V146Z-167 | .250″ x .250″ x 1 1/4″ | V146ZR-118 | .340″ x 1 1/4″ | 1.652 | 1.103 | .826 | .661 |
| 2.0 | 100 | V146Z-168 | .312″ x .468″ x 1 1/4″ | V146ZR-119 | .405″ x 1 1/4″ | 1.992 | 1.33 | .996 | .797 |
| 3.0 | 100 | V146Z-169 | .406″ x .562″ x 1 1/4″ | V146ZR-120 | .500″ x 1 1/4″ | 2.416 | 1.613 | 1.208 | .966 |
| 4.0 | 100 | V146Z-170 | .406″ x .562″ x 1 3/8″ | V146ZR-121 | .510″ x 1 3/8″ | 3.06 | 2.043 | 1.53 | 1.224 |
| 5.0 | 100 | V146Z-171 | .375″ x .593″ x 1 3/4″ | V146ZR-122 | .510″ x 1 3/4″ | 3.584 | 2.392 | 1.792 | 1.434 |
| .01 | 200 | V146Z-127 | .156″ x .203″ x 7/16″ | | | .70 | .467 | .35 | .28 |
| .015 | 200 | V146Z-128 | .156″ x .234″ x 7/16″ | | | .54 | .36 | .27 | .216 |
| .022 | 200 | V146Z-129 | .203″ x .265″ x 7/16″ | | | .54 | .36 | .27 | .216 |
| .033 | 200 | V146Z-130 | .218″ x .281″ x 7/16″ | | | .54 | .36 | .27 | .216 |
| .047 | 200 | V146Z-131 | .171″ x .265″ x 9/16″ | V146ZR-123 | .200″ x 9/16″ | .54 | .36 | .27 | .216 |
| .068 | 200 | V146Z-60 | .125″ x .250″ x 11/16″ | V146ZR-25 | .200″ x 11/16″ | .54 | .36 | .27 | .216 |
| .1 | 200 | V146Z-6 | .187″ x .281″ x 11/16″ | V146ZR-26 | .234″ x 11/16″ | .58 | .387 | .29 | .232 |
| .15 | 200 | V146Z-61 | .187″ x .312″ x 11/16″ | V146ZR-27 | .265″ x 11/16″ | .64 | .427 | .32 | .256 |
| .22 | 200 | V146Z-132 | .265″ x .375″ x 11/16″ | V146ZR-124 | .340″ x 11/16″ | .70 | .467 | .35 | .28 |
| .33 | 200 | V146Z-133 | .296″ x .484″ x 11/16″ | V146ZR-125 | .390″ x 11/16″ | .76 | .507 | .38 | .304 |
| .47 | 200 | V146Z-134 | .359″ x .546″ x 11/16″ | V146ZR-16 | .328″ x 1″ | .88 | .587 | .44 | .352 |
| .68 | 200 | V146Z-135 | .343″ x .515″ x 11/16″ | V146ZR-30 | .390″ x 1″ | .96 | .641 | .48 | .384 |
| 1.0 | 200 | V146Z-64 | .312″ x .468″ x 1 3/16″ | V146ZR-126 | .500″ x 1″ | 1.20 | .801 | .60 | .48 |
| 1.5 | 200 | V146Z-65 | .406″ x .593″ x 1 3/16″ | V146ZR-32 | .515″ x 1 3/16″ | 1.60 | 1.068 | .80 | .64 |
| 2.0 | 200 | V146Z-8 | .343″ x .563″ x 1 11/16″ | V146ZR-127 | .620″ x 1 1/4″ | 1.96 | 1.308 | .98 | .784 |
| 3.0 | 200 | | | V146ZR-128 | .650″ x 1 1/2″ | 3.48 | 2.323 | 1.74 | 1.392 |
| 4.0 | 200 | V146Z-55 | .562″ x .687″ x 1 11/16″ | V146ZR-34 | .656″ x 1 11/16″ | 4.16 | 2.777 | 2.08 | 1.664 |
| 5.0 | 200 | V146Z-136 | .484″ x .843″ x 1 3/4″ | V146ZR-129 | .800″ x 1 3/4″ | 6.44 | 4.299 | 3.22 | 2.576 |
| .01 | 400 | V146Z-137 | .140″ x .265″ x 11/16″ | V146ZR-132 | .180″ x 9/16″ | .716 | .478 | .358 | .286 |
| .015 | 400 | V146Z-138 | .171″ x .296″ x 11/16″ | V146ZR-133 | .180″ x 11/16″ | .744 | .497 | .372 | .298 |
| .022 | 400 | V146Z-139 | .203″ x .312″ x 11/16″ | V146ZR-134 | .210″ x 11/16″ | .744 | .497 | .372 | .298 |
| .033 | 400 | V146Z-140 | .250″ x .375″ x 11/16″ | V146ZR-135 | .250″ x 11/16″ | .68 | .454 | .34 | .272 |
| .047 | 400 | V146Z-81 | .187″ x .281″ x 7/8″ | V146ZR-136 | .300″ x 11/16″ | .70 | .467 | .35 | .28 |
| .068 | 400 | V146Z-141 | .234″ x .421″ x 15/16″ | V146ZR-137 | .350″ x 11/16″ | .72 | .481 | .36 | .288 |
| .1 | 400 | V146Z-142 | .296″ x .484″ x 15/16″ | V146ZR-138 | .325″ x 1″ | .74 | .494 | .37 | .296 |
| .15 | 400 | V146Z-143 | .343″ x .562″ x 15/16″ | V146ZR-139 | .375″ x 1″ | .76 | .507 | .38 | .304 |
| .22 | 400 | V146Z-84 | .281″ x .281″ x 1 1/4″ | V146ZR-55 | .400″ x 1 1/4″ | .84 | .561 | .42 | .336 |
| .33 | 400 | V146Z-85 | .375″ x .375″ x 1 1/4″ | V146ZR-140 | .450″ x 1 1/2″ | 1.02 | .681 | .51 | .408 |
| .47 | 400 | V146Z-144 | .406″ x .406″ x 1 1/2″ | V146ZR-141 | .520″ x 1 1/2″ | 1.18 | .788 | .59 | .472 |
| .68 | 400 | V146Z-145 | .421″ x .890″ x 1 1/2″ | V146ZR-142 | .625″ x 1 1/2″ | 1.40 | .935 | .70 | .56 |
| 1.0 | 400 | V146Z-87 | .531″ x .718″ x 1 3/4″ | V146ZR-59 | .656″ x 1 3/4″ | 1.64 | 1.095 | .82 | .656 |
| 1.5 | 400 | V146Z-88 | .500″ x 1.093″ x 1 3/4″ | V146ZR-60 | .825″ x 1 3/4″ | 2.16 | 1.442 | 1.08 | .864 |
| 2.0 | 400 | V146Z-146 | .812″ x 1.125″ x 1 3/4″ | V146ZR-143 | .950″ x 1 3/4″ | 2.72 | 1.816 | 1.36 | 1.088 |
| 4.0 | 400 | V146Z-89 | 1.000″ x 1.093″ x 2 1/4″ | V146ZR-62 | 1.093″ x 2 1/4″ | 4.28 | 2.857 | 2.14 | 1.712 |
| .01 | 600 | V146Z-147 | .187″ x .246″ x 11/16″ | V146ZR-63 | .171″ x 3/4″ | .744 | .497 | .372 | .298 |
| .015 | 600 | V146Z-148 | .218″ x .343″ x 11/16″ | V146ZR-64 | .203″ x 3/4″ | .78 | .521 | .39 | .312 |
| .022 | 600 | V146Z-149 | .250″ x .453″ x 11/16″ | V146ZR-145 | .300″ x 3/4″ | .812 | .542 | .406 | .325 |
| .033 | 600 | V146Z-150 | .296″ x .500″ x 11/16″ | V146ZR-146 | .370″ x 3/4″ | .78 | .521 | .39 | .312 |
| .047 | 600 | V146Z-151 | .234″ x .437″ x 15/16″ | V146ZR-67 | .250″ x 1 1/16″ | .80 | .534 | .40 | .32 |
| .068 | 600 | V146Z-152 | .312″ x .531″ x 15/16″ | V146ZR-68 | .296″ x 1 1/16″ | .88 | .587 | .44 | .352 |
| .1 | 600 | V146Z-153 | .375″ x .593″ x 15/16″ | V146ZR-69 | .359″ x 1 1/16″ | .96 | .641 | .48 | .384 |
| .15 | 600 | V146Z-95 | .312″ x .437″ x 1 1/4″ | V146ZR-70 | .375″ x 1 1/4″ | 1.04 | .694 | .52 | .416 |
| .22 | 600 | V146Z-96 | .343″ x .531″ x 1 1/4″ | V146ZR-71 | .468″ x 1 1/4″ | 1.12 | .748 | .56 | .448 |
| .33 | 600 | V146Z-154 | .515″ x .875″ x 1 1/2″ | V146ZR-72 | .453″ x 1 3/4″ | 1.22 | .814 | .61 | .488 |
| .47 | 600 | V146Z-155 | .515″ x .890″ x 1 1/2″ | V146ZR-73 | .531″ x 1 3/4″ | 1.36 | .908 | .68 | .544 |
| .68 | 600 | V146Z-156 | .671″ x 1.031″ x 1 1/2″ | V146ZR-147 | .800″ x 1 3/4″ | 1.96 | 1.308 | .98 | .784 |
| 1.0 | 600 | V146Z-157 | .671″ x 1.187″ x 1 3/4″ | V146ZR-148 | .950″ x 1 3/4″ | 2.56 | 1.709 | 1.28 | 1.024 |
| 1.5 | 600 | V146Z-158 | .859″ x 1.375″ x 1 3/4″ | V146ZR-76 | .859″ x 2 1/4″ | 3.16 | 2.109 | 1.58 | 1.264 |
| 2.0 | 600 | V146Z-159 | 1.032″ x 1.515″ x 1 3/4″ | V146ZR-17 | .890″ x 2 1/4″ | 3.80 | 2.537 | 1.90 | 1.52 |

## TYPE V146X AND V146XR AEROFILM® "WRAP AND FILL" MYLAR CAPACITORS



Miniature Mylar tubular and flat capacitors with extended foil construction; synthetic film wrapped, end sealed with plastic resin. High insulation resistance, low power factor. Temperature range, −65° C to +125° C with voltage derating. Tolerance, ±10%, .01 µF up; ±20%, below .01 µF. Closer tolerances on request.

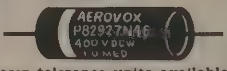
| Cap., µF | WVDC | Type V146X Flat Style | | Type V146XR Tubular Style | | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|
| | | Number | Th. x W. x Lgth. | Number | Dia. x Lgth. | 1-24 | 25-49 | 50-99 |
| .01 | 150 | | | V146XR-1 | .156″ x 1/2″ | $0.32 | $0.214 | $0.16 |
| .015 | 150 | | | V146XR-2 | .187″ x 1/2″ | .32 | .214 | .16 |
| .022 | 150 | | | V146XR-3 | .203″ x 5/8″ | .32 | .214 | .16 |
| .033 | 150 | V146X-15 | 3/16″ x 11/32″ x 15/16″ | V146XR-4 | .218″ x 5/8″ | .32 | .214 | .16 |
| .047 | 150 | V146X-16 | 3/16″ x 3/8″ x 15/16″ | V146XR-5 | .234″ x 3/4″ | .328 | .219 | .164 |
| .068 | 150 | V146X-17 | 7/32″ x 3/8″ x 15/16″ | V146XR-6 | .265″ x 3/4″ | .34 | .227 | .17 |
| .1 | 150 | V146X-19 | 1/4″ x 15/32″ x 15/16″ | V146XR-7 | .281″ x 7/8″ | .352 | .235 | .176 |
| .15 | 150 | V146X-20 | 1/4″ x 7/16″ x 1 1/16″ | V146XR-8 | .328″ x 7/8″ | .36 | .24 | .18 |
| .22 | 150 | V146X-21 | 1/4″ x 17/32″ x 1 1/4″ | V146XR-9 | .385″ x 1″ | .38 | .254 | .19 |
| .33 | 150 | V146X-22 | 5/16″ x 19/32″ x 1 1/4″ | V146XR-10 | .375″ x 1 1/8″ | .456 | .304 | .228 |
| .47 | 150 | V146X-23 | 7/16″ x 23/32″ x 1 7/16″ | V146XR-11 | .468″ x 1 1/4″ | .552 | .368 | .276 |
| .68 | 150 | V146X-24 | 13/32″ x 23/32″ x 1 11/16″ | V146XR-12 | .562″ x 1 1/4″ | .708 | .473 | .354 |
| 1.0 | 150 | V146X-26 | 13/32″ x 3/4″ x 1 7/8″ | V146XR-13 | .593″ x 1 1/2″ | .988 | .659 | .494 |
| 1.5 | 150 | | | V146XR-14 | .718″ x 1 3/4″ | 1.344 | .897 | .672 |
| 2.0 | 150 | | | V146XR-15 | .812″ x 1 3/4″ | 1.628 | 1.087 | .814 |
| .001 | 200 | | | V146XR-16 | .156″ x 1/2″ | .32 | .214 | .16 |
| .0015 | 200 | | | V146XR-17 | .156″ x 1/2″ | .32 | .214 | .16 |
| .0022 | 200 | | | V146XR-18 | .156″ x 1/2″ | .32 | .214 | .16 |
| .0033 | 200 | | | V146XR-19 | .156″ x 1/2″ | .32 | .214 | .16 |
| .0047 | 200 | | | V146XR-20 | .156″ x 1/2″ | .32 | .214 | .16 |
| .0068 | 200 | | | V146XR-21 | .156″ x 1/2″ | .32 | .214 | .16 |
| .01 | 200 | | | V146XR-22 | .171″ x 1/2″ | .32 | .214 | .16 |
| .015 | 200 | | | V146XR-23 | .203″ x 1/2″ | .32 | .214 | .16 |
| .022 | 200 | | | V146XR-24 | .250″ x 5/8″ | .32 | .214 | .16 |
| .033 | 200 | V146X-217 | 7/32″ x 3/8″ x 15/16″ | V146XR-25 | .250″ x 3/4″ | .32 | .214 | .16 |
| .047 | 200 | V146X-218 | 7/32″ x 13/32″ x 15/16″ | V146XR-26 | .296″ x 3/4″ | .328 | .219 | .164 |
| .068 | 200 | V146X-219 | 9/32″ x 7/16″ x 15/16″ | V146XR-27 | .343″ x 3/4″ | .344 | .23 | .172 |
| .1 | 200 | V146X-220 | 5/16″ x 15/32″ x 1 1/8″ | V146XR-28 | .375″ x 7/8″ | .42 | .28 | .21 |
| .15 | 200 | V146X-221 | 3/8″ x 9/16″ x 1 1/8″ | V146XR-29 | .453″ x 7/8″ | .444 | .296 | .222 |
| .22 | 200 | V146X-222 | 13/32″ x 9/16″ x 1 1/4″ | V146XR-30 | .438″ x 1 1/8″ | .468 | .312 | .234 |
| .33 | 200 | V146X-223 | 3/8″ x 9/16″ x 1 11/16″ | V146XR-31 | .484″ x 1 1/8″ | .528 | .352 | .264 |
| .47 | 200 | V146X-224 | 7/16″ x 21/32″ x 1 11/16″ | V146XR-32 | .546″ x 1 1/4″ | .60 | .401 | .30 |

# AEROVOX Hi-Q® Industrial Capacitors

## TYPE V146X AND V146XR AEROFILM® "WRAP AND FILL" CAPACITORS (CONTINUED)

| Cap., µF | WVDC | Type V146X Flat Style |  | Type V146XR Tubular Style |  | Net Each, Lots of |  |  |
|---|---|---|---|---|---|---|---|---|
|  |  | Number | Th. x W. x Lgth. | Number | Dia. x Lgth. | 1-24 | 25-49 | 50-99 |
| .68 | 200 | V146X-225 | 1/2" x 3/4" x 1 7/8" | V146XR-33 | .609" x 1 5/8" | $0.708 | $0.473 | $0.354 |
| 1.0 | 200 | V146X-226 | 9/16" x 13/16" x 2 1/8" | V146XR-34 | .671" x 1 3/4" | .988 | .659 | .494 |
| 1.5 | 200 |  |  | V146XR-35 | .828" x 1 3/4" | 1.344 | .897 | .672 |
| 2.0 | 200 |  |  | V146XR-36 | .875" x 1 7/8" | 1.624 | 1.084 | .812 |
| .001 | 400 |  |  | V146XR-37 | .156" x 5/8" | .356 | .238 | .178 |
| .0015 | 400 |  |  | V146XR-38 | .156" x 5/8" | .356 | .238 | .178 |
| .0022 | 400 |  |  | V146XR-39 | .156" x 5/8" | .356 | .238 | .178 |
| .0033 | 400 | V146X-27 | 3/16" x 5/16" x 13/16" | V146XR-40 | .156" x 5/8" | .356 | .238 | .178 |
| .0047 | 400 | V146X-28 | 3/16" x 5/16" x 13/16" | V146XR-41 | .187" x 5/8" | .356 | .238 | .178 |
| .0068 | 400 | V146X-29 | 3/16" x 5/16" x 13/16" | V146XR-42 | .218" x 5/8" | .356 | .238 | .178 |
| .01 | 400 | V146X-31 | 3/16" x 5/16" x 13/16" | V146XR-43 | .250" x 5/8" | .356 | .238 | .178 |
| .015 | 400 | V146X-32 | 7/32" x 3/8" x 13/16" | V146XR-44 | .296" x 5/8" | .356 | .238 | .178 |
| .022 | 400 | V146X-33 | 7/32" x 7/16" x 13/16" | V146XR-45 | .312" x 3/4" | .356 | .238 | .178 |
| .033 | 400 | V146X-34 | 7/32" x 7/16" x 15/16" | V146XR-46 | .312" x 7/8" | .356 | .238 | .178 |
| .047 | 400 | V146X-35 | 1/4" x 15/32" x 15/16" | V146XR-47 | .343" x 7/8" | .372 | .248 | .186 |
| .068 | 400 | V146X-36 | 9/32" x 1/2" x 1 1/8" | V146XR-48 | .375" x 1" | .396 | .264 | .198 |
| .1 | 400 | V146X-38 | 9/32" x 17/32" x 1 1/4" | V146XR-49 | .421" x 1" | .404 | .27 | .202 |
| .15 | 400 | V146X-39 | 5/16" x 19/32" x 1 11/16" | V146XR-50 | .468" x 1 1/4" | .42 | .28 | .21 |
| .22 | 400 | V146X-40 | 3/8" x 21/32" x 1 7/8" | V146XR-51 | .546" x 1 3/8" | .484 | .323 | .242 |
| .33 | 400 | V146X-41 | 7/16" x 3/4" x 1 7/8" | V146XR-52 | .593" x 1 5/8" | .784 | .523 | .392 |
| .47 | 400 | V146X-42 | 1/2" x 7/8" x 1 7/8" | V146XR-53 | .671" x 1 5/8" | .932 | .622 | .466 |
| .68 | 400 | V146X-43 | 17/32" x 15/16" x 2 1/8" | V146XR-54 | .796" x 1 3/4" | 1.14 | .761 | .57 |
| 1.0 | 400 | V146X-45 | 9/16" x 1" x 2 5/16" | V146XR-55 | .812" x 2" | 1.356 | .905 | .678 |
| 1.5 | 400 |  |  | V146XR-56 | .921" x 2 1/4" | 1.688 | 1.127 | .844 |
| 2.0 | 400 |  |  | V146XR-57 | 1.093" x 2 1/4" | 2.216 | 1.479 | 1.108 |
| .001 | 600 | V146X-46 | 3/16" x 5/16" x 13/16" | V146XR-58 | .156" x 3/4" | .408 | .272 | .204 |
| .0015 | 600 | V146X-47 | 3/16" x 5/16" x 13/16" | V146XR-59 | .171" x 3/4" | .408 | .272 | .204 |
| .0022 | 600 | V146X-48 | 3/16" x 5/16" x 13/16" | V146XR-60 | .187" x 3/4" | .408 | .272 | .204 |
| .0033 | 600 | V146X-49 | 3/16" x 3/8" x 7/8" | V146XR-61 | .203" x 3/4" | .408 | .272 | .204 |
| .0047 | 600 | V146X-50 | 3/16" x 13/32" x 7/8" | V146XR-62 | .234" x 3/4" | .408 | .272 | .204 |
| .0068 | 600 | V146X-51 | 7/32" x 13/32" x 7/8" | V146XR-63 | .265" x 3/4" | .408 | .272 | .204 |
| .01 | 600 | V146X-53 | 1/4" x 7/16" x 7/8" | V146XR-64 | .312" x 3/4" | .408 | .272 | .204 |
| .015 | 600 | V146X-54 | 5/16" x 1/2" x 7/8" | V146XR-65 | .312" x 7/8" | .408 | .272 | .204 |
| .022 | 600 | V146X-55 | 5/16" x 1/2" x 1 1/16" | V146XR-66 | .375" x 7/8" | .408 | .272 | .204 |
| .033 | 600 | V146X-56 | 9/32" x 1/2" x 1 1/8" | V146XR-67 | .406" x 1" | .408 | .272 | .204 |
| .047 | 600 | V146X-57 | 5/16" x 17/32" x 1 1/8" | V146XR-68 | .453" x 1" | .408 | .272 | .204 |
| .068 | 600 | V146X-58 | 5/16" x 19/32" x 1 1/4" | V146XR-69 | .531" x 1" | .424 | .283 | .212 |
| .1 | 600 | V146X-60 | 13/32" x 21/32" x 1 5/16" | V146XR-70 | .562" x 1 3/8" | .528 | .352 | .264 |
| .15 | 600 | V146X-61 | 3/8" x 23/32" x 1 7/8" | V146XR-71 | .671" x 1 3/8" | .552 | .368 | .276 |
| .22 | 600 | V146X-62 | 1/2" x 27/32" x 1 7/8" | V146XR-72 | .718" x 1 5/8" | .628 | .419 | .314 |
| .33 | 600 | V146X-63 | 1/2" x 29/32" x 2 1/8" | V146XR-73 | .765" x 2" | 1.068 | .713 | .534 |
| .47 | 600 | V146X-64 | 5/8" x 1 1/16" x 2 1/8" | V146XR-74 | .859" x 2" | 1.372 | .916 | .686 |
| .68 | 600 | V146X-65 | 11/16" x 1 3/32" x 2 7/16" | V146XR-75 | 1.016" x 2" | 1.84 | 1.228 | .92 |
| 1.0 | 600 |  |  | V146XR-76 | 1.125" x 2 1/2" | 2.90 | 1.936 | 1.45 |
| 1.5 | 600 |  |  | V146XR-77 | 1.234" x 3" | 3.768 | 2.515 | 1.884 |
| 2.0 | 600 |  |  | V146XR-78 | 1.421" x 3" | 4.76 | 3.177 | 2.38 |

## TYPE P8292ZN PLASTIC CASED METALLIZED-PAPER TUBULARS



Polycap® plastic cased tubulars feature outstanding humidity resistance and improved insulation resistance. Operation between −30° C to 100° C at working voltage. Standard tolerance ±20%; closer tolerance units available on request.

### 200 WVDC

| No. P82-92ZN- | Cap., µF | Size, In. |  | Net Each, Lots of |  |  |  |  |
|---|---|---|---|---|---|---|---|---|
|  |  | Dia. | Lg. | 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
| 6 | .01 | 1/4 | 1 9/32 | $0.54 | $0.36 | $0.27 | $0.216 | $0.186 |
| 7 | .02 | 1/4 | 2 1/32 | .54 | .36 | .27 | .216 | .186 |
| 8 | .03 | 5/16 | 2 3/32 | .54 | .36 | .27 | .216 | .186 |
| 9 | .05 | 5/16 | 2 3/32 | .54 | .36 | .27 | .216 | .186 |
| 10 | .1 | 3/8 | 2 3/32 | .576 | .384 | .288 | .23 | .199 |
| 11 | .25 | 1/2 | 2 3/32 | .828 | .553 | .414 | .331 | .286 |
| 12 | .5 | 7/16 | 1 5/32 | .972 | .649 | .486 | .389 | .335 |
| 13 | 1.0 | 9/16 | 1 5/32 | 1.296 | .865 | .648 | .518 | .447 |
| 14 | 2.0 | 5/8 | 1 21/32 | 1.764 | 1.177 | .882 | .706 | .609 |
| 206 | 3.0 | 11/16 | 1 31/32 | 2.16 | 1.442 | 1.08 | .864 | .745 |
| 207 | 4.0 | 13/16 | 1 15/16 | 2.70 | 1.802 | 1.35 | 1.08 | .932 |
| 208 | 5.0 | 7/8 | 1 15/16 | 3.24 | 2.163 | 1.62 | 1.296 | 1.118 |
| 209 | 6.0 | 15/16 | 1 15/16 | 4.16 | 2.777 | 2.08 | 1.664 | 1.435 |
| 210 | 8.0 | 15/16 | 2 3/8 | 5.20 | 3.471 | 2.60 | 2.08 | 1.794 |
| 211 | 10.0 | 1 | 2 3/8 | 5.76 | 3.845 | 2.88 | 2.304 | 1.987 |

### 400 WVDC

| No. P82-92ZN- | Cap., µF | Dia. | Lg. | 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 15 | .01 | 5/16 | 2 3/32 | $0.54 | $0.36 | $0.27 | $0.216 | $0.186 |
| 16 | .02 | 3/8 | 2 3/32 | .54 | .36 | .27 | .216 | .186 |
| 17 | .03 | 3/8 | 2 3/32 | .54 | .36 | .27 | .216 | .186 |
| 18 | .05 | 7/16 | 2 3/32 | .576 | .384 | .288 | .23 | .199 |
| 19 | .1 | 7/16 | 1 5/32 | .612 | .409 | .306 | .245 | .211 |
| 20 | .25 | 9/16 | 1 5/32 | .90 | .601 | .45 | .36 | .311 |
| 21 | .5 | 5/8 | 1 15/32 | 1.152 | .769 | .576 | .461 | .397 |
| 22 | 1.0 | 11/16 | 1 31/32 | 1.584 | 1.057 | .792 | .634 | .546 |
| 23 | 2.0 | 7/8 | 2 3/8 | 2.232 | 1.49 | 1.116 | .893 | .77 |
| 212 | 3.0 | 1 | 2 7/8 | 3.168 | 2.115 | 1.584 | 1.267 | 1.093 |
| 213 | 4.0 | 1 | 3 5/8 | 4.08 | 2.723 | 2.04 | 1.632 | 1.408 |

### 600 WVDC

| No. P82-92ZN- | Cap., µF | Dia. | Lg. | 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 24 | .01 | 3/8 | 2 3/32 | $0.54 | $0.36 | $0.27 | $0.216 | $0.186 |
| 25 | .02 | 3/8 | 2 3/32 | .576 | .384 | .288 | .23 | .199 |
| 26 | .03 | 7/16 | 2 3/32 | .612 | .409 | .306 | .245 | .211 |
| 27 | .05 | 1/2 | 2 3/32 | .648 | .433 | .324 | .259 | .224 |
| 28 | .1 | 7/16 | 1 5/32 | .72 | .481 | .36 | .288 | .248 |
| 29 | .25 | 5/8 | 1 5/32 | .972 | .649 | .486 | .389 | .335 |
| 30 | .5 | 11/16 | 1 19/32 | 1.26 | .841 | .63 | .504 | .435 |
| 31 | 1.0 | 13/16 | 2 | 2.16 | 1.442 | 1.08 | .864 | .745 |
| 32 | 2.0 | 1 | 2 3/8 | 2.52 | 1.682 | 1.26 | 1.008 | .869 |
| 214 | 3.0 | 1 | 3 3/8 | 4.08 | 2.723 | 2.04 | 1.632 | 1.408 |

## TYPE B161Y HIGH VOLTAGE CAPACITORS

Dual purpose for standard DC or low frequency AC high voltage use. Dual dielectric of film and Kraft paper, with special impregnant, permits replacing glass tube types. Standard tolerance, ±20%. Operating temp. range, −45° C to +100° C. No. 18 AWG wire leads; available with mtg. studs on special order.

| Cap., µF | WVDC | Size, In. Dia. x L. | Net Each, Lots of |  |  |  |
|---|---|---|---|---|---|---|
|  |  |  | 1-24 | 25-49 | 50-99 | 100-249 |
| .001 | 3000 | 1/2 x 1 3/8 | $1.332 | $0.889 | $0.666 | $0.533 |
| .002 | 3000 | 5/8 x 1 3/8 | 1.368 | .913 | .684 | .547 |
| .005 | 3000 | 5/8 x 1 9/16 | 1.44 | .961 | .72 | .576 |
| .01 | 3000 | 11/16 x 1 3/4 | 1.476 | .985 | .738 | .59 |
| .02 | 3000 | 3/4 x 1 13/16 | 1.728 | 1.153 | .864 | .691 |
| .03 | 3000 | 3/4 x 2 1/8 | 1.80 | 1.202 | .90 | .72 |
| .05 | 3000 | 7/8 x 2 1/8 | 1.872 | 1.25 | .936 | .749 |
| .1 | 3000 | 1 x 2 7/16 | 2.376 | 1.586 | 1.188 | .95 |
| .15 | 3000 | 1 x 3 1/16 | 2.988 | 1.994 | 1.494 | 1.195 |
| .25 | 3000 | 1 x 4 1/4 | 3.636 | 2.427 | 1.818 | 1.454 |
| .0005 | 5000 | 1/2 x 1 5/8 | 1.44 | .961 | .72 | .576 |
| .001 | 5000 | 5/8 x 1 5/8 | 1.476 | .985 | .738 | .59 |
| .002 | 5000 | 5/8 x 2 | 1.512 | 1.009 | .756 | .605 |
| .005 | 5000 | 11/16 x 2 | 1.548 | 1.033 | .744 | .619 |
| .01 | 5000 | 13/16 x 2 | 1.764 | 1.177 | .882 | .706 |
| .02 | 5000 | 7/8 x 2 3/8 | 1.98 | 1.322 | .99 | .792 |
| .03 | 5000 | 1 x 2 3/8 | 2.412 | 1.61 | 1.206 | .965 |
| .05 | 5000 | 1 x 2 15/16 | 2.808 | 1.874 | 1.404 | 1.123 |
| .1 | 5000 | 1 x 4 3/8 | 3.672 | 2.451 | 1.836 | 1.469 |
| .0005 | 8000 | 9/16 x 1 11/16 | 1.656 | 1.105 | .828 | .662 |
| .001 | 8000 | 5/8 x 1 11/16 | 1.764 | 1.177 | .882 | .706 |
| .002 | 8000 | 3/4 x 1 13/16 | 1.836 | 1.226 | .918 | .734 |
| .005 | 8000 | 7/8 x 1 15/16 | 1.98 | 1.322 | .99 | .792 |
| .01 | 8000 | 15/16 x 2 5/16 | 2.232 | 1.49 | 1.116 | .893 |
| .02 | 8000 | 1 x 2 15/16 | 2.808 | 1.874 | 1.404 | 1.123 |
| .03 | 8000 | 1 x 3 3/4 | 3.492 | 2.331 | 1.746 | 1.397 |
| .05 | 8000 | 1 x 5 3/8 | 3.96 | 2.643 | 1.98 | 1.584 |
| .0005 | 10,000 | 5/8 x 1 13/16 | 1.80 | 1.202 | .90 | .72 |
| .001 | 10,000 | 3/4 x 1 13/16 | 1.872 | 1.25 | .936 | .749 |
| .002 | 10,000 | 3/4 x 2 | 2.052 | 1.37 | 1.026 | .821 |
| .005 | 10,000 | 15/16 x 2 1/4 | 2.232 | 1.49 | 1.116 | .893 |
| .01 | 10,000 | 1 x 2 11/16 | 2.772 | 1.85 | 1.386 | 1.109 |
| .02 | 10,000 | 1 x 3 3/4 | 3.672 | 2.451 | 1.836 | 1.469 |
| .03 | 10,000 | 1 x 5 1/8 | 4.04 | 2.697 | 2.02 | 1.616 |
| .0005 | 15,000 | 5/8 x 2 13/16 | 1.98 | 1.322 | .99 | .792 |
| .001 | 15,000 | 3/4 x 2 13/16 | 2.232 | 1.49 | 1.116 | .893 |
| .002 | 15,000 | 7/8 x 3 | 2.628 | 1.754 | 1.314 | 1.051 |
| .005 | 15,000 | 1 x 3 9/16 | 3.348 | 2.235 | 1.674 | 1.339 |
| .01 | 15,000 | 1 x 5 1/4 | 4.04 | 2.697 | 2.02 | 1.616 |

# Capacitors and Filters

## AEROVOX CAPACITORS

### TYPE 3400 SKY CAP™ EPOXY-DIPPED MONOLITHIC CAPACITORS

3400, TTP

Feature environmental performance to MIL-C-11015 or MIL-C-20. Epoxy-dipped nonolithic construction with solder-coated opper leads. Choice of three temperature haracteristics. **WVDC:** 50 or 100 WVDC s noted; 200 WVDC available on request. Flash test voltage is 3 times rated voltage. **Size:** Types: 3417, .100″ sq. x .100″ thick; 418, .150″ sq. x .100″ th.; 3419, .200″ sq. x 125″ th.; 3420, .300″ sq. x .150″ th.; 3421, 400″ sq. x .150″ th.; 3422, .500″ sq. x .200″ th.

#### TEMPERATURE CHARACTERISTIC NPO

**Cap. Change:** ±30 ppm. **Temp. Range:** −55° C to +125° C. **Max. Dissipation:** 0.1% initial, 30 pF and higher; 0.2%, 1 V rms post. **Tolerance:** ±10% standard (unless otherwise noted); ±5%, ±20% and +80, −20% available on special order.

**100 WVDC**

| Aerovox Number | Cap., pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|
| 3417-100A-4R7D* | 4.7 | $0.45 | $0.34 | $0.27 | $0.23 | $0.19 |
| 3417-100A-6R8K | 6.8 | .36 | .27 | .22 | .18 | .15 |
| 3417-100A-100K | 10 | .36 | .27 | .22 | .18 | .15 |
| 3418-100A-150K | 15 | .36 | .27 | .22 | .18 | .15 |
| 3418-100A-220K | 22 | .36 | .27 | .22 | .18 | .15 |
| 3419-100A-330K | 33 | .33 | .25 | .20 | .17 | .14 |
| 3419-100A-470K | 47 | .60 | .45 | .36 | .30 | .25 |
| 3419-100A-680K | 68 | .60 | .45 | .36 | .30 | .25 |
| 3419-100A-101K | 100 | .66 | .50 | .40 | .33 | .28 |
| 3419-100A-151K | 150 | .69 | .52 | .41 | .35 | .29 |
| 3419-100A-221K | 220 | .78 | .59 | .47 | .39 | .33 |
| 3419-100A-331K | 330 | .90 | .68 | .54 | .45 | .38 |
| 3419-100A-471K | 470 | 1.05 | .79 | .63 | .53 | .44 |
| 3419-100A-681K | 680 | 1.26 | .95 | .76 | .63 | .53 |
| 3419-100A-102K | 1,000 | 1.56 | 1.17 | .94 | .78 | .65 |
| 3420-100A-152K | 1,500 | 1.23 | .92 | .74 | .62 | .51 |
| 3420-100A-222K | 2,200 | 1.62 | 1.22 | .97 | .81 | .68 |
| 3420-100A-332K | 3,300 | 2.10 | 1.58 | 1.26 | 1.05 | .88 |
| 3421-100A-472K | 4,700 | 3.06 | 2.30 | 1.84 | 1.53 | 1.28 |
| 3421-100A-682K | 6,800 | 4.14 | 3.11 | 2.48 | 2.07 | 1.73 |
| 3421-100A-103K | 10,000 | 5.64 | 4.23 | 3.38 | 2.82 | 2.35 |

*Tol., ±0.5 pF.

#### TEMPERATURE CHARACTERISTIC X7R

**Cap. Change:** ±15%. **Temp. Range:** −55° C to +125° C. **Max. Dissipation:** 2.0% initial; 2.5%, 1 V rms post. **Tolerance:** ±10% as listed; ±5%, ±20% and +80, −20% available on special order.

**100 WVDC**

| Aerovox Number | Cap., pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|
| 3417-100C-151K | 150 | $0.36 | $0.27 | $0.22 | $0.18 | $0.15 |
| 3417-100C-221K | 220 | .36 | .27 | .22 | .18 | .15 |
| 3417-100C-331K | 330 | .36 | .27 | .22 | .18 | .15 |
| 3418-100C-471K | 470 | .36 | .27 | .22 | .18 | .15 |
| 3418-100C-681K | 680 | .36 | .27 | .22 | .18 | .15 |
| 3419-100C-102K | 1,000 | .33 | .25 | .20 | .17 | .14 |

#### TEMPERATURE CHARACTERISTIC X7R 100 WVDC (CONTINUED)

| Aerovox Number | Cap., pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|
| 3419-100C-152K | 1,500 | $0.33 | $0.25 | $0.20 | $0.17 | $0.14 |
| 3419-100C-222K | 2,200 | .42 | .32 | .25 | .21 | .18 |
| 3419-100C-332K | 3,300 | .45 | .34 | .27 | .23 | .19 |
| 3419-100C-472K | 4,700 | .45 | .34 | .27 | .23 | .19 |
| 3419-100C-682K | 6,800 | .51 | .38 | .31 | .26 | .21 |
| 3419-100C-103K | 10,000 | .60 | .45 | .36 | .30 | .25 |
| 3420-100C-153K | 15,000 | .75 | .56 | .45 | .38 | .31 |
| 3420-100C-223K | 22,000 | .87 | .65 | .52 | .44 | .36 |
| 3420-100C-333K | 33,000 | .96 | .72 | .58 | .48 | .40 |
| 3420-100C-473K | 47,000 | 1.11 | .83 | .67 | .56 | .46 |
| 3420-100C-683K | 68,000 | 1.41 | 1.06 | .85 | .71 | .59 |
| 3420-100C-104K | 100,000 | 1.74 | 1.31 | 1.04 | .87 | .73 |
| 3421-100C-154K | 150,000 | 3.54 | 2.66 | 2.12 | 1.77 | 1.48 |
| 3421-100C-224K | 220,000 | 3.72 | 2.79 | 2.23 | 1.86 | 1.55 |
| 3422-100C-334K | 330,000 | 4.68 | 3.51 | 2.81 | 2.34 | 1.95 |
| 3422-100C-474K | 470,000 | 6.06 | 4.55 | 3.64 | 3.03 | 2.53 |

#### TEMPERATURE CHARACTERISTIC Z5U

**Cap. Change:** +22, −56%. **Temp. Range:** +10° C to +85° C. **Max. Dissipation:** 2.5% initial; 3.0%, 1 V rms post. **Tolerance:** ±20% as listed; ±5%, ±10% and +80, −20% available on special order.

**50 WVDC**

| | | | | | | |
|---|---|---|---|---|---|---|
| 3419-050E-103M | 10,000 | $0.42 | $0.32 | $0.25 | $0.21 | $0.18 |
| 3419-050E-153M | 15,000 | .45 | .34 | .27 | .23 | .19 |
| 3419-050E-223M | 22,000 | .51 | .38 | .31 | .26 | .21 |
| 3419-050E-333M | 33,000 | .63 | .47 | .38 | .32 | .26 |
| 3419-050E-473M | 47,000 | .69 | .52 | .41 | .35 | .29 |
| 3419-050E-683M | 68,000 | .81 | .61 | .49 | .41 | .34 |
| 3419-050E-104M | 100,000 | .96 | .72 | .58 | .48 | .40 |
| 3419-050E-154M | 150,000 | 1.08 | .81 | .65 | .54 | .45 |
| 3420-050E-224M | 220,000 | .81 | .61 | .49 | .41 | .34 |
| 3420-050E-334M | 330,000 | .96 | .72 | .58 | .48 | .40 |
| 3420-050E-474M | 470,000 | 1.14 | .86 | .68 | .57 | .48 |
| 3420-050E-684M | 680,000 | 1.23 | .92 | .74 | .62 | .51 |
| 3420-050E-105M | 1.0 μF | 1.59 | 1.19 | .95 | .80 | .66 |
| 3421-050E-155M | 1.5 μF | 2.34 | 1.76 | 1.40 | 1.17 | .98 |
| 3421-050E-225M | 2.2 μF | 3.18 | 2.39 | 1.91 | 1.59 | 1.33 |
| 3422-050E-335M | 3.3 μF | 4.47 | 3.35 | 2.68 | 2.24 | 1.86 |
| 3422-050E-475M | 4.7 μF | 5.70 | 4.28 | 3.42 | 2.85 | 2.38 |

**100 WVDC**

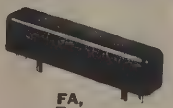
| | | | | | | |
|---|---|---|---|---|---|---|
| 3419-100E-682M | 6,800 | $0.30 | $0.23 | $0.18 | $0.15 | $0.13 |
| 3419-100E-103M | 10,000 | .48 | .36 | .29 | .24 | .20 |
| 3419-100E-153M | 15,000 | .51 | .38 | .31 | .26 | .21 |
| 3419-100E-223M | 22,000 | .60 | .45 | .36 | .30 | .25 |
| 3419-100E-333M | 33,000 | .72 | .54 | .43 | .36 | .30 |
| 3419-100E-473M | 47,000 | .81 | .61 | .49 | .41 | .34 |
| 3419-100E-683M | 68,000 | .96 | .72 | .58 | .48 | .40 |
| 3420-100E-104M | 100,000 | .81 | .61 | .49 | .41 | .34 |
| 3420-100E-154M | 150,000 | .96 | .72 | .58 | .48 | .40 |
| 3420-100E-224M | 220,000 | 1.14 | .86 | .68 | .57 | .48 |
| 3420-100E-334M | 330,000 | 1.23 | .92 | .74 | .62 | .51 |
| 3420-100E-474M | 470,000 | 1.59 | 1.19 | .95 | .80 | .66 |
| 3421-100E-684M | 680,000 | 1.74 | 1.31 | 1.04 | .87 | .73 |
| 3421-100E-105M | 1.0 μF | 2.19 | 1.64 | 1.31 | 1.10 | .91 |
| 3422-100E-155M | 1.5 μF | 2.94 | 2.21 | 1.76 | 1.47 | 1.23 |
| 3422-100E-225M | 2.2 μF | 3.99 | 2.99 | 2.39 | 2.00 | 1.66 |

### TYPE P30ZN HIGH TEMPERATURE "BATHTUBS"

Aerolene impregnated, metallized paper capacitors in bathtub, hermetically-sealed case. Temperature range: −65° C to +125° C at full rating. Std. tolerance ±20%.

| Cap., μF | WV DC | Net Ea., Lots of 1-9 | 10-24 | 25-49 | Cap., μF | WV DC | Net Ea., Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|---|---|---|---|---|---|
| 3.0 | 150 | $4.40 | $2.937 | $2.20 | .25 | 400 | $3.36 | $2.243 | $1.68 |
| 4.0 | 150 | 5.28 | 3.524 | 2.64 | .5 | 400 | 3.92 | 2.617 | 1.96 |
| 5.0 | 150 | 5.84 | 3.898 | 2.92 | 1.0 | 400 | 4.88 | 3.257 | 2.44 |
| 6.0 | 150 | 6.08 | 4.058 | 3.04 | 2.0 | 400 | 6.72 | 4.486 | 3.36 |
| 8.0 | 150 | 7.04 | 4.699 | 3.52 | 3.0 | 400 | 8.56 | 5.714 | 4.28 |
| 10.0 | 150 | 8.12 | 5.42 | 4.06 | 4.0 | 400 | 10.40 | 6.942 | 5.20 |
| 12.0 | 150 | 9.08 | 6.061 | 4.54 | 5.0 | 400 | 12.32 | 8.224 | 6.16 |
| 15.0 | 150 | 11.00 | 7.343 | 5.50 | .1 | 600 | 3.32 | 2.216 | 1.66 |
| .1 | 200 | 2.88 | 1.922 | 1.44 | .25 | 600 | 3.72 | 2.483 | 1.86 |
| .25 | 200 | 3.20 | 2.136 | 1.60 | .5 | 600 | 4.36 | 2.91 | 2.18 |
| .5 | 200 | 3.24 | 2.163 | 1.62 | 1.0 | 600 | 5.80 | 3.872 | 2.90 |
| 1.0 | 200 | 3.80 | 2.537 | 1.90 | 2.0 | 600 | 7.20 | 4.806 | 3.60 |
| 2.0 | 200 | 4.72 | 3.151 | 2.36 | 3.0 | 600 | 9.40 | 6.275 | 4.70 |
| .1 | 400 | 3.08 | 2.056 | 1.54 | 4.0 | 600 | 11.92 | 7.957 | 5.96 |

## COLLINS MECHANICAL FILTERS


FA, Z

J

Provide high adjacent channel separation through steep-skirted selectivity with flat-topped frequency response. Electrically and mechanically stable over −40° C to +85° C range with frequency variations of only 2 to 10 ppm/° C. **Type J** (e.g., F455J-05) is used in Collins 75A receivers; **FA types,** Collins S-Line. **Type Z** is for commercial and industrial SSB uses. **Size:** FA and Z, 2.5″ w. x .528″ d. x 6″ h. of molded phenolic, hermetically sealed. J type .775″ dia. x 2¾″ h. metal case, hermetically sealed.

| Collins Number | Bandwidth, kHz Nominal | Bandwidth, kHz Maximum | Net Each, Lots of 1-4 | Net Each, Lots of 5-24 |
|---|---|---|---|---|
| F455FA-05 | 0.5 at 6 dB | 2.5 at 60 dB | $43.00 | $41.00 |
| F455FA-08 | 0.8 at 8 dB | 4.0 at 60 dB | 43.00 | 41.00 |
| F455FA-15 | 1.5 at 6 dB | 3.5 at 60 dB | 42.50 | 40.50 |
| F455FA-21 | 2.1 at 6 dB | 5.3 at 60 dB | 25.00 | 25.00 |
| F455FA-27 | 2.7 at 6 dB | 6.5 at 60 dB | 27.00 | 27.00 |
| F455J-05 | 0.5 at 3 dB | 2.5 at 60 dB | 58.00 | 55.00 |
| F455J-15 | 1.5 at 6 dB | 3.5 at 60 dB | 43.50 | 41.50 |
| F455J-21 | 2.1 at 6 dB | 5.3 at 60 dB | 43.00 | 41.00 |
| F455Z-16 | 1.7 at 3 dB | 5.0 (USB) | 45.00 | 41.95 |
| F455Z-17 | 1.7 at 3 dB | 5.0 (LSB) | 45.00 | 41.95 |

# AEROVOX Hi-Q® Industrial Ceramic Capacitors

## MIL-C-11015D, CK12-CK16 CERAMICS

Ceramic dielectric general purpose capacitors per MIL-C-11015D. Capacitance tolerance, ±20% (±10% available). Rated voltage, 100 or 50 volts DC. Size (dia. x lgth.), CK12—.090″ x .160″; CK13—.090″ x .250″; CK14—.140″ x .390″; CK15—.250″ x .500″; CK16—.350″ x .690″.

### STOCK VALUES, ±10% TOLERANCE PRICES

| Cap., pF | MIL-C-11051D Type | WV DC | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|
| 10 | CK12BX100K* | 100 | $ 0.856 | $ 0.571 | $ 0.428 | $ 0.342 |
| 12 | CK12BX120K | 100 | .856 | .571 | .428 | .342 |
| 15 | CK12BX150K* | 100 | .856 | .571 | .428 | .342 |
| 18 | CK12BX180K | 100 | .856 | .571 | .428 | .342 |
| 22 | CK12BX220K* | 100 | .856 | .571 | .428 | .342 |
| 27 | CK12BX270K | 100 | .856 | .571 | .428 | .342 |
| 33 | CK12BX330K* | 100 | .856 | .571 | .428 | .342 |
| 39 | CK12BX390K | 100 | .856 | .571 | .428 | .342 |
| 47 | CK12BX470K* | 100 | .856 | .571 | .428 | .342 |
| 56 | CK12BX560K | 100 | .856 | .571 | .428 | .342 |
| 68 | CK12BX680K* | 100 | .856 | .571 | .428 | .342 |
| 82 | CK12BX820K | 100 | .856 | .571 | .428 | .342 |
| 100 | CK12BX101K* | 100 | .856 | .571 | .428 | .342 |
| 120 | CK12BX121K | 100 | .856 | .571 | .428 | .342 |
| 150 | CK12BX151K* | 100 | .856 | .571 | .428 | .342 |
| 180 | CK12BX181K | 100 | .856 | .571 | .428 | .342 |
| 220 | CK12BX221K* | 100 | .856 | .571 | .428 | .342 |
| 270 | CK12BX271K | 100 | .856 | .571 | .428 | .342 |
| 330 | CK12BX331K* | 100 | .856 | .571 | .428 | .342 |
| 390 | CK12BX391K | 100 | .856 | .571 | .428 | .342 |
| 470 | CK12BX471K* | 100 | .856 | .571 | .428 | .342 |
| 560 | CK12BX561K | 100 | .856 | .571 | .428 | .342 |
| 680 | CK12BX681K* | 100 | .856 | .571 | .428 | .342 |
| 820 | CK12BX821K | 100 | .856 | .571 | .428 | .342 |
| 1000 | CK12BX102K* | 100 | .856 | .571 | .428 | .342 |
| 1200 | CK12BX122K | 100 | .856 | .571 | .428 | .342 |
| 1500 | CK12BX152K* | 100 | .856 | .571 | .428 | .342 |
| 1800 | CK12BX182K | 100 | .856 | .571 | .428 | .342 |
| 2200 | CK12BX222K* | 100 | .856 | .571 | .428 | .342 |
| 2700 | CK12BX272K | 100 | .856 | .571 | .428 | .342 |
| 3300 | CK12BX332K* | 100 | .856 | .571 | .428 | .342 |
| 3900 | CK12BX392K | 100 | .856 | .571 | .428 | .342 |
| 4700 | CK12BX472K* | 100 | .856 | .571 | .428 | .342 |
| 5600 | CK13BX562K | 100 | .988 | .659 | .494 | .395 |
| 6800 | CK13BX682K* | 100 | .988 | .659 | .494 | .395 |
| 8200 | CK13BX822K | 100 | .988 | .659 | .494 | .395 |
| 10K | CK13BX103K* | 100 | .988 | .659 | .494 | .395 |
| 12K | CK14BX123K | 100 | 1.804 | 1.204 | .902 | .722 |
| 15K | CK14BX153K* | 100 | 1.804 | 1.204 | .902 | .722 |
| 18K | CK14BX183K | 100 | 1.804 | 1.204 | .902 | .722 |
| 22K | CK14BX223K* | 100 | 1.804 | 1.204 | .902 | .722 |
| 27K | CK14BX273K | 100 | 1.804 | 1.204 | .902 | .722 |
| 33K | CK14BX333K* | 100 | 2.14 | 1.428 | 1.07 | .856 |
| 39K | CK14BX393K | 100 | 2.14 | 1.428 | 1.07 | .856 |
| 47K | CK14BX473K* | 100 | 2.14 | 1.428 | 1.07 | .856 |
| 56K | CK14BR563K | 100 | 2.52 | 1.682 | 1.26 | 1.008 |
| 68K | CK14BR683K* | 100 | 2.52 | 1.682 | 1.26 | 1.008 |
| 82K | CK14BR823K | 100 | 2.52 | 1.682 | 1.26 | 1.008 |
| 100K | CK14BR104K* | 100 | 2.52 | 1.682 | 1.26 | 1.008 |
| 100K | CK15BX104K* | 100 | 2.788 | 1.861 | 1.394 | 1.115 |
| 120K | CK15BR124K | 100 | 3.72 | 2.483 | 1.86 | 1.488 |
| 150K | CK15BR154K* | 100 | 3.72 | 2.483 | 1.86 | 1.488 |
| 180K | CK15BR184K | 100 | 4.08 | 2.723 | 2.04 | 1.632 |
| 220K | CK15BR224K* | 100 | 4.08 | 2.723 | 2.04 | 1.632 |
| 270K | CK15BR274K | 100 | 5.80 | 3.872 | 2.90 | 2.32 |
| 330K | CK15BR334K* | 100 | 5.80 | 3.872 | 2.90 | 2.32 |
| 470K | CK16BR474K* | 100 | 24.64 | 16.447 | 12.32 | 9.856 |
| 1000K | CK16BR105K* | 100 | 25.80 | 17.222 | 12.90 | 10.32 |
| 5600 | CK12BX562K | 50 | .856 | .571 | .428 | .342 |
| 6800 | CK12BX682K* | 50 | .936 | .625 | .468 | .374 |
| 8200 | CK12BX822K | 50 | .936 | .625 | .468 | .374 |
| 10K | CK12BX103K* | 50 | .936 | .625 | .468 | .374 |
| 12K | CK13BX123K | 50 | 1.092 | .729 | .546 | .437 |
| 15K | CK13BX153K* | 50 | 1.092 | .729 | .546 | .437 |
| 18K | CK13BX183K | 50 | 1.092 | .729 | .546 | .437 |
| 22K | CK13BX223K* | 50 | 1.092 | .729 | .546 | .437 |
| 27K | CK13BR273K | 50 | 1.448 | .967 | .724 | .579 |
| 33K | CK13BR333K* | 50 | 1.448 | .967 | .724 | .579 |
| 39K | CK13BR393K | 50 | 1.584 | 1.057 | .792 | .634 |
| 47K | CK13BR473K* | 50 | 1.584 | 1.057 | .792 | .634 |
| 120K | CK14BR124K | 50 | 3.16 | 2.109 | 1.58 | 1.264 |
| 150K | CK14BR154K* | 50 | 3.16 | 2.109 | 1.58 | 1.264 |
| 180K | CK14BR184K | 50 | 4.36 | 2.91 | 2.18 | 1.744 |
| 220K | CK14BR224K* | 50 | 4.36 | 2.91 | 2.18 | 1.744 |
| 270K | CK14BR274K | 50 | 5.16 | 3.444 | 2.58 | 2.064 |
| 470K | CK15BR474K* | 50 | 8.80 | 5.874 | 4.40 | 3.52 |
| 1000K | CK15BR105K* | 50 | 13.00 | 8.678 | 6.50 | 5.20 |
| 2200K | CK16BR225K* | 50 | 28.80 | 19.224 | 14.40 | 11.52 |
| 3300K | CK16BR335K* | 50 | 36.00 | 24.03 | 18.00 | 14.40 |

*Also available in ±20% tolerance, to order change suffix **K** to **M** (e.g., CK16BR335**M**).

### ±20% TOLERANCE PRICES

| Cap., pF | WV DC | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|
| 10–4700 | 100 | $ 0.753 | $ 0.503 | $ 0.377 | $ 0.301 |
| 6800–10K | 100 | .869 | .58 | .435 | .348 |
| 15K–22K | 100 | 1.588 | 1.06 | .794 | .635 |
| 33K–47K | 100 | 1.883 | 1.257 | .942 | .753 |
| 68K–100K | 100 | 2.218 | 1.48 | 1.109 | .887 |
| 100K* | 100 | 2.453 | 1.633 | 1.227 | .981 |
| 150K | 100 | 3.274 | 2.167 | 1.637 | 1.309 |
| 220K | 100 | 3.591 | 2.396 | 1.795 | 1.436 |
| 330K | 100 | 5.104 | 3.307 | 2.552 | 2.042 |
| 470K | 100 | 21.683 | 14.473 | 10.842 | 8.673 |
| 1000K | 100 | 22.704 | 15.155 | 11.352 | 9.082 |

*Stock Value, CK15BX104M.

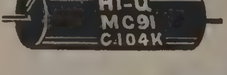
## CK12-CK16 CERAMICS (CONT'D)

### ±20% TOLERANCE PRICES

| Cap., pF | WV DC | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|
| 6800–10K | 50 | $ 0.824 | $ 0.55 | $ 0.412 | $ 0.329 |
| 15K–22K | 50 | .961 | .642 | .481 | .385 |
| 33K | 50 | 1.274 | .851 | .637 | .51 |
| 47K | 50 | 1.394 | .93 | .697 | .558 |
| 150K | 50 | 2.781 | 1.856 | 1.39 | 1.112 |
| 220K | 50 | 3.837 | 2.561 | 1.918 | 1.535 |
| 470K | 50 | 7.744 | 5.169 | 3.872 | 3.098 |
| 1000K | 50 | 11.44 | 6.737 | 5.72 | 4.576 |
| 2200K | 50 | 25.344 | 16.917 | 12.672 | 10.138 |
| 3300K | 50 | 31.68 | 21.146 | 15.84 | 12.672 |

**CKR12, CKR13 high reliability versions of above also available write for information.**

## MOLDED CERALAM® MINIATURE TUBULARS



Molded miniature ceramic tubula capacitors that meet environmental requirements of MIL-C-1101 and MIL-C-39014. Rated 10 WVDC except as noted. Lead are tin copper or gold dumet, a indicated below.

### TOLERANCE ±10%

| Aerovox Number | Cap., µF | Size, In. Dia. x L. | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-24 |
|---|---|---|---|---|---|---|
| MC91C153K* | .015 | .200 x .500 | $ 9.60 | $6.408 | $ 3.80 | $ 3.31 |
| MC91C223K* | .022 | .200 x .500 | 9.60 | 6.408 | 4.80 | 3.31 |
| MC91C333K* | .033 | .200 x .500 | 9.60 | 6.408 | 4.80 | 3.31 |
| MC91C473K* | .047 | .200 x .500 | 9.60 | 6.408 | 4.80 | 3.31 |
| MC91C683K* | .068 | .200 x .500 | 9.60 | 6.408 | 4.80 | 3.31 |
| MC91C104K* | .1 | .200 x .500 | 10.80 | 7.209 | 5.40 | 3.72 |
| MC205C104K† | .1 | .140 x .390 | 8.40 | 5.607 | 4.20 | 2.89 |
| MC905C154K*† | .15 | .200 x .500 | 9.60 | 6.408 | 4.80 | 3.31 |
| MC905C224K*† | .22 | .200 x .500 | 9.60 | 6.408 | 4.80 | 3.31 |
| MC905C254K*† | .25 | .190 x .500 | 9.60 | 6.408 | 4.80 | 3.31 |
| MC855C504K† | .5 | .250 x .500 | 16.60 | 11.081 | 8.30 | 5.72 |
| MC865C105K† | 1.0 | .250 x .690 | 30.00 | 20.025 | 15.00 | 10.35 |
| MC875C205K† | 2.0 | .350 x .690 | 60.00 | 40.05 | 30.00 | 20.70 |

### TOLERANCE ±20%

| Aerovox Number | Cap., µF | Size, In. Dia. x L. | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-24 |
|---|---|---|---|---|---|---|
| MC91C153M* | .015 | .200 x .500 | $ 6.40 | $4.272 | $ 3.20 | $ 2.20 |
| MC91C223M* | .022 | .200 x .500 | 6.40 | 4.272 | 3.20 | 2.20 |
| MC91C333M* | .033 | .200 x .500 | 6.40 | 4.272 | 3.20 | 2.20 |
| MC91C473M | .047 | .200 x .500 | 6.40 | 4.272 | 3.20 | 2.20 |
| MC91C683M* | .068 | .200 x .500 | 6.40 | 4.272 | 3.20 | 2.20 |
| MC91C104M* | .1 | .200 x .500 | 7.20 | 4.806 | 3.60 | 2.48 |
| MC205C104M† | .1 | .140 x .390 | 5.60 | 3.738 | 2.80 | 1.93 |
| MC905C154M*† | .15 | .200 x .500 | 6.40 | 4.272 | 3.20 | 2.20 |
| MC905C224M*† | .22 | .200 x .500 | 6.40 | 4.272 | 3.20 | 2.20 |
| MC905C254M*† | .25 | .190 x .500 | 6.40 | 4.272 | 3.20 | 2.20 |
| MC855C504M† | .5 | .250 x .500 | 11.00 | 7.343 | 5.50 | 3.79 |
| MC865C105M† | 1.0 | .250 x .690 | 20.00 | 13.35 | 10.00 | 6.90 |
| MC875C205M† | 2.0 | .350 x .690 | 40.00 | 26.70 | 20.00 | 13.80 |

*Furnished with gold dumet leads until present stocks are depleted; then tin copper leads will be standard. †Rated 50 WVDC

## MOLDED CERALAM MC71 CORDWOOD-SIZE CERAMIC TUBULARS

Meet CK13BX size requirement per MIL-C-11015. Perfect size fo cordwood packaging—only .250 x .090″. Rated 100 WVDC. Suffi **K** indicates ±10% tolerance; **M**, ±20% tolerance.

| Cap., pF | Aerovox Number | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|
| 10 | MC71A100AK | $0.576 | $0.384 | $0.288 | $0.23 |
| 12 | MC71A120AK | .576 | .384 | .288 | .23 |
| 15 | MC71A150AK | .576 | .384 | .288 | .23 |
| 18 | MC71A180AK | .576 | .384 | .288 | .23 |
| 22 | MC71A220AK | .576 | .384 | .288 | .23 |
| 27 | MC71A270AK | .576 | .384 | .288 | .23 |
| 33 | MC71A330AK | .576 | .384 | .288 | .23 |
| 39 | MC71A390AK | .576 | .384 | .288 | .23 |
| 47 | MC71A470AK | .576 | .384 | .288 | .23 |
| 51 | MC71A510AK | .576 | .384 | .288 | .23 |
| 56 | MC71A560AK | .576 | .384 | .288 | .23 |
| 62 | MC71A620AK | .576 | .384 | .288 | .23 |
| 68 | MC71A680AK | .576 | .384 | .288 | .23 |
| 75 | MC71A750AK | .576 | .384 | .288 | .23 |
| 82 | MC71A820AK | .576 | .384 | .288 | .23 |
| 91 | MC71A910AK | .576 | .384 | .288 | .23 |
| 100 | MC71A101AK | .576 | .384 | .288 | .23 |
| 120 | MC71A121AK | .576 | .384 | .288 | .23 |
| 150 | MC71A151AK | .576 | .384 | .288 | .23 |
| 180 | MC71A181AK | .576 | .384 | .288 | .23 |
| 220 | MC71A221AK | .576 | .384 | .288 | .23 |
| 270 | MC71A271AK | .576 | .384 | .288 | .23 |
| 330 | MC71B331AK | .576 | .384 | .288 | .23 |
| 390 | MC71B391AK | .576 | .384 | .288 | .23 |
| 470 | MC71B471AK | .576 | .384 | .288 | .23 |
| 560 | MC71B561AK | .576 | .384 | .288 | .23 |
| 680 | MC71B681AK | .576 | .384 | .288 | .23 |
| 820 | MC71B821AK | .576 | .384 | .288 | .23 |
| 1000 | MC71B102AK | .576 | .384 | .288 | .23 |
| 1200 | MC71B122AK | 1.188 | .793 | .594 | .475 |
| 1500 | MC71B152AK | 1.188 | .793 | .594 | .475 |
| 1800 | MC71B182AK | 1.188 | .793 | .594 | .475 |

AEROVOX Hi-Q®

# Industrial Ceramic Capacitors

## MIL-C-11015D, CK05-CK06
## EXTENDED RANGE
## CERAMIC CAPACITORS

Meet MIL-C-11015D, Type CK05-CK06 specifications. Capacitance tolerance, ±10% (suffix **K**) or ±20% (suffix **M**) as indicated. Working voltage, 200, 100 or 50 volts DC.

### STOCK VALUES, ±10% TOLERANCE PRICES

| Cap., pF | MIL-C-11015D Type | WV DC | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|
| 10 | CK05BX100K* | 200 | $ 0.432 | $0.288 | $0.216 | $0.173 |
| 12 | CK05BX120K | 200 | .432 | .288 | .216 | .173 |
| 15 | CK05BX150K* | 200 | .432 | .288 | .216 | .173 |
| 18 | CK05BX180K | 200 | .432 | .288 | .216 | .173 |
| 22 | CK05BX220K* | 200 | .432 | .288 | .216 | .173 |
| 27 | CK05BX270K | 200 | .432 | .288 | .216 | .173 |
| 33 | CK05BX330K* | 200 | .432 | .288 | .216 | .173 |
| 39 | CK05BX390K | 200 | .432 | .288 | .216 | .173 |
| 47 | CK05BX470K* | 200 | .432 | .288 | .216 | .173 |
| 56 | CK05BX560K | 200 | .432 | .288 | .216 | .173 |
| 68 | CK05BX680K* | 200 | .432 | .288 | .216 | .173 |
| 82 | CK05BX820K | 200 | .432 | .288 | .216 | .173 |
| 100 | CK05BX101K* | 200 | .432 | .288 | .216 | .173 |
| 120 | CK05BX121K | 200 | .432 | .288 | .216 | .173 |
| 150 | CK05BX151K* | 200 | .432 | .288 | .216 | .173 |
| 180 | CK05BX181K | 200 | .432 | .288 | .216 | .173 |
| 220 | CK05BX221K* | 200 | .432 | .288 | .216 | .173 |
| 270 | CK05BX271K | 200 | .432 | .288 | .216 | .173 |
| 330 | CK05BX331K* | 200 | .432 | .288 | .216 | .173 |
| 390 | CK05BX391K | 200 | .432 | .288 | .216 | .173 |
| 470 | CK05BX471K* | 200 | .432 | .288 | .216 | .173 |
| 560 | CK05BX561K | 200 | .432 | .288 | .216 | .173 |
| 680 | CK05BX681K* | 200 | .432 | .288 | .216 | .173 |
| 820 | CK05BX821K | 200 | .432 | .288 | .216 | .173 |
| 000 | CK05BX102K* | 200 | .432 | .288 | .216 | .173 |
| 200 | CK06BX122K | 200 | .66 | .441 | .33 | .264 |
| 500 | CK06BX152K* | 200 | .66 | .441 | .33 | .264 |
| 800 | CK06BX182K | 200 | .66 | .441 | .33 | .264 |
| 200 | CK06BX222K* | 200 | .66 | .441 | .33 | .264 |
| 700 | CK06BX272K | 200 | .66 | .441 | .33 | .264 |
| 300 | CK06BX332K* | 200 | .74 | .494 | .37 | .296 |
| 900 | CK06BX392K | 200 | .74 | .494 | .37 | .296 |
| 700 | CK06BX472K* | 200 | .74 | .494 | .37 | .296 |
| 600 | CK06BX562K | 200 | .74 | .494 | .37 | .296 |
| 800 | CK06BX682K* | 200 | .76 | .507 | .38 | .304 |
| 200 | CK06BX822K | 200 | .76 | .507 | .38 | .304 |
| 10K | CK06BX103K* | 200 | .76 | .507 | .38 | .304 |
| 200 | CK05BX122K | 100 | .92 | .614 | .46 | .368 |
| 500 | CK05BX152K* | 100 | .92 | .614 | .46 | .368 |
| 800 | CK05BX182K | 100 | .92 | .614 | .46 | .368 |
| 200 | CK05BX222K* | 100 | .948 | .633 | .474 | .379 |
| 700 | CK05BX272K | 100 | .948 | .633 | .474 | .379 |
| 300 | CK05BX332K* | 100 | .948 | .633 | .474 | .379 |
| 900 | CK05BX392K | 100 | .948 | .633 | .474 | .379 |
| 700 | CK05BX472K* | 100 | .948 | .633 | .474 | .379 |
| 600 | CK05BX562K | 100 | .948 | .633 | .474 | .379 |
| 800 | CK05BX682K* | 100 | 1.10 | .734 | .55 | .44 |
| 200 | CK05BX822K | 100 | 1.10 | .734 | .55 | .44 |
| 10K | CK05BX103K* | 100 | 1.10 | .734 | .55 | .44 |
| 12K | CK06BX123K | 100 | .96 | .641 | .48 | .384 |
| 15K | CK06BX153K* | 100 | .96 | .641 | .48 | .384 |
| 18K | CK06BX183K | 100 | 1.08 | .721 | .54 | .432 |
| 22K | CK06BX223K* | 100 | 1.08 | .721 | .54 | .432 |
| 27K | CK06BX273K | 100 | 1.12 | .748 | .56 | .448 |
| 33K | CK06BX333K* | 100 | 1.12 | .748 | .56 | .448 |
| 39K | CK06BX393K | 100 | 1.32 | .881 | .66 | .528 |
| 47K | CK06BX473K* | 100 | 1.36 | .908 | .68 | .544 |
| 56K | CK06BX563K | 100 | 1.42 | .948 | .71 | .568 |
| 68K | CK06BX683K* | 100 | 1.42 | .948 | .71 | .568 |
| 82K | CK06BX823K | 100 | 1.44 | .961 | .72 | .576 |
| 100K | CK06BX104K* | 100 | 1.44 | .961 | .72 | .576 |
| 12K | CK05BX123K | 50 | 1.212 | .809 | .606 | .485 |
| 15K | CK05BX153K* | 50 | 1.212 | .809 | .606 | .485 |
| 18K | CK05BX183K | 50 | 1.212 | .809 | .606 | .485 |
| 22K | CK05BX223K* | 50 | 1.212 | .809 | .606 | .485 |
| 27K | CK05BX273K | 50 | 1.212 | .809 | .606 | .485 |
| 33K | CK05BX333K* | 50 | 1.836 | 1.226 | .918 | .734 |
| 39K | CK05BX393K | 50 | 1.836 | 1.226 | .918 | .734 |
| 47K | CK05BX473K* | 50 | 1.836 | 1.226 | .918 | .734 |
| 56K | CK05BX563K | 50 | 2.112 | 1.41 | 1.056 | .845 |
| 68K | CK05BX683K* | 50 | 2.112 | 1.41 | 1.056 | .845 |
| 82K | CK05BX823K | 50 | 2.42 | 1.615 | 1.21 | .968 |
| 100K | CK05BX104K* | 50 | 2.42 | 1.615 | 1.21 | .968 |
| 120K | CK06BX124K | 50 | 2.20 | 1.469 | 1.10 | .88 |
| 150K | CK06BX154K* | 50 | 2.20 | 1.469 | 1.10 | .88 |
| 180K | CK06BX184K | 50 | 3.048 | 2.035 | 1.524 | 1.219 |
| 220K | CK06BX224K* | 50 | 3.048 | 2.035 | 1.524 | 1.219 |
| 270K | CK06BX274K | 50 | 5.16 | 3.444 | 2.58 | 2.064 |
| 330K | CK06BX334K* | 50 | 5.16 | 3.444 | 2.58 | 2.064 |
| 390K | CK06BX394K | 50 | 7.20 | 4.806 | 3.60 | 2.88 |
| 470K | CK06BX474K* | 50 | 7.20 | 4.806 | 3.60 | 2.88 |
| 560K | CK06BX564K | 50 | 9.20 | 6.141 | 4.60 | 3.68 |
| 680K | CK06BX684K* | 50 | 9.20 | 6.141 | 4.60 | 3.68 |
| 820K | CK06BX824K | 50 | 12.76 | 8.517 | 6.38 | 5.104 |
| 000K | CK06BX105K* | 50 | 12.76 | 8.517 | 6.38 | 5.104 |

*Also available in ±20% tolerance; to order, change suffix **K** to **M** (e.g., CK06BX105**M**).

### EXTENDED RANGE CAPACITORS (CONT'D)

### ±20% TOLERANCE PRICES

| Cap., pF | WV DC | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|
| 10–1000 | 200 | $ 0.38 | $0.253 | $0.19 | $0.152 |
| 1500–2200 | 200 | .581 | .388 | .29 | .232 |
| 3300–4700 | 200 | .651 | .435 | .326 | .261 |
| 6800–10K | 200 | .669 | .446 | .334 | .268 |
| 1500 | 100 | .81 | .54 | .405 | .324 |
| 2200–4700 | 100 | .834 | .557 | .417 | .334 |
| 6800–10K | 100 | .968 | .646 | .484 | .387 |
| 15K | 100 | .845 | .561 | .422 | .338 |
| 22K | 100 | .95 | .635 | .475 | .38 |
| 33K | 100 | .986 | .658 | .493 | .394 |
| 47K | 100 | 1.197 | .799 | .576 | .479 |
| 68K | 100 | 1.25 | .834 | .625 | .50 |
| 100K | 100 | 1.267 | .846 | .634 | .507 |
| 15K–22K | 50 | 1.067 | .712 | .533 | .427 |
| 33K–47K | 50 | 1.616 | 1.079 | .808 | .646 |
| 68K | 50 | 1.859 | 1.241 | .929 | .744 |
| 100K | 50 | 2.13 | 1.421 | 1.065 | .852 |
| 150K | 50 | 1.936 | 1.293 | .968 | .774 |
| 220K | 50 | 2.682 | 1.79 | 1.341 | 1.073 |
| 330K | 50 | 4.541 | 3.031 | 2.27 | 1.816 |
| 470K | 50 | 6.336 | 4.229 | 3.168 | 2.534 |
| 680K | 50 | 8.096 | 5.404 | 4.048 | 3.238 |
| 1000K | 50 | 11.229 | 7.495 | 5.614 | 4.492 |

## CKR05-CKR06 HIGH RELIABILITY CERAMICS

MIL-C-39014 high reliability version of units listed as CK05-CK06, etc. in MIL-C-11015D. All units meet failure rate level R (0.01%) as indicated by last digit in MIL number, and are marked with this number. Better failure rate (S) types will become available as test time is completed. Capacitance tolerance, ±10% (suffix **KR**) or ±20% (suffix **MR**) as indicated.

### TYPE CKR05

Rated 200 WVDC, 10 thru 1000 pF; 100 WVDC, 1200 thru 10,000 pF; 50 WVDC, 12,000 pF up.

| Cap., pF | MIL Designation | Cap., pF | MIL Designation |
|---|---|---|---|
| 10 | CKR05BX100KR* | 1,200 | CKR05BX122KR |
| 12 | CKR05BX120KR | 1,500 | CKR05BX152KR* |
| 15 | CKR05BX150KR* | 1,800 | CKR05BX182KR |
| 18 | CKR05BX180KR | 2,200 | CKR05BX222KR* |
| 22 | CKR05BX220KR* | 2,700 | CKR05BX272KR |
| 27 | CKR05BX270KR | 3,300 | CKR05BX332KR* |
| 33 | CKR05BX330KR* | 3,900 | CKR05BX392KR |
| 39 | CKR05BX390KR | 4,700 | CKR05BX472KR* |
| 47 | CKR05BX470KR* | 5,600 | CKR05BX562KR |
| 56 | CKR05BX560KR | 6,800 | CKR05BX682KR* |
| 68 | CKR05BX680KR* | 8,200 | CKR05BX822KR |
| 82 | CKR05BX820KR | 10,000 | CKR05BX103KR* |
| 100 | CKR05BX101KR* | 12,000 | CKR05BX123KR |
| 120 | CKR05BX121KR | 15,000 | CKR05BX153KR* |
| 150 | CKR05BX151KR* | 18,000 | CKR05BX183KR |
| 180 | CKR05BX181KR | 22,000 | CKR05BX223KR* |
| 220 | CKR05BX221KR* | 27,000 | CKR05BX273KR |
| 270 | CKR05BX271KR | 33,000 | CKR05BX333KR* |
| 330 | CKR05BX331KR* | 39,000 | CKR05BX393KR |
| 390 | CKR05BX391KR | 47,000 | CKR05BX473KR* |
| 470 | CKR05BX471KR* | 56,000 | CKR05BX563KR |
| 560 | CKR05BX561KR | 68,000 | CKR05BX683KR* |
| 680 | CKR05BX681KR* | 82,000 | CKR05BX823KR |
| 820 | CKR05BX821KR | 100,000 | CKR05BX104KR* |
| 1,000 | CKR05BX102KR* | | |

### TYPE CKR06

Rated 200 WVDC, 1200 thru 10,000 pF; 100 WVDC, 12,000 thru 100,000 pF; 50 WVDC, 12,000 pF up. Thicker version (.185″) CKR07474K thru 105K also available to MIL-C-39014B; but CKR06 (.090″ th.) meets same specifications.

| Cap., pF | MIL Designation | Cap., pF | MIL Designation |
|---|---|---|---|
| 1,200 | CKR06BX122KR | 39,000 | CKR06BX393KR |
| 1,500 | CKR06BX152KR* | 47,000 | CKR06BX473KR |
| 1,800 | CKR06BX182KR | 56,000 | CKR06BX563KR |
| 2,200 | CKR06BX222KR* | 68,000 | CKR06BX683KR |
| 2,700 | CKR06BX272KR | 82,000 | CKR06BX823KR |
| 3,300 | CKR06BX332KR* | 100,000 | CKR06BX104KR |
| 3,900 | CKR06BX392KR | 120,000 | CKR06BX124KR |
| 4,700 | CKR06BX472KR* | 150,000 | CKR06BX154KR |
| 5,600 | CKR06BX562KR | 180,000 | CKR06BX184KR |
| 6,800 | CKR06BX682KR* | 220,000 | CKR06BX224KR |
| 8,200 | CKR06BX882KR | 270,000 | CKR06BX274KR |
| 10,000 | CKR06BX103KR* | 330,000 | CKR06BX334KR |
| 12,000 | CKR06BX123KR | 390,000 | CKR06BX394KR |
| 15,000 | CKR06BX153KR | 470,000 | CKR06BX474KR |
| 18,000 | CKR06BX183KR | 560,000† | CKR06BX564KR |
| 22,000 | CKR06BX223KR | 680,000† | CKR06BX684KR |
| 27,000 | CKR06BX273KR | 820,000† | CKR06BX824KR |
| 33,000 | CKR06BX333KR | 1.0 μF | CKR06BX105KR |

*Available in ±20% tolerance; to order, change suffix **KR** to **MR** (e.g., CKR05BX100**MR**). †Ceramic encased Ceraseal construction.

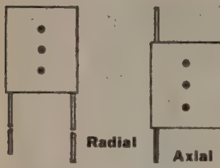
**CKR05 AND CKR06 PRICES ON REQUEST**

**OUR LARGE INVENTORY OF AEROVOX PARTS ASSURES FAST DELIVERY ON YOUR ORDER. ASK ABOUT NEW OR UNLISTED ITEMS.**

COMPONENTS INCORPORATED
A Subsidiary of Corning Glass Works

# Tantalum Capacitors

## MINITAN® MODULAR SERIES SUBMINIATURE SOLID TANTALUM CAPACITORS



Precision subminiature polar capacitors suitable for general filtering, coupling, bypassing and non critical RC timing applications. Very favorable capacitance-to-volume ratio makes units ideal for us in high-density applications such as found in avionics systems, subminiature communications equip ment and thick-film circuitry. **Temperature Range:** −55° C to +85° C without derating; to +125° if WVDC derated to ⅔. **ORDERING INFORMATION:** Price table below is keyed to case size; als see Part Number Breakdown Chart. **Lead Configuration:** Add suffix **A** to Basic Part No. for axia leads; add suffix **R** for radial leads. **Tolerance:** Add suffix **-40** for +40% −20% (available only on and **U** case sizes); suffix **-20** for ±20%; suffix **-10** for ±10%; suffix **-05** for ±5%. Only standar tolerance capacitors are stock items, others are special order only; 10% decade values are available ±5% and ±10% tolerances. **Example:** Part No. **F105A-10** indicates a 1.0 μF axial capacitor, case F ±10% tolerance; complete Part No. must include Basic Part No. and both Lead and Tolerance suffixe Capacitance and dissipation factor (DF) measured at 25° C, 120 Hz; DC leakage measured at 25°

### W CASE

Standard tolerance, +40% −20%; max. DC leakage, 0.5 μA.

| Basic Part No. | Cap., μF | WVDC | Max. DF |
|---|---|---|---|
| **W472*** | .0047 | 20 | 10 |
| **W682*** | .0068 | 20 | 10 |
| **W103** | .010 | 20 | 10 |
| **W153** | .015 | 20 | 10 |
| **W223** | .022 | 20 | 10 |
| **W333** | .033 | 20 | 10 |
| **W473** | .047 | 20 | 10 |
| **W683** | .068 | 20 | 10 |
| **W104** | .10 | 15 | 10 |
| **W154** | .15 | 10 | 10 |
| **W224** | .22 | 6 | 10 |
| **W334** | .33 | 4 | 10 |
| **W474** | .47 | 2 | 10 |

*Not available in ±10% or ±5% tolerances.

### U CASE

Standard tolerance, +40% −20%; max. DC leakage, 0.5 μA.

| Basic Part No. | Cap., μF | WVDC | Max. DF |
|---|---|---|---|
| **U102** | .0010 | 20 | 6 |
| **U152** | .0015 | 20 | 6 |
| **U222** | .0022 | 20 | 6 |
| **U332** | .0033 | 20 | 6 |
| **U472** | .0047 | 20 | 6 |
| **U682** | .0068 | 20 | 6 |
| **U103** | .010 | 20 | 6 |
| **U153** | .015 | 20 | 6 |
| **U223** | .022 | 20 | 6 |
| **U333** | .033 | 20 | 6 |
| **U473** | .047 | 20 | 6 |
| **U683** | .068 | 20 | 6 |
| **U104** | .10 | 20 | 6 |
| **U154** | .15 | 20 | 6 |
| **U224** | .22 | 20 | 6 |
| **U334** | .33 | 15 | 6 |
| **U474** | .47 | 10 | 6 |
| **U684** | .68 | 6 | 6 |
| **U105** | 1.0 | 4 | 8 |
| **U155** | 1.5 | 3 | 10 |
| **U225** | 2.2 | 2 | 10 |

### F CASE

Standard tolerance, ±20%; max. DC leakage, 0.5 μA.

| Basic Part No. | Cap., μF | WVDC | Max. DF |
|---|---|---|---|
| **F472** | .0047 | 35 | 6 |
| **F682** | .0068 | 35 | 6 |
| **F103** | .010 | 35 | 6 |
| **F153** | .015 | 35 | 6 |
| **F223** | .022 | 35 | 6 |
| **F333** | .033 | 35 | 6 |
| **F473** | .047 | 35 | 6 |
| **F683** | .068 | 35 | 6 |
| **F104** | .10 | 35 | 6 |
| **F154** | .15 | 35 | 6 |
| **F224** | .22 | 35 | 6 |
| **F334** | .33 | 35 | 6 |
| **F474** | .47 | 35 | 6 |
| **F684** | .68 | 25 | 6 |
| **F105** | 1.0 | 20 | 6 |
| **F155** | 1.5 | 15 | 6 |
| **F225** | 2.2 | 10 | 6 |
| **F335** | 3.3 | 6 | 6 |
| **F475** | 4.7 | 4 | 8 |
| **F685** | 6.8 | 3 | 10 |
| **F106** | 10 | 2 | 10 |

### M CASE

Standard tolerance, ±20%; max. DC leakage, 1.0 μA.

| | | | |
|---|---|---|---|
| **M684** | .68 | 35 | 6 |
| **M105** | 1.0 | 35 | 6 |
| **M155** | 1.5 | 35 | 6 |
| **M225** | 2.2 | 25 | 6 |
| **M335** | 3.3 | 20 | 6 |
| **M475** | 4.7 | 20 | 6 |
| **M685** | 6.8 | 10 | 6 |
| **M106** | 10 | 6 | 6 |
| **M156** | 15 | 4 | 8 |
| **M226** | 22 | 3 | 10 |

### L CASE

Standard tolerance, ±20%; max. DC leakage, 2.0 μA.

| | | | |
|---|---|---|---|
| **L225** | 2.2 | 35 | 6 |
| **L335** | 3.3 | 35 | 6 |
| **L475** | 4.7 | 35 | 6 |

### L CASE (CONT'D)

| Basic Part No. | Cap., μF | WVDC | Max. DF |
|---|---|---|---|
| **L685** | 6.8 | 25 | 6 |
| **L106** | 10 | 20 | 6 |
| **L156** | 15 | 15 | 6 |
| **L226** | 22 | 10 | 6 |
| **L336** | 33 | 6 | 6 |
| **L476** | 47 | 4 | 8 |

### S CASE

Standard tolerance, ±20%; max. DC leak age, 3.0 μA.

| | | | |
|---|---|---|---|
| **S685** | 6.8 | 35 | 6 |
| **S106** | 10 | 25 | 6 |
| **S156** | 15 | 20 | 6 |
| **S226** | 22 | 15 | 6 |
| **S336** | 33 | 10 | 6 |
| **S476** | 47 | 6 | 6 |
| **S686** | 68 | 4 | 8 |

### J CASE

Standard tolerance, ±20%; max. DC leak age, 9.0 μA.

| | | | |
|---|---|---|---|
| **J106** | 10 | 35 | 8 |
| **J156** | 15 | 35 | 8 |
| **J226** | 22 | 35 | 8 |
| **J336** | 33 | 25 | 8 |
| **J476** | 47 | 20 | 8 |
| **J686** | 68 | 15 | 8 |
| **J107** | 100 | 10 | 8 |
| **J157** | 150 | 6 | 10 |
| **J227** | 220 | 3 | 15 |

### CASE SIZES

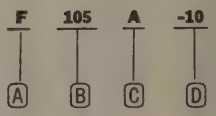
| Case | Size, Inches W. x D. x H. |
|---|---|
| **W** | .050 x .040 x .100 |
| **U** | .070 x .040 x .125 |
| **F** | .120 x .070 x .165 |
| **M** | .185 x .075 x .225 |
| **L** | .220 x .110 x .290 |
| **S** | .230 x .130 x .310 |
| **J** | .375 x .150 x .475 |

## PRICING

| Tolerance | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|
| **W CASE** | | | | | |
| +40 −20% | $1·20 | $0·97 | $0·82 | $0·70 | $0·64 |
| 20%* | 1·24 | 1·00 | ·84 | ·72 | ·66 |
| 10%* | 1·56 | 1·26 | 1·06 | ·91 | ·83 |
| 5%* | 2·40 | 1·94 | 1·64 | 1·40 | 1·28 |
| **U CASE** | | | | | |
| +40 −20% | $1·00 | $0·81 | $0·68 | $0·58 | $0·53 |
| 20%* | 1·04 | ·84 | ·71 | ·61 | ·55 |
| 10%* | 1·35 | 1·09 | ·92 | ·79 | ·72 |
| 5%* | 2·08 | 1·68 | 1·42 | 1·22 | 1·10 |
| **F CASE** | | | | | |
| 20% | $0·88 | $0·70 | $0·59 | $0·51 | $0·46 |
| 10%* | 1·14 | ·91 | ·77 | ·66 | ·60 |
| 5%* | 1·76 | 1·40 | 1·18 | 1·02 | ·92 |
| **M CASE** | | | | | |
| 20% | $1·10 | $0·89 | $0·75 | $0·64 | $0·59 |
| 10%* | 1·43 | 1·16 | ·97 | ·83 | ·77 |
| 5%* | 2·20 | 1·78 | 1·50 | 1·28 | 1·18 |
| **L AND S CASES** | | | | | |
| 20% | $1·24 | $1·00 | $0·84 | $0·72 | $0·66 |
| 10%* | 1·61 | 1·30 | 1·09 | ·94 | ·86 |
| 5%* | 2·48 | 2·00 | 1·68 | 1·44 | 1·32 |
| **J CASE** | | | | | |
| 20% | $3·00 | $2·42 | $2·04 | $1·74 | $1·60 |
| 10%* | 3·90 | 3·15 | 2·65 | 2·26 | 2·08 |
| 5%* | 6·00 | 4·84 | 4·08 | 3·48 | 3·20 |

*Non-stock tolerances; special order items only.

### PART NUMBER BREAKDOWN CHART



Ⓐ **Case Size**—W, U, F, M L, S or J as required; pricing is keyed to case size.

Ⓑ **Capacitance**—First two digits are significant figures, last digit is the power of 10 (or the number of zeros) of the multiplier; all values measured in pF.

Ⓒ **Lead Configuration**—"A" indicates axial leads; "R" indicates radial leads.

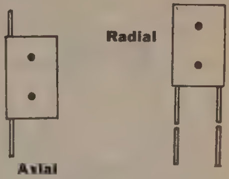
Ⓓ **Tolerance**—Suffix "-40" for +40% −20%; "-20" for ±20%; "-10" for ±10%; "-05" for ±5%. Only indicated standard tolerances are stock items; all others are special order only.

# COMPONENTS INCORPORATED Tantalum Capacitors

Subsidiary of Corning Glass Works

## MINITAN® CORDWOOD SERIES SUBMINIATURE SOLID TANTALUM CAPACITORS

recision subminiature polar capacitors suitable for general filtering, coupling, bypassing and non-ritical RC timing applications. Very favorable capacitance-to-volume ratio makes units especially vell suited to high-density applications such as found in avionics systems, subminiature communica-ions equipment and thick-film circuitry. **Temperature Range:** −55° C to +85° C without derating; erate WVDC linearly to ⅔ at +125° C. **ORDERING INFORMATION:** Price table below is keyed o case size; also see Part Number Breakdown Chart. **Lead Configuration:** Add suffix **A** to Basic Part No. for axial leads; add suffix **R** for radial leads. **Tolerance:** Add suffix **-40** for +40% −20% (available nly on **Y** and **P** case sizes); suffix **-20** for ±20%; suffix **-10** for ±10%; suffix **-05** for ±5%. Only tandard tolerance capacitors are stock items, others are special order only; 10% decade values available in ±5% and ±10% tolerances. **Example:** Part No. **B105A-10** indicates a 1.0 μF axial capacitor, ase F, ±10% tolerance; complete Part No. must include Basic Part No. and both Lead and Tolerance uffixes. Capacitance and dissipation factor (DF) measured at 25° C, 120 Hz; DC leakage measured t 25° C.



### Y CASE

tandard tolerance, +40% −20%; max. DC leakage, 0.5 μA.

| Basic Part No. | Cap., μF | WVDC | Max. DF |
|---|---|---|---|
| Y102 | .0010 | 20 | 6 |
| Y152 | .0015 | 20 | 6 |
| Y222 | .0022 | 20 | 6 |
| Y332 | .0033 | 20 | 6 |
| Y472 | .0047 | 20 | 6 |
| Y682 | .0068 | 20 | 6 |
| Y103 | .010 | 20 | 6 |
| Y153 | .015 | 20 | 6 |
| Y223 | .022 | 20 | 6 |
| Y333 | .033 | 20 | 6 |
| Y473 | .047 | 20 | 6 |
| Y683 | .068 | 20 | 6 |
| Y104 | .10 | 20 | 6 |
| Y154 | .15 | 20 | 6 |
| Y224 | .22 | 20 | 6 |
| Y334 | .33 | 15 | 6 |
| Y474 | .47 | 10 | 6 |
| Y684 | .68 | 6 | 6 |
| Y105 | 1.0 | 4 | 8 |
| Y155 | 1.5 | 3 | 10 |
| Y225 | 2.2 | 2 | 10 |

### P CASE

tandard tolerance, +40% −20%; max. DC leakage, 0.5 μA.

| Basic Part No. | Cap., μF | WVDC | Max. DF |
|---|---|---|---|
| P102 | .0010 | 50 | 6 |
| P152 | .0015 | 50 | 6 |
| P222 | .0022 | 50 | 6 |
| P332 | .0033 | 50 | 6 |
| P472 | .0047 | 50 | 6 |
| P682 | .0068 | 50 | 6 |

### P CASE (CONT'D)

| Basic Part No. | Cap., μF | WVDC | Max. DF |
|---|---|---|---|
| P103 | .010 | 50 | [illegible] |
| P153 | .015 | 35 | [illegible] |
| P223 | .022 | 35 | 6 |
| P333 | .033 | 35 | 6 |
| P473 | .047 | 35 | 6 |
| P683 | .068 | 35 | 6 |
| P104 | .10 | 35 | 6 |
| P154 | .15 | 35 | 6 |
| P224 | .22 | 35 | 6 |
| P334 | .33 | 20 | 6 |
| P474 | .47 | 20 | 6 |
| P684 | .68 | 15 | 6 |
| P105 | 1.0 | 10 | 6 |
| P155 | 1.5 | 6 | 6 |
| P225 | 2.2 | 4 | 8 |
| P335 | 3.3 | 3 | 10 |
| P475 | 4.7 | 2 | 10 |

### B CASE

Standard tolerance, ±20%; max. DC leakage, 0.5 μA.

| Basic Part No. | Cap., μF | WVDC | Max. DF |
|---|---|---|---|
| B334 | .33 | 35 | 6 |
| B474 | .47 | 35 | 6 |
| B684 | .68 | 20 | 6 |
| B105 | 1.0 | 20 | 6 |
| B155 | 1.5 | 15 | 6 |
| B225 | 2.2 | 10 | 6 |
| B335 | 3.3 | 6 | 6 |
| B475 | 4.7 | 4 | 8 |
| B685 | 6.8 | 3 | 10 |
| B106 | 10 | 2 | 10 |

### A CASE

Standard tolerance, ±20%; max. DC leakage, 1.0 μA.

| Basic Part No. | Cap., μF | WVDC | Max. DF |
|---|---|---|---|
| A684 | .68 | 35 | 6 |
| A105 | 1.0 | 35 | 6 |
| A155 | 1.5 | 20 | 6 |
| A225 | 2.2 | 20 | 6 |
| A335 | 3.3 | 15 | 6 |
| A475 | 4.7 | 10 | 6 |
| A685 | 6.8 | 6 | 6 |
| A106 | 10 | 4 | 8 |
| A156 | 15 | 3 | 10 |
| A226 | 22 | 2 | 10 |

### G CASE

Standard tolerance, ±20%; max. DC leakage, 1.5 μA.

| | | | |
|---|---|---|---|
| G155 | 1.5 | 35 | 6 |
| G225 | 2.2 | 35 | 6 |
| G335 | 3.3 | 20 | 6 |
| G475 | 4.7 | 20 | 6 |
| G685 | 6.8 | 20 | 6 |
| G106 | 10 | 15 | 6 |
| G156 | 15 | 10 | 6 |
| G226 | 22 | 6 | 6 |
| G336 | 33 | 4 | 8 |
| G476 | 47 | 3 | 10 |

### CASE SIZES

| Case | Max. Size, Inches Length x Diameter |
|---|---|
| Y | .125 x .070 |
| P | .160 x .070 |
| B | .200 x .080 |
| A | .225 x .100 |
| G | .250 x .150 |

## PRICING

### Y AND P CASES

| Tolerance | Net Each, Lots of | | | | |
|---|---|---|---|---|---|
| | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
| +40 −20% | $0·88 | $0·70 | $0·59 | $0·51 | $0·46 |
| 20%* | ·92 | ·74 | ·62 | ·54 | ·48 |
| 10%* | 1·14 | ·91 | ·77 | ·66 | ·60 |
| 5%* | 1·76 | 1·40 | 1·18 | 1·02 | ·92 |

### A CASE

| Tolerance | Net Each, Lots of | | | | |
|---|---|---|---|---|---|
| | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
| 20% | $0·96 | $0·76 | $0·64 | $0·56 | $0·50 |
| 10%* | 1·26 | ·99 | ·83 | ·73 | ·65 |
| 5%* | 1·92 | 1·52 | 1·28 | 1·12 | 1·00 |

### B CASE

| Tolerance | Net Each, Lots of | | | | |
|---|---|---|---|---|---|
| | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
| 20% | $0·88 | $0·70 | $0·59 | $0·51 | $0·46 |
| 10%* | 1·14 | ·91 | ·77 | ·66 | ·60 |
| 5%* | 1·76 | 1·40 | 1·18 | 1·02 | ·92 |

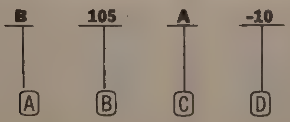
*Non-stock tolerances; special order items only.

### G CASE

| Tolerance | Net Each, Lots of | | | | |
|---|---|---|---|---|---|
| | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
| 20% | $1·16 | $0·94 | $0·79 | $0·68 | $0·62 |
| 10%* | 1·51 | 1·22 | 1·03 | ·88 | ·81 |
| 5%* | 2·32 | 1·88 | 1·58 | 1·36 | 1·24 |

*Non-stock tolerances; special order items only.

## PART NUMBER BREAKDOWN CHART



Ⓐ **Case Size**—Y, P, B, A or G as required; pricing is keyed to case size.

Ⓑ **Capacitance**—First two digits are significant figures, last digit is number of zeros that follow (or the power of 10 of the multiplier); all values measured in pF.

Ⓒ **Lead Configuration**—"A" indicates axial leads, "R" indicates radial leads.

Ⓓ **Tolerance**—Suffix "-40" for +40% −20%; "-20" for ±20%; "-10" for ±10%; "-05" for ±5%. Only indicated standard tolerances are stock items; all others are special order only.

COMPONENTS INCORPORATED CI
A Subsidiary of Corning Glass Works

# Tantalum Capacitors

## MILITAN® TS SERIES CS12/13 STYLE HERMETICALLY SEALED SOLID TANTALUMS

Miniature polar capacitors designed to meet or exceed performance and environment requirement of MIL-C-26655; available with polyester insulating sleeve (CS13 style) or with bare metal ca (CS12 style). Suitable for general filtering, coupling, bypassing, non-critical RC timing and energy storage applications. **Temperature Range:** −80° C to +85° C without derating; derate WVDC linearly to ⅔ at +125° C. **Tolerance:** Available in ±20%, ±10% and ±5%. **Dissipation Factor:** At 25° C, will not exceed 6% for 6–20 WVDC units, 5% for 35 WVDC units, 4% for 50 and 75 WVDC units and 3% for 100 WVDC units. **DC Leakage:** At 25° C, will not exceed .01 μA/μF-V or 0.5 μA, whichever is greater; at +85° C, 0.1 μA/μF-V or 5.0 μA, whichever is greater; at +125° C, .125 μA/μF-V or 6.3 μA, whichever is greater. **ORDERING INFORMATION:** Pricing is keyed to case size (i.e., TS1, TS2, TS3, TS4). **Tolerance:** Add suffix **-20** to Components No. for ±20%; **-10** for ±10%; **-05** for ±5%. **Unsleeved Units:** Add suffix **-U** to Components No. after tolerance suffix (e.g., TS1-006-565-20-**U**); with no suffix, unit will be delivered with polyester insulating sleeve.

### 100 WVDC

| Components No. | Cap., μF |
|---|---|
| TS1-100-472 | .0047 |
| TS1-100-562 | .0056 |
| TS1-100-682 | .0068 |
| TS1-100-822 | .0082 |
| TS1-100-103 | .010 |
| TS1-100-123 | .012 |
| TS1-100-153 | .015 |
| TS1-100-183 | .018 |
| TS1-100-223 | .022 |
| TS1-100-273 | .027 |
| TS1-100-333 | .033 |
| TS1-100-393 | .039 |
| TS1-100-473 | .047 |
| TS1-100-563 | .056 |
| TS1-100-683 | .068 |
| TS1-100-823 | .082 |
| TS1-100-104 | .10 |
| TS1-100-124 | .12 |
| TS1-100-154 | .15 |
| TS1-100-184 | .18 |
| TS1-100-224 | .22 |
| TS1-100-274 | .27 |
| TS1-100-334 | .33 |
| TS1-100-394 | .39 |
| TS1-100-474 | .47 |
| TS1-100-564 | .56 |
| TS2-100-684 | .68 |
| TS2-100-824 | .82 |
| TS2-100-105 | 1.0 |
| TS2-100-125 | 1.2 |
| TS2-100-155 | 1.5 |
| TS2-100-185 | 1.8 |
| TS2-100-225 | 2.2 |
| TS2-100-275 | 2.7 |

### 75 WVDC

| Components No. | Cap., μF |
|---|---|
| TS1-075-472 | .0047 |
| TS1-075-562 | .0056 |
| TS1-075-682 | .0068 |
| TS1-075-822 | .0082 |
| TS1-075-103 | .010 |
| TS1-075-123 | .012 |
| TS1-075-153 | .015 |
| TS1-075-183 | .018 |
| TS1-075-223 | .022 |
| TS1-075-273 | .027 |
| TS1-075-333 | .033 |
| TS1-075-393 | .039 |
| TS1-075-473 | .047 |
| TS1-075-563 | .056 |
| TS1-075-683 | .068 |
| TS1-075-823 | .082 |
| TS1-075-104 | .10 |
| TS1-075-124 | .12 |

### 75 WVDC (CONT'D)

| Components No. | Cap., μF |
|---|---|
| TS1-075-154 | .15 |
| TS1-075-184 | .18 |
| TS1-075-224 | .22 |
| TS1-075-274 | .27 |
| TS1-075-334 | .33 |
| TS1-075-394 | .39 |
| TS1-075-474 | .47 |
| TS1-075-564 | .56 |
| TS1-075-684 | .68 |
| TS2-075-824 | .82 |
| TS2-075-105 | 1.0 |
| TS2-075-125 | 1.2 |
| TS2-075-155 | 1.5 |
| TS2-075-185 | 1.8 |
| TS2-075-225 | 2.2 |
| TS2-075-275 | 2.7 |
| TS2-075-335 | 3.3 |
| TS2-075-395 | 3.9 |
| TS3-075-475 | 4.7 |
| TS3-075-565 | 5.6 |
| TS3-075-685 | 6.8 |
| TS3-075-825 | 8.2 |
| TS3-075-106 | 10 |
| TS4-075-126 | 12 |
| TS4-075-156 | 15 |

### 50 WVDC

| Components No. | Cap., μF |
|---|---|
| TS1-050-472 | .0047 |
| TS1-050-562 | .0056 |
| TS1-050-682 | .0068 |
| TS1-050-822 | .0082 |
| TS1-050-103 | .010 |
| TS1-050-123 | .012 |
| TS1-050-153 | .015 |
| TS1-050-183 | .018 |
| TS1-050-223 | .022 |
| TS1-050-273 | .027 |
| TS1-050-333 | .033 |
| TS1-050-393 | .039 |
| TS1-050-473 | .047 |
| TS1-050-563 | .056 |
| TS1-050-683 | .068 |
| TS1-050-823 | .082 |
| TS1-050-104 | .10 |
| TS1-050-124 | .12 |
| TS1-050-154 | .15 |
| TS1-050-184 | .18 |
| TS1-050-224 | .22 |
| TS1-050-274 | .27 |
| TS1-050-334 | .33 |
| TS1-050-394 | .39 |
| TS1-050-474 | .47 |
| TS1-050-564 | .56 |
| TS1-050-684 | .68 |
| TS1-050-824 | .82 |

### 50 WVDC (CONT'D)

| Components No. | Cap., μF |
|---|---|
| TS1-050-105 | 1.0 |
| TS2-050-125 | 1.2 |
| TS2-050-155 | 1.5 |
| TS2-050-185 | 1.8 |
| TS2-050-225 | 2.2 |
| TS2-050-275 | 2.7 |
| TS2-050-335 | 3.3 |
| TS2-050-395 | 3.9 |
| TS2-050-475 | 4.7 |
| TS3-050-565 | 5.6 |
| TS3-050-685 | 6.8 |
| TS3-050-825 | 8.2 |
| TS3-050-106 | 10 |
| TS3-050-126 | 12 |
| TS3-050-156 | 15 |
| TS3-050-186 | 18 |
| TS4-050-226 | 22 |

### 35 WVDC

| Components No. | Cap., μF |
|---|---|
| TS1-035-472 | .0047 |
| TS1-035-562 | .0056 |
| TS1-035-682 | .0068 |
| TS1-035-822 | .0082 |
| TS1-035-103 | .010 |
| TS1-035-123 | .012 |
| TS1-035-153 | .015 |
| TS1-035-183 | .018 |
| TS1-035-223 | .022 |
| TS1-035-273 | .027 |
| TS1-035-333 | .033 |
| TS1-035-393 | .039 |
| TS1-035-473 | .047 |
| TS1-035-563 | .056 |
| TS1-035-683 | .068 |
| TS1-035-823 | .082 |
| TS1-035-104 | .10 |
| TS1-035-124 | .12 |
| TS1-035-154 | .15 |
| TS1-035-184 | .18 |
| TS1-035-224 | .22 |
| TS1-035-274 | .27 |
| TS1-035-334 | .33 |
| TS1-035-394 | .39 |
| TS1-035-474 | .47 |
| TS1-035-564 | .56 |
| TS1-035-684 | .68 |
| TS1-035-824 | .82 |
| TS1-035-105 | 1.0 |
| TS2-035-125 | 1.2 |
| TS2-035-155 | 1.5 |
| TS2-035-185 | 1.8 |
| TS2-035-225 | 2.2 |
| TS2-035-275 | 2.7 |
| TS2-035-335 | 3.3 |
| TS2-035-395 | 3.9 |

### 35 WVDC (CONT'D)

| Components No. | Cap., μF |
|---|---|
| TS2-035-475 | 4.7 |
| TS2-035-565 | 5.6 |
| TS2-035-685 | 6.8 |
| TS3-035-825 | 8.2 |
| TS3-035-106 | 10 |
| TS3-035-126 | 12 |
| TS3-035-156 | 15 |
| TS3-035-186 | 18 |
| TS3-035-226 | 22 |
| TS4-035-276 | 27 |
| TS4-035-336 | 33 |
| TS4-035-396 | 39 |
| TS4-035-476 | 47 |

### 20 WVDC

| Components No. | Cap., μF |
|---|---|
| TS1-020-125 | 1.2 |
| TS1-020-155 | 1.5 |
| TS1-020-185 | 1.8 |
| TS1-020-225 | 2.2 |
| TS2-020-275 | 2.7 |
| TS2-020-335 | 3.3 |
| TS2-020-395 | 3.9 |
| TS2-020-475 | 4.7 |
| TS2-020-565 | 5.6 |
| TS2-020-685 | 6.8 |
| TS2-020-825 | 8.2 |
| TS2-020-106 | 10 |
| TS2-020-126 | 12 |
| TS2-020-156 | 15 |
| TS3-020-186 | 18 |
| TS3-020-226 | 22 |
| TS3-020-276 | 27 |
| TS3-020-336 | 33 |
| TS3-020-396 | 39 |
| TS3-020-476 | 47 |
| TS4-020-566 | 56 |
| TS4-020-686 | 68 |
| TS4-020-826 | 82 |
| TS4-020-107 | 100 |

### 15 WVDC

| Components No. | Cap., μF |
|---|---|
| TS1-015-275 | 2.7 |
| TS1-015-335 | 3.3 |
| TS2-015-395 | 3.9 |
| TS2-015-475 | 4.7 |
| TS2-015-565 | 5.6 |
| TS2-015-685 | 6.8 |
| TS2-015-825 | 8.2 |
| TS2-015-106 | 10 |
| TS2-015-126 | 12 |
| TS2-015-156 | 15 |
| TS2-015-186 | 18 |
| TS2-015-226 | 22 |
| TS3-015-276 | 27 |
| TS3-015-336 | 33 |

### 15 WVDC (CONT'D)

| Components No. | Cap., μF |
|---|---|
| TS3-015-396 | 39 |
| TS3-015-476 | 47 |
| TS3-015-566 | 56 |
| TS3-015-686 | 68 |
| TS4-015-826 | 82 |
| TS4-015-107 | 100 |
| TS4-015-127 | 120 |
| TS4-015-157 | 150 |

### 10 WVDC

| Components No. | Cap., μF |
|---|---|
| TS1-010-395 | 3.9 |
| TS1-010-475 | 4.7 |
| TS2-010-565 | 5.6 |
| TS2-010-685 | 6.8 |
| TS2-010-825 | 8.2 |
| TS2-010-106 | 10 |
| TS2-010-126 | 12 |
| TS2-010-156 | 15 |
| TS2-010-186 | 18 |
| TS2-010-226 | 22 |
| TS2-010-276 | 27 |
| TS2-010-336 | 33 |
| TS2-010-396 | 39 |
| TS3-010-476 | 47 |
| TS3-010-566 | 56 |
| TS3-010-686 | 68 |
| TS3-010-826 | 82 |
| TS3-010-107 | 100 |
| TS3-010-127 | 120 |
| TS4-010-157 | 150 |
| TS4-010-187 | 180 |
| TS4-010-227 | 220 |

### 6 WVDC

| Components No. | Cap., μF |
|---|---|
| TS1-006-565 | 5.6 |
| TS1-006-685 | 6.8 |
| TS2-006-825 | 8.2 |
| TS2-006-106 | 10 |
| TS2-006-126 | 12 |
| TS2-006-156 | 15 |
| TS2-006-186 | 18 |
| TS2-006-226 | 22 |
| TS2-006-276 | 27 |
| TS2-006-336 | 33 |
| TS2-006-396 | 39 |
| TS2-006-476 | 47 |
| TS2-006-566 | 56 |
| TS3-006-686 | 68 |
| TS3-006-826 | 82 |
| TS3-006-107 | 100 |
| TS3-006-127 | 120 |
| TS3-006-157 | 150 |
| TS3-006-187 | 180 |
| TS4-006-227 | 220 |
| TS4-006-277 | 270 |
| TS4-006-337 | 330 |

## PRICING

### TS1 CASE

Size, .286″ lg. x .135″ dia. sleeved; .250″ lg. x .125″ dia. unsleeved.

| WVDC | Tol. | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
| 6–35 | ±20%<br>±10%<br>±5%* | $1.31<br>1.34<br>1.81 | $1.05<br>1.08<br>1.45 | $0.72<br>.75<br>.98 | $0.59<br>.62<br>.80 | $0.50<br>.53<br>.67 |
| 50 | ±20%<br>±10%<br>±5%* | 1.92<br>2.48<br>3.62 | 1.54<br>1.99<br>2.88 | 1.30<br>1.48<br>2.25 | .90<br>1.05<br>1.40 | .62<br>.66<br>1.12 |
| 75 | ±20%<br>±10% | 2.70<br>3.60 | 2.20<br>2.70 | 1.75<br>2.35 | 1.60<br>2.00 | 1.40<br>1.80 |
| 100 | ±20%<br>±10% | 3.65<br>4.70 | 2.75<br>3.70 | 2.40<br>3.20 | 2.05<br>2.75 | 1.95<br>2.40 |

*Available in values 1 μF and above only.

### TS2 CASE

Size, .474″ lg. x .185″ dia. sleeved; .438″ lg. x .175″ dia. unsleeved.

| WVDC | Tol. | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
| 6–35 | ±20%<br>±10%<br>±5% | $1.54<br>1.57<br>2.13 | $1.24<br>1.27<br>1.71 | $0.80<br>.83<br>1.01 | $0.66<br>.69<br>.83 | $0.56<br>.59<br>.69 |
| 50 | ±20%<br>±10%<br>±5% | 1.95<br>2.65<br>4.45 | 1.59<br>2.12<br>3.80 | 1.33<br>1.80<br>3.30 | .96<br>1.25<br>2.25 | .68<br>.80<br>1.60 |
| 75 | ±20%<br>±10% | 2.75<br>3.70 | 2.25<br>2.90 | 1.80<br>2.45 | 1.65<br>2.14 | 1.45<br>1.95 |
| 100 | ±20%<br>±10% | 3.75<br>4.75 | 2.95<br>3.75 | 2.55<br>3.25 | 2.20<br>2.80 | 2.00<br>2.45 |

### TS3 CASE

Size, .686″ lg. x .289″ dia. sleeved; .650″ lg. x .279″ dia. unsleeved.

| | | | | | | |
|---|---|---|---|---|---|---|
| 6–35 | ±20%<br>±10%<br>±5% | $2.54<br>2.57<br>3.05 | $2.04<br>2.07<br>2.74 | $1.39<br>1.42<br>2.60 | $1.13<br>1.16<br>2.50 | $0.95<br>.98<br>2.25 |
| 50 | ±20%<br>±10% | 3.45<br>4.45 | 2.64<br>3.30 | 2.30<br>2.94 | 1.85<br>2.56 | 1.50<br>2.25 |
| 75 | ±20%<br>±10% | 4.77<br>6.24 | 3.78<br>4.97 | 3.18<br>4.19 | 2.69<br>3.54 | 2.45<br>3.25 |

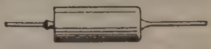
### TS4 CASE

Size, .786″ lg. x .351″ dia. sleeved; .750″ lg. x .341″ dia. unsleeved.

| | | | | | | |
|---|---|---|---|---|---|---|
| 6–35 | ±20%<br>±10%<br>±5% | $ 4.72<br>4.75<br>6.23 | $3.78<br>3.81<br>4.91 | $2.78<br>2.81<br>4.70 | $2.26<br>2.29<br>4.50 | $1.88<br>1.91<br>3.80 |
| 50 | ±20%<br>±10% | 5.75<br>6.40 | 4.70<br>5.30 | 3.70<br>4.30 | 2.90<br>3.73 | 2.15<br>2.45 |
| 75 | ±20%<br>±10% | 9.20<br>11.96 | 7.37<br>9.58 | 6.23<br>8.09 | 5.30<br>6.89 | 4.85<br>6.31 |

# Tantalum Capacitors

## MILITAN® TR SERIES SOLID TANTALUMS TO MIL-C-39003, STYLE CSR13



eets or exceeds applicable requirements of MIL-C-39003, case style CSR13 (units insulated with lyester sleeve). **Temperature Range:** −55° C to +85° C without derating; derate WVDC linearly to at +125° C. **ORDERING INFORMATION:** Prices are keyed to Components No. case designations e., TR1, TR2, TR3, TR4). **Tolerance:** For MIL numbers, add suffix **K** for ±10%, **J** for ±5%, or for ±20% (where available); for Components numbers, add suffix **-10** for ±10%, **-5** for ±5%, **-20** for ±20% (where available); e.g., CSR13B685**K** and TR1-006-685-**10. Failure Rate Level:** ld suffix **L** to both MIL and Components numbers for 2%/1000 hrs., **M** for 1%/1000 hrs., **P** for %/1000 hrs., or **R** for 0.01%/1000 hours (e.g., CSR-13B685K**L** and TR1-006-685-10-**L**).

### 6 WVDC

| Cap., µF | MIL No. | Components No. |
|---|---|---|
| 5.6 | CSR13B565 | TR1-006-565 |
| 6.8* | CSR13B685 | TR1-006-685 |
| 47* | CSR13B476 | TR2-006-476 |
| 56 | CSR13B566 | TR2-006-566 |
| 150* | CSR13B157 | TR3-006-157 |
| 180 | CSR13B187 | TR3-006-187 |
| 270 | CSR13B227 | TR4-006-277 |
| 330* | CSR13B337 | TR4-006-337 |

### 20 WVDC

| Cap., µF | MIL No. | Components No. |
|---|---|---|
| 1.2 | CSR13E125 | TR1-020-125 |
| 1.5* | CSR13E155 | TR1-020-155 |
| 1.8 | CSR13E185 | TR1-020-185 |
| 2.2* | CSR13E225 | TR1-020-225 |
| 8.2 | CSR13E825 | TR2-020-825 |
| 10* | CSR13E106 | TR2-020-106 |
| 12 | CSR13E126 | TR2-020-126 |
| 15* | CSR13E156 | TR2-020-156 |
| 27 | CSR13E276 | TR3-020-276 |
| 33* | CSR13E336 | TR3-020-336 |
| 39 | CSR13E396 | TR3-020-396 |
| 47* | CSR13E476 | TR3-020-476 |
| 56 | CSR13E566 | TR4-020-566 |
| 68* | CSR13E686 | TR4-020-686 |
| 82 | CSR13E826 | TR4-020-826 |
| 100* | CSR13E107 | TR4-020-107 |

### 75 WVDC

| Cap., µF | MIL No. | Components No. |
|---|---|---|
| .10* | CSR13H104 | TR1-075-104 |
| .12 | CSR13H124 | TR1-075-124 |
| .15* | CSR13H154 | TR1-075-154 |
| .18 | CSR13H184 | TR1-075-184 |
| .22* | CSR13H224 | TR1-075-224 |
| .27 | CSR13H274 | TR1-075-274 |
| .33* | CSR13H334 | TR1-075-334 |
| .39 | CSR13H394 | TR1-075-394 |
| .47* | CSR13H474 | TR1-075-474 |
| .56 | CSR13H564 | TR1-075-564 |
| .68* | CSR13H684 | TR1-075-684 |
| .82 | CSR13H824 | TR2-075-824 |
| 1.0* | CSR13H105 | TR2-075-105 |
| 1.2 | CSR13H125 | TR2-075-125 |
| 1.5* | CSR13H155 | TR2-075-155 |
| 1.8 | CSR13H185 | TR2-075-185 |
| 2.2* | CSR13H225 | TR2-075-225 |
| 2.7 | CSR13H275 | TR2-075-275 |
| 3.3* | CSR13H335 | TR2-075-335 |
| 3.9 | CSR13H395 | TR2-075-395 |
| 4.7* | CSR13H475 | TR3-075-475 |
| 5.6 | CSR13H565 | TR3-075-565 |
| 6.8* | CSR13H685 | TR3-075-685 |
| 8.2 | CSR13H825 | TR3-075-825 |
| 10* | CSR13H106 | TR3-075-106 |
| 12 | CSR13H126 | TR4-075-126 |
| 15* | CSR13H156 | TR4-075-156 |

### 10 WVDC

| Cap., µF | MIL No. | Components No. |
|---|---|---|
| 3.9 | CSR13C395 | TR1-010-395 |
| 4.7* | CSR13C475 | TR1-010-475 |
| 27 | CSR13C276 | TR2-010-276 |
| 33* | CSR13C336 | TR2-010-336 |
| 39 | CSR13C396 | TR2-010-396 |
| 82 | CSR13C826 | TR3-010-826 |
| 100* | CSR13C107 | TR3-010-107 |
| 120 | CSR13C127 | TR3-010-127 |
| 180 | CSR13C187 | TR4-010-187 |
| 220* | CSR13C227 | TR4-010-227 |

### 35 WVDC

| Cap., µF | MIL No. | Components No. |
|---|---|---|
| 5.6 | CSR13F565 | TR2-035-565 |
| 6.8* | CSR13F685 | TR2-035-685 |
| 22* | CSR13F226 | TR3-035-226 |
| 27 | CSR13F276 | TR4-035-276 |
| 33* | CSR13F336 | TR4-035-336 |
| 39 | CSR13F396 | TR4-035-396 |
| 47* | CSR13F476 | TR4-035-476 |

### 100 WVDC

| Cap., µF | MIL No. | Components No. |
|---|---|---|
| .0047* | CSR13J472 | TR1-100-472 |
| .0056 | CSR13J562 | TR1-100-562 |
| .0068* | CSR13J682 | TR1-100-682 |
| .0082 | CSR13J822 | TR1-100-822 |
| .010* | CSR13J103 | TR1-100-103 |
| .012 | CSR13J123 | TR1-100-123 |
| .015* | CSR13J153 | TR1-100-153 |
| .018 | CSR13J183 | TR1-100-183 |
| .022* | CSR13J223 | TR1-100-223 |
| .027 | CSR13J273 | TR1-100-273 |
| .033* | CSR13J333 | TR1-100-333 |
| .039 | CSR13J393 | TR1-100-393 |
| .047* | CSR13J473 | TR1-100-473 |
| .056 | CSR13J563 | TR1-100-563 |
| .068* | CSR13J683 | TR1-100-683 |
| .082 | CSR13J823 | TR1-100-823 |
| .10* | CSR13J104 | TR1-100-104 |
| .12 | CSR13J124 | TR1-100-124 |
| .15* | CSR13J154 | TR1-100-154 |
| .18 | CSR13J184 | TR1-100-184 |
| .22* | CSR13J224 | TR1-100-224 |
| .27 | CSR13J274 | TR1-100-274 |
| .33* | CSR13J334 | TR1-100-334 |
| .39 | CSR13J394 | TR1-100-394 |
| .47* | CSR13J474 | TR1-100-474 |
| .56 | CSR13J564 | TR1-100-564 |
| .68* | CSR13J684 | TR2-100-684 |
| .82 | CSR13J824 | TR2-100-824 |
| 1.0* | CSR13J105 | TR2-100-105 |
| 1.2 | CSR13J125 | TR2-100-125 |
| 1.5* | CSR13J155 | TR2-100-155 |
| 1.8 | CSR13J185 | TR2-100-185 |
| 2.2* | CSR13J225 | TR2-100-225 |
| 2.7 | CSR13J275 | TR2-100-275 |

### 15 WVDC

| Cap., µF | MIL No. | Components No. |
|---|---|---|
| 2.7 | CSR13D275 | TR1-015-275 |
| 3.3* | CSR13D335 | TR1-015-335 |
| 18 | CSR13D186 | TR2-015-186 |
| 22* | CSR13D226 | TR2-015-226 |
| 56 | CSR13D566 | TR3-015-566 |
| 68* | CSR13D686 | TR3-015-686 |
| 120 | CSR13D127 | TR4-015-127 |
| 150* | CSR13D157 | TR4-015-157 |

### 50 WVDC

| Cap., µF | MIL No. | Components No. |
|---|---|---|
| .0047* | CSR13G472 | TR1-050-472 |
| .0056 | CSR13G562 | TR1-050-562 |
| .0068* | CSR13G682 | TR1-050-682 |
| .0082 | CSR13G822 | TR1-050-822 |
| .010* | CSR13G103 | TR1-050-103 |
| .012 | CSR13G123 | TR1-050-123 |
| .015* | CSR13G153 | TR1-050-153 |
| .018 | CSR13G183 | TR1-050-183 |
| .022* | CSR13G223 | TR1-050-223 |
| .027 | CSR13G273 | TR1-050-273 |
| .033* | CSR13G333 | TR1-050-333 |
| .039 | CSR13G393 | TR1-050-393 |
| .047* | CSR13G473 | TR1-050-473 |
| .056 | CSR13G563 | TR1-050-563 |
| .068* | CSR13G683 | TR1-050-683 |
| .082 | CSR13G823 | TR1-050-823 |
| .10* | CSR13G104 | TR1-050-104 |
| .12 | CSR13G124 | TR1-050-124 |
| .15* | CSR13G154 | TR1-050-154 |
| .18 | CSR13G184 | TR1-050-184 |
| .22* | CSR13G224 | TR1-050-224 |
| .27 | CSR13G274 | TR1-050-274 |
| .33* | CSR13G334 | TR1-050-334 |
| .39 | CSR13G394 | TR1-050-394 |
| .47* | CSR13G474 | TR1-050-474 |
| .56 | CSR13G564 | TR1-050-564 |
| .68* | CSR13G684 | TR1-050-684 |
| .82 | CSR13G824 | TR1-050-824 |
| 1.0* | CSR13G105 | TR1-050-105 |
| 1.2 | CSR13G125 | TR2-050-125 |
| 1.5* | CSR13G155 | TR2-050-155 |
| 1.8 | CSR13G185 | TR2-050-185 |
| 2.2* | CSR13G225 | TR2-050-225 |
| 2.7 | CSR13G275 | TR2-050-275 |
| 3.3* | CSR13G335 | TR2-050-335 |
| 3.9 | CSR13G395 | TR2-050-395 |
| 4.7* | CSR13G475 | TR2-050-475 |
| 5.6 | CSR13G565 | TR3-050-565 |
| 6.8* | CSR13G685 | TR3-050-685 |
| 8.2 | CSR13G825 | TR3-050-825 |
| 10* | CSR13G106 | TR3-050-106 |
| 12 | CSR13G126 | TR3-050-126 |
| 15* | CSR13G156 | TR3-050-156 |
| 18 | CSR13G186 | TR3-050-186 |
| 22* | CSR13G226 | TR4-050-226 |

Also available in ±20% tolerance; see Ordering Information above.

### PRICING

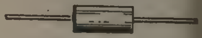
| | | | | "L" Failure Rate | | | | | "M" Failure Rate | | | | | "P" Failure Rate | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Net Each, Lots of | | | | | Net Each, Lots of | | | | | Net Each, Lots of | | | | |
| Case | Size, In. Lg. x Dia. | WVDC | Tol. | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
| TR1 | .286 x .135 | 6–20 | 20% | $ 1.42 | $ 1.13 | $0.78 | $0.62 | $0.52 | $ 1.94 | $ 1.53 | $ 1.06 | $ 0.85 | $0.71 | $ 4.53 | $ 3.62 | $ 2.34 | $1.96 | $1.64 |
| | | | 10% | 1.45 | 1.16 | .81 | .65 | .55 | 1.97 | 1.56 | 1.09 | .88 | .74 | 4.97 | 3.99 | 2.57 | 2.16 | 1.81 |
| | | 50 | 20% | 2.09 | 1.66 | 1.42 | 1.20 | .85 | 2.86 | 2.27 | 1.94 | 1.42 | 1.00 | 7.38 | 5.94 | 3.84 | 3.24 | 2.74 |
| | | | 10% | 2.71 | 2.17 | 1.83 | 1.58 | .90 | 3.69 | 2.95 | 2.49 | 1.65 | 1.05 | 8.11 | 6.58 | 4.22 | 3.57 | 3.01 |
| | | 75 | 20% | 3.14 | 2.50 | 2.11 | 1.81 | 1.66 | 4.28 | 3.42 | 2.88 | 2.46 | 2.26 | ...... | ...... | ...... | ...... | ...... |
| | | | 10% | 4.08 | 3.26 | 2.75 | 2.34 | 2.14 | 5.57 | 4.44 | 3.75 | 3.20 | 2.82 | ...... | ...... | ...... | ...... | ...... |
| | | 100 | 20% | 4.08 | 3.25 | 2.76 | 2.34 | 2.14 | 5.55 | 4.42 | 3.78 | 3.20 | 2.62 | ...... | ...... | ...... | ...... | ...... |
| | | | 10% | 5.30 | 4.24 | 3.58 | 3.04 | 2.80 | 7.24 | 5.78 | 4.87 | 4.14 | 3.32 | ...... | ...... | ...... | ...... | ...... |
| TR2 | .474 x .185 | 6–35 | 20% | 1.68 | 1.34 | .90 | .76 | .62 | 2.29 | 1.82 | 1.09 | .89 | .74 | 4.77 | 3.97 | 2.49 | 2.18 | 1.81 |
| | | | 10% | 1.71 | 1.37 | .93 | .79 | .65 | 2.32 | 1.85 | 1.12 | .92 | .77 | 5.26 | 4.36 | 2.74 | 2.40 | 1.99 |
| | | 50 | 20% | 2.20 | 1.76 | 1.50 | 1.27 | .90 | 3.00 | 2.39 | 2.04 | 1.53 | 1.04 | 10.93 | 8.84 | 5.66 | 4.81 | 4.01 |
| | | | 10% | 2.86 | 2.29 | 1.94 | 1.65 | .95 | 3.91 | 3.11 | 2.63 | 1.85 | 1.08 | 12.02 | 9.73 | 6.22 | 5.29 | 4.43 |
| | | 75 | 20% | 3.31 | 2.63 | 2.24 | 1.91 | 1.74 | 4.51 | 3.59 | 3.07 | 2.60 | 2.37 | ...... | ...... | ...... | ...... | ...... |
| | | | 10% | 4.30 | 3.42 | 2.90 | 2.48 | 2.27 | 5.86 | 4.67 | 3.96 | 3.37 | 3.01 | ...... | ...... | ...... | ...... | ...... |
| | | 100 | 20% | 4.30 | 3.42 | 2.90 | 2.48 | 2.26 | 5.86 | 4.67 | 3.96 | 3.37 | 3.09 | ...... | ...... | ...... | ...... | ...... |
| | | | 10% | 5.59 | 4.47 | 3.79 | 3.22 | 2.96 | 7.62 | 6.09 | 5.17 | 4.40 | 4.02 | ...... | ...... | ...... | ...... | ...... |
| TR3 | .686 x .289 | 6–35 | 20% | 2.77 | 2.22 | 1.51 | 1.22 | 1.03 | 3.79 | 3.00 | 2.05 | 1.67 | 1.40 | 7.12 | 5.87 | 3.68 | 3.21 | 2.64 |
| | | | 10% | 2.81 | 2.26 | 1.55 | 1.25 | 1.06 | 3.83 | 3.04 | 2.09 | 1.71 | 1.44 | 7.84 | 6.45 | 4.05 | 3.53 | 2.91 |
| | | 50 | 20% | 3.60 | 2.89 | 2.45 | 2.00 | 1.76 | 4.93 | 3.94 | 3.35 | 2.83 | 2.40 | 12.88 | 10.57 | 6.79 | 5.78 | 4.81 |
| | | | 10% | 4.70 | 3.75 | 3.19 | 2.70 | 2.47 | 6.40 | 5.10 | 4.34 | 3.69 | 3.05 | 14.77 | 11.62 | 7.36 | 6.36 | 5.29 |
| | | 75 | 20% | 5.42 | 4.32 | 3.67 | 3.13 | 2.87 | 7.39 | 5.89 | 5.01 | 4.26 | 3.92 | ...... | ...... | ...... | ...... | ...... |
| | | | 10% | 7.04 | 5.61 | 4.79 | 4.05 | 3.73 | 9.59 | 7.66 | 6.54 | 5.53 | 5.09 | ...... | ...... | ...... | ...... | ...... |
| TR4 | .786 x .351 | 6–35 | 20% | 5.19 | 4.12 | 3.05 | 2.46 | 2.05 | 7.07 | 5.57 | 4.17 | 3.36 | 2.79 | 10.22 | 8.25 | 5.31 | 4.50 | 3.79 |
| | | | 10% | 5.21 | 4.15 | 3.08 | 2.49 | 2.08 | 7.10 | 5.60 | 4.20 | 3.39 | 2.82 | 11.24 | 9.08 | 5.84 | 4.95 | 4.17 |
| | | 50 | 20% | 6.75 | 5.39 | 4.57 | 3.87 | 2.60 | 9.19 | 7.34 | 6.23 | 5.27 | 4.84 | 19.72 | 16.14 | 10.22 | 8.81 | 7.31 |
| | | | 10% | 8.76 | 7.00 | 5.52 | 4.83 | 3.10 | 11.95 | 9.54 | 8.07 | 6.86 | 5.86 | 21.70 | 17.75 | 11.25 | 9.69 | 8.04 |
| | | 75 | 20% | 10.12 | 8.06 | 6.86 | 5.81 | 5.33 | 13.80 | 11.00 | 9.35 | 7.90 | 7.25 | ...... | ...... | ...... | ...... | ...... |
| | | | 10% | 13.15 | 10.49 | 8.91 | 7.55 | 6.93 | 17.92 | 14.31 | 12.14 | 10.29 | 9.45 | ...... | ...... | ...... | ...... | ...... |

**COMPONENTS INCORPORATED**
A Subsidiary of Corning Glass Works

# Tantalum Capacitors

## ECONOTAN® SERIES EPOXY SEALED SUBMINIATURE SOLID TANTALUM CAPACITORS

Precision polar capacitors suitable for general filtering, coupling, energy storage, bypassing and non-critical RC timing applications. Voidless construction allows excellent shock and high-frequency vibration characteristics. Designed especially for high-volume consumer and industrial applications; combines low cost and small size with precision electrical and dimensional tolerances. **Temperature Range:** −55° C to +85° C without derating. **Tolerance:** ±20% and ±10% standard. **DC Leakage:** Will not exceed .01 μA/μF-V or 0.5 μA at rated WVDC, whichever is greater, at 25° C operating temperature; will not exceed 0.1 μA/μF-V or 5 μA, whichever is greater, at 85° C. **ORDERING INFORMATION:** Prices are keyed to case size. **Tolerance:** Add suffix **-20** for ±20% or suffix **-10** for ±10%. **Sleeving:** Polyester insulating sleeve is standard.



### CCT CASE

| Components No. | Cap., μF | WVDC at 85° C |
|---|---|---|
| CCT-050-472 | .0047 | 50 |
| CCT-050-562 | .0056 | 50 |
| CCT-050-682 | .0068 | 50 |
| CCT-050-822 | .0082 | 50 |
| CCT-050-103 | .010 | 50 |
| CCT-050-123 | .012 | 50 |
| CCT-050-153 | .015 | 50 |
| CCT-050-183 | .018 | 50 |
| CCT-050-223 | .022 | 50 |
| CCT-050-273 | .027 | 50 |
| CCT-050-333 | .033 | 50 |
| CCT-050-393 | .039 | 50 |
| CCT-050-473 | .047 | 50 |
| CCT-050-563 | .056 | 50 |
| CCT-050-683 | .068 | 50 |
| CCT-050-823 | .082 | 50 |
| CCT-050-104 | .10 | 50 |
| CCT-050-124 | .12 | 50 |
| CCT-050-154 | .15 | 50 |
| CCT-050-184 | .18 | 50 |
| CCT-050-224 | .22 | 50 |
| CCT-050-274 | .27 | 50 |
| CCT-050-334 | .33 | 50 |
| CCT-035-472 | .0047 | 35 |
| CCT-035-562 | .0056 | 35 |
| CCT-035-682 | .0068 | 35 |
| CCT-035-822 | .0082 | 35 |
| CCT-035-103 | .010 | 35 |
| CCT-035-123 | .012 | 35 |
| CCT-035-153 | .015 | 35 |
| CCT-035-183 | .018 | 35 |
| CCT-035-223 | .022 | 35 |
| CCT-035-273 | .027 | 35 |
| CCT-035-333 | .033 | 35 |
| CCT-035-393 | .039 | 35 |
| CCT-035-473 | .047 | 35 |
| CCT-035-563 | .056 | 35 |
| CCT-035-683 | .068 | 35 |
| CCT-035-823 | .082 | 35 |
| CCT-035-104 | .10 | 35 |
| CCT-035-124 | .12 | 35 |
| CCT-035-154 | .15 | 35 |
| CCT-035-184 | .18 | 35 |
| CCT-035-224 | .22 | 35 |
| CCT-035-274 | .27 | 35 |
| CCT-035-334 | .33 | 35 |
| CCT-035-394 | .39 | 35 |
| CCT-035-474 | .47 | 35 |
| CCT-025-564 | .56 | 25 |
| CCT-025-684 | .68 | 25 |
| CCT-025-824 | .82 | 25 |
| CCT-025-105 | 1.0 | 25 |
| CCT-020-125 | 1.2 | 20 |
| CCT-020-155 | 1.5 | 20 |
| CCT-015-185 | 1.8 | 15 |
| CCT-015-225 | 2.2 | 15 |
| CCT-010-275 | 2.7 | 10 |
| CCT-010-335 | 3.3 | 10 |
| CCT-006-395 | 3.9 | 6 |
| CCT-006-475 | 4.7 | 6 |
| CCT-004-565 | 5.6 | 4 |
| CCT-004-685 | 6.8 | 4 |
| CCT-002-825 | 8.2 | 2 |
| CCT-002-106 | 10 | 2 |

### CCM CASE

| Components No. | Cap., μF | WVDC at 85° C |
|---|---|---|
| CCM-050-394 | .39 | 50 |
| CCM-050-474 | .47 | 50 |
| CCM-050-564 | .56 | 50 |
| CCM-050-684 | .68 | 50 |
| CCM-050-824 | .82 | 50 |
| CCM-050-105 | 1.0 | 50 |
| CCM-035-564 | .56 | 35 |
| CCM-035-684 | .68 | 35 |
| CCM-035-824 | .82 | 35 |
| CCM-035-105 | 1.0 | 35 |
| CCM-035-125 | 1.2 | 35 |
| CCM-035-155 | 1.5 | 35 |
| CCM-025-185 | 1.8 | 25 |
| CCM-025-225 | 2.2 | 25 |
| CCM-025-275 | 2.7 | 25 |
| CCM-025-335 | 3.3 | 25 |
| CCM-020-395 | 3.9 | 20 |
| CCM-020-475 | 4.7 | 20 |
| CCM-015-565 | 5.6 | 15 |
| CCM-015-685 | 6.8 | 15 |
| CCM-010-825 | 8.2 | 10 |
| CCM-010-106 | 10 | 10 |
| CCM-006-126 | 12 | 6 |
| CCM-006-156 | 15 | 6 |
| CCM-004-186 | 18 | 4 |
| CCM-004-226 | 22 | 4 |
| CCM-002-276 | 27 | 2 |
| CCM-002-336 | 33 | 2 |

### CCL CASE

| Components No. | Cap., μF | WVDC at 85° C |
|---|---|---|
| CCL-050-125 | 1.2 | 50 |
| CCL-050-155 | 1.5 | 50 |
| CCL-050-185 | 1.8 | 50 |
| CCL-050-225 | 2.2 | 50 |
| CCL-035-185 | 1.8 | 35 |
| CCL-035-225 | 2.2 | 35 |
| CCL-035-275 | 2.7 | 35 |
| CCL-035-355 | 3.3 | 35 |
| CCL-025-395 | 3.9 | 25 |
| CCL-025-475 | 4.7 | 25 |
| CCL-025-565 | 5.6 | 25 |
| CCL-025-685 | 6.8 | 25 |
| CCL-020-825 | 8.2 | 20 |
| CCL-020-106 | 10 | 20 |
| CCL-015-126 | 12 | 15 |
| CCL-015-156 | 15 | 15 |
| CCL-010-186 | 18 | 10 |
| CCL-010-226 | 22 | 10 |
| CCL-006-276 | 27 | 6 |
| CCL-006-336 | 33 | 6 |
| CCL-004-396 | 39 | 4 |
| CCL-004-476 | 47 | 4 |
| CCL-002-566 | 56 | 2 |
| CCL-002-686 | 68 | 2 |

### CCD CASE

| Components No. | Cap., μF | WVDC at 85° C |
|---|---|---|
| CCD-050-275 | 2.7 | 50 |
| CCD-050-335 | 3.3 | 50 |
| CCD-050-395 | 3.9 | 50 |
| CCD-050-475 | 4.7 | 50 |
| CCD-035-395 | 3.9 | 35 |
| CCD-035-475 | 4.7 | 35 |
| CCD-035-565 | 5.6 | 35 |
| CCD-035-685 | 6.8 | 35 |
| CCD-025-825 | 8.2 | 25 |
| CCD-025-106 | 10 | 25 |
| CCD-020-126 | 12 | 20 |
| CCD-020-156 | 15 | 20 |
| CCD-015-186 | 18 | 15 |
| CCD-015-226 | 22 | 15 |
| CCD-010-276 | 27 | 10 |
| CCD-010-336 | 33 | 10 |
| CCD-010-396 | 39 | 10 |
| CCD-006-476 | 47 | 6 |
| CCD-006-566 | 56 | 6 |

### CCZ CASE

| Components No. | Cap., μF | WVDC at 85° C |
|---|---|---|
| CCZ-050-565 | 5.6 | 50 |
| CCZ-050-685 | 6.8 | 50 |
| CCZ-050-825 | 8.2 | 50 |
| CCZ-050-106 | 10 | 50 |
| CCZ-050-126 | 12 | 50 |
| CCZ-050-156 | 15 | 50 |
| CCZ-050-186 | 18 | 50 |
| CCZ-035-825 | 8.2 | 35 |
| CCZ-035-106 | 10 | 35 |
| CCZ-035-126 | 12 | 35 |
| CCZ-035-156 | 15 | 35 |
| CCZ-035-186 | 18 | 35 |
| CCZ-035-226 | 22 | 35 |
| CCZ-025-276 | 27 | 25 |
| CCZ-025-336 | 33 | 25 |
| CCZ-020-396 | 39 | 20 |
| CCZ-020-476 | 47 | 20 |
| CCZ-015-566 | 56 | 15 |
| CCZ-015-686 | 68 | 15 |
| CCZ-010-826 | 82 | 10 |
| CCZ-010-107 | 100 | 10 |
| CCZ-010-127 | 120 | 10 |
| CCZ-006-157 | 150 | 6 |
| CCZ-006-187 | 180 | 6 |

### CCH CASE

| Components No. | Cap., μF | WVDC at 85° C |
|---|---|---|
| CCH-050-226 | 22 | 50 |
| CCH-035-276 | 27 | 35 |
| CCH-035-336 | 33 | 35 |
| CCH-035-396 | 39 | 35 |
| CCH-035-476 | 47 | 35 |
| CCH-025-566 | 56 | 25 |
| CCH-025-686 | 68 | 25 |
| CCH-020-826 | 82 | 20 |
| CCH-020-107 | 100 | 20 |
| CCH-015-127 | 120 | 15 |
| CCH-015-157 | 150 | 15 |
| CCH-010-187 | 180 | 10 |
| CCH-010-227 | 220 | 10 |
| CCH-006-277 | 270 | 6 |
| CCH-006-337 | 330 | 6 |

### PRICING

| Case | Size, In.* Lgth. x Dia. | Tol. | WV DC | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| **CCT** | .260 x .095 | ±20% | 2-35<br>50 | $0.39<br>.49 | $0.34<br>.42 | $0.29<br>.35 | $0.25<br>.30 | $0.21<br>.24 |
| | | ±10% | 2-35<br>50 | .45<br>.55 | .39<br>.47 | .33<br>.39 | .28<br>.33 | .23<br>.26 |
| **CCM** | .320 x .133 | ±20% | 2-35<br>50 | .42<br>.52 | .37<br>.45 | .32<br>.38 | .28<br>.33 | .24<br>.27 |
| | | ±10% | 2-35<br>50 | .48<br>.58 | .42<br>.47 | .36<br>.42 | .31<br>.36 | .26<br>.29 |
| **CCL** | .345 x .180 | ±20% | 2-35<br>50 | .46<br>.56 | .40<br>.48 | .35<br>.41 | .31<br>.36 | .27<br>.30 |
| | | ±10% | 2-35<br>50 | .52<br>.62 | .45<br>.53 | .39<br>.45 | .34<br>.39 | .29<br>.32 |

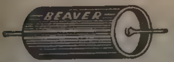
*For unsleeved units, subtract .010″ from length and .005″ from diameter.

| Case | Size, In.* Lgth. x Dia. | Tol. | WV DC | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| **CCD** | .510 x .190 | ±20% | 6-35<br>50 | $0.50<br>.60 | $0.45<br>.53 | $0.40<br>.46 | $0.35<br>.40 | $0.30<br>.33 |
| | | ±10% | 6-35<br>50 | .56<br>.66 | .50<br>.58 | .44<br>.50 | .38<br>.43 | .32<br>.35 |
| **CCZ** | .750 x .310 | ±20% | 6-35<br>50 | 1.02<br>1.12 | .88<br>.96 | .74<br>.80 | .64<br>.69 | .55<br>.58 |
| | | ±10% | 6-35<br>50 | 1.10<br>1.20 | .95<br>1.03 | .80<br>.86 | .68<br>.73 | .58<br>.61 |
| **CCH** | .810 x .360 | ±20% | 6-35<br>50 | 1.86<br>1.96 | 1.63<br>1.71 | 1.40<br>1.46 | 1.23<br>1.28 | 1.06<br>1.09 |
| | | ±10% | 6-35<br>50 | 1.96<br>2.06 | 1.72<br>1.80 | 1.47<br>1.53 | 1.28<br>1.33 | 1.10<br>1.13 |

*For unsleeved units, subtract .010″ from length and .005″ from diameter.

# CORNELL-DUBILIER TUBULAR ELECTROLYTIC CAPACITORS

## BLUE BEAVER® TUBULAR ELECTROLYTIC CAPACITORS



Hermetically sealed in aluminum cases with cardboard insulating sleeve. **Negative terminal grounded to can.** Temperature range to 85° C up to 450 VDC; units, 500 VDC and above, to 65° C. Etched cathode to 150 V. With rubber-Bakelite* hermetic seal; seal provided with rubber safety vent for units over 3/8" dia. *Registered Bakelite Corp. trademark.

### SINGLE SECTION

| CDE Number | Cap., μF | WVDC | Net Each, Lots of* 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|
| BR 5-6 | 5 | 6 | $0.48 | $0.35 | $0.27 | $0.22 | $0.19 |
| BR 25-6 | 25 | 6 | .51 | .37 | .29 | .23 | .20 |
| BR 50-6 | 50 | 6 | .57 | .41 | .32 | .26 | .22 |
| BR 100-6 | 100 | 6 | .69 | .50 | .39 | .31 | .26 |
| BR 250-6 | 250 | 6 | .81 | .64 | .50 | .40 | .34 |
| BR 500-6 | 500 | 6 | .93 | .73 | .57 | .45 | .38 |
| BR 1000-6 | 1000 | 6 | 1.14 | .89 | .69 | .55 | .47 |
| BR 2000-6 | 2000 | 6 | 1.38 | 1.04 | .83 | .67 | .57 |
| BR 3000-6 | 3000 | 6 | 1.80 | 1.35 | 1.04 | .84 | .72 |
| BR 4000-6 | 4000 | 6 | 2.04 | 1.54 | 1.20 | .95 | .82 |
| BR 100-15 | 100 | 15 | .75 | .52 | .41 | .33 | .28 |
| BR 250-15 | 250 | 15 | .93 | .73 | .57 | .46 | .40 |
| BR 500-15 | 500 | 15 | 1.05 | .82 | .64 | .51 | .43 |
| BR 1000-15 | 1000 | 15 | 1.41 | 1.07 | .83 | .67 | .58 |
| BR 2000-15 | 2000 | 15 | 1.68 | 1.26 | .97 | .78 | .67 |
| BR 3000-15 | 3000 | 15 | 2.37 | 1.82 | 1.42 | 1.14 | .97 |
| BR 4000-15 | 4000 | 15 | 3.00 | 2.25 | 1.75 | 1.40 | 1.20 |
| BR 5000-15 | 5000 | 15 | 3.27 | 2.45 | 1.91 | 1.53 | 1.30 |
| BR 10-25 | 10 | 25 | .60 | .42 | .33 | .26 | .23 |
| BR 20-25 | 20 | 25 | .60 | .43 | .34 | .27 | .23 |
| BR 25-25 | 25 | 25 | .60 | .44 | .35 | .28 | .24 |
| BR 50-25 | 50 | 25 | .66 | .47 | .37 | .30 | .25 |
| BR 100-25 | 100 | 25 | .78 | .57 | .45 | .36 | .30 |
| BR 250-25 | 250 | 25 | 1.02 | .79 | .62 | .49 | .42 |
| BR 500-25 | 500 | 25 | 1.38 | 1.04 | .83 | .67 | .57 |
| BR 1000-25 | 1000 | 25 | 2.37 | 1.78 | 1.39 | 1.11 | .95 |
| BR 2000-25 | 2000 | 25 | 2.91 | 2.19 | 1.70 | 1.36 | 1.17 |
| BR 3000-25 | 3000 | 25 | 3.30 | 2.47 | 1.93 | 1.54 | 1.32 |
| BR 4000-25 | 4000 | 25 | 3.90 | 2.92 | 2.28 | 1.82 | 1.56 |
| BR 1-50 | 1 | 50 | .54 | .39 | .31 | .24 | .21 |
| BR 2-50 | 2 | 50 | .54 | .39 | .31 | .24 | .21 |
| BR 4-50 | 4 | 50 | .54 | .41 | .32 | .25 | .22 |
| BR 5-50 | 5 | 50 | .60 | .42 | .32 | .26 | .22 |
| BR 10-50 | 10 | 50 | .60 | .42 | .33 | .27 | .23 |
| BR 25-50 | 25 | 50 | .63 | .44 | .35 | .28 | .24 |
| BR 50-50 | 50 | 50 | .72 | .51 | .40 | .32 | .28 |
| BR 100-50 | 100 | 50 | .81 | .59 | .46 | .37 | .31 |
| BR 150-50 | 150 | 50 | .90 | .66 | .51 | .41 | .35 |
| BR 250-50 | 250 | 50 | 1.05 | .83 | .64 | .51 | .44 |
| BR 500-50 | 500 | 50 | 1.44 | 1.11 | .86 | .69 | .59 |
| BR 1000-50 | 1000 | 50 | 2.49 | 1.84 | 1.44 | 1.15 | .98 |
| BR 1500-50 | 1500 | 50 | 3.00 | 2.26 | 1.76 | 1.41 | 1.21 |
| BR 2000-50 | 2000 | 50 | 3.48 | 2.60 | 2.02 | 1.61 | 1.38 |
| BR 3000-50 | 3000 | 50 | 3.90 | 2.92 | 2.28 | 1.82 | 1.56 |
| BR 4-150 | 4 | 150 | .60 | .43 | .33 | .27 | .23 |
| BR 8-150 | 8 | 150 | .63 | .45 | .34 | .28 | .24 |
| BR 10-150 | 10 | 150 | .63 | .46 | .35 | .29 | .25 |
| BR 12-150 | 12 | 150 | .66 | .47 | .37 | .29 | .25 |
| BR 16-150 | 16 | 150 | .69 | .49 | .38 | .31 | .26 |
| BR 20-150 | 20 | 150 | .69 | .50 | .39 | .31 | .27 |
| BR 25-150 | 25 | 150 | .75 | .53 | .41 | .33 | .28 |
| BR 30-150 | 30 | 150 | .75 | .55 | .43 | .34 | .29 |
| BR 40-150 | 40 | 150 | .81 | .58 | .45 | .36 | .31 |
| BR 50-150 | 50 | 150 | .84 | .59 | .46 | .37 | .32 |
| BR 60-150 | 60 | 150 | .87 | .63 | .49 | .39 | .34 |
| BR 80-150 | 80 | 150 | .93 | .68 | .54 | .43 | .36 |
| BR 100-150 | 100 | 150 | 1.05 | .74 | .58 | .46 | .40 |
| BR 150-150 | 150 | 150 | 1.11 | .82 | .63 | .51 | .44 |
| BR 200-150 | 200 | 150 | 1.32 | .98 | .77 | .62 | .53 |
| BR 250-150 | 250 | 150 | 1.65 | 1.24 | .96 | .77 | .66 |
| BR 300-150 | 300 | 150 | 1.77 | 1.35 | 1.04 | .84 | .72 |
| BR 4-250 | 4 | 250 | .63 | .47 | .37 | .30 | .25 |
| BR 5-250 | 5 | 250 | .66 | .49 | .38 | .31 | .26 |
| BR 8-250 | 8 | 250 | .69 | .53 | .41 | .33 | .28 |
| BR 12-250 | 12 | 250 | .75 | .57 | .44 | .35 | .30 |
| BR 16-250 | 16 | 250 | .78 | .60 | .47 | .38 | .32 |
| BR 20-250 | 20 | 250 | .81 | .64 | .49 | .40 | .34 |
| BR 30-250 | 30 | 250 | .87 | .68 | .53 | .42 | .36 |
| BR 40-250 | 40 | 250 | .93 | .73 | .57 | .46 | .40 |
| BR 50-250 | 50 | 250 | 1.05 | .80 | .62 | .50 | .43 |
| BR 60-250 | 60 | 250 | 1.08 | .84 | .65 | .52 | .44 |
| BR 80-250 | 80 | 250 | 1.17 | .91 | .71 | .57 | .48 |
| BR 100-250 | 100 | 250 | 1.32 | .96 | .75 | .60 | .52 |
| BR 150-250 | 150 | 250 | 1.50 | 1.12 | .85 | .70 | .60 |
| BR 200-250 | 200 | 250 | 1.80 | 1.35 | 1.05 | .84 | .72 |
| BR 4-350 | 4 | 350 | .63 | .49 | .38 | .30 | .26 |
| BR 8-350 | 8 | 350 | .72 | .55 | .43 | .34 | .29 |
| BR 12-350 | 12 | 350 | .78 | .60 | .47 | .38 | .32 |
| BR 16-350 | 16 | 350 | .84 | .66 | .51 | .41 | .35 |
| BR 20-350 | 20 | 350 | .87 | .68 | .52 | .42 | .36 |
| BR 30-350 | 30 | 350 | .99 | .77 | .60 | .48 | .41 |
| BR 40-350 | 40 | 350 | 1.05 | .81 | .62 | .51 | .43 |
| BR 50-350 | 50 | 350 | 1.11 | .87 | .68 | .54 | .47 |
| BR 60-350 | 60 | 350 | 1.17 | .91 | .71 | .57 | .48 |
| BR 80-350 | 80 | 350 | 1.35 | 1.01 | .78 | .63 | .54 |
| BR 100-350 | 100 | 350 | 1.50 | 1.11 | .86 | .69 | .59 |
| BR 150-350 | 150 | 350 | 1.95 | 1.44 | 1.02 | .90 | .77 |
| BR 200-350 | 200 | 350 | 2.40 | 1.78 | 1.39 | 1.11 | .95 |
| BR 1-450 | 1 | 450 | .66 | .51 | .39 | .32 | .27 |
| BR 2-450 | 2 | 450 | .66 | .52 | .40 | .32 | .28 |
| BR 4-450 | 4 | 450 | .69 | .53 | .42 | .34 | .29 |
| BR 5-450 | 5 | 450 | .72 | .56 | .43 | .35 | .30 |
| BR 8-450 | 8 | 450 | .75 | .59 | .46 | .37 | .31 |
| BR 10-450 | 10 | 450 | .78 | .62 | .47 | .38 | .33 |
| BR 12-450 | 12 | 450 | .81 | .64 | .50 | .40 | .34 |
| BR 16-450 | 16 | 450 | .87 | .65 | .53 | .42 | .36 |
| BR 20-450 | 20 | 450 | .93 | .73 | .56 | .45 | .38 |
| BR 30-450 | 30 | 450 | 1.02 | .80 | .62 | .50 | .42 |
| BR 40-450 | 40 | 450 | 1.08 | .83 | .64 | .52 | .44 |
| BR 50-450 | 50 | 450 | $1.26 | $0.97 | $0.75 | $0.61 | $0.52 |
| BR 60-450 | 60 | 450 | 1.41 | 1.08 | .83 | .67 | .57 |
| BR 80-450 | 80 | 450 | 1.68 | 1.28 | .98 | .79 | .67 |
| BR 100-450 | 100 | 450 | 1.92 | 1.48 | 1.15 | .92 | .80 |
| BR 150-450 | 150 | 450 | 2.70 | 2.00 | 1.55 | 1.25 | 1.07 |
| BR 200-450 | 200 | 450 | 3.30 | 2.50 | 1.95 | 1.56 | 1.33 |
| BR 4-500 | 4 | 500 | .72 | .56 | .43 | .35 | .30 |
| BR 8-500 | 8 | 500 | .78 | .61 | .47 | .38 | .33 |
| BR 10-500 | 10 | 500 | .81 | .64 | .50 | .40 | .34 |
| BR 12-500 | 12 | 500 | .84 | .66 | .51 | .41 | .35 |
| BR 16-500 | 16 | 500 | .90 | .70 | .54 | .43 | .37 |
| BR 20-500 | 20 | 500 | .96 | .74 | .58 | .47 | .40 |
| BR 30-500 | 30 | 500 | 1.05 | .82 | .66 | .52 | .44 |
| BR 4-600 | 4 | 600 | 1.44 | 1.08 | .84 | .67 | .58 |
| BR 8-600 | 8 | 600 | 1.68 | 1.26 | .98 | .78 | .67 |
| BR 10-600 | 10 | 600 | 1.80 | 1.35 | 1.05 | .84 | .72 |
| BR 12-600 | 12 | 600 | 1.92 | 1.46 | 1.12 | .90 | .77 |
| BR 16-600 | 16 | 600 | 2.10 | 1.57 | 1.23 | .98 | .84 |
| BR 20-600 | 20 | 600 | 2.31 | 1.73 | 1.35 | 1.08 | .92 |
| BR 8-700 | 8 | 700 | 1.74 | 1.31 | 1.02 | .81 | .70 |
| BR 10-700 | 10 | 700 | 1.86 | 1.40 | 1.09 | .87 | .74 |
| BR 12-700 | 12 | 700 | 1.98 | 1.49 | 1.16 | .92 | .79 |
| BR 16-700 | 16 | 700 | 2.25 | 1.69 | 1.31 | 1.05 | .90 |

### BRNP NON-POLARIZED SINGLE SECTION

| CDE No. BRNP- | Cap., μF | WVDC | Net Each, Lots of* 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|
| 1000-3 | 1000 | 3 NPV | $1.29 | $1.01 | $0.79 | $0.63 | $0.54 |
| 4-10 | 4 | 10 NPV | .72 | .51 | .40 | .32 | .27 |
| 8-10 | 8 | 10 NPV | .72 | .54 | .42 | .33 | .28 |
| 170-10 | 170 | 10 NPV | .90 | .67 | .53 | .42 | .36 |
| 500-10 | 500 | 10 NPV | 1.14 | .80 | .62 | .50 | .42 |
| 5-15 | 5 | 15 NPV | .72 | .51 | .40 | .32 | .27 |
| 500-15 | 500 | 15 NPV | 1.35 | .98 | .76 | .61 | .52 |
| .68-25 | .68 | 25 NPV | .72 | .51 | .40 | .32 | .27 |
| 4-25 | 4 | 25 NPV | .72 | .51 | .40 | .32 | .27 |
| 20-30 | 20 | 30 NPV | .75 | .54 | .42 | .34 | .29 |
| 1-50 | 1 | 50 NPV | .66 | .49 | .38 | .31 | .26 |
| 2-50 | 2 | 50 NPV | .66 | .49 | .38 | .31 | .26 |
| 4-50 | 4 | 50 NPV | .72 | .51 | .40 | .32 | .27 |
| 50-50 | 50 | 50 NPV | .87 | .65 | .50 | .40 | .35 |
| 5-400 | 5 | 400 NPV | .75 | .56 | .44 | .35 | .30 |
| 10-400 | 10 | 400 NPV | .99 | .74 | .58 | .46 | .40 |
| 20-400 | 20 | 400 NPV | 1.20 | .89 | .70 | .56 | .48 |

### BBRD DUAL COMMON NEGATIVE

| BBRD- | | | | | | | |
|---|---|---|---|---|---|---|---|
| 115 | 10–10 | 50 | $0.84 | $0.72 | $0.55 | $0.49 | $0.44 |
| 2215 | 20–20 | 150 | .99 | .79 | .60 | .53 | .48 |
| 3315 | 30–30 | 150 | 1.08 | .84 | .64 | .58 | .51 |
| 4215 | 40–20 | 150 | 1.05 | .84 | .63 | .58 | .51 |
| 4415 | 40–40 | 150 | 1.11 | .87 | .66 | .59 | .53 |
| 5315 | 50–30 | 150 | 1.17 | .87 | .67 | .59 | .53 |
| 5515 | 50–50 | 150 | 1.26 | .87 | .73 | .66 | .59 |
| 8415 | 80–40 | 150 | 1.35 | .97 | .77 | .69 | .61 |
| 8515 | 80–50 | 150 | 1.38 | 1.02 | .78 | .70 | .62 |
| 0183.7 | 100–50 | 150 | 1.80 | 1.10 | .83 | .76 | .67 |
| 101015 | 100–100 | 150 | 1.92 | 1.20 | .91 | .81 | .73 |
| 0196 | 200–5 | 200 | 2.10 | 1.31 | 1.00 | .90 | .80 |
| 8D25 | 8–8 | 250 | .96 | .74 | .56 | .51 | .45 |
| 16D25 | 16–16 | 250 | 1.08 | .87 | .66 | .59 | .53 |
| 2225 | 20–20 | 250 | 1.11 | .92 | .70 | .63 | .56 |
| 3325 | 30–30 | 250 | 1.35 | 1.02 | .78 | .70 | .62 |
| 7V225 | 75–20 | 250 | 1.56 | 1.18 | .90 | .81 | .72 |
| 0286 | 150–100 | 300 | 3.15 | 2.40 | 1.84 | 1.65 | 1.47 |
| 8D45 | 8–8 | 450 | 1.02 | .91 | .69 | .62 | .55 |
| 1145 | 10–10 | 450 | 1.17 | .95 | .72 | .65 | .58 |
| 16D45 | 16–16 | 450 | 1.35 | 1.12 | .85 | .76 | .68 |
| 2245 | 20–20 | 450 | 1.50 | 1.23 | .94 | .84 | .75 |
| 3345 | 30–30 | 450 | 1.80 | 1.50 | 1.14 | 1.02 | .91 |
| 4445 | 40–40 | 450 | 2.04 | 1.74 | 1.32 | 1.19 | 1.06 |

### BBRT TRIPLE COMMON NEGATIVE

| BBRT- | | | | | | | |
|---|---|---|---|---|---|---|---|
| 22215 | 20–20–20 | 150 | $1.32 | $1.23 | $0.94 | $0.84 | $0.75 |
| 32V215 | 30–25–20 | 150 | 1.35 | 1.28 | .97 | .87 | .78 |
| 33315 | 30–30–30 | 150 | 1.41 | 1.30 | .99 | .88 | .79 |
| 42215 | 40–20–20 | 150 | 1.41 | 1.30 | .99 | .88 | .79 |
| 43215 | 40–30–20 | 150 | 1.41 | 1.30 | .99 | .88 | .79 |
| 44215 | 40–40–20 | 150 | 1.41 | 1.31 | 1.00 | .90 | .80 |
| 44415 | 40–40–40 | 150 | 1.47 | 1.36 | 1.04 | .93 | .83 |
| 53215 | 50–30–20 | 150 | 1.41 | 1.31 | 1.00 | .90 | .80 |
| 84215 | 80–40–20 | 150 | 1.65 | 1.40 | 1.08 | .97 | .86 |
| 0126.5 | 150–150–150 | 150 | 2.85 | 2.30 | 1.75 | 1.57 | 1.40 |
| 0129 | 250–200–10 | 150 | 3.39 | 2.33 | 1.77 | 1.58 | 1.41 |
| 0185 | 40–40–40 | 300 | 2.76 | 1.71 | 1.30 | 1.16 | 1.04 |
| 11145 | 10–10–10 | 450 | 1.74 | 1.51 | 1.15 | 1.04 | .92 |
| 16T45 | 16–16–16 | 450 | 1.86 | 1.57 | 1.20 | 1.08 | .96 |
| 5315C | 50–30, 20 | 150, 25 | 1.41 | 1.30 | .99 | .88 | .79 |
| 5515C | 50–50, 20 | 150, 25 | 1.50 | 1.34 | 1.02 | .93 | .82 |
| 8415C | 80–40, 20 | 150, 25 | 1.59 | 1.38 | 1.05 | .94 | .84 |
| 4415C | 40–40, 20 | 150, 25 | 1.35 | 1.30 | .99 | .88 | .79 |

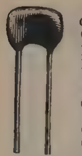
### BBRQ QUADRUPLE COMMON NEGATIVE

| BBRQ- | | | | | | | |
|---|---|---|---|---|---|---|---|
| 111145 | 10–10–10–10 | 450 | $1.92 | $1.67 | $1.28 | $1.15 | $1.02 |
| 222245 | 20–20–20–20 | 450 | 2.70 | 2.12 | 1.61 | 1.44 | 1.29 |
| 0174 | 40–40–20–20 | 450 | 3.27 | 2.50 | 1.89 | 1.70 | 1.51 |
| 44315C | 40–40–30, 20 | 150, 25 | 1.80 | 1.55 | 1.18 | 1.05 | .94 |
| 55515C | 50–50–50, 20 | 150, 25 | 2.07 | 1.63 | 1.24 | 1.11 | .99 |
| 0925 | 140, 5, 200–30 | 350, 300, 200 | 4.59 | 2.90 | 2.21 | 1.98 | 1.76 |
| 0926.5 | 10, 80, 40–40 | 450, 300, 250 | 2.97 | 2.15 | 1.64 | 1.47 | 1.31 |

★LARGER QUANTITY PRICES AVAILABLE ON REQUEST.

# CORNELL-DUBILIER Mica Capacitors

## CD6—CD42 DIPPED SILVERED MICAS



**Range:** −55° C to +125° C. **Temp. Characteristic:** Indicated by 3rd letter in number (e.g., CD10CD050D): C, ±200 ppm/° C (drift, ±0.5%); E, −20 to +100 ppm/° C (drift, ±sum of 0.1% and .1 pF); F, 0 to +70 ppm/° C (drift, ±sum of 0.05% and .1 pF). **Tolerance:** ±5% unless otherwise noted (many values available in ±20%, ±2%, ±1%). **Voltage:** 500 WVDC unless otherwise noted. Only commercial types listed. For MIL type, change prefix CD10 to CM04, CD15 to CM05, CD19 to CM06, CD30 to CM07, or CD42 to CM08. **Note:** CD6 and CD7 types not available in MIL version.

| CDE Number* | Cap., pF | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|
| CD6CD020C§ | 2 | $0.45 | $0.263 | $0.15 | $0.113 |
| CD6CD030C§ | 3 | .45 | .263 | .15 | .113 |
| CD6CD040C§ | 4 | .45 | .263 | .15 | .113 |
| CD6CD050C§ | 5 | .45 | .263 | .15 | .113 |
| CD6CD060C§ | 6 | .45 | .263 | .15 | .113 |
| CD6CD070C§ | 7 | .45 | .263 | .15 | .113 |
| CD6CD080C§ | 8 | .45 | .263 | .15 | .113 |
| CD6CD090C§ | 9 | .45 | .263 | .15 | .113 |
| CD6CD100K† | 10 | .45 | .263 | .15 | .113 |
| CD6CD110K† | 11 | .45 | .263 | .15 | .113 |
| CD6CD120K† | 12 | .46 | .269 | .154 | .115 |
| CD6CD150K† | 15 | .46 | .269 | .154 | .115 |
| CD6CD180K† | 18 | .46 | .269 | .154 | .115 |
| CD6CD200J | 20 | .51 | .298 | .17 | .128 |
| CD6CD220J | 22 | .51 | .298 | .17 | .128 |
| CD6ED240J | 24 | .54 | .315 | .18 | .135 |
| CD6ED270J | 27 | .54 | .315 | .18 | .135 |
| CD6ED300J | 30 | .54 | .315 | .18 | .135 |
| CD6ED330J | 33 | .558 | .326 | .186 | .14 |
| CD6ED360J | 36 | .558 | .326 | .186 | .14 |
| CD6ED390J | 39 | .558 | .326 | .186 | .14 |
| CD6ED430J | 43 | .558 | .326 | .186 | .14 |
| CD6ED470J | 47 | .558 | .326 | .186 | .14 |
| CD6ED500J | 50 | .60 | .35 | .20 | .15 |
| CD6ED510J | 51 | .60 | .35 | .20 | .15 |
| CD6ED560J | 56 | .60 | .35 | .20 | .15 |
| CD6ED620J | 62 | .60 | .35 | .20 | .15 |
| CD6ED680J | 68 | .654 | .382 | .218 | .164 |
| CD6ED750J | 75 | .654 | .382 | .218 | .164 |
| CD6ED820J‡ | 82 | .672 | .392 | .224 | .168 |
| CD6EC910J‡ | 91 | .672 | .392 | .224 | .168 |
| CD6FC101J‡ | 100 | .672 | .392 | .224 | .168 |
| CD6FC111J‡ | 110 | .69 | .403 | .23 | .173 |
| CD6FC121J‡ | 120 | .69 | .403 | .23 | .173 |
| CD6CA020C§# | 2 | .342 | .20 | .114 | .086 |
| CD6CA030C§# | 3 | .342 | .20 | .114 | .086 |
| CD6CA040C§# | 4 | .342 | .20 | .114 | .086 |
| CD6CA050C§# | 5 | .342 | .20 | .114 | .086 |
| CD6CA060C§# | 6 | .342 | .20 | .114 | .086 |
| CD6CA070C§# | 7 | .342 | .20 | .114 | .086 |
| CD6CA080C§# | 8 | .342 | .20 | .114 | .086 |
| CD6CA090C§# | 9 | .342 | .20 | .114 | .086 |
| CD6CA100K†# | 10 | .342 | .20 | .114 | .086 |
| CD6CA110K†# | 11 | .342 | .20 | .114 | .086 |
| CD6CA120J# | 12 | .396 | .231 | .132 | .099 |
| CD6CA150J# | 15 | .402 | .235 | .134 | .101 |
| CD6CA180J# | 18 | .402 | .235 | .134 | .101 |
| CD6CA200J# | 20 | .402 | .235 | .134 | .101 |
| CD6CA220J# | 22 | .408 | .238 | .136 | .102 |
| CD6EA240J# | 24 | .408 | .238 | .136 | .102 |
| CD6EA270J# | 27 | .408 | .238 | .136 | .102 |
| CD6EA300J# | 30 | .414 | .242 | .138 | .104 |
| CD6EA330J# | 33 | .414 | .242 | .138 | .104 |
| CD6EA360J# | 36 | .42 | .245 | .14 | .105 |
| CD6EA390J# | 39 | .42 | .245 | .14 | .105 |
| CD6EA430J# | 43 | .432 | .252 | .144 | .108 |
| CD6EA470J# | 47 | .432 | .252 | .144 | .108 |
| CD6EA500J# | 50 | .45 | .263 | .15 | .113 |
| CD6EA510J# | 51 | .45 | .263 | .15 | .113 |
| CD6EA560J# | 56 | .45 | .263 | .15 | .113 |
| CD6EA620J# | 62 | .462 | .27 | .154 | .116 |
| CD6EA680J# | 68 | .474 | .277 | .158 | .119 |
| CD6EA750J# | 75 | .504 | .294 | .168 | .126 |
| CD6EA820J# | 82 | .528 | .308 | .176 | .132 |
| CD6EA910J# | 91 | .558 | .326 | .186 | .14 |
| CD6FA101J# | 100 | .558 | .326 | .186 | .14 |
| CD6FA111J# | 110 | .624 | .364 | .208 | .156 |
| CD6FA121J# | 120 | .624 | .364 | .208 | .156 |
| CD7FD131J | 130 | .702 | .41 | .234 | .176 |
| CD7FD151J | 150 | .702 | .41 | .234 | .176 |
| CD7FD161J | 160 | .72 | .42 | .24 | .18 |
| CD7FD181J | 180 | .732 | .427 | .244 | .183 |
| CD7FD201J‡ | 200 | .768 | .448 | .256 | .192 |
| CD7FC221J‡ | 220 | .81 | .473 | .27 | .203 |
| CD7FC241J‡ | 240 | .84 | .49 | .28 | .21 |
| CD7FC251J‡ | 250 | .87 | .508 | .29 | .218 |
| CD7FC271J‡ | 270 | .888 | .518 | .296 | .222 |
| CD7FC301J‡ | 300 | .918 | .536 | .306 | .23 |
| CD7FA331J‡ | 330 | 1.002 | .585 | .334 | .251 |
| CD7FA361J# | 360 | 1.05 | .613 | .35 | .263 |
| CD7FA391J# | 390 | 1.05 | .613 | .35 | .263 |
| CD7FA431J‡ | 430 | 1.05 | .613 | .35 | .263 |
| CD7FA471J# | 470 | 1.098 | .641 | .366 | .275 |
| CD7FA501J | 500 | 1.152 | .672 | .384 | .288 |
| CD7FA511J# | 510 | 1.152 | .672 | .384 | .288 |
| CD7FA561J# | 560 | 1.20 | .70 | .40 | .30 |
| CD7FA621J# | 620 | 1.248 | .728 | .416 | .312 |
| CD7FA681J# | 680 | 1.50 | .875 | .50 | .375 |
| CD7FA751J# | 750 | 1.602 | .935 | .534 | .401 |
| CD7FA821J# | 820 | 1.65 | .963 | .55 | .413 |
| CD7FA911J# | 910 | 1.752 | 1.022 | .584 | .438 |
| CD7FA102J# | 1000 | 1.95 | 1.138 | .65 | .488 |
| CD7FA112J# | 1100 | 1.998 | 1.166 | .666 | .50 |
| CD7FA122J# | 1200 | 2.052 | 1.197 | .684 | .513 |
| CD7FA132J# | 1300 | $2.298 | $1.341 | $0.766 | $0.575 |
| CD7FA152J# | 1500 | 2.55 | 1.488 | .85 | .638 |
| CD10CD010D• | 1 | .456 | .266 | .152 | .114 |
| CD10CD020D• | 2 | .456 | .266 | .152 | .114 |
| CD10CD030D• | 3 | .456 | .266 | .152 | .114 |
| CD10CD050D• | 5 | .456 | .266 | .152 | .114 |
| CD10CD060D• | 6 | .456 | .266 | .152 | .114 |
| CD10CD070D• | 7 | .456 | .266 | .152 | .114 |
| CD10CD080D• | 8 | .456 | .266 | .152 | .114 |
| CD10CD100J | 10 | .456 | .266 | .152 | .114 |
| CD10CD120J | 12 | .456 | .266 | .152 | .114 |
| CD10CD150J | 15 | .456 | .266 | .152 | .114 |
| CD10ED180J | 18 | .456 | .266 | .152 | .114 |
| CD10ED200J | 20 | .312 | .182 | .104 | .078 |
| CD10ED220J | 22 | .312 | .182 | .104 | .078 |
| CD10ED240J | 24 | .324 | .189 | .108 | .081 |
| CD10ED270J | 27 | .324 | .189 | .108 | .081 |
| CD10ED300J | 30 | .324 | .189 | .108 | .081 |
| CD10ED330J | 33 | .324 | .189 | .108 | .081 |
| CD10ED360J | 36 | .33 | .193 | .11 | .083 |
| CD10ED390J | 39 | .33 | .193 | .11 | .083 |
| CD10ED430J | 43 | .33 | .193 | .11 | .083 |
| CD10ED470J | 47 | .336 | .196 | .112 | .084 |
| CD10ED500J | 50 | .336 | .196 | .112 | .084 |
| CD10ED510J | 51 | .336 | .196 | .112 | .084 |
| CD10ED560J | 56 | .348 | .203 | .116 | .087 |
| CD10ED620J | 62 | .348 | .203 | .116 | .087 |
| CD10ED680J | 68 | .354 | .207 | .118 | .089 |
| CD10ED750J | 75 | .354 | .207 | .118 | .089 |
| CD10ED820J | 82 | .36 | .21 | .12 | .09 |
| CD10FD910J | 91 | .372 | .217 | .124 | .093 |
| CD10FD101J | 100 | .378 | .221 | .126 | .095 |
| CD10FD111J | 110 | .378 | .221 | .126 | .095 |
| CD10FD121J | 120 | .396 | .231 | .132 | .099 |
| CD10FD131J | 130 | .42 | .245 | .14 | .105 |
| CD10FD151J | 150 | .462 | .27 | .154 | .116 |
| CD10FD161J | 160 | .48 | .28 | .16 | .12 |
| CD10FD181J | 180 | .528 | .308 | .176 | .132 |
| CD10FD201J | 200 | .57 | .333 | .19 | .143 |
| CD10FD221J | 220 | .594 | .347 | .198 | .149 |
| CD10FD242J | 240 | .636 | .371 | .212 | .159 |
| CD10FD251J | 250 | .654 | .382 | .164 | .131 |
| CD10FC271J‡ | 270 | .612 | .357 | .204 | .153 |
| CD10FC301J‡ | 300 | .672 | .392 | .224 | .168 |
| CD10FA331J# | 330 | .636 | .371 | .212 | .159 |
| CD10FA361J# | 360 | .672 | .392 | .224 | .168 |
| CD10FA391J# | 390 | .72 | .42 | .24 | .18 |
| CD15CD010D• | 1 | .318 | .186 | .106 | .08 |
| CD15CD020D• | 2 | .318 | .186 | .106 | .08 |
| CD15CD030D• | 3 | .318 | .186 | .106 | .08 |
| CD15CD040D• | 4 | .318 | .186 | .106 | .08 |
| CD15CD050D• | 5 | .318 | .186 | .106 | .08 |
| CD15CD060D• | 6 | .318 | .186 | .106 | .08 |
| CD15CD070D• | 7 | .318 | .186 | .106 | .08 |
| CD15CD080D• | 8 | .318 | .186 | .106 | .08 |
| CD15CD100J | 10 | .318 | .186 | .106 | .08 |
| CD15CD120J | 12 | .318 | .186 | .106 | .08 |
| CD15CD150J | 15 | .318 | .186 | .106 | .08 |
| CD15CD180J | 18 | .318 | .186 | .106 | .08 |
| CD15ED200J | 20 | .258 | .151 | .086 | .065 |
| CD15ED220J | 22 | .258 | .151 | .086 | .065 |
| CD15ED240J | 24 | .258 | .151 | .086 | .065 |
| CD15ED270J | 27 | .258 | .151 | .086 | .065 |
| CD15ED300J | 30 | .258 | .151 | .086 | .065 |
| CD15ED330J | 33 | .258 | .151 | .086 | .065 |
| CD15ED360J | 36 | .258 | .151 | .086 | .065 |
| CD15ED390J | 39 | .258 | .151 | .086 | .065 |
| CD15ED430J | 43 | .258 | .151 | .086 | .065 |
| CD15ED470J | 47 | .258 | .151 | .086 | .065 |
| CD15ED510J | 51 | .258 | .151 | .086 | .065 |
| CD15ED560J | 56 | .258 | .151 | .086 | .065 |
| CD15ED620J | 62 | .258 | .151 | .086 | .065 |
| CD15ED680J | 68 | .258 | .151 | .086 | .065 |
| CD15ED750J | 75 | .258 | .151 | .086 | .065 |
| CD15ED820J | 82 | .258 | .151 | .086 | .065 |
| CD15FD910J | 91 | .264 | .154 | .088 | .066 |
| CD15FD101J | 100 | .264 | .154 | .088 | .066 |
| CD15FD111J | 110 | .282 | .165 | .094 | .071 |
| CD15FD121J | 120 | .282 | .165 | .094 | .071 |
| CD15FD131J | 130 | .306 | .179 | .102 | .077 |
| CD15FD151J | 150 | .306 | .179 | .102 | .077 |
| CD15FD161J | 160 | .33 | .193 | .11 | .083 |
| CD15FD181J | 180 | .354 | .207 | .118 | .089 |
| CD15FD201J | 200 | .354 | .207 | .118 | .089 |
| CD15FD221J | 220 | .378 | .221 | .126 | .095 |
| CD15FD241J | 240 | .402 | .235 | .134 | .101 |
| CD15FD271J | 270 | .426 | .249 | .142 | .107 |
| CD15FD301J | 300 | .45 | .263 | .15 | .113 |
| CD15FD331J | 330 | .498 | .291 | .166 | .125 |
| CD15FD361J | 360 | .522 | .305 | .174 | .131 |
| CD15FD391J | 390 | .546 | .319 | .182 | .137 |
| CD15FD431J | 430 | .588 | .343 | .196 | .147 |
| CD15FD471J | 470 | .612 | .357 | .204 | .153 |
| CD15FD511J | 510 | .66 | .385 | .22 | .165 |
| CD15FC561J‡ | 560 | .66 | .385 | .22 | .165 |
| CD15FC621J‡ | 620 | .708 | .413 | .236 | .177 |
| CD15FC681J‡ | 680 | .78 | .455 | .26 | .195 |
| CD15FC751J‡ | 750 | .828 | .483 | .276 | .207 |
| CD15FC821J‡ | 820 | .90 | .525 | .30 | .225 |
| CD15FA911J# | 910 | .78 | .455 | .26 | .195 |

*Add final suffix **03** when ordering (e.g., CD10CD050D**03**). †Tol., ±10%. ‡300 WVDC. §Tol., ±1 pF. #100 WVDC. •Tol., ±.5 pF.

SILVERED MICAS CONTINUED
ON NEXT PAGE.

## CD6—CD42 DIPPED SILVERED MICAS (CONT'D)

| CDE Number* | Cap., pF | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|
| D15FA102J# | 1000 | $0.852 | $0.497 | $0.284 | $0.213 |
| D15FA112J# | 1100 | .924 | .539 | .308 | .231 |
| D15FA122J# | 1200 | .996 | .581 | .332 | .249 |
| D19ED271J | 270 | .336 | .196 | .112 | .084 |
| D19ED301J | 300 | .336 | .196 | .112 | .084 |
| D19ED331J | 330 | .336 | .196 | .112 | .084 |
| D19ED361J | 360 | .378 | .221 | .126 | .095 |
| D19ED391J | 390 | .378 | .221 | .126 | .095 |
| D19FD431J | 430 | .378 | .221 | .126 | .095 |
| D19FD471J | 470 | .426 | .249 | .142 | .107 |
| D19FD511J | 510 | .426 | .249 | .142 | .107 |
| D19FD561J | 560 | .426 | .249 | .142 | .107 |
| D19FD621J | 620 | .468 | .273 | .156 | .117 |
| D19FD681J | 680 | .468 | .273 | .156 | .117 |
| D19FD751J | 750 | .51 | .298 | .17 | .128 |
| D19FD821J | 820 | .51 | .298 | .17 | .128 |
| D19FD911J | 910 | .552 | .322 | .184 | .138 |
| D19FD102J | 1000 | .60 | .35 | .20 | .15 |
| D19FD112J | 1100 | .642 | .375 | .214 | .16 |
| D19FD122J | 1200 | .684 | .399 | .228 | .171 |
| D19FD132J | 1300 | .732 | .427 | .244 | .183 |
| D19FD152J | 1500 | .816 | .476 | .272 | .204 |
| D19FD162J | 1600 | .816 | .476 | .272 | .204 |
| D19FD182J | 1800 | .906 | .529 | .302 | .227 |
| D19FD202J | 2000 | .99 | .578 | .33 | .248 |
| D19FD222J | 2200 | 1.08 | .63 | .36 | .27 |
| D19FD242J | 2400 | 1.134 | .662 | .378 | .284 |
| D19FD272J | 2700 | 1.284 | .749 | .321 | .257 |
| D19FD302J | 3000 | 1.44 | .84 | .48 | .36 |
| D19FD332J | 3300 | 1.542 | .90 | .514 | .386 |
| D19FD362J | 3600 | 1.698 | .991 | .566 | .425 |
| D19FD392J | 3900 | 1.80 | 1.05 | .60 | .45 |
| D19FD432J | 4300 | 2.004 | 1.17 | .668 | .501 |
| D19FD472J | 4700 | 2.154 | 1.257 | .718 | .539 |
| D19FD512J | 5100 | 2.364 | 1.379 | .788 | .591 |
| D19FC562J‡ | 5600 | 2.208 | 1.288 | .736 | .552 |
| D19FC622J‡ | 6200 | 2.412 | 1.407 | .804 | .603 |
| D19FA682J# | 6800 | 2.106 | 1.229 | .702 | .527 |
| D19FA752J# | 7500 | 2.364 | 1.379 | .788 | .591 |
| D19FA822J# | 8200 | 2.562 | 1.495 | .854 | .641 |
| D20ED271J | 270 | .306 | .179 | .102 | .077 |
| D20ED301J | 300 | .306 | .179 | .102 | .077 |
| D20ED331J | 330 | .306 | .179 | .102 | .077 |
| D20ED361J | 360 | .306 | .179 | .102 | .077 |
| D20ED391J | 390 | .306 | .179 | .102 | .077 |
| D20ED431J | 430 | .378 | .221 | .126 | .095 |
| D20ED471J | 470 | .378 | .221 | .126 | .095 |
| D20ED501J | 500 | .378 | .221 | .126 | .095 |
| D20ED511J | 510 | .378 | .221 | .126 | .095 |
| D20FD561J | 560 | .426 | .249 | .142 | .107 |
| D20FD621J | 620 | .426 | .249 | .142 | .107 |
| D20FD681J | 680 | .426 | .249 | .142 | .107 |
| D20FD751J | 750 | .486 | .273 | .156 | .117 |
| D20FD821J | 820 | .486 | .273 | .156 | .117 |
| D20FD911J | 910 | .51 | .298 | .17 | .128 |
| D20FD102J | 1000 | .552 | .322 | .184 | .138 |
| D20FD112J | 1100 | .60 | .35 | .20 | .15 |
| D20FD122J | 1200 | .60 | .35 | .20 | .15 |
| D20FD132J | 1300 | .642 | .375 | .214 | .161 |
| D20FD152J | 1500 | .732 | .427 | .244 | .183 |
| D20FD182J | 1800 | .816 | .476 | .272 | .204 |
| D20FD202J | 2000 | .864 | .504 | .288 | .216 |
| D20FD222J | 2200 | .948 | .553 | .316 | .237 |
| D20FD242J | 2400 | .99 | .578 | .33 | .248 |
| D20FD252J | 2500 | 1.038 | .606 | .346 | .26 |
| D20FD272J | 2700 | 1.08 | .63 | .36 | .27 |
| CD20FD302J | 3000 | $1.236 | $0.721 | $0.412 | $0.309 |
| CD20FD332J | 3300 | 1.338 | .781 | .446 | .335 |
| CD20FD362J | 3600 | 1.44 | .84 | .48 | .36 |
| CD20FD392J | 3900 | 1.542 | .90 | .514 | .386 |
| CD20FD432J | 4300 | 1.698 | .991 | .566 | .425 |
| CD20FD472J | 4700 | 1.848 | 1.078 | .616 | .462 |
| CD20FD502J | 5000 | 1.974 | 1.151 | .658 | .494 |
| CD20FD512J | 5100 | 1.974 | 1.151 | .658 | .494 |
| CD20FD562J | 5600 | 2.208 | 1.288 | .736 | .552 |
| CD20FD622J | 6200 | 2.412 | 1.407 | .804 | .603 |
| CD20FD682J | 6800 | 2.67 | 1.558 | .89 | .668 |
| CD20FD752J | 7500 | 2.928 | 1.708 | .976 | .732 |
| CD20FD822J | 8200 | 3.18 | 1.855 | 1.06 | .795 |
| CD20FD912J | 9100 | 3.54 | 2.065 | 1.18 | .885 |
| CD20FD103J | 10,000 | 3.90 | 2.275 | 1.30 | .975 |
| CD30FD202J | 2000 | .864 | .504 | .288 | .216 |
| CD30FD222J | 2200 | .936 | .546 | .312 | .234 |
| CD30FD242J | 2400 | .936 | .546 | .312 | .234 |
| CD30FD252J | 2500 | 1.014 | .592 | .338 | .254 |
| CD30FD272J | 2700 | 1.014 | .592 | .338 | .254 |
| CD30FD302J | 3000 | 1.164 | .679 | .388 | .291 |
| CD30FD332J | 3300 | 1.242 | .725 | .414 | .311 |
| CD30FD362J | 3600 | 1.314 | .767 | .438 | .329 |
| CD30FD392J | 3900 | 1.386 | .809 | .462 | .347 |
| CD30FD432J | 4300 | 1.464 | .854 | .488 | .366 |
| CD30FD472J | 4700 | 1.614 | .942 | .538 | .404 |
| CD30FD502J | 5000 | 1.686 | .984 | .562 | .422 |
| CD30FD512J | 5100 | 1.686 | .984 | .562 | .422 |
| CD30FD562J | 5600 | 1.842 | 1.075 | .614 | .461 |
| CD30FD622J | 6200 | 1.986 | 1.159 | .662 | .497 |
| CD30FD682J | 6800 | 2.214 | 1.292 | .738 | .554 |
| CD30FD752J | 7500 | 2.364 | 1.379 | .788 | .591 |
| CD30FD822J | 8200 | 2.586 | 1.509 | .862 | .647 |
| CD30FD912J | 9100 | 2.808 | 1.638 | .936 | .702 |
| CD30FD103J | 10,000 | 3.114 | 1.817 | 1.038 | .779 |
| CD30FD113J | 11,000 | 3.33 | 1.943 | 1.11 | .833 |
| CD30FD123J | 12,000 | 3.636 | 2.121 | 1.212 | .909 |
| CD30FD133J | 13,000 | 3.93 | 2.293 | 1.31 | .983 |
| CD30FD153J | 15,000 | 4.452 | 2.597 | 1.484 | 1.113 |
| CD30FD163J | 16,000 | 4.758 | 2.776 | 1.586 | 1.19 |
| CD30FD183J | 18,000 | 5.28 | 3.08 | 1.76 | 1.32 |
| CD30FD203J | 20,000 | 5.88 | 3.43 | 1.96 | 1.47 |
| CD30FC223J‡ | 22,000 | 5.424 | 3.164 | 1.808 | 1.356 |
| CD30FC243J‡ | 24,000 | 5.88 | 3.43 | 1.96 | 1.47 |
| CD30FC253J‡ | 25,000 | 6.18 | 3.605 | 2.06 | 1.545 |
| CD30FC273J‡ | 27,000 | 6.63 | 3.868 | 2.21 | 1.658 |
| CD30FC303J‡ | 30,000 | 7.32 | 4.27 | 2.44 | 1.83 |
| CD30FA333J# | 33,000 | 6.474 | 3.777 | 2.158 | 1.619 |
| CD30FA363J# | 36,000 | 7.002 | 4.085 | 2.334 | 1.751 |
| CD42FD203J | 20,000 | 8.28 | 4.83 | 2.76 | 2.07 |
| CD42FD223J | 22,000 | 9.25 | 5.40 | 3.09 | 2.31 |
| CD42FD243J | 24,000 | 9.80 | 5.72 | 3.27 | 2.45 |
| CD42FD273J | 27,000 | 10.80 | 6.30 | 3.60 | 2.70 |
| CD42FD303J | 30,000 | 11.80 | 6.89 | 3.94 | 2.95 |
| CD42FD333J | 33,000 | 12.80 | 7.47 | 4.27 | 3.20 |
| CD42FD363J | 36,000 | 14.70 | 8.58 | 4.90 | 3.68 |
| CD42FD393J | 39,000 | 15.20 | 8.87 | 5.07 | 3.80 |
| CD42FD433J | 43,000 | 16.50 | 9.63 | 5.50 | 4.13 |
| CD42FD473J | 47,000 | 18.00 | 10.50 | 6.00 | 4.50 |
| CD42FD513J | 51,000 | 19.50 | 11.38 | 6.50 | 4.88 |
| CD42FC563J‡ | 50,000 | 16.02 | 9.35 | 5.34 | 4.01 |
| CD42FC623J‡ | 62,000 | 17.52 | 10.22 | 5.84 | 4.38 |
| CD42FC683J‡ | 68,000 | 17.52 | 10.22 | 5.84 | 4.38 |
| CD42FA753J# | 75,000 | 10.40 | 6.07 | 3.47 | 2.60 |
| CD42FA823J# | 82,000 | 10.40 | 6.07 | 3.47 | 2.60 |
| CD42FA913J# | 91,000 | 10.65 | 6.21 | 3.55 | 2.66 |

Add final suffix 03 when ordering (e.g., CD19FD362J03). ‡300 WVDC. #100 WVDC.

## TYPE MMW MINIATURE METALLIZED POLYESTER FILM TUBULARS

22 MFD
400 VDC

Extremely small size for transistorized circuits. Metallized polyester dielectric in tough film wrap and sealed with high-density, thermosetting resin end fill. Extra rong and durable; high capacitance stability, resistance to oisture and humidity. **Temperature Range:** −55° C to +85° C, t rated voltage; to +125° C with derating. **Tolerance:** ±20%. **ize:** Min. .180″ dia. x 9/16″ lg. to .950″ dia. x 1¾″ lg.

### 200 WVDC

| CDE Number | Cap., µF | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|
| MMW2S33 | .033 | $0.63 | $0.47 | $0.36 | $0.311 | $0.259 |
| MMW2S47 | .047 | .63 | .47 | .36 | .311 | .259 |
| MMW2S68 | .068 | .66 | .49 | .38 | .324 | .27 |
| MMW2P1 | .10 | .69 | .51 | .39 | .338 | .281 |
| MMW2P15 | .15 | .72 | .55 | .43 | .365 | .304 |
| MMW2P22 | .22 | .81 | .61 | .47 | .405 | .338 |
| MMW2P33 | .33 | .93 | .69 | .54 | .459 | .383 |
| MMW2P47 | .47 | .96 | .71 | .55 | .473 | .394 |
| MMW2P68 | .68 | 1.02 | .77 | .60 | .51 | .425 |
| MMW2W1 | 1.0 | 1.14 | .86 | .67 | .575 | .479 |
| MMW2W1P5 | 1.5 | 1.38 | 1.03 | .80 | .689 | .574 |
| MMW2W2 | 2.0 | 1.65 | 1.25 | .97 | .83 | .691 |

### 400 WVDC

| CDE Number | Cap., µF | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|
| MMW4S1 | .01 | $0.60 | $0.45 | $0.35 | $0.297 | $0.248 |
| MMW4S15 | .015 | .63 | .47 | .36 | .311 | .259 |
| MMW4S22 | .022 | .63 | .47 | .36 | .311 | .259 |
| MMW4S33 | .033 | .66 | .49 | .38 | .324 | .27 |
| MMW4S47 | .047 | .69 | .51 | .39 | .338 | .281 |
| MMW4S68 | .068 | .72 | .53 | .41 | .351 | .293 |
| MMW4P1 | .10 | .75 | .57 | .44 | .378 | .315 |
| MMW4P15 | .15 | .84 | .63 | .49 | .419 | .349 |
| MMW4P22 | .22 | .93 | .69 | .54 | .459 | .383 |
| MMW4P33 | .33 | 1.05 | .79 | .62 | .527 | .439 |
| MMW4P47 | .47 | 1.23 | .91 | .71 | .608 | .506 |
| MMW4P68 | .68 | 1.38 | 1.03 | .80 | .689 | .574 |
| MMW4W1 | 1.0 | 1.74 | 1.30 | 1.01 | .867 | .723 |
| MMW4W1P5 | 1.5 | 2.16 | 1.63 | 1.27 | 1.09 | .904 |
| MMW4W2 | 2.0 | 2.64 | 1.97 | 1.53 | 1.32 | 1.10 |
| **600 WVDC** | | | | | | |
| MMW6S1 | .01 | $0.63 | $0.47 | $0.36 | $0.311 | $0.259 |
| MMW6S15 | .015 | .66 | .49 | .38 | .324 | .27 |
| MMW6S22 | .022 | .69 | .51 | .39 | .338 | .281 |
| MMW6S33 | .033 | .72 | .53 | .41 | .351 | .293 |
| MMW6S47 | .047 | .75 | .57 | .44 | .378 | .315 |
| MMW6S68 | .068 | .81 | .61 | .47 | .405 | .338 |
| MMW6P1 | .10 | .87 | .65 | .51 | .432 | .36 |
| MMW6P15 | .15 | .99 | .73 | .57 | .486 | .405 |
| MMW6P22 | .22 | 1.14 | .85 | .66 | .567 | .473 |
| MMW6P33 | .33 | 1.41 | 1.05 | .82 | .702 | .585 |
| MMW6P47 | .47 | 1.71 | 1.28 | .99 | .851 | .709 |
| MMW6P68 | .68 | 2.07 | 1.55 | 1.21 | 1.03 | .861 |
| MMW6W1 | 1.0 | 2.73 | 2.05 | 1.59 | 1.37 | 1.14 |

# CDE CORNELL-DUBILIER Capacitors

## TYPE MFP FLAT MYLAR® WRAP CAPACITORS

Similar to type WMF capacitors but designed with a flat, pressed section to give an oval configuration. Mylar dielectric, tough yellow outer film wrap and epoxy end seals. High resistance to humidity. **Operating Temperature:** −55° C to +125° C at full voltage; derate 10% at 100° C; 50% at 125° C. **Tolerance:** ±10%, 50 WVDC; ±20%, all others. Other tolerances also available; prices on request. ®Reg. DuPont TM.

### 50 WVDC, ±10% TOL.

| CDE No. | Cap., μF | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
| MFP05S1-10 | .01 | $0.36 | $0.27 | $0.21 | $0.18 | $0.15 |
| MFP05S12-10 | .012 | .36 | .27 | .21 | .18 | .15 |
| MFP05S15-10 | .015 | .36 | .27 | .21 | .18 | .15 |
| MFP05S18-10 | .018 | .36 | .27 | .21 | .18 | .15 |
| MFP05S22-10 | .022 | .39 | .29 | .23 | .195 | .163 |
| MFP05S27-10 | .027 | .39 | .29 | .23 | .195 | .163 |
| MFP05S33-10 | .033 | .39 | .29 | .23 | .195 | .163 |
| MFP05S39-10 | .039 | .39 | .29 | .23 | .195 | .163 |
| MFP05S47-10 | .047 | .39 | .29 | .23 | .195 | .163 |
| MFP05S5-10 | .050 | .39 | .29 | .23 | .195 | .163 |
| MFP05S56-10 | .056 | .39 | .29 | .23 | .195 | .163 |
| MFP05S68-10 | .068 | .39 | .29 | .23 | .195 | .163 |
| MFP05S82-10 | .082 | .42 | .32 | .25 | .21 | .175 |
| MFP05P1-10 | .10 | .45 | .34 | .26 | .225 | .188 |
| MFP05P15-10 | .15 | .48 | .36 | .28 | .24 | .20 |
| MFP05P18-10 | .18 | .51 | .38 | .30 | .255 | .213 |
| MFP05P22-10 | .22 | .51 | .38 | .30 | .255 | .213 |
| MFP05P27-10 | .27 | .54 | .41 | .32 | .27 | .225 |
| MFP05P33-10 | .33 | .57 | .43 | .33 | .285 | .238 |
| MFP05P39-10 | .39 | .60 | .45 | .35 | .30 | .25 |
| MFP05P47-10 | .47 | .63 | .47 | .37 | .315 | .263 |
| MFP05P5-10 | .50 | .63 | .47 | .37 | .315 | .263 |
| MFP05P56-10 | .56 | .66 | .50 | .39 | .33 | .275 |
| MFP05P68-10 | .68 | .69 | .52 | .40 | .345 | .288 |
| MFP05P82-10 | .82 | .75 | .56 | .44 | .375 | .313 |
| MFP05W1-10 | 1.0 | .96 | .72 | .56 | .48 | .40 |
| MFP05W1P25-10 | 1.25 | 1.11 | .83 | .65 | .555 | .463 |
| MFP05W1P5-10 | 1.5 | 1.26 | .95 | .74 | .63 | .525 |
| MFP05W2-10 | 2.0 | 1.53 | 1.15 | .89 | .765 | .638 |
| MFP05W3-10 | 3.0 | 2.10 | 1.58 | 1.23 | 1.05 | .875 |
| MFP05W4-10 | 4.0 | 2.67 | 2.00 | 1.56 | 1.34 | 1.11 |
| MFP05W5-10 | 5.0 | 3.09 | 2.32 | 1.80 | 1.34 | 1.11 |

### 100 WVDC, ±20% TOL.

| | | | | | | |
|---|---|---|---|---|---|---|
| MFP1S22 | .022 | $0.27 | $0.21 | $0.16 | $0.138 | $0.115 |
| MFP1S33 | .033 | .33 | .24 | .18 | .156 | .13 |
| MFP1S47 | .047 | .33 | .24 | .18 | .156 | .13 |
| MFP1S68 | .068 | .33 | .24 | .18 | .156 | .13 |
| MFP1P1 | .10 | .36 | .27 | .21 | .182 | .151 |
| MFP1P15 | .15 | .39 | .30 | .23 | .198 | .165 |
| MFP1P22 | .22 | .42 | .32 | .25 | .215 | .179 |
| MFP1P33 | .33 | .48 | .35 | .27 | .231 | .193 |
| MFP1P47 | .47 | .51 | .37 | .29 | .248 | .206 |
| MFP1P68 | .68 | .57 | .42 | .33 | .281 | .234 |
| MFP1W1 | 1.0 | .75 | .57 | .44 | .378 | .315 |
| MFP1W1P25 | 1.25 | .90 | .68 | .53 | .45 | .375 |
| MFP1W1P5 | 1.5 | 1.02 | .77 | .60 | .51 | .425 |
| MFP1W2 | 2.0 | 1.23 | .92 | .72 | .615 | .513 |

### 200 WVDC, ±20% TOL.

| CDE No. | Cap., μF | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
| MFP2S15 | .015 | $0.27 | $0.21 | $0.16 | $0.138 | $0.115 |
| MFP2S22 | .022 | .27 | .21 | .16 | .138 | .115 |
| MFP2S33 | .033 | .33 | .24 | .18 | .156 | .13 |
| MFP2S47 | .047 | .33 | .24 | .18 | .156 | .13 |
| MFP2S68 | .068 | .33 | .24 | .18 | .156 | .13 |
| MFP2P1 | .10 | .36 | .27 | .21 | .182 | .151 |
| MFP2P15 | .15 | .39 | .30 | .23 | .198 | .165 |
| MFP2P22 | .22 | .42 | .32 | .25 | .215 | .179 |
| MFP2P33 | .33 | .48 | .35 | .27 | .231 | .193 |
| MFP2P47 | .47 | .51 | .37 | .29 | .248 | .206 |
| MFP2P68 | .68 | .57 | .42 | .33 | .281 | .234 |
| MFP2W1 | 1.0 | .75 | .57 | .44 | .378 | .315 |
| MFP2W1P25 | 1.25 | .90 | .68 | .53 | .45 | .375 |
| MFP2W1P5 | 1.5 | 1.02 | .77 | .60 | .51 | .425 |
| MFP2W2 | 2.0 | 1.23 | .92 | .72 | .615 | .513 |

### 400 WVDC, ±20% TOL.

| | | | | | | |
|---|---|---|---|---|---|---|
| MFP4S15 | .015 | $0.33 | $0.24 | $0.18 | $0.156 | $0.13 |
| MFP4S22 | .022 | .33 | .24 | .18 | .156 | .13 |
| MFP4S33 | .033 | .33 | .24 | .18 | .156 | .13 |
| MFP4S47 | .047 | .36 | .26 | .20 | .173 | .144 |
| MFP4S68 | .068 | .36 | .26 | .20 | .173 | .144 |
| MFP4P1 | .10 | .36 | .27 | .21 | .182 | .151 |
| MFP4P15 | .15 | .36 | .27 | .21 | .182 | .151 |
| MFP4P22 | .22 | .42 | .32 | .25 | .215 | .179 |
| MFP4P33 | .33 | .63 | .47 | .37 | .314 | .261 |
| MFP4P47 | .47 | .75 | .57 | .44 | .38 | .316 |
| MFP4P68 | .68 | .90 | .68 | .53 | .45 | .374 |
| MFP4W1 | 1.0 | 1.05 | .78 | .61 | .521 | .434 |
| MFP4W1P25 | 1.25 | 1.17 | .88 | .68 | .584 | .486 |
| MFP4W1P5 | 1.5 | 1.26 | .95 | .74 | .63 | .525 |
| MFP4W2 | 2.0 | 1.41 | 1.06 | .82 | .705 | .588 |

### 600 WVDC, ±20% TOL.

| | | | | | | |
|---|---|---|---|---|---|---|
| MFP6S1 | .01 | $0.36 | $0.26 | $0.20 | $0.173 | $0.144 |
| MFP6S15 | .015 | .36 | .26 | .20 | .173 | .144 |
| MFP6S22 | .022 | .36 | .26 | .20 | .173 | .144 |
| MFP6S33 | .033 | .36 | .26 | .20 | .173 | .144 |
| MFP6S47 | .047 | .36 | .26 | .20 | .173 | .144 |
| MFP6S68 | .068 | .39 | .29 | .22 | .191 | .159 |
| MFP6P1 | .10 | .48 | .35 | .27 | .231 | .193 |
| MFP6P15 | .15 | .48 | .35 | .27 | .231 | .193 |
| MFP6P22 | .22 | .51 | .37 | .29 | .248 | .206 |
| MFP6P33 | .33 | .84 | .62 | .48 | .413 | .344 |
| MFP6P47 | .47 | 1.05 | .80 | .62 | .53 | .441 |
| MFP6P68 | .68 | 1.38 | 1.04 | .81 | .693 | .578 |
| MFP6W1 | 1.0 | 2.19 | 1.65 | 1.28 | 1.10 | .915 |
| MFP6W1P25 | 1.25 | 2.37 | 1.78 | 1.39 | 1.19 | .989 |
| MFP6W1P5 | 1.5 | 2.85 | 2.14 | 1.67 | 1.43 | 1.19 |
| MFP6W2 | 2.0 | 3.63 | 2.72 | 2.12 | 1.82 | 1.51 |

## TYPE WMF MYLAR® DIELECTRIC FILM-ENCASED CAPACITORS

Ultra-compact Mylar dielectric in Mylar film wrap; thermosetting epoxy end seals. High resistance to humidity. Excellent stability.

**Temp:** −55° C to +85° C at full voltage; derate 10% at 100° C; 50% at 125° C. **Tol.:** ±10%. Other tolerances also available; prices on request. ®Reg. DuPont TM.

| CDE No. | Cap., μF | WVDC | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
| WMF05P1 | .1 | 50 | $0.33 | $0.24 | $0.19 | $0.161 | $0.134 |
| WMF05P12 | .12 | 50 | .33 | .25 | .19 | .164 | .136 |
| WMF05P15 | .15 | 50 | .33 | .25 | .19 | .165 | .138 |
| WMF05P18 | .18 | 50 | .33 | .26 | .20 | .170 | .141 |
| WMF05P22 | .22 | 50 | .36 | .26 | .21 | .174 | .145 |
| WMF05P27 | .27 | 50 | .39 | .29 | .22 | .191 | .159 |
| WMF05P33 | .33 | 50 | .42 | .31 | .24 | .207 | .173 |
| WMF05P39 | .39 | 50 | .45 | .35 | .27 | .23 | .191 |
| WMF05P47 | .47 | 50 | .51 | .38 | .30 | .254 | .211 |
| WMF05P5 | .50 | 50 | .51 | .39 | .30 | .258 | .215 |
| WMF05P56 | .56 | 50 | .60 | .46 | .36 | .303 | .253 |
| WMF05P68 | .68 | 50 | .66 | .49 | .38 | .323 | .269 |
| WMF05P82 | .82 | 50 | .81 | .60 | .47 | .398 | .331 |
| WMF05W1 | 1.0 | 50 | .90 | .68 | .53 | .452 | .376 |
| WMF05W2 | 2.0 | 50 | 1.50 | 1.12 | .87 | .747 | .623 |
| WMF05W3 | 3.0 | 50 | 2.10 | 1.57 | 1.22 | 1.05 | .873 |
| WMF05W4 | 4.0 | 50 | 2.49 | 1.86 | 1.44 | 1.24 | 1.03 |
| WMF05W5 | 5.0 | 50 | 3.09 | 2.32 | 1.80 | 1.55 | 1.29 |
| WMF1D1 | .001 | 100 | .27 | .20 | .15 | .131 | .109 |
| WMF1D12 | .0012 | 100 | .27 | .20 | .15 | .131 | .109 |
| WMF1D15 | .0015 | 100 | .27 | .20 | .15 | .131 | .109 |
| WMF1D18 | .0018 | 100 | .27 | .20 | .15 | .131 | .109 |
| WMF1D22 | .0022 | 100 | .27 | .20 | .15 | .131 | .109 |
| WMF1D27 | .0027 | 100 | .27 | .20 | .15 | .131 | .109 |
| WMF1D33 | .0033 | 100 | .27 | .20 | .15 | .131 | .109 |
| WMF1D39 | .0039 | 100 | .27 | .20 | .15 | .131 | .109 |
| WMF1D47 | .0047 | 100 | .27 | .20 | .15 | .131 | .109 |
| WMF1D5 | .0050 | 100 | .27 | .20 | .15 | .131 | .109 |
| WMF1D56 | .0056 | 100 | .27 | .20 | .15 | .131 | .109 |
| WMF1D68 | .0068 | 100 | .27 | .20 | .15 | .131 | .109 |
| WMF1D82 | .0082 | 100 | .27 | .20 | .15 | .131 | .109 |
| WMF1S1 | .01 | 100 | .27 | .20 | .15 | .131 | .109 |
| WMF1S12 | .012 | 100 | .27 | .20 | .15 | .131 | .109 |
| WMF1S15 | .015 | 100 | .27 | .20 | .15 | .131 | .109 |
| WMF1S18 | .018 | 100 | .27 | .20 | .15 | .131 | .109 |
| WMF1S22 | .022 | 100 | .27 | .20 | .15 | .131 | .109 |
| WMF1S27 | .027 | 100 | .27 | .20 | .15 | .131 | .109 |
| WMF1S33 | .033 | 100 | .27 | .20 | .15 | .131 | .109 |
| WMF1S39 | .039 | 100 | .27 | .20 | .15 | .131 | .109 |
| WMF1S47 | .047 | 100 | .27 | .21 | .16 | .137 | .114 |
| WMF1S5 | .050 | 100 | $0.27 | $0.21 | $0.16 | $0.137 | $0.114 |
| WMF1S56 | .056 | 100 | .30 | .21 | .17 | .141 | .118 |
| WMF1S68 | .068 | 100 | .30 | .22 | .17 | .144 | .12 |
| WMF1S82 | .082 | 100 | .30 | .22 | .17 | .146 | .121 |
| WMF1P1 | .1 | 100 | .30 | .22 | .17 | .147 | .123 |
| WMF1P12 | .12 | 100 | .30 | .22 | .17 | .149 | .124 |
| WMF1P15 | .15 | 100 | .30 | .23 | .18 | .15 | .125 |
| WMF1P18 | .18 | 100 | .30 | .23 | .18 | .155 | .129 |
| WMF1P22 | .22 | 100 | .33 | .24 | .19 | .158 | .131 |
| WMF1P27 | .27 | 100 | .36 | .26 | .20 | .174 | .145 |
| WMF1P33 | .33 | 100 | .39 | .28 | .22 | .189 | .158 |
| WMF1P39 | .39 | 100 | .42 | .32 | .25 | .21 | .175 |
| WMF1P47 | .47 | 100 | .45 | .34 | .27 | .23 | .191 |
| WMF1P5 | .50 | 100 | .48 | .35 | .27 | .234 | .195 |
| WMF1P56 | .56 | 100 | .54 | .42 | .32 | .275 | .229 |
| WMF1P68 | .68 | 100 | .60 | .44 | .34 | .294 | .245 |
| WMF1P82 | .82 | 100 | .72 | .54 | .42 | .362 | .301 |
| WMF1W1 | 1.0 | 100 | .84 | .62 | .48 | .411 | .343 |
| WMF1W1P25 | 1.25 | 100 | .96 | .71 | .55 | .473 | .394 |
| WMF1W1P5 | 1.5 | 100 | 1.11 | .84 | .65 | .56 | .466 |
| WMF1W2 | 2.0 | 100 | 1.35 | 1.02 | .79 | .678 | .565 |
| WMF1W3 | 3.0 | 100 | 1.92 | 1.43 | 1.11 | .951 | .793 |
| WMF1W4 | 4.0 | 100 | 2.25 | 1.68 | 1.31 | 1.12 | .935 |
| WMF2D1 | .001 | 200 | .27 | .20 | .15 | .131 | .109 |
| WMF2D15 | .0015 | 200 | .27 | .20 | .15 | .131 | .109 |
| WMF2D22 | .0022 | 200 | .27 | .20 | .15 | .131 | .109 |
| WMF2D33 | .0033 | 200 | .27 | .20 | .15 | .131 | .109 |
| WMF2D47 | .0047 | 200 | .27 | .20 | .15 | .131 | .109 |
| WMF2D68 | .0068 | 200 | .27 | .20 | .15 | .131 | .109 |
| WMF2S1 | .01 | 200 | .27 | .20 | .15 | .131 | .109 |
| WMF2S15 | .015 | 200 | .27 | .20 | .15 | .131 | .109 |
| WMF2S22 | .022 | 200 | .27 | .20 | .15 | .131 | .109 |
| WMF2S33 | .033 | 200 | .27 | .20 | .15 | .131 | .109 |
| WMF2S47 | .047 | 200 | .27 | .21 | .16 | .137 | .114 |
| WMF2S68 | .068 | 200 | .30 | .22 | .17 | .144 | .12 |
| WMF2P1 | .1 | 200 | .36 | .26 | .20 | .174 | .145 |
| WMF2P15 | .15 | 200 | .36 | .28 | .22 | .185 | .154 |

CONTINUED ON FOLLOWING PAGE

# CDE CORNELL-DUBILIER Capacitors

## TYPE WMF FILM-ENCASED CAPACITORS (CONT'D)

| CDE No. | Cap., µF | WVDC | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| MF2P22 | .22 | 200 | .39 | .29 | .23 | .195 | .163 |
| MF2P33 | .33 | 200 | .45 | .33 | .26 | .221 | .184 |
| MF2P47 | .47 | 200 | .51 | .38 | .29 | .251 | .209 |
| MF2P68 | .68 | 200 | .60 | .44 | .34 | .294 | .245 |
| MF2W1 | 1.0 | 200 | .84 | .62 | .48 | .411 | .343 |
| MF2W1P25 | 1.25 | 200 | .96 | .71 | .55 | .473 | .394 |
| MF2W1P5 | 1.5 | 200 | 1.11 | .84 | .65 | .56 | .466 |
| MF2W2 | 2.0 | 200 | 1.35 | 1.02 | .79 | .678 | .565 |
| MF4D1 | .001 | 400 | .30 | .22 | .17 | .149 | .124 |
| MF4D15 | .0015 | 400 | .30 | .22 | .17 | .149 | .124 |
| MF4D22 | .0022 | 400 | .30 | .22 | .17 | .149 | .124 |
| MF4D33 | .0033 | 400 | .30 | .22 | .17 | .149 | .124 |
| MF4D47 | .0047 | 400 | .30 | .22 | .17 | .149 | .124 |
| MF4D68 | .0068 | 400 | .30 | .22 | .17 | .149 | .124 |
| MF4S1 | .01 | 400 | .30 | .22 | .17 | .149 | .124 |
| MF4S15 | .015 | 400 | .30 | .22 | .17 | .149 | .124 |
| MF4S22 | .022 | 400 | .30 | .22 | .17 | .149 | .124 |
| MF4S33 | .033 | 400 | .30 | .22 | .17 | .149 | .124 |
| MF4S47 | .047 | 400 | .30 | .23 | .18 | .155 | .129 |
| MF4S68 | .068 | 400 | .33 | .25 | .19 | .165 | .138 |
| MF4P1 | .1 | 400 | .33 | .25 | .20 | .168 | .14 |
| MF4P15 | .15 | 400 | .36 | .26 | .20 | .174 | .145 |
| MF4P22 | .22 | 400 | .42 | .30 | .24 | .201 | .168 |
| MF4P33 | .33 | 400 | .66 | .49 | .38 | .327 | .273 |
| MF4P47 | .47 | 400 | .78 | .58 | .46 | .389 | .324 |
| MF4P68 | .68 | 400 | .96 | .71 | .56 | .476 | .396 |

| CDE No. | Cap., µF | WVDC | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| WMF4W1 | 1.0 | 400 | 1.14 | .85 | .66 | .566 | .471 |
| WMF4W1P25 | 1.25 | 400 | 1.26 | .93 | .73 | .621 | .518 |
| WMF4W1P5 | 1.5 | 400 | 1.41 | 1.06 | .82 | .704 | .586 |
| WMF4W2 | 2.0 | 400 | 1.86 | 1.39 | 1.08 | .923 | .769 |
| WMF6D1 | .001 | 600 | .33 | .26 | .20 | .17 | .141 |
| WMF6D15 | .0015 | 600 | .33 | .26 | .20 | .17 | .141 |
| WMF6D22 | .0022 | 600 | .33 | .26 | .20 | .17 | .141 |
| WMF6D33 | .0033 | 600 | .33 | .26 | .20 | .17 | .141 |
| WMF6D47 | .0047 | 600 | .33 | .26 | .20 | .17 | .141 |
| WMF6D68 | .0068 | 600 | .33 | .26 | .20 | .17 | .141 |
| WMF6S1 | .01 | 600 | .33 | .26 | .20 | .17 | .141 |
| WMF6S15 | .015 | 600 | .33 | .26 | .20 | .17 | .141 |
| WMF6S22 | .022 | 600 | .33 | .26 | .20 | .17 | .141 |
| WMF6S33 | .033 | 600 | .33 | .26 | .20 | .17 | .141 |
| WMF6S47 | .047 | 600 | .33 | .26 | .20 | .17 | .141 |
| WMF6S68 | .068 | 600 | .36 | .27 | .21 | .177 | .148 |
| WMF6P1 | .1 | 600 | .45 | .33 | .26 | .219 | .183 |
| WMF6P15 | .15 | 600 | .45 | .34 | .27 | .23 | .191 |
| WMF6P22 | .22 | 600 | .54 | .39 | .31 | .261 | .218 |
| WMF6P33 | .33 | 600 | .90 | .67 | .52 | .446 | .371 |
| WMF6P47 | .47 | 600 | 1.14 | .86 | .67 | .572 | .476 |
| WMF6P68 | .68 | 600 | 1.53 | 1.15 | .90 | .767 | .639 |
| WMF6W1 | 1.0 | 600 | 2.43 | 1.81 | 1.41 | 1.21 | 1.01 |
| WMF6W1P25 | 1.25 | 600 | 2.61 | 1.96 | 1.52 | 1.31 | 1.09 |
| WMF6W1P5 | 1.5 | 600 | 3.15 | 2.36 | 1.84 | 1.58 | 1.31 |
| WMF6W2 | 2.0 | 600 | 3.96 | 2.97 | 2.31 | 1.98 | 1.65 |

## TYPE NLW SUBMINIATURE ELECTROLYTIC CAPACITORS

hallest subminiature electrolytic capacitors. Welded construc-
n, hermetically sealed in an aluminum case and provided with
astic insulating sleeve. **Temp. Range:** −40° to +105° C.
**lerance:** −10%, +75%.

| CDE No.† | Cap. µF | Size*, In. D. x L. | Net Each, Lots of* 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|
| LW 25-3 | 25 | ¼ x ½ | $0.54 | $0.373 | $0.296 | $0.226 | $0.187 |
| LW 35-3 | 35 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| LW 75-3 | 75 | 5⁄16 x ⅝ | .60 | .42 | .333 | .254 | .21 |
| LW 100-3 | 100 | 5⁄16 x ⅝ | .60 | .42 | .333 | .254 | .21 |
| LW 125-3 | 125 | 5⁄16 x ⅝ | .60 | .42 | .333 | .254 | .21 |
| LW 150-3 | 150 | 5⁄16 x ⅝ | .78 | .528 | .418 | .319 | .264 |
| LW 175-3 | 175 | 5⁄16 x ¾ | .78 | .528 | .418 | .319 | .264 |
| LW 200-3 | 200 | 5⁄16 x ¾ | .78 | .528 | .418 | .319 | .264 |
| LW 250-3 | 250 | ⅜ x ¾ | .81 | .552 | .437 | .334 | .276 |
| LW 300-3 | 300 | ⅜ x ¾ | .81 | .552 | .437 | .334 | .276 |
| LW 350-3 | 350 | ⅜ x ⅞ | .84 | .576 | .456 | .348 | .288 |
| LW 400-3 | 400 | ⅜ x ⅞ | .84 | .576 | .456 | .348 | .288 |
| LW 450-3 | 450 | ⅜ x ⅞ | .87 | .60 | .475 | .363 | .30 |
| LW 500-3 | 500 | ⅜ x 1 | .87 | .60 | .475 | .363 | .30 |
| LW 1000-3 | 1000 | ⅜ x 1½ | .96 | .685 | .543 | .414 | .349 |
| LW 10-6 | 10 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| LW 20-6 | 20 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| LW 30-6 | 30 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| LW 35-6 | 35 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| LW 40-6 | 40 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| LW 50-6 | 50 | ¼ x ⅝ | .60 | .42 | .333 | .254 | .21 |
| LW 100-6 | 100 | 5⁄16 x ⅝ | .78 | .528 | .418 | .319 | .264 |
| LW 150-6 | 150 | 5⁄16 x ¾ | .81 | .552 | .437 | .334 | .276 |
| LW 175-6 | 175 | 5⁄16 x ¾ | .81 | .552 | .437 | .334 | .276 |
| LW 200-6 | 200 | ⅜ x ¾ | .81 | .552 | .437 | .334 | .276 |
| LW 250-6 | 250 | ⅜ x ⅞ | .84 | .576 | .456 | .348 | .288 |
| LW 300-6 | 300 | ⅜ x ⅞ | .84 | .576 | .456 | .348 | .288 |
| LW 350-6 | 350 | ⅜ x ⅞ | .87 | .60 | .475 | .363 | .30 |
| LW 500-6 | 500 | ⅜ x 1¼ | .90 | .624 | .494 | .377 | .312 |
| LW 600-6 | 600 | ⅜ x 1¼ | .93 | .638 | .505 | .386 | .319 |
| LW 800-6 | 800 | ⅜ x 1½ | .96 | .685 | .543 | .414 | .349 |
| LW 8-10 | 8 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| LW 40-10 | 40 | ¼ x ⅝ | .54 | .373 | .296 | .226 | .187 |
| LW 50-10 | 50 | 5⁄16 x ⅝ | .60 | .42 | .333 | .254 | .21 |
| LW 75-10 | 75 | 5⁄16 x ⅝ | .78 | .528 | .418 | .319 | .264 |
| LW 125-10 | 125 | 5⁄16 x ¾ | .81 | .552 | .437 | .334 | .276 |
| LW 150-10 | 150 | ⅜ x ¾ | .84 | .576 | .456 | .348 | .288 |
| LW 225-10 | 225 | ⅜ x ⅞ | .87 | .60 | .475 | .363 | .30 |
| LW 450-10 | 450 | ⅜ x 1¼ | .93 | .638 | .505 | .386 | .319 |
| LW 15-12 | 15 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| LW 25-12 | 25 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| LW 30-12 | 30 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| LW 35-12 | 35 | ¼ x ⅝ | .54 | .373 | .296 | .226 | .187 |
| LW 40-12 | 40 | ¼ x ⅝ | .60 | .42 | .333 | .254 | .21 |
| LW 75-12 | 75 | 5⁄16 x ⅝ | .78 | .528 | .418 | .319 | .264 |
| LW 100-12 | 100 | 5⁄16 x ¾ | .81 | .552 | .437 | .334 | .276 |
| LW 125-12 | 125 | ⅜ x ⅝ | .81 | .552 | .437 | .334 | .276 |
| LW 175-12 | 175 | ⅜ x ¾ | .84 | .576 | .456 | .348 | .288 |
| LW 200-12 | 200 | ⅜ x ⅞ | .87 | .60 | .475 | .363 | .30 |
| LW 250-12 | 250 | ⅜ x ⅞ | .87 | .60 | .475 | .363 | .30 |
| LW 300-12 | 300 | ⅜ x 1 | .87 | .60 | .475 | .363 | .30 |
| LW 400-12 | 400 | ⅜ x 1¼ | .93 | .638 | .505 | .386 | .319 |
| LW 500-12 | 500 | ⅜ x 1½ | .96 | .685 | .543 | .414 | .349 |
| LW 4-16 | 4 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| LW 5-16 | 5 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| LW 6-16 | 6 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| LW 10-16 | 10 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| LW 15-16 | 15 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| LW 20-16 | 20 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| LW 25-16 | 25 | ¼ x ⅝ | .54 | .373 | .296 | .226 | .187 |
| LW 30-16 | 30 | ¼ x ⅝ | .60 | .42 | .333 | .254 | .21 |
| LW 40-16 | 40 | 5⁄16 x ⅝ | .60 | .42 | .333 | .254 | .21 |
| LW 50-16 | 50 | 5⁄16 x ⅝ | .60 | .42 | .333 | .254 | .21 |
| LW 75-16 | 75 | 5⁄16 x ¾ | .78 | .528 | .418 | .319 | .264 |

Add 1⁄32" x 1⁄16" for overall size. †Suffix indicates WVDC (e.g.,
LW 150-6 is rated 6 WVDC).

| CDE No.† | Cap. µF | Size*, In. D. x L. | Net Each, Lots of* 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|
| NLW 100-16 | 100 | 5⁄16 x ¾ | $0.81 | $0.552 | $0.437 | $0.334 | $0.276 |
| NLW 125-16 | 125 | ⅜ x ¾ | .81 | .552 | .437 | .334 | .276 |
| NLW 150-16 | 150 | ⅜ x ¾ | .84 | .576 | .456 | .348 | .288 |
| NLW 175-16 | 175 | ⅜ x ⅞ | .84 | .576 | .456 | .348 | .288 |
| NLW 200-16 | 200 | ⅜ x ⅞ | .87 | .60 | .475 | .363 | .30 |
| NLW 250-16 | 250 | ⅜ x 1 | .87 | .60 | .475 | .363 | .30 |
| NLW 300-16 | 300 | ⅜ x 1¼ | .90 | .624 | .494 | .377 | .312 |
| NLW 350-16 | 350 | ⅜ x 1¼ | .90 | .624 | .494 | .377 | .312 |
| NLW 400-16 | 400 | ⅜ x 1½ | .96 | .685 | .543 | .414 | .349 |
| NLW 450-16 | 450 | ⅜ x 1½ | .96 | .685 | .543 | .414 | .349 |
| NLW 1-25 | 1 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| NLW 2-25 | 2 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| NLW 3-25 | 3 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| NLW 5-25 | 5 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| NLW 6-25 | 6 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| NLW 8-25 | 8 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| NLW 10-25 | 10 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| NLW 15-25 | 15 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| NLW 20-25 | 20 | ¼ x ⅝ | .60 | .42 | .333 | .254 | .21 |
| NLW 25-25 | 25 | 5⁄16 x ⅝ | .60 | .42 | .333 | .254 | .21 |
| NLW 30-25 | 30 | 5⁄16 x ⅝ | .60 | .42 | .333 | .254 | .21 |
| NLW 35-25 | 35 | 5⁄16 x ⅝ | .60 | .42 | .333 | .254 | .21 |
| NLW 40-25 | 40 | 5⁄16 x ⅝ | .78 | .528 | .418 | .319 | .264 |
| NLW 50-25 | 50 | 5⁄16 x ¾ | .78 | .528 | .418 | .319 | .264 |
| NLW 75-25 | 75 | ⅜ x ¾ | .81 | .552 | .437 | .334 | .276 |
| NLW 100-25 | 100 | ⅜ x ¾ | .84 | .576 | .456 | .348 | .288 |
| NLW 125-25 | 125 | ⅜ x ⅞ | .84 | .576 | .456 | .348 | .288 |
| NLW 150-25 | 150 | ⅜ x 1 | .87 | .60 | .475 | .363 | .30 |
| NLW 175-25 | 175 | ⅜ x 1¼ | .93 | .638 | .505 | .386 | .319 |
| NLW 200-25 | 200 | ⅜ x 1¼ | .93 | .638 | .505 | .386 | .319 |
| NLW 250-25 | 250 | ⅜ x 1½ | .96 | .685 | .543 | .414 | .349 |
| NLW 1-50 | 1 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| NLW 2-50 | 2 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| NLW 3-50 | 3 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| NLW 4-50 | 4 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| NLW 5-50 | 5 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| NLW 6-50 | 6 | ¼ x ½ | .54 | .373 | .296 | .226 | .187 |
| NLW 8-50 | 8 | ¼ x ⅝ | .54 | .373 | .296 | .226 | .187 |
| NLW 10-50 | 10 | ¼ x ⅝ | .60 | .42 | .333 | .254 | .21 |
| NLW 15-50 | 15 | 5⁄16 x ⅝ | .60 | .42 | .333 | .254 | .21 |
| NLW 20-50 | 20 | 5⁄16 x ⅝ | .78 | .528 | .418 | .319 | .264 |
| NLW 25-50 | 25 | 5⁄16 x ¾ | .78 | .528 | .418 | .319 | .264 |
| NLW 30-50 | 30 | ⅜ x ⅝ | .81 | .552 | .437 | .334 | .276 |
| NLW 35-50 | 35 | ⅜ x ¾ | .81 | .552 | .437 | .334 | .276 |
| NLW 40-50 | 40 | ⅜ x ¾ | .84 | .576 | .456 | .348 | .288 |
| NLW 50-50 | 50 | ⅜ x ⅞ | .84 | .576 | .456 | .348 | .288 |
| NLW 75-50 | 75 | ⅜ x 1 | .87 | .60 | .475 | .363 | .30 |
| NLW 100-50 | 100 | ⅜ x 1¼ | .90 | .624 | .494 | .377 | .312 |
| NLW 125-50 | 125 | ⅜ x 1½ | .96 | .685 | .543 | .414 | .349 |
| NLW 2-100 | 2 | ¼ x ½ | .60 | .42 | .333 | .254 | .21 |
| NLW 4-100 | 4 | 5⁄16 x ⅝ | .69 | .469 | .372 | .284 | .235 |
| NLW 5-100 | 5 | 5⁄16 x ⅝ | .78 | .528 | .418 | .319 | .264 |
| NLW 6-100 | 6 | 5⁄16 x ⅝ | .78 | .528 | .418 | .319 | .264 |
| NLW 8-100 | 8 | ⅜ x ⅝ | .81 | .552 | .437 | .334 | .276 |
| NLW 10-100 | 10 | ⅜ x ¾ | .81 | .552 | .437 | .334 | .276 |
| NLW 15-100 | 15 | ⅜ x ⅞ | .84 | .576 | .456 | .348 | .288 |
| NLW 20-100 | 20 | ⅜ x 1 | .87 | .60 | .475 | .363 | .30 |
| NLW 25-100 | 25 | ⅜ x 1 | .90 | .624 | .494 | .377 | .312 |
| NLW 30-100 | 30 | ⅜ x 1¼ | .93 | .638 | .505 | .386 | .319 |
| NLW 40-100 | 40 | ⅜ x 1½ | .96 | .685 | .543 | .414 | .349 |
| NLW 1-150 | 1 | ¼ x ½ | .60 | .42 | .333 | .254 | .21 |
| NLW 2-150 | 2 | ¼ x ⅝ | .60 | .42 | .333 | .254 | .21 |
| NLW 3-150 | 3 | 5⁄16 x ⅝ | .69 | .469 | .372 | .284 | .235 |
| NLW 4-150 | 4 | 5⁄16 x ¾ | .78 | .528 | .418 | .319 | .264 |
| NLW 5-150 | 5 | 5⁄16 x ¾ | .78 | .528 | .418 | .319 | .264 |
| NLW 6-150 | 6 | ⅜ x ¾ | .81 | .552 | .437 | .334 | .276 |
| NLW 8-150 | 8 | ⅜ x ¾ | .81 | .552 | .437 | .334 | .276 |
| NLW 10-150 | 10 | ⅜ x ⅞ | .84 | .576 | .456 | .348 | .288 |
| NLW 12-150 | 12 | ⅜ x 1 | .87 | .60 | .475 | .363 | .30 |
| NLW 15-150 | 15 | ⅜ x 1¼ | .87 | .60 | .475 | .363 | .30 |
| NLW 18-150 | 18 | ⅜ x 1¼ | .90 | .624 | .494 | .377 | .312 |
| NLW 20-150 | 20 | ⅜ x 1½ | .93 | .638 | .505 | .386 | .319 |
| NLW 25-150 | 25 | ⅜ x 1½ | .96 | .685 | .543 | .414 | .349 |

**★LARGER QUANTITIES AVAILABLE ON REQUEST**

# CDE CORNELL-DUBILIER Capacitors

## TYPE FAH COMPUTAMITE® COMPUTER GRADE CAPACITORS

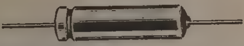
High capacitance DC aluminum electrolytics for use where banks of high capacitance filters are required. Long life, with low leakage current, minimum ESR, high 120 Hz ripple currents. Molded terminal block with safety vent seal; provided with screw terminals. With plastic insulating sleeve. Operating temperature −40° C to +85° C. **Tolerance:** 3–50 WVDC, −10 +100%; 51–350 WVDC, −10 +75%; 351–450 WVDC, −10 +50%.

| CDE No. | Cap., μF | WV DC | Size, In.* Dia. x L. | Net Each, Lots of 1-24 | 25-49 | 50-99* |
|---|---|---|---|---|---|---|
| **FAH143-3** | 14000 | 3 | 1⅜ x 2⅛ | $ 2.40 | $ 1.68 | $ 1.30 |
| **FAH2352-3** | 23500 | 3 | 1⅜ x 3⅛ | 2.75 | 1.93 | 1.49 |
| **FAH363-3** | 36000 | 3 | 1⅜ x 4⅛ | 3.20 | 2.24 | 1.73 |
| **FAH613-3** | 61000 | 3 | 1¾ x 4⅛ | 4.43 | 3.10 | 2.39 |
| **FAH863-3** | 86000 | 3 | 2 x 4⅛ | 5.40 | 3.78 | 2.92 |
| **FAH124-3** | 120000 | 3 | 2 x 5⅝ | 6.63 | 4.64 | 3.58 |
| **FAH1453-3** | 145000 | 3 | 2½ x 4⅛ | 8.08 | 5.65 | 4.36 |
| **FAH214-3** | 210000 | 3 | 3 x 4⅛ | 12.03 | 8.42 | 6.49 |
| **FAH304-3** | 300000 | 3 | 3 x 5⅝ | 15.45 | 10.82 | 8.34 |
| **FAH105-3** | 1000000 | 3 | 3 x 8⅝ | 24.53 | 17.17 | 13.24 |
| **FAH123-5** | 12000 | 5 | 1⅜ x 2⅛ | 2.40 | 1.68 | 1.30 |
| **FAH2052-5** | 20500 | 5 | 1⅜ x 3⅛ | 2.75 | 1.93 | 1.49 |
| **FAH313-5** | 31000 | 5 | 1⅜ x 4⅛ | 3.20 | 2.24 | 1.73 |
| **FAH523-5** | 52000 | 5 | 1¾ x 4⅛ | 4.43 | 3.10 | 2.39 |
| **FAH783-5** | 78000 | 5 | 2 x 4⅛ | 5.40 | 3.78 | 2.92 |
| **FAH114-5** | 110000 | 5 | 2 x 5⅝ | 6.63 | 4.64 | 3.58 |
| **FAH1253-5** | 125000 | 5 | 2½ x 4⅛ | 8.08 | 5.65 | 4.36 |
| **FAH1753-5** | 175000 | 5 | 2½ x 5⅝ | 11.28 | 7.89 | 6.09 |
| **FAH194-5** | 190000 | 5 | 3 x 4⅛ | 12.03 | 8.42 | 6.49 |
| **FAH2753-5** | 275000 | 5 | 3 x 5⅝ | 15.45 | 10.82 | 8.34 |
| **FAH444-5** | 440000 | 5 | 3 x 8⅝ | 24.53 | 17.17 | 13.24 |
| **FAH852-10** | 8500 | 10 | 1⅜ x 2⅛ | 2.40 | 1.68 | 1.30 |
| **FAH1452-10** | 14500 | 10 | 1⅜ x 3⅛ | 2.75 | 1.93 | 1.49 |
| **FAH223-10** | 22000 | 10 | 1⅜ x 4⅛ | 3.15 | 2.21 | 1.70 |
| **FAH373-10** | 37000 | 10 | 1¾ x 4⅛ | 4.43 | 3.10 | 2.39 |
| **FAH553-10** | 55000 | 10 | 2 x 4⅛ | 5.40 | 3.78 | 2.92 |
| **FAH783-10** | 78000 | 10 | 2 x 5⅝ | 6.63 | 4.64 | 3.58 |
| **FAH903-10** | 90000 | 10 | 2½ x 4⅛ | 8.08 | 5.65 | 4.36 |
| **FAH124-10** | 120000 | 10 | 2½ x 5⅝ | 11.28 | 7.89 | 6.09 |
| **FAH1353-10** | 135000 | 10 | 3 x 4⅛ | 12.03 | 8.42 | 6.49 |
| **FAH204-10** | 200000 | 10 | 3 x 5⅝ | 15.33 | 10.73 | 8.28 |
| **FAH314-10** | 310000 | 10 | 3 x 8⅝ | 24.53 | 17.17 | 13.24 |
| **FAH652-15** | 6500 | 15 | 1⅜ x 2⅛ | 2.40 | 1.68 | 1.30 |
| **FAH113-15** | 11000 | 15 | 1⅜ x 3⅛ | 2.75 | 1.93 | 1.49 |
| **FAH173-15** | 17000 | 15 | 1⅜ x 4⅛ | 3.20 | 2.24 | 1.73 |
| **FAH2852-10** | 28500 | 15 | 1¾ x 4⅛ | 4.43 | 3.10 | 2.39 |
| **FAH4252-10** | 42500 | 15 | 2 x 4⅛ | 5.40 | 3.78 | 2.92 |
| **FAH603-15** | 60000 | 15 | 2 x 5⅝ | 6.75 | 4.73 | 3.65 |
| **FAH693-15** | 69000 | 15 | 2½ x 4⅛ | 8.08 | 5.65 | 4.36 |
| **FAH903-15** | 90000 | 15 | 2½ x 5⅝ | 11.28 | 7.89 | 6.09 |
| **FAH104-15** | 100000 | 15 | 3 x 4⅛ | 12.03 | 8.42 | 6.49 |
| **FAH154-15** | 150000 | 15 | 3 x 5⅝ | 15.45 | 10.82 | 8.34 |
| **FAH244-15** | 240000 | 15 | 3 x 8⅝ | 24.53 | 17.17 | 13.24 |
| **FAH462-20** | 4600 | 20 | 1⅜ x 2⅛ | 2.40 | 1.68 | 1.30 |
| **FAH752-20** | 7500 | 20 | 1⅜ x 3⅛ | 2.75 | 1.93 | 1.49 |
| **FAH123-20** | 12000 | 20 | 1⅜ x 4⅛ | 3.20 | 2.24 | 1.73 |
| **FAH203-20** | 20000 | 20 | 1¾ x 4⅛ | 4.30 | 3.01 | 2.32 |
| **FAH303-20** | 30000 | 20 | 2 x 4⅛ | 5.40 | 3.78 | 2.92 |
| **FAH4252-20** | 42500 | 20 | 2 x 5⅝ | 6.75 | 4.73 | 3.65 |
| **FAH503-20** | 50000 | 20 | 2½ x 4⅛ | 8.08 | 5.65 | 4.36 |
| **FAH733-20** | 73000 | 20 | 3 x 4⅛ | 12.03 | 8.42 | 6.49 |
| **FAH104-20** | 100000 | 20 | 3 x 5⅝ | 15.20 | 10.64 | 8.21 |
| **FAH1653-20** | 165000 | 20 | 3 x 8⅝ | 24.53 | 17.17 | 13.24 |
| **FAH372-25** | 3700 | 25 | 1⅜ x 2⅛ | 2.33 | 1.63 | 1.26 |
| **FAH602-25** | 6000 | 25 | 1⅜ x 3⅛ | 2.75 | 1.93 | 1.49 |
| **FAH952-25** | 9500 | 25 | 1⅜ x 4⅛ | 3.20 | 2.24 | 1.73 |
| **FAH163-25** | 16000 | 25 | 1¾ x 4⅛ | 4.30 | 3.01 | 2.32 |
| **FAH243-25** | 24000 | 25 | 2 x 4⅛ | 5.40 | 3.78 | 2.92 |
| **FAH3452-25** | 34500 | 25 | 2 x 5⅝ | 6.75 | 4.73 | 3.65 |
| **FAH3952-25** | 39500 | 25 | 2½ x 4⅛ | 8.08 | 5.65 | 4.36 |
| **FAH503-25** | 50000 | 25 | 2½ x 5⅝ | 11.28 | 7.89 | 6.09 |
| **FAH593-25** | 59000 | 25 | 3 x 4⅛ | 12.03 | 8.42 | 6.49 |
| **FAH843-25** | 84000 | 25 | 3 x 5⅝ | 15.33 | 10.73 | 8.28 |
| **FAH1353-25** | 135000 | 25 | 3 x 8⅝ | 24.53 | 17.17 | 13.24 |
| **FAH292-30** | 2900 | 30 | 1⅜ x 2⅛ | 2.33 | 1.63 | 1.26 |
| **FAH492-30** | 4900 | 30 | 1⅜ x 3⅛ | 2.75 | 1.93 | 1.49 |
| **FAH752-30** | 7500 | 30 | 1⅜ x 4⅛ | 3.20 | 2.24 | 1.73 |
| **FAH1252-30** | 12500 | 30 | 1¾ x 4⅛ | 4.30 | 3.01 | 2.32 |
| **FAH1752-30** | 17500 | 30 | 2 x 4⅛ | 5.28 | 3.69 | 2.85 |
| **FAH2852-30** | 28500 | 30 | 2½ x 4⅛ | 7.95 | 5.57 | 4.29 |
| **FAH403-30** | 40000 | 30 | 2½ x 5⅝ | 11.28 | 7.89 | 6.09 |
| **FAH4252-30** | 42500 | 30 | 3 x 4⅛ | 12.03 | 8.42 | 6.49 |
| **FAH663-30** | 66000 | 30 | 3 x 5⅝ | 15.33 | 10.73 | 8.28 |
| **FAH983-30** | 98000 | 30 | 3 x 8⅝ | 23.90 | 16.73 | 12.91 |
| **FAH242-40** | 2400 | 40 | 1⅜ x 2⅛ | 2.40 | 1.68 | 1.30 |
| **FAH412-40** | 4100 | 40 | 1⅜ x 3⅛ | 2.75 | 1.93 | 1.49 |
| **FAH602-40** | 6000 | 40 | 1⅜ x 4⅛ | 3.20 | 2.24 | 1.73 |
| **FAH1052-40** | 10500 | 40 | 1¾ x 4⅛ | 4.43 | 3.10 | 2.39 |
| **FAH1452-40** | 14500 | 40 | 2 x 4⅛ | 5.53 | 3.87 | 2.98 |
| **FAH2052-40** | 20500 | 40 | 2 x 5⅝ | 6.75 | 4.73 | 3.65 |
| **FAH2352-40** | 23500 | 40 | 2½ x 4⅛ | 8.08 | 5.65 | 4.36 |
| **FAH263-40** | 26000 | 40 | 2½ x 5⅝ | 11.28 | 7.89 | 6.09 |
| **FAH353-40** | 35000 | 40 | 3 x 4⅛ | 12.03 | 8.42 | 6.49 |
| **FAH603-40** | 60000 | 40 | 3 x 5⅝ | 15.95 | 11.17 | 8.61 |
| **FAH813-40** | 81000 | 40 | 3 x 8⅝ | 25.13 | 17.59 | 13.57 |
| **FAH162-50** | 1600 | 50 | 1⅜ x 2⅛ | 2.40 | 1.68 | 1.30 |
| **FAH272-50** | 2700 | 50 | 1⅜ x 3⅛ | 2.83 | 1.98 | 1.53 |
| **FAH412-50** | 4100 | 50 | 1⅜ x 4⅛ | 3.33 | 2.33 | 1.80 |
| **FAH702-50** | 7000 | 50 | 1¾ x 4⅛ | 4.43 | 3.10 | 2.39 |
| **FAH942-50** | 9400 | 50 | 2 x 4⅛ | 5.53 | 3.87 | 2.98 |
| **FAH1352-50** | 13500 | 50 | 2 x 5⅝ | 6.75 | 4.73 | 3.65 |
| **FAH1552-50** | 15500 | 50 | 2½ x 4⅛ | 7.95 | 5.57 | 4.29 |
| **FAH233-50** | 23000 | 50 | 3 x 4⅛ | 12.03 | 8.42 | 6.49 |
| **FAH253-50** | 25000 | 50 | 3 x 4⅛ | 12.03 | 8.42 | 6.49 |
| **FAH403-50** | 40000 | 50 | 3 x 5⅝ | 15.95 | 11.17 | 8.61 |
| **FAH573-50** | 57000 | 50 | 3 x 8⅝ | $25.73 | $18.01 | $13.89 |
| **FAH132-60** | 1300 | 60 | 1⅜ x 2⅛ | 2.40 | 1.68 | 1.30 |
| **FAH222-60** | 2200 | 60 | 1⅜ x 3⅛ | 2.83 | 1.98 | 1.53 |
| **FAH332-60** | 3300 | 60 | 1⅜ x 4⅛ | 3.33 | 2.33 | 1.80 |
| **FAH552-60** | 5500 | 60 | 1¾ x 4⅛ | 4.43 | 3.10 | 2.39 |
| **FAH802-60** | 8000 | 60 | 2 x 4⅛ | 5.53 | 3.87 | 2.98 |
| **FAH1052-60** | 10500 | 60 | 2 x 5⅝ | 6.75 | 4.73 | 3.65 |
| **FAH1252-60** | 12500 | 60 | 2½ x 4⅛ | 7.95 | 5.57 | 4.29 |
| **FAH1852-60** | 18500 | 60 | 3 x 4⅛ | 12.03 | 8.42 | 6.49 |
| **FAH2652-60** | 26500 | 60 | 3 x 5⅝ | 15.95 | 11.17 | 8.61 |
| **FAH433-60** | 43000 | 60 | 3 x 8⅝ | 25.73 | 18.01 | 13.89 |
| **FAH102-75** | 1000 | 75 | 1⅜ x 2⅛ | 2.40 | 1.68 | 1.30 |
| **FAH172-75** | 1700 | 75 | 1⅜ x 3⅛ | 2.83 | 1.98 | 1.53 |
| **FAH262-75** | 2600 | 75 | 1⅜ x 4⅛ | 3.45 | 2.42 | 1.86 |
| **FAH452-75** | 4500 | 75 | 1¾ x 4⅛ | 4.30 | 3.01 | 2.32 |
| **FAH652-75** | 6500 | 75 | 2 x 4⅛ | 5.53 | 3.87 | 2.98 |
| **FAH902-75** | 9000 | 75 | 2 x 5⅝ | 6.75 | 4.73 | 3.65 |
| **FAH1052-75** | 10500 | 75 | 2½ x 4⅛ | 7.95 | 5.57 | 4.29 |
| **FAH163-75** | 16000 | 75 | 3 x 4⅛ | 12.03 | 8.42 | 6.49 |
| **FAH2252-75** | 22500 | 75 | 3 x 5⅝ | 15.95 | 11.17 | 8.61 |
| **FAH373-75** | 37000 | 75 | 3 x 8⅝ | 25.73 | 18.01 | 13.89 |
| **FAH601-100** | 600 | 100 | 1⅜ x 2⅛ | 2.40 | 1.68 | 1.30 |
| **FAH112-100** | 1100 | 100 | 1⅜ x 3⅛ | 2.95 | 2.07 | 1.59 |
| **FAH1651-100** | 1650 | 100 | 1⅜ x 4⅛ | 3.45 | 2.42 | 1.86 |
| **FAH282-100** | 2800 | 100 | 1¾ x 4⅛ | 4.30 | 3.01 | 2.32 |
| **FAH412-100** | 4100 | 100 | 2 x 4⅛ | 5.65 | 3.96 | 3.05 |
| **FAH552-100** | 5500 | 100 | 2 x 5⅝ | 6.88 | 4.81 | 3.71 |
| **FAH652-100** | 6500 | 100 | 2½ x 4⅛ | 8.20 | 5.74 | 4.43 |
| **FAH902-100** | 9000 | 100 | 3 x 4⅛ | 12.03 | 8.42 | 6.49 |
| **FAH133-100** | 13000 | 100 | 3 x 5⅝ | 15.95 | 11.17 | 8.61 |
| **FAH2152-100** | 21500 | 100 | 3 x 8⅝ | 25.73 | 18.01 | 13.89 |
| **FAH251-150** | 250 | 150 | 1⅜ x 2⅛ | 2.40 | 1.68 | 1.30 |
| **FAH401-150** | 400 | 150 | 1⅜ x 2⅛ | 2.58 | 1.80 | 1.39 |
| **FAH701-150** | 700 | 150 | 1⅜ x 3⅛ | 3.08 | 2.15 | 1.66 |
| **FAH1051-150** | 1050 | 150 | 1⅜ x 4⅛ | 3.45 | 2.42 | 1.86 |
| **FAH1851-150** | 1850 | 150 | 1¾ x 4⅛ | 4.90 | 3.43 | 2.65 |
| **FAH202-150** | 2000 | 150 | 2 x 4⅛ | 5.78 | 4.04 | 3.12 |
| **FAH382-150** | 3800 | 150 | 2 x 5⅝ | 6.88 | 4.81 | 3.71 |
| **FAH392-150** | 3900 | 150 | 2½ x 4⅛ | 8.33 | 5.83 | 4.50 |
| **FAH552-150** | 5500 | 150 | 3 x 4⅛ | 12.25 | 8.58 | 6.62 |
| **FAH652-150** | 6500 | 150 | 3 x 5⅝ | 15.33 | 10.73 | 8.28 |
| **FAH852-150** | 8500 | 150 | 3 x 5⅝ | 15.95 | 11.17 | 8.61 |
| **FAH1352-150** | 13500 | 150 | 3 x 8⅝ | 25.73 | 18.01 | 13.89 |
| **FAH191-200** | 190 | 200 | 1⅜ x 2⅛ | 2.45 | 1.72 | 1.32 |
| **FAH3250-200** | 325 | 200 | 1⅜ x 3⅛ | 3.08 | 2.15 | 1.66 |
| **FAH501-200** | 500 | 200 | 1⅜ x 4⅛ | 3.45 | 2.42 | 1.86 |
| **FAH901-200** | 900 | 200 | 1¾ x 4⅛ | 4.90 | 3.43 | 2.65 |
| **FAH1251-200** | 1250 | 200 | 2 x 4⅛ | 5.78 | 4.04 | 3.12 |
| **FAH182-200** | 1800 | 200 | 2 x 5⅝ | 6.88 | 4.81 | 3.71 |
| **FAH212-200** | 2100 | 200 | 2½ x 4⅛ | 8.58 | 6.00 | 4.63 |
| **FAH322-200** | 3200 | 200 | 3 x 4⅛ | 12.25 | 8.58 | 6.62 |
| **FAH452-200** | 4500 | 200 | 3 x 5⅝ | 15.95 | 11.17 | 8.61 |
| **FAH181-250** | 180 | 250 | 1⅜ x 2⅛ | 2.70 | 1.89 | 1.46 |
| **FAH301-250** | 300 | 250 | 1⅜ x 3⅛ | 3.20 | 2.24 | 1.73 |
| **FAH451-250** | 450 | 250 | 1⅜ x 4⅛ | 3.45 | 2.42 | 1.86 |
| **FAH851-250** | 850 | 250 | 1¾ x 4⅛ | 5.40 | 3.78 | 2.92 |
| **FAH1151-250** | 1150 | 250 | 2 x 4⅛ | 6.13 | 4.29 | 3.31 |
| **FAH172-250** | 1700 | 250 | 2 x 5⅝ | 7.35 | 5.15 | 3.97 |
| **FAH202-250** | 2000 | 250 | 2½ x 4⅛ | 8.58 | 6.00 | 4.63 |
| **FAH292-250** | 2900 | 250 | 3 x 4⅛ | 12.03 | 8.42 | 6.49 |
| **FAH412-250** | 4100 | 250 | 3 x 5⅝ | 15.70 | 10.99 | 8.48 |
| **FAH161-300** | 160 | 300 | 1⅜ x 2⅛ | 2.83 | 1.98 | 1.53 |
| **FAH2750-300** | 275 | 300 | 1⅜ x 3⅛ | 3.20 | 2.24 | 1.73 |
| **FAH4250-300** | 425 | 300 | 1⅜ x 4⅛ | 3.70 | 2.59 | 2.00 |
| **FAH601-300** | 600 | 300 | 1¾ x 4⅛ | 5.40 | 3.78 | 2.92 |
| **FAH701-300** | 700 | 300 | 1¾ x 4⅛ | 5.53 | 3.87 | 2.98 |
| **FAH1051-300** | 1050 | 300 | 2 x 4⅛ | 6.75 | 4.73 | 3.65 |
| **FAH1551-300** | 1550 | 300 | 2 x 5⅝ | 7.35 | 5.15 | 3.97 |
| **FAH172-300** | 1700 | 300 | 2½ x 4⅛ | 9.18 | 6.42 | 4.95 |
| **FAH202-300** | 2000 | 300 | 2½ x 5⅝ | 11.65 | 8.16 | 6.29 |
| **FAH242-300** | 2400 | 300 | 3 x 4⅛ | 12.25 | 8.58 | 6.62 |
| **FAH342-300** | 3400 | 300 | 3 x 5⅝ | 15.95 | 11.17 | 8.61 |
| **FAH101-350** | 100 | 350 | 1⅜ x 2⅛ | 2.83 | 1.98 | 1.53 |
| **FAH151-350** | 150 | 350 | 1⅜ x 3⅛ | 3.33 | 2.33 | 1.80 |
| **FAH181-350** | 180 | 350 | 1⅜ x 3⅛ | 3.45 | 2.42 | 1.86 |
| **FAH2750-350** | 275 | 350 | 1⅜ x 4⅛ | 3.70 | 2.59 | 2.00 |
| **FAH501-350** | 500 | 350 | 1¾ x 4⅛ | 5.53 | 3.87 | 2.98 |
| **FAH651-350** | 650 | 350 | 2 x 4⅛ | 6.75 | 4.73 | 3.65 |
| **FAH951-350** | 950 | 350 | 2 x 5⅝ | 7.60 | 5.32 | 4.11 |
| **FAH122-350** | 1200 | 350 | 2½ x 4⅛ | 9.83 | 6.88 | 5.31 |
| **FAH172-350** | 1700 | 350 | 3 x 4⅛ | 12.25 | 8.58 | 6.62 |
| **FAH242-350** | 2400 | 350 | 3 x 5⅝ | 15.95 | 11.17 | 8.61 |
| **FAH800-400** | 80 | 400 | 1⅜ x 2⅛ | 2.95 | 2.07 | 1.59 |
| **FAH141-400** | 140 | 400 | 1⅜ x 3⅛ | 3.45 | 2.42 | 1.86 |
| **FAH201-400** | 200 | 400 | 1⅜ x 4⅛ | 3.70 | 2.59 | 2.00 |
| **FAH3750-400** | 375 | 400 | 1¾ x 4⅛ | 5.53 | 3.87 | 2.98 |
| **FAH501-400** | 500 | 400 | 2 x 4⅛ | 6.75 | 4.73 | 3.65 |
| **FAH701-400** | 700 | 400 | 2 x 5⅝ | 7.60 | 5.32 | 4.11 |
| **FAH901-400** | 900 | 400 | 2½ x 4⅛ | 9.83 | 6.88 | 5.31 |
| **FAH1351-400** | 1350 | 400 | 3 x 4⅛ | 12.25 | 8.58 | 6.62 |
| **FAH192-400** | 1900 | 400 | 3 x 5⅝ | 15.95 | 11.17 | 8.61 |
| **FAH500-450** | 50 | 450 | 1⅜ x 2⅛ | 2.83 | 1.98 | 1.53 |
| **FAH700-450** | 70 | 450 | 1⅜ x 2⅛ | 2.95 | 2.07 | 1.59 |
| **FAH121-450** | 120 | 450 | 1⅜ x 3⅛ | 3.45 | 2.42 | 1.86 |
| **FAH181-450** | 180 | 450 | 1⅜ x 4⅛ | 3.70 | 2.59 | 2.00 |
| **FAH3250-450** | 325 | 450 | 1¾ x 4⅛ | 5.53 | 3.87 | 2.98 |
| **FAH4250-450** | 425 | 450 | 2 x 4⅛ | 6.75 | 4.73 | 3.65 |
| **FAH601-450** | 600 | 450 | 2 x 5⅝ | 7.60 | 5.32 | 4.11 |
| **FAH751-450** | 750 | 450 | 2½ x 4⅛ | 9.83 | 6.88 | 5.31 |
| **FAH861-450** | 860 | 450 | 2½ x 5⅝ | 11.65 | 8.16 | 6.29 |
| **FAH112-450** | 1100 | 450 | 3 x 4⅛ | 12.25 | 8.58 | 6.62 |
| **FAH162-450** | 1600 | 450 | 3 x 5⅝ | 15.95 | 11.17 | 8.61 |

*Uninsulated case size. Add 1/32" to diameter and 1/32" to length for dimensions including insulating sleeve. ***Larger Quantity Prices on Request.***

# CDE CORNELL-DUBILIER Capacitors

## TYPE WHB COMPUTAMITE® COMPUTER GRADE CAPACITORS



ll welded, aluminum electrolytic capacitors are miniature size nd computer quality. Feature unique anode terminal and seal esign. Long life, highly vibration resistant with low leakage urrent, high 120 Hz ripple currents. Standard WHB capacitors re polarized; semi-polarized or non-polarized available on request. perating temperature −40° C to +85° C. **Tolerance:** Up to 75 WVDC, −10 +75%; above 75 WVDC, −10 +50%; closer tolrances available on request.

### 3 WVDC—4 VS

| CDE No. | Cap., µF | Size, In.* Dia. x L. | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 | 100 Up |
| WHB1300-3 | 1300 | ½ x 2⅛ | $1.68 | $1.01 | $0.81 | $0.67 |
| WHB2100-3 | 2100 | ⅞ x 1⅛ | 1.85 | 1.11 | .89 | .74 |
| WHB3000-3 | 3000 | 1 x 1⅛ | 1.90 | 1.14 | .91 | .76 |
| WHB5700-3 | 5700 | ¾ x 2⅝ | 2.03 | 1.22 | .97 | .81 |
| WHB10000-3 | 10000 | ⅞ x 3⅛ | 2.53 | 1.52 | 1.21 | 1.01 |
| WHB18000-3 | 18000 | 1 x 3⅝ | 3.15 | 1.89 | 1.51 | 1.26 |
| **6 WVDC—8 VS** | | | | | | |
| WHB600-6 | 600 | ½ x 1⅝ | $1.63 | $0.98 | $0.78 | $0.65 |
| WHB1000-6 | 1000 | ¾ x 1⅛ | 1.73 | 1.04 | .83 | .69 |
| WHB2000-6 | 2000 | ¾ x 1⅝ | 1.90 | 1.14 | .91 | .76 |
| WHB4000-6 | 4000 | ¾ x 2⅝ | 2.03 | 1.22 | .97 | .81 |
| WHB6000-6 | 6000 | ⅞ x 2⅝ | 2.38 | 1.43 | 1.14 | .96 |
| WHB10000-6 | 10000 | 1 x 3⅛ | 2.93 | 1.76 | 1.41 | 1.17 |
| **10 WVDC—15 VS** | | | | | | |
| WHB500-10 | 500 | ½ x 1⅝ | $1.63 | $0.98 | $0.78 | $0.65 |
| WHB1000-10 | 1000 | ⅝ x 1⅝ | 1.73 | 1.04 | .83 | .69 |
| WHB1600-10 | 1600 | ⅝ x 2⅛ | 1.85 | 1.11 | .89 | .74 |
| WHB2500-10 | 2500 | ¾ x 2⅛ | 1.98 | 1.19 | .95 | .79 |
| WHB5000-10 | 5000 | ⅞ x 2⅝ | 2.38 | 1.43 | 1.14 | .95 |
| WHB10000-10 | 10000 | 1 x 3⅝ | 3.15 | 1.89 | 1.51 | 1.26 |
| **15 WVDC—20 VS** | | | | | | |
| WHB600-15 | 600 | ½ x 2⅛ | $1.68 | $1.01 | $0.81 | $0.67 |
| WHB1200-15 | 1200 | ⅝ x 2⅛ | 1.85 | 1.11 | .89 | .74 |
| WHB2500-15 | 2500 | ¾ x 2⅝ | 2.03 | 1.22 | .97 | .81 |
| WHB4000-15 | 4000 | 1 x 2⅛ | 2.48 | 1.49 | 1.19 | .99 |
| WHB8000-15 | 8000 | 1 x 3⅝ | 3.15 | 1.89 | 1.51 | 1.26 |
| **25 WVDC—40 VS** | | | | | | |
| WHB200-25 | 200 | ½ x 1⅝ | $1.63 | $0.98 | $0.78 | $0.65 |
| WHB500-25 | 500 | ⅞ x 1⅛ | 1.85 | 1.11 | .89 | .74 |
| WHB1000-25 | 1000 | ¾ x 2⅛ | 1.98 | 1.19 | .95 | .79 |
| WHB2200-25 | 2200 | ⅞ x 2⅝ | 2.38 | 1.43 | 1.14 | .95 |
| WHB4000-25 | 4000 | 1 x 3⅛ | 2.93 | 1.76 | 1.41 | 1.17 |

### 30 WVDC—45 VS

| CDE No. | Cap., µF | Size, In.* Dia. x L. | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 | 100 Up |
| WHB75-30 | 75 | ½ x 1⅛ | $1.58 | $0.95 | $0.76 | $0.63 |
| WHB150-30 | 150 | ½ x 1⅝ | 1.63 | .98 | .78 | .65 |
| WHB250-30 | 250 | ½ x 2⅛ | 1.68 | 1.01 | .81 | .67 |
| WHB500-30 | 500 | ⅝ x 2⅝ | 1.85 | 1.11 | .89 | .74 |
| WHB1100-30 | 1100 | ¾ x 2⅝ | 2.03 | 1.22 | .97 | .81 |
| WHB2100-30 | 2100 | ⅞ x 3⅛ | 2.53 | 1.52 | 1.21 | 1.01 |
| WHB3000-30 | 3000 | 1 x 3⅛ | 2.93 | 1.76 | 1.41 | 1.17 |
| **50 WVDC—75 VS** | | | | | | |
| WHB50-50 | 50 | ½ x 1⅛ | $1.58 | $0.95 | $0.76 | $0.63 |
| WHB100-50 | 100 | ½ x 1⅝ | 1.63 | .98 | .78 | .65 |
| WHB150-50 | 150 | ½ x 2⅛ | 1.68 | 1.01 | .81 | .67 |
| WHB250-50 | 250 | ⅞ x 1⅛ | 1.85 | 1.11 | .89 | .74 |
| WHB500-50 | 500 | ¾ x 2⅛ | 1.98 | 1.19 | .95 | .79 |
| WHB1100-50 | 1100 | ⅞ x 2⅝ | 2.38 | 1.43 | 1.14 | .95 |
| WHB2300-50 | 2300 | 1 x 3⅝ | 3.15 | 1.89 | 1.51 | 1.26 |
| **150 WVDC—200 VS** | | | | | | |
| WHB25-150 | 25 | ½ x 1⅝ | $1.63 | $0.98 | $0.78 | $0.65 |
| WHB50-150 | 50 | ⅝ x 1⅝ | 1.73 | 1.04 | .83 | .69 |
| WHB100-150 | 100 | ⅝ x 2⅝ | 1.98 | 1.17 | .95 | .79 |
| WHB250-150 | 250 | ⅞ x 2⅝ | 2.38 | 1.43 | 1.14 | .95 |
| WHB530-150 | 530 | 1 x 3⅝ | 3.15 | 1.89 | 1.51 | 1.26 |
| **250 WVDC—300 VS** | | | | | | |
| WHB20-250 | 20 | ½ x 2⅛ | $1.68 | $1.01 | $0.81 | $0.67 |
| WHB50-250 | 50 | 1 x 1⅛ | 1.90 | 1.14 | .91 | .76 |
| WHB100-250 | 100 | ⅞ x 2⅛ | 2.33 | 1.40 | 1.12 | .93 |
| WHB200-250 | 200 | 1 x 2⅝ | 2.55 | 1.53 | 1.23 | 1.02 |
| WHB300-250 | 300 | 1 x 3⅝ | 3.15 | 1.89 | 1.51 | 1.26 |
| **350 WVDC—400 VS** | | | | | | |
| WHB20-350 | 20 | ⅝ x 2⅛ | $1.85 | $1.11 | $0.89 | $0.74 |
| WHB30-350 | 30 | ⅝ x 2⅝ | 1.98 | 1.19 | .95 | .79 |
| WHB40-350 | 40 | ¾ x 2⅛ | 1.98 | 1.19 | .95 | .79 |
| WHB50-350 | 50 | ¾ x 2⅝ | 2.03 | 1.22 | .97 | .81 |
| WHB100-350 | 100 | ⅞ x 3⅛ | 2.53 | 1.52 | 1.21 | 1.01 |
| WHB160-350 | 160 | 1 x 3⅝ | 3.15 | 1.89 | 1.51 | 1.26 |
| **450 WVDC—525 VS** | | | | | | |
| WHB5-450 | 5 | ½ x 2⅛ | $1.68 | $1.01 | $0.81 | $0.67 |
| WHB10-450 | 10 | ⅝ x 2⅛ | 1.85 | 1.11 | .89 | .74 |
| WHB20-450 | 20 | ¾ x 2⅛ | 1.98 | 1.19 | .95 | .79 |
| WHB50-450 | 50 | 1 x 2⅝ | 2.55 | 1.53 | 1.23 | 1.02 |
| WHB75-450 | 75 | 1 x 3⅝ | 3.15 | 1.89 | 1.51 | 1.26 |

*Uninsulated case size. Add 0.010″ to diameter and 0.036″ to length for dimensions including insulating sleeve.

## TYPE MCR FILM-WRAP METALLIZED POLYCARBONATE CAPACITORS

**perating Temperature:** −55° C to +125° C, with 50% voltage erating. **Tolerance:** ±20%, except as noted. **Capacitance Change:** -2.5%+2% with reference to +25° C measurement. Epoxy nd-seal for superior moisture resistance.

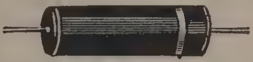
### DUAL RATED 50-100 WVDC

| CDE No. | Cap., µF | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
| MCR-1P1 | .1 | $0.99 | $0.74 | $0.58 | $0.495 | $0.413 |
| MCR-1P1-10* | .1 | 1.11 | .83 | .65 | .555 | .463 |
| MCR-1P15 | .15 | 1.08 | .81 | .63 | .54 | .45 |
| MCR-1P15-10* | .15 | 1.20 | .90 | .70 | .60 | .50 |
| MCR-1P22 | .22 | 1.20 | .90 | .70 | .60 | .50 |
| MCR-1P22-10* | .22 | 1.32 | .99 | .77 | .66 | .55 |
| MCR-1P33 | .33 | 1.32 | .99 | .77 | .66 | .55 |
| MCR-1P33-10* | .33 | 1.44 | 1.08 | .84 | .72 | .60 |
| MCR-1P47 | .47 | 1.53 | 1.15 | .89 | .765 | .638 |
| MCR-1P47-10* | .47 | 1.68 | 1.26 | .98 | .84 | .70 |
| MCR-1P68 | .68 | 1.71 | 1.28 | 1.00 | .855 | .713 |
| MCR-1P68-10* | .68 | 1.89 | 1.42 | 1.10 | .945 | .788 |
| MCR-1W1 | 1.0 | 2.01 | 1.51 | 1.17 | 1.01 | .838 |
| MCR-1W1-10* | 1.0 | 2.22 | 1.67 | 1.30 | 1.11 | .925 |
| MCR-1W1P5 | 1.5 | 2.49 | 1.87 | 1.45 | 1.25 | 1.04 |
| MCR-1W1P5-10* | 1.5 | 2.73 | 2.05 | 1.59 | 1.37 | 1.14 |
| MCR-1W2 | 2 | 2.82 | 2.12 | 1.65 | 1.41 | 1.18 |
| MCR-1W2-10* | 2 | 3.12 | 2.34 | 1.82 | 1.56 | 1.30 |
| MCR-1W3 | 3 | 3.48 | 2.61 | 2.03 | 1.74 | 1.45 |
| MCR-1W3-10* | 3 | 3.84 | 2.88 | 2.24 | 1.92 | 1.60 |
| MCR-1W4 | 4 | 4.29 | 3.22 | 2.50 | 2.15 | 1.79 |
| MCR-1W4-10* | 4 | 4.74 | 3.56 | 2.77 | 2.37 | 1.98 |
| MCR-1W5 | 5 | 5.07 | 3.80 | 2.96 | 2.54 | 2.11 |
| MCR-1W5-10* | 5 | 5.58 | 4.19 | 3.26 | 2.79 | 2.33 |

±10% tolerance.

### 600 WVDC

| CDE No. | Cap., µF | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|
| MCR-6S1 | .01 | $0.78 | $0.59 | $0.46 | $0.39 | $0.325 |
| MCR-6S15 | .015 | .84 | .63 | .49 | .42 | .35 |
| MCR-6S22 | .022 | .93 | .70 | .54 | .465 | .388 |
| MCR-6S33 | .033 | 1.02 | .77 | .60 | .51 | .425 |
| MCR-6S47 | .047 | 1.14 | .86 | .67 | .57 | .475 |
| MCR-6S68 | .068 | 1.26 | .95 | .74 | .63 | .525 |
| MCR-6P1 | .1 | 1.38 | 1.04 | .81 | .69 | .575 |
| MCR-6P15 | .15 | 1.53 | 1.15 | .89 | .765 | .638 |
| MCR-6P22 | .22 | 1.74 | 1.31 | 1.02 | .87 | .725 |
| MCR-6P33 | .33 | 2.07 | 1.55 | 1.21 | 1.04 | .863 |
| MCR-6P47 | .47 | 2.58 | 1.94 | 1.51 | 1.29 | 1.08 |
| MCR-6P68 | .68 | 3.09 | 2.32 | 1.80 | 1.55 | 1.29 |
| MCR-6W1 | 1 | 4.14 | 3.11 | 2.42 | 2.07 | 1.73 |



### 200 WVDC

| CDE No. | Cap., µF | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
| MCR-2S1 | .01 | $0.72 | $0.54 | $0.42 | $0.36 | $0.30 |
| MCR-2S15 | .015 | .72 | .54 | .42 | .36 | .30 |
| MCR-2S22 | .022 | .72 | .54 | .42 | .36 | .30 |
| MCR-2S33 | .033 | .72 | .54 | .42 | .36 | .30 |
| MCR-2S47 | .047 | .81 | .61 | .47 | .405 | .338 |
| MCR-2S68 | .068 | .87 | .65 | .51 | .435 | .363 |
| MCR-2P1 | .1 | .90 | .68 | .53 | .45 | .375 |
| MCR-2P15 | .15 | .99 | .74 | .58 | .495 | .413 |
| MCR-2P22 | .22 | 1.08 | .81 | .63 | .54 | .45 |
| MCR-2P33 | .33 | 1.20 | .90 | .70 | .60 | .50 |
| MCR-2P47 | .47 | 1.38 | 1.04 | .81 | .69 | .575 |
| MCR-2P68 | .68 | 1.56 | 1.17 | .91 | .78 | .65 |
| MCR-2W1 | 1 | 1.83 | 1.37 | 1.07 | .915 | .763 |
| MCR-2W1P5 | 1.5 | 2.25 | 1.69 | 1.31 | 1.13 | .938 |
| MCR-2W2 | 2 | 2.58 | 1.94 | 1.51 | 1.29 | 1.08 |
| MCR-2W3 | 3 | 3.18 | 2.39 | 1.86 | 1.59 | 1.33 |
| MCR-2W4 | 4 | 3.90 | 2.93 | 2.28 | 1.95 | 1.63 |
| MCR-2W5 | 5 | 4.62 | 3.47 | 2.70 | 2.31 | 1.93 |

### 400 WVDC

| CDE No. | Cap., µF | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|
| MCR-4S1 | .01 | $0.72 | $0.54 | $0.42 | $0.36 | $0.30 |
| MCR-4S15 | .015 | .72 | .54 | .42 | .36 | .30 |
| MCR-4S22 | .022 | .78 | .59 | .46 | .39 | .325 |
| MCR-4S33 | .033 | .81 | .61 | .47 | .405 | .338 |
| MCR-4S47 | .047 | .90 | .68 | .53 | .45 | .36 |
| MCR-4S68 | .068 | .96 | .72 | .56 | .48 | .40 |
| MCR-4P1 | .1 | 1.05 | .79 | .61 | .525 | .438 |
| MCR-4P15 | .15 | 1.20 | .90 | .70 | .60 | .50 |
| MCR-4P22 | .22 | 1.38 | 1.04 | .81 | .69 | .575 |
| MCR-4P33 | .33 | 1.62 | 1.22 | .95 | .81 | .675 |
| MCR-4P47 | .47 | 1.98 | 1.49 | 1.16 | .99 | .825 |
| MCR-4P68 | .68 | 2.31 | 1.73 | 1.35 | 1.16 | .963 |
| MCR-4W1 | 1.0 | 2.82 | 2.12 | 1.65 | 1.41 | 1.18 |
| MCR-4W1P5 | 1.5 | 3.54 | 2.66 | 2.07 | 1.77 | 1.48 |
| MCR-4W2 | 2 | 4.68 | 3.51 | 2.73 | 2.34 | 1.95 |
| MCR-4W3 | 3 | 5.67 | 4.25 | 3.31 | 2.84 | 2.36 |

# CORNING® Glass Capacitors

## CYK MINIATURE GLASS-K™ CERAMIC CAPACITORS

Larger capacitance values suitable for point-of-use filtering in computers; bypassing and coupling elements in miniaturized circuitry. Smaller capacitance values suitable for more critical circuit functions. Ideal for automatic insertion. **Temperature Range:** −55° C to +125° C. **Insulation Resistance:** 10,000 megs or 1,000 megs-μF, whichever is less. **Dissipation Factor:** Stability characteristic T less than 1%; U less than 1.5%; V less than 3%. **WVDC:** 50 V. **Size:** CYK01, 0.100" dia. x 0.250" lg.; CYK02, 0.140" dia. x 0.250" lg. **Note:** Prices apply to standard capacitance decade values only; non-standard value prices on request.

### TYPE CYK01

| Corning No. CYK01- | Cap., pF | Tolerance* | Stability Char. | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1-24 | 25-99 | 100-499 | 500-999 | 1000 Up |
| **BT301** | 300 | J† | T | $2.71 | $2.50 | $2.00 | $1.50 | $1.00 |
| | | K† | T | 1.93 | 1.79 | 1.43 | 1.07 | .71 |
| | | M† | T | 1.73 | 1.61 | 1.28 | .97 | .64 |
| **BT331** | 330 | J† | T | 2.71 | 2.50 | 2.00 | 1.50 | 1.00 |
| | | K† | T | 1.93 | 1.79 | 1.43 | 1.07 | .71 |
| | | M† | T | 1.73 | 1.61 | 1.28 | .97 | .64 |
| **BT361** | 360 | J† | T | 2.71 | 2.50 | 2.00 | 1.50 | 1.00 |
| | | K† | T | 1.93 | 1.79 | 1.43 | 1.07 | .71 |
| | | M† | T | 1.73 | 1.61 | 1.28 | .97 | .64 |
| **BT391** | 390 | J† | T | 2.71 | 2.50 | 2.00 | 1.50 | 1.00 |
| | | K† | T | 1.93 | 1.79 | 1.43 | 1.07 | .71 |
| | | M† | T | 1.73 | 1.61 | 1.28 | .97 | .64 |
| **BT471** | 470 | J† | T | 2.71 | 2.50 | 2.00 | 1.50 | 1.00 |
| | | K† | T | 1.93 | 1.79 | 1.43 | 1.07 | .71 |
| | | M† | T | 1.73 | 1.61 | 1.28 | .97 | .64 |
| **BT511** | 510 | J† | T | 2.71 | 2.50 | 2.00 | 1.50 | 1.00 |
| | | K† | T | 1.93 | 1.79 | 1.43 | 1.07 | .71 |
| | | M† | T | 1.73 | 1.61 | 1.28 | .97 | .64 |
| **BT561** | 560 | J† | T | 2.71 | 2.50 | 2.00 | 1.50 | 1.00 |
| | | K† | T | 1.93 | 1.79 | 1.43 | 1.07 | .71 |
| | | M† | T | 1.73 | 1.61 | 1.28 | .97 | .64 |
| **BT621** | 620 | J† | T | 2.71 | 2.50 | 2.00 | 1.50 | 1.00 |
| | | K† | T | 1.93 | 1.79 | 1.43 | 1.07 | .71 |
| | | M† | T | 1.73 | 1.61 | 1.28 | .97 | .64 |
| **BT681** | 680 | J† | T | 2.71 | 2.50 | 2.00 | 1.50 | 1.00 |
| | | K† | T | 1.93 | 1.79 | 1.43 | 1.07 | .71 |
| | | M† | T | 1.73 | 1.61 | 1.28 | .97 | .64 |
| **BT751** | 750 | J† | T | 2.71 | 2.50 | 2.00 | 1.50 | 1.00 |
| | | K† | T | 1.93 | 1.79 | 1.43 | 1.07 | .71 |
| | | M† | T | 1.73 | 1.61 | 1.28 | .97 | .64 |
| **BT821** | 820 | J† | T | 2.71 | 2.50 | 2.00 | 1.50 | 1.00 |
| | | K† | T | 1.93 | 1.79 | 1.43 | 1.07 | .71 |
| | | M† | T | 1.73 | 1.61 | 1.28 | .97 | .64 |
| **BT102** | 1000 | J† | T | 2.71 | 2.50 | 2.00 | 1.50 | 1.00 |
| | | K | T | 1.93 | 1.79 | 1.43 | 1.07 | .71 |
| | | M | T | 1.73 | 1.61 | 1.28 | .97 | .64 |
| **BT122** | 1200 | J† | T | 2.71 | 2.50 | 2.00 | 1.50 | 1.00 |
| | | K | T | 1.93 | 1.79 | 1.43 | 1.07 | .71 |
| | | M | T | 1.73 | 1.61 | 1.28 | .97 | .64 |
| **BT152** | 1500 | J† | T | 2.71 | 2.50 | 2.00 | 1.50 | 1.00 |
| | | K | T | 1.93 | 1.79 | 1.43 | 1.07 | .71 |
| | | M | T | 1.73 | 1.61 | 1.28 | .97 | .64 |
| **BT182** | 1800 | J† | T | 2.71 | 2.50 | 2.00 | 1.50 | 1.00 |
| | | K | T | 1.93 | 1.79 | 1.43 | 1.07 | .71 |
| | | M | T | 1.73 | 1.61 | 1.28 | .97 | .64 |
| **BT222** | 2200 | J† | T | 2.98 | 2.76 | 2.21 | 1.66 | 1.10 |
| | | K | T | 2.13 | 1.99 | 1.58 | 1.19 | .79 |
| | | M | T | 1.90 | 1.76 | 1.41 | 1.06 | .70 |
| **BT272** | 2700 | J† | T | 2.98 | 2.76 | 2.21 | 1.66 | 1.10 |
| | | K | T | 2.13 | 1.99 | 1.58 | 1.19 | .79 |
| | | M | T | 1.90 | 1.76 | 1.41 | 1.06 | .70 |
| **BT332** | 3300 | J† | T | 2.98 | 2.76 | 2.21 | 1.66 | 1.10 |
| | | K | T | 2.13 | 1.99 | 1.58 | 1.19 | .79 |
| | | M | T | 1.90 | 1.76 | 1.41 | 1.06 | .70 |
| **BT392** | 3900 | J† | T | 2.98 | 2.76 | 2.21 | 1.66 | 1.10 |
| | | K | T | 2.13 | 1.97 | 1.58 | 1.19 | .79 |
| | | M | T | 1.90 | 1.76 | 1.41 | 1.06 | .70 |
| **BT472** | 4700 | J† | T | 2.98 | 2.76 | 2.21 | 1.66 | 1.10 |
| | | K | T | 2.13 | 1.97 | 1.58 | 1.19 | .79 |
| | | M | T | 1.90 | 1.76 | 1.41 | 1.06 | .70 |
| **BT562** | 5600 | J† | T | 2.98 | 2.76 | 2.21 | 1.66 | 1.10 |
| | | K | T | 2.13 | 1.97 | 1.58 | 1.19 | .79 |
| | | M | T | 1.90 | 1.76 | 1.41 | 1.06 | .70 |
| **BT682** | 6800 | J† | T | 2.98 | 2.76 | 2.21 | 1.66 | 1.10 |
| | | K | T | 2.13 | 1.97 | 1.58 | 1.19 | .79 |
| | | M | T | 1.90 | 1.76 | 1.41 | 1.06 | .70 |
| **BT822** | 8200 | J† | T | 2.98 | 2.76 | 2.21 | 1.66 | 1.10 |
| | | K | T | 2.13 | 1.97 | 1.58 | 1.19 | .79 |
| | | M | T | 1.90 | 1.76 | 1.41 | 1.06 | .70 |
| **BT103** | 10,000 | J† | T | 3.38 | 3.13 | 2.50 | 1.88 | 1.25 |
| | | K | T | 2.42 | 2.24 | 1.79 | 1.34 | .89 |
| | | M | T | 2.15 | 2.00 | 1.60 | 1.20 | .80 |
| **BU123** | 12,000 | K | U | 3.83 | 3.55 | 2.84 | 2.13 | 1.42 |
| | | M | U | 3.40 | 3.15 | 2.52 | 1.89 | 1.26 |
| **BU153** | 15,000 | K | U | 3.83 | 3.55 | 2.84 | 2.13 | 1.42 |
| | | M | U | 3.40 | 3.15 | 2.52 | 1.89 | 1.26 |
| **BU183** | 18,000 | K | U | 3.83 | 3.55 | 2.84 | 2.13 | 1.42 |
| | | M | U | 3.40 | 3.15 | 2.52 | 1.89 | 1.26 |
| **BU203** | 20,000 | K | U | 3.83 | 3.55 | 2.84 | 2.13 | 1.42 |
| | | M | U | 3.40 | 3.15 | 2.52 | 1.89 | 1.26 |
| **BV223** | 22,000 | K | V | 4.25 | 3.94 | 3.15 | 2.36 | 1.58 |
| | | M | V | 3.80 | 3.52 | 2.81 | 2.11 | 1.41 |
| **BV273** | 27,000 | K | V | 4.25 | 3.94 | 3.15 | 2.36 | 1.58 |
| | | M | V | 3.80 | 3.52 | 2.81 | 2.11 | 1.41 |
| **BV333** | 33,000 | K | V | 4.25 | 3.94 | 3.15 | 2.36 | 1.58 |
| | | M | V | 3.80 | 3.52 | 2.81 | 2.11 | 1.41 |
| **BV393** | 39,000 | K | V | 4.25 | 3.94 | 3.15 | 2.36 | 1.58 |
| | | M | V | 3.80 | 3.52 | 2.81 | 2.11 | 1.41 |
| **BV473** | 47,000 | K | V | 4.25 | 3.94 | 3.15 | 2.36 | 1.58 |
| | | M | V | 3.80 | 3.52 | 2.81 | 2.11 | 1.41 |
| **BV513** | 51,000 | K | V | 4.25 | 3.94 | 3.15 | 2.36 | 1.58 |
| | | M | V | 3.80 | 3.52 | 2.81 | 2.11 | 1.41 |

*For desired tolerance, add **J** (±5%), **K** (±10%), or **M** (±20%) to Part No. †Not normally stocked; available on special order.

### TYPE CYK02

| Corning No. CYK02- | Cap., pF | Tolerance* | Stability Char. | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1-24 | 25-99 | 100-499 | 500-999 | 1000 Up |
| **BT123** | 12,000 | J† | T | $5.76 | $5.33 | $4.26 | $3.20 | $2.13 |
| | | K | T | 4.12 | 3.81 | 3.05 | 2.29 | 1.52 |
| | | M | T | 3.65 | 3.39 | 2.71 | 2.04 | 1.35 |
| **BT153** | 15,000 | J† | T | 5.76 | 5.33 | 4.26 | 3.20 | 2.13 |
| | | K | T | 4.12 | 3.81 | 3.05 | 2.29 | 1.52 |
| | | M | T | 3.65 | 3.39 | 2.71 | 2.04 | 1.35 |
| **BT183** | 18,000 | J† | T | 5.76 | 5.33 | 4.26 | 3.20 | 2.13 |
| | | K | T | 4.12 | 3.81 | 3.05 | 2.29 | 1.52 |
| | | M | T | 3.65 | 3.39 | 2.71 | 2.04 | 1.35 |
| **BT203** | 20,000 | J† | T | 5.76 | 5.33 | 4.26 | 3.20 | 2.13 |
| | | K | T | 4.12 | 3.81 | 3.05 | 2.29 | 1.52 |
| | | M | T | 3.65 | 3.39 | 2.71 | 2.04 | 1.35 |
| **BU223** | 22,000 | K | U | 4.12 | 3.81 | 3.05 | 2.29 | 1.52 |
| | | M | U | 3.65 | 3.39 | 2.71 | 2.04 | 1.35 |
| **BU273** | 27,000 | K | U | 4.12 | 3.81 | 3.05 | 2.29 | 1.52 |
| | | M | U | 3.65 | 3.39 | 2.71 | 2.04 | 1.35 |
| **BU333** | 33,000 | K | U | 4.12 | 3.81 | 3.05 | 2.29 | 1.52 |
| | | M | U | 3.65 | 3.39 | 2.71 | 2.04 | 1.35 |
| **BU393** | 39,000 | K | U | 4.12 | 3.81 | 3.05 | 2.29 | 1.52 |
| | | M | U | 3.65 | 3.39 | 2.71 | 2.04 | 1.35 |
| **BV563** | 56,000 | K | V | 4.10 | 3.76 | 2.73 | 2.05 | 1.37 |
| | | M | V | 3.65 | 3.35 | 2.44 | 1.83 | 1.22 |
| **BV683** | 68,000 | K | V | 4.10 | 3.76 | 2.73 | 2.05 | 1.37 |
| | | M | V | 3.65 | 3.35 | 2.44 | 1.83 | 1.22 |
| **BV823** | 82,000 | K | V | 4.10 | 3.76 | 2.73 | 2.05 | 1.37 |
| | | M | V | 3.65 | 3.35 | 2.44 | 1.83 | 1.22 |
| **BV104** | 100,000 | K | V | 5.67 | 5.20 | 3.78 | 2.84 | 1.89 |
| | | M | V | 5.04 | 4.62 | 3.36 | 2.52 | 1.68 |

*For desired tolerance, add **J** (±5%), **K** (±10%), or **M** (±20%) to Part No. †Not normally stocked; available on special order.

## CYK MINIATURE GLASS-K™ BX CAPACITORS

Performance characteristics in accordance with MIL-C-11015. Exclusive glass-ceramic dielectric and unique manufacturing process assure true monolithic structure. Used in bypass, filter and coupling circuits, R-C networks; point of use filtering; suited for automatic insertion. **Temperature Range:** −55° C to +125° C. **Insulation Resistance:** 100,000 megohms or 1,000 megohm-microfarads, whichever is greater. **Dissipation Factor:** 2.5% max. **WVDC:** 50 and 100 V. **Size:** CYK12, .160" lg. x .090" dia.; CYK13, .250" lg. x .090" dia.; CYK14, .390" lg. x .140" dia. **Tolerance:** Suffix K, ±10%; M, ±20%.

### TYPE CYK12 (MIL CK12)

| Cap., pF | CYK12 BX- | Cap., pF | CYK12 BX- | Cap., pF | CYK12 BX- | Cap., pF | CYK12 BX- |
|---|---|---|---|---|---|---|---|
| 10 | **100K,M** | 68 | **680K,M** | 470 | **471K,M** | 3300 | **332K,M** |
| 12 | **120K** | 82 | **820K** | 560 | **561K** | 3900 | **392K** |
| 15 | **150K,M** | 100 | **101K,M** | 680 | **681K,M** | 4700 | **472K,M** |
| 18 | **180K** | 120 | **121K** | 820 | **821K** | 5600* | **562K** |
| 22 | **220K,M** | 150 | **151K,M** | 1000 | **102K,M** | 6800* | **682K,M** |
| 27 | **270K** | 180 | **181K** | 1200 | **122K** | 8200* | **822K** |
| 33 | **330K,M** | 220 | **221K,M** | 1500 | **152K,M** | 10000* | **103K,M** |
| 39 | **390K** | 270 | **271K** | 1800 | **182K** | | |
| 47 | **470K,M** | 330 | **331K,M** | 2200 | **222K,M** | | |
| 56 | **560K** | 390 | **391K** | 2700 | **272K** | | |

*50 VDC; all others 100 VDC.

### PRICING FOR TYPE CYK12

| Capacitance pF | Tolerance ± | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 | 1000 Up |
| 10–5600 | 10% | $0.73 | $0.53 | $0.41 | $0.37 | $0.32 | $0.275 |
| | 20% | .67 | .48 | .37 | .34 | .29 | .245 |
| 6800–10000 | 10% | .80 | .58 | .44 | .40 | .35 | .305 |
| | 20% | .74 | .53 | .40 | .37 | .32 | .275 |

### TYPE CYK13 (MIL CK13)

| Cap., pF | CYK13 BX- | Cap., pF | CYK13 BX- | Cap., pF | CYK13 BX- | Cap., pF | CYK13 BX- |
|---|---|---|---|---|---|---|---|
| 5600 | **562K** | 8200 | **822K** | 12000* | **123K** | 18000* | **183K** |
| 6800 | **682K,M** | 10000 | **103K,M** | 15000* | **153K,M** | 22000* | **223K,M** |

*50 VDC; all others 100 VDC.

### PRICING FOR TYPE CYK13

| Capacitance pF | Tolerance ± | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 | 1000 Up |
| 5600–10000 | 10% | $0.87 | $0.63 | $0.49 | $0.44 | $0.38 | $0.32 |
| | 20% | .80 | .57 | .44 | .41 | .34 | .29 |
| 12000–22000 | 10% | 1.18 | .85 | .66 | .61 | .54 | .45 |
| | 20% | 1.08 | .78 | .59 | .54 | .48 | .40 |

### TYPE CYK14 (MIL CK14)

| Cap., pF | CYK14 BX- | Cap., pF | CYK14 BX- | Cap., pF | CYK14 BX- | Cap., pF | CYK14 BX- |
|---|---|---|---|---|---|---|---|
| 12000 | **123K** | 22000 | **223K,M** | 39000 | **393K** | 68000 | **683K** |
| 15000 | **153K,M** | 27000 | **273K** | 47000 | **473K,M** | 82000 | **823K** |
| 18000 | **183K** | 33000 | **333K,M** | 56000 | **563K** | 100000 | **104K,M** |

### PRICING FOR TYPE CYK14

| Capacitance pF | Tolerance ± | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 | 1000 Up |
| 12000–27000 | 10% | $1.52 | $1.09 | $0.85 | $0.76 | $0.68 | $0.585 |
| | 20% | 1.39 | 1.01 | .78 | .79 | .61 | .53 |
| 33000–47000 | 10% | 1.85 | 1.33 | 1.03 | .91 | .80 | .695 |
| | 20% | 1.64 | 1.20 | .87 | .82 | .71 | .62 |
| 56000–100000 | 10% | 2.03 | 1.45 | 1.14 | 1.05 | .94 | .815 |
| | 20% | 1.85 | 1.34 | 1.05 | .96 | .84 | .73 |

# CORNING® Glass Capacitors

## CYFM GLASS CAPACITORS

sion-sealed, environment-proof capaci- s have glass-to-metal seals at leads. Foil l glass element is frozen inside glass. et or exceed MIL-C-11272B require- nts. Subjected to moisture resistance ditions of MIL-STD-202A, Method A for 1200 hours without failure or deg- ation. **WVDC:** 300 and 500 V, −55° C +125° C. **Temperature Coefficient:** 40 (±25) ppm/° C at 100 kHz. Varies m +115 ppm/° C at −55° C to +165 n/° C at +125° C. Max. deviation, 5 n. Drift less than 0.1% or 0.1 pF, ichever is greater. **Tolerance:** Standard, % or ±0.25 pF, whichever is greater; 0%, ±2% and ±1% on request.

### TYPE CYFM10

e, Min.-Max.: .2969″–.3906″ lg. x .1406″– 31″ w. x .0469″–.1093″ thick.

| No. FM- 0C- | Cap., pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999‡ |
|---|---|---|---|---|---|---|
| 5C† | 0.5 | $4.16 | $3.82 | $2.95 | $2.77 | $2.08 |
| 0C† | 1.0 | 4.16 | 3.82 | 2.95 | 2.77 | 2.08 |
| 5C† | 1.5 | 4.16 | 3.82 | 2.95 | 2.77 | 2.08 |
| 2C† | 2.2 | 4.16 | 3.82 | 2.95 | 2.77 | 2.08 |
| 7C† | 2.7 | 3.99 | 3.66 | 2.83 | 2.66 | 2.00 |
| 0C† | 3.0 | 3.99 | 3.66 | 2.83 | 2.66 | 2.00 |
| 3C† | 3.3 | 3.99 | 3.66 | 2.83 | 2.66 | 2.00 |
| 6C† | 3.6 | 3.99 | 3.66 | 2.83 | 2.66 | 2.00 |
| 9C† | 3.9 | 3.99 | 3.66 | 2.83 | 2.66 | 2.00 |
| 3C† | 4.3 | 3.99 | 3.66 | 2.83 | 2.66 | 2.00 |
| 7C† | 4.7 | 3.99 | 3.66 | 2.83 | 2.66 | 2.00 |
| 1C† | 5.1 | 3.99 | 3.66 | 2.83 | 2.66 | 2.00 |
| 6C† | 5.6 | 3.99 | 3.66 | 2.83 | 2.66 | 2.00 |
| 2C† | 6.2 | 3.99 | 3.66 | 2.83 | 2.66 | 2.00 |
| 8C† | 6.8 | 3.99 | 3.66 | 2.83 | 2.66 | 2.00 |
| 5C† | 7.5 | 3.99 | 3.66 | 2.83 | 2.66 | 2.00 |
| 2C† | 8.2 | 3.99 | 3.66 | 2.83 | 2.66 | 2.00 |
| 1C† | 9.1 | 3.99 | 3.66 | 2.83 | 2.66 | 2.00 |
| C† | 10 | 3.99 | 3.66 | 2.83 | 2.66 | 2.00 |
| C† | 11 | 3.99 | 3.66 | 2.83 | 2.66 | 2.00 |
| C† | 12 | 3.99 | 3.66 | 2.83 | 2.66 | 2.00 |
| J | 13 | 1.32 | 1.21 | .94 | .88 | .66 |
| J | 15 | 1.32 | 1.21 | .94 | .88 | .66 |
| J | 16 | 1.32 | 1.21 | .94 | .88 | .66 |
| J | 18 | 1.32 | 1.21 | .94 | .88 | .66 |
| J | 20 | 1.32 | 1.21 | .94 | .88 | .66 |
| J | 22 | 1.32 | 1.21 | .94 | .88 | .66 |
| J | 24 | 1.32 | 1.21 | .94 | .88 | .66 |
| J | 27 | 1.32 | 1.21 | .94 | .88 | .66 |
| J | 30 | 1.32 | 1.21 | .94 | .88 | .66 |
| J | 33 | 1.32 | 1.21 | .94 | .88 | .66 |
| J | 36 | 1.49 | 1.36 | 1.05 | .99 | .75 |
| J | 39 | 1.49 | 1.36 | 1.05 | .99 | .75 |
| J | 43 | 1.49 | 1.36 | 1.05 | .99 | .75 |
| J | 47 | 1.49 | 1.36 | 1.05 | .99 | .75 |
| J | 51 | 1.49 | 1.36 | 1.05 | .99 | .75 |
| J | 56 | 1.49 | 1.36 | 1.05 | .99 | .75 |
| J | 62 | 1.49 | 1.36 | 1.05 | .99 | .75 |
| J | 68 | 1.49 | 1.36 | 1.05 | .99 | .75 |
| J | 75 | 1.49 | 1.36 | 1.05 | .99 | .75 |
| J | 82 | 1.49 | 1.36 | 1.05 | .99 | .75 |
| J | 91 | 2.38 | 2.18 | 1.68 | 1.58 | 1.19 |
| J | 100 | 2.38 | 2.18 | 1.68 | 1.58 | 1.19 |
| J | 110 | 2.38 | 2.18 | 1.68 | 1.58 | 1.19 |
| J | 120 | 2.38 | 2.18 | 1.68 | 1.58 | 1.19 |
| J | 130 | 2.38 | 2.18 | 1.68 | 1.58 | 1.19 |
| J | 150 | 2.38 | 2.18 | 1.68 | 1.58 | 1.19 |
| J | 160 | 2.64 | 2.42 | 1.87 | 1.76 | 1.32 |
| J | 180 | 2.64 | 2.42 | 1.87 | 1.76 | 1.32 |
| J | 200 | 2.64 | 2.42 | 1.87 | 1.76 | 1.32 |
| J* | 220 | 3.10 | 2.85 | 2.20 | 2.07 | 1.55 |
| J* | 240 | 3.10 | 2.85 | 2.20 | 2.07 | 1.55 |
| J* | 270 | 3.10 | 2.85 | 2.20 | 2.07 | 1.55 |
| J* | 300 | 3.10 | 2.85 | 2.20 | 2.07 | 1.55 |

### TYPE CYFM15

e prefix CYFM-15-C; Size, Min.-Max.: 19″–.5156″ lg. x .2344″–.2968″ w. x 25″–.1562″ thick.

| No. YFM- 15C- | Cap., pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999‡ |
|---|---|---|---|---|---|---|
| 1J | 220 | $1.65 | $1.52 | $1.17 | $1.10 | $0.83 |
| 1J | 240 | 1.65 | 1.52 | 1.17 | 1.10 | .83 |
| 1J | 270 | 1.65 | 1.52 | 1.17 | 1.10 | .83 |
| 1J | 300 | 1.65 | 1.52 | 1.17 | 1.10 | .83 |
| 1J | 330 | 1.91 | 1.76 | 1.35 | 1.28 | .96 |
| 1J | 360 | 1.91 | 1.76 | 1.35 | 1.28 | .96 |
| 1J | 390 | 1.91 | 1.76 | 1.35 | 1.28 | .96 |
| 1J | 430 | 1.91 | 1.76 | 1.35 | 1.28 | .96 |
| 1J | 470 | 2.31 | 2.12 | 1.64 | 1.54 | 1.16 |
| 1J | 510 | 2.31 | 2.12 | 1.64 | 1.54 | 1.16 |
| 1J* | 560 | 2.31 | 2.12 | 1.64 | 1.54 | 1.16 |
| 1J* | 620 | 2.31 | 2.12 | 1.64 | 1.54 | 1.16 |
| 1J* | 680 | 2.64 | 2.42 | 1.87 | 1.76 | 1.32 |
| 1J* | 750 | 2.64 | 2.42 | 1.87 | 1.76 | 1.32 |
| 1J* | 820 | 2.64 | 2.42 | 1.87 | 1.76 | 1.32 |
| 1J* | 910 | 2.64 | 2.42 | 1.87 | 1.76 | 1.32 |
| 2J* | 1000 | 2.64 | 2.42 | 1.87 | 1.76 | 1.32 |
| 2J* | 1100 | 3.30 | 3.03 | 2.34 | 2.20 | 1.65 |
| 2J* | 1200 | 3.30 | 3.03 | 2.34 | 2.20 | 1.65 |

00 WVDC. †Tolerance ±0.25 pF; all hers ±5%. ‡1000 Up prices on request.

## TYPE TYO GLASS CAPACITORS

Upright flush mounting in printed circuits with minimum rocking; or, point-to-point wiring. Glass dielectric and foil fused to form single element with high stability. Gold-plated 1¼″ Dumet leads spaced 0.2″. General performance to MIL-C-11272B. **WVDC:** 300 V, −55° C to +125° C. **Temperature Coefficient:** +140 (±25) ppm/° C at 100 kHz. Varies from +115 ppm/° C at −55° C to +165 ppm/° C at +125° C. Maximum deviation at any temperature, 5 ppm. Drift less than 0.1% or 0.1 pF, whichever is greater. **Tol.:** Suffix **J**, ±5%; **K**, ±10% and **C**, ±0.25 pF; ±20%, ±2%, ±1% on request.

### TYPE TYO6

Size: .300″ lg. x .200″ w. x .115″ thick. Weight, 0.3–0.4 gram.

| Corn. No. TY06- | Cap., pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999§ |
|---|---|---|---|---|---|---|
| 1R0C | 1.0 | $4.13 | $3.78 | $2.92 | $2.75 | $2.07 |
| 1R5C | 1.5 | 4.13 | 3.78 | 2.92 | 2.75 | 2.07 |
| 2R2C | 2.2 | 4.13 | 3.78 | 2.92 | 2.75 | 2.07 |
| 2R7C | 2.7 | 3.96 | 3.63 | 2.79 | 2.64 | 1.98 |
| 3R0C | 3.0 | 3.96 | 3.63 | 2.79 | 2.64 | 1.98 |
| 3R3C | 3.3 | 3.96 | 3.63 | 2.79 | 2.64 | 1.98 |
| 3R6C | 3.6 | 3.96 | 3.63 | 2.79 | 2.64 | 1.98 |
| 3R9C | 3.9 | 3.96 | 3.63 | 2.79 | 2.64 | 1.98 |
| 4R3C | 4.3 | 3.96 | 3.63 | 2.79 | 2.64 | 1.98 |
| 4R7C | 4.7 | 3.80 | 3.48 | 2.68 | 2.53 | 1.90 |
| 5R1J | 5.1 | 3.41 | 3.11 | 2.40 | 2.27 | 1.71 |
| 5R6J | 5.6 | 3.41 | 3.11 | 2.40 | 2.27 | 1.71 |
| 6R2J | 6.2 | 3.41 | 3.11 | 2.40 | 2.27 | 1.71 |
| 6R8J | 6.8 | 3.41 | 3.11 | 2.40 | 2.27 | 1.71 |
| 7R5J | 7.5 | 3.30 | 3.03 | 2.33 | 2.20 | 1.65 |
| 8R2J | 8.2 | 3.30 | 3.03 | 2.33 | 2.20 | 1.65 |
| 9R1J | 9.1 | 3.30 | 3.03 | 2.33 | 2.20 | 1.65 |
| 100J | 10 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 100K | 10 | .70 | .63 | .49 | .45 | .42 |
| 110J | 11 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 110K | 11 | .70 | .63 | .49 | .45 | .42 |
| 120J | 12 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 120K | 12 | .70 | .63 | .49 | .45 | .42 |
| 130J | 13 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 130K | 13 | .70 | .63 | .49 | .45 | .42 |
| 150J | 15 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 150K | 15 | .70 | .63 | .49 | .45 | .42 |
| 160J | 16 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 160K | 16 | .70 | .63 | .49 | .45 | .42 |
| 180J | 18 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 180K | 18 | .70 | .63 | .49 | .45 | .42 |
| 200J | 20 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 200K | 20 | .70 | .63 | .49 | .45 | .42 |
| 220J | 22 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 220K | 22 | .70 | .63 | .49 | .45 | .42 |
| 240J | 24 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 240K | 24 | .70 | .63 | .49 | .45 | .42 |
| 270J | 27 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 270K | 27 | .70 | .63 | .49 | .45 | .42 |
| 300J | 30 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 300K | 30 | .70 | .63 | .49 | .45 | .42 |

### TYPE TY06 (CONTINUED)

| Corn. No. TY06- | Cap., pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999§ |
|---|---|---|---|---|---|---|
| 330J | 33 | $1.42 | $1.30 | $1.01 | $0.95 | $0.72 |
| 330K | 33 | .70 | .63 | .49 | .45 | .42 |
| 360J | 36 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 360K | 36 | .70 | .63 | .49 | .45 | .42 |
| 390J | 39 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 390K | 39 | .70 | .63 | .49 | .45 | .42 |
| 430J | 43 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 430K | 43 | .70 | .63 | .49 | .45 | .42 |
| 470J | 47 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 470K | 47 | .70 | .63 | .49 | .45 | .42 |
| 510J | 51 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 510K | 51 | .70 | .63 | .49 | .45 | .42 |
| 560J | 56 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 560K | 56 | .70 | .63 | .49 | .45 | .42 |
| 620J | 62 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 620K | 62 | .70 | .63 | .49 | .45 | .42 |
| 680J | 68 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 680K | 68 | .70 | .63 | .49 | .45 | .42 |
| 750J | 75 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 750K | 75 | .70 | .63 | .49 | .45 | .42 |
| 820J | 82 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 820K | 82 | .70 | .63 | .49 | .45 | .42 |
| 910J | 91 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 910K | 91 | .70 | .63 | .49 | .45 | .42 |
| 101J | 100 | 1.42 | 1.30 | 1.01 | .95 | .72 |
| 101K | 100 | .70 | .63 | .49 | .45 | .42 |
| 111J | 110 | 1.58 | 1.45 | 1.12 | 1.06 | .79 |
| 111K | 110 | .70 | .63 | .49 | .45 | .42 |
| 121J | 120 | 1.58 | 1.45 | 1.12 | 1.06 | .79 |
| 121K | 120 | .70 | .63 | .49 | .45 | .42 |
| 131J | 130 | 1.58 | 1.45 | 1.12 | 1.06 | .79 |
| 131K | 130 | .70 | .63 | .49 | .45 | .42 |
| 151J | 150 | 1.58 | 1.45 | 1.12 | 1.06 | .79 |
| 151K | 150 | .70 | .63 | .49 | .45 | .42 |
| 161J | 160 | 1.58 | 1.45 | 1.12 | 1.06 | .79 |
| 161K | 160 | .70 | .63 | .49 | .45 | .42 |
| 181J | 180 | 1.58 | 1.45 | 1.12 | 1.06 | .79 |
| 181K | 180 | .70 | .63 | .49 | .45 | .42 |
| 201J | 200 | 1.58 | 1.45 | 1.12 | 1.06 | .79 |
| 201K | 200 | .70 | .63 | .49 | .45 | .42 |
| 221J | 220 | 1.58 | 1.45 | 1.12 | 1.06 | .79 |
| 221K | 220 | .70 | .63 | .49 | .45 | .42 |
| 241J | 240 | 1.58 | 1.45 | 1.12 | 1.06 | .79 |
| 241K | 240 | .70 | .63 | .49 | .45 | .42 |
| 271J | 270 | 1.58 | 1.45 | 1.12 | 1.06 | .79 |
| 271K | 270 | .70 | .63 | .49 | .45 | .42 |
| 301J | 300 | 1.78 | 1.63 | 1.25 | 1.19 | .89 |
| 301K | 300 | .70 | .63 | .49 | .45 | .42 |
| 331J | 330 | 1.78 | 1.63 | 1.25 | 1.19 | .89 |
| 331K | 330 | .70 | .63 | .49 | .45 | .42 |
| 361J | 360 | 1.78 | 1.63 | 1.25 | 1.19 | .89 |
| 361K | 360 | .70 | .63 | .49 | .45 | .42 |
| 391J | 390 | 1.78 | 1.63 | 1.25 | 1.19 | .89 |
| 391K | 390 | .70 | .63 | .49 | .45 | .42 |
| 431J | 430 | 1.78 | 1.63 | 1.25 | 1.19 | .89 |
| 431K | 430 | .70 | .63 | .49 | .45 | .42 |
| 471J | 470 | 1.78 | 1.63 | 1.25 | 1.19 | .89 |
| 471K | 470 | .70 | .63 | .49 | .45 | .42 |
| 511J | 510 | 1.78 | 1.63 | 1.25 | 1.19 | .89 |
| 511K | 510 | .70 | .63 | .49 | .45 | .42 |
| 561J | 560 | 1.78 | 1.63 | 1.25 | 1.19 | .89 |
| 561K | 560 | .70 | .63 | .49 | .45 | .42 |

### TYPE TYO7

Use prefix TY07-C; .300″ lg. x .300″ w. x .115″ thick. Weight, 0.4–0.5 gram.

| | | | | | | |
|---|---|---|---|---|---|---|
| 621J | 620 | $1.85 | $1.69 | $1.31 | $1.23 | $0.92 |
| 621K | 620 | .70 | .63 | .49 | .45 | .42 |
| 681J | 680 | 1.85 | 1.69 | 1.31 | 1.23 | .92 |
| 681K | 680 | .70 | .63 | .49 | .45 | .42 |
| 751J | 750 | 1.85 | 1.69 | 1.31 | 1.23 | .92 |
| 751K | 750 | .70 | .63 | .49 | .45 | .42 |
| 821J | 820 | 1.85 | 1.69 | 1.31 | 1.23 | .92 |
| 821K | 820 | .70 | .63 | .49 | .45 | .42 |
| 911J | 910 | 1.98 | 1.82 | 1.40 | 1.32 | .99 |
| 911K | 910 | .70 | .63 | .49 | .45 | .42 |
| 102J | 1000 | 1.98 | 1.82 | 1.40 | 1.32 | .99 |
| 102K | 1000 | .70 | .63 | .49 | .45 | .42 |

### TYPE TYO8

Use prefix TY08-; .500″ lg. x .300″ w. x .115″ thick. Weight, 0.7–0.8 gram.

| | | | | | | |
|---|---|---|---|---|---|---|
| 112J | 1100 | $2.28 | $2.09 | $1.61 | $1.52 | $1.14 |
| 122J | 1200 | 2.28 | 2.09 | 1.61 | 1.52 | 1.14 |
| 132J | 1300 | 2.28 | 2.09 | 1.61 | 1.52 | 1.14 |
| 152J | 1500 | 2.28 | 2.09 | 1.61 | 1.52 | 1.14 |
| 162J | 1600 | 2.84 | 2.61 | 2.00 | 1.89 | 1.42 |
| 182J | 1800 | 2.84 | 2.61 | 2.00 | 1.89 | 1.42 |
| 202J | 2000 | 2.84 | 2.61 | 2.00 | 1.89 | 1.42 |
| 222J | 2200 | 3.50 | 3.21 | 2.48 | 2.33 | 1.75 |
| 242J | 2400 | 3.50 | 3.21 | 2.48 | 2.33 | 1.75 |

§1000–4999 prices on request.

### TYPE CYFM20

Size, Min.-Max.: .6719″–.7968″ lg. x .3750″–.4687″ w. x .0938″–.1875″ thick.

| No. CYFM-20C- | Cap., pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999‡ |
|---|---|---|---|---|---|---|
| 561J | 560 | $2.61 | $2.38 | $1.84 | $1.73 | $1.30 |
| 621J | 620 | 2.61 | 2.38 | 1.84 | 1.73 | 1.30 |
| 681J | 680 | 2.61 | 2.38 | 1.84 | 1.73 | 1.30 |
| 751J | 750 | 2.61 | 2.38 | 1.84 | 1.73 | 1.30 |
| 821J | 820 | 2.77 | 2.54 | 1.97 | 1.85 | 1.39 |
| 911J | 910 | 2.77 | 2.54 | 1.97 | 1.85 | 1.39 |
| 102J | 1000 | 2.77 | 2.54 | 1.97 | 1.85 | 1.39 |
| 112J | 1100 | 2.77 | 2.54 | 1.97 | 1.85 | 1.39 |
| 122J | 1200 | 3.12 | 2.87 | 2.21 | 2.08 | 1.56 |
| 132J | 1300 | 3.12 | 2.87 | 2.21 | 2.08 | 1.56 |
| 152J | 1500 | 3.12 | 2.87 | 2.21 | 2.08 | 1.56 |
| 162J | 1600 | 3.12 | 2.87 | 2.21 | 2.08 | 1.56 |
| 182J | 1800 | 3.46 | 3.18 | 2.46 | 2.31 | 1.73 |
| 202J | 2000 | 3.46 | 3.18 | 2.46 | 2.31 | 1.73 |
| 222J | 2200 | 3.81 | 3.49 | 2.70 | 2.54 | 1.91 |
| 242J | 2400 | 3.81 | 3.49 | 2.70 | 2.54 | 1.91 |
| 272J | 2700 | 3.81 | 3.49 | 2.70 | 2.54 | 1.91 |
| 302J | 3000 | 3.81 | 3.49 | 2.70 | 2.54 | 1.91 |
| 332J | 3300 | 4.34 | 3.97 | 3.08 | 2.89 | 2.20 |
| 362J | 3600 | 4.34 | 3.97 | 3.08 | 2.89 | 2.20 |
| 392J | 3900 | 4.34 | 3.97 | 3.08 | 2.89 | 2.20 |
| 432J | 4300 | 4.85 | 4.45 | 3.45 | 3.23 | 2.43 |
| 472J | 4700 | 4.85 | 4.45 | 3.45 | 3.23 | 2.43 |
| 512J | 5100 | 4.85 | 4.45 | 3.45 | 3.23 | 2.43 |

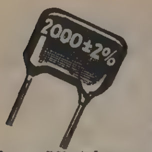
### TYPE CYFM30

Size, Min.-Max.: .7032″–.8281″ lg. x .6719″–.8281″ w. x .0938″–.1875″ thick.

| No. CYFM-30C- | Cap., pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999‡ |
|---|---|---|---|---|---|---|
| 362J | 3600 | $4.50 | $4.14 | $3.19 | $3.00 | $2.26 |
| 392J | 3900 | 4.50 | 4.14 | 3.19 | 3.00 | 2.26 |
| 432J | 4300 | 4.50 | 4.14 | 3.19 | 3.00 | 2.26 |
| 472J | 4700 | 4.50 | 4.14 | 3.19 | 3.00 | 2.26 |
| 512J | 5100 | 5.20 | 4.78 | 3.69 | 3.47 | 2.60 |
| 562J | 5600 | 5.20 | 4.78 | 3.69 | 3.47 | 2.60 |
| 622J | 6200 | 5.20 | 4.78 | 3.69 | 3.47 | 2.60 |
| 682J | 6800 | 5.75 | 5.24 | 4.04 | 3.82 | 2.87 |
| 752J | 7500 | 5.75 | 5.24 | 4.04 | 3.82 | 2.87 |
| 822J | 8200 | 6.25 | 5.71 | 4.41 | 4.16 | 3.12 |
| 912J | 9100 | 6.25 | 5.71 | 4.41 | 4.16 | 3.12 |
| 103J | 10000 | 6.95 | 6.35 | 4.89 | 4.62 | 3.47 |

# Elmenco Dur-Mica Capacitors

## TYPE DM DUR-MICA DIPPED SILVERED MICA CAPACITORS



Highly reliable, compact silvered mica capacitors coated for maximum protection against moisture and temperature extremes. Meet or exceed MIL-C-5D and EIA standards for fixed mica capacitors. **Operating Temperature Range:** −55° C to +150° C. **Type DM:** Per MIL-C-5D. **Type SCDM:** Single coat of resin; thinner than regular DM-10's and DM-15's. To order, use prefix **SC. Tolerances Available:** ±10%, ±5%, ±2%, ±1%, ±½%, ±0.5 pF and ±1.0 pF. Prices are for ±5% tolerance (suffix **J**) unless otherwise noted. **Working Voltage:** As shown; MIL-C-5D indicated by sixth character in MIL number (e.g., CM05C**D**060D03): A=100, C=300, and D=500 WVDC.

### TYPE DM-5—50 WVDC

| Elmenco Number | Cap., pF | Net Each, Lots of 10-90 | 100-490 | 500-990 | 1000-4990 |
|---|---|---|---|---|---|
| DM5EY680 | 68 | $0.16 | $0.15 | $0.14 | $0.127 |
| DM5EY750 | 75 | .17 | .15 | .14 | .13 |
| DM5EY820 | 82 | .17 | .15 | .14 | .13 |
| DM5FY910 | 91 | .18 | .16 | .15 | .139 |
| DM5FY101 | 100 | .19 | .17 | .16 | .147 |
| DM5FY111 | 110 | .20 | .18 | .17 | .155 |
| DM5FY121 | 120 | .21 | .19 | .18 | .161 |
| DM5FY131 | 130 | .22 | .19 | .18 | .169 |
| DM5FY151 | 150 | .23 | .21 | .20 | .183 |
| DM5FY161 | 160 | .24 | .22 | .21 | .191 |
| DM5FY181 | 180 | .27 | .24 | .23 | .208 |
| DM5FY201 | 200 | .29 | .26 | .25 | .227 |
| DM5FY221 | 220 | .31 | .28 | .26 | .241 |
| DM5FY241 | 240 | .33 | .30 | .28 | .257 |
| DM5FY251 | 250 | .34 | .30 | .29 | .263 |
| DM5FY271 | 270 | .35 | .32 | .30 | .277 |
| DM5FY301 | 300 | .39 | .35 | .33 | .317 |
| DM5FY331 | 330 | .42 | .38 | .36 | .329 |
| DM5FY361 | 360 | .45 | .40 | .38 | .35 |
| DM5FY391 | 390 | .48 | .44 | .41 | .379 |

### TYPE DM-5—300 WVDC

| Elmenco Number | Cap., pF | Net Each, Lots of 10-90 | 100-490 | 500-990 | 1000-4990 |
|---|---|---|---|---|---|
| DM5CC010A* | 1 | $0.11 | $0.10 | $0.09 | $0.084 |
| DM5CC020A* | 2 | .11 | .10 | .09 | .084 |
| DM5CC030A* | 3 | .11 | .10 | .09 | .084 |
| DM5CC040A* | 4 | .11 | .10 | .09 | .084 |
| DM5CC050A* | 5 | .11 | .10 | .09 | .084 |
| DM5CC060A* | 6 | .13 | .12 | .11 | .10 |
| DM5CC070A* | 7 | .13 | .12 | .11 | .10 |
| DM5CC080A* | 8 | .13 | .12 | .11 | .10 |
| DM5CC100J | 10 | .20 | .18 | .17 | .157 |
| DM5CC120J | 12 | .21 | .19 | .18 | .161 |
| DM5CC150J | 15 | .21 | .19 | .18 | .161 |
| DM5CC180J | 18 | .21 | .19 | .18 | .161 |
| DM5CC200J | 20 | .14 | .13 | .12 | .108 |
| DM5CC220J | 22 | .15 | .14 | .13 | .117 |
| DM5CC240J | 24 | .15 | .14 | .13 | .117 |
| DM5EC270J | 27 | .15 | .14 | .13 | .117 |
| DM5EC300J | 30 | .15 | .14 | .13 | .117 |
| DM5EC330J | 33 | .16 | .14 | .13 | .117 |
| DM5EC360J | 36 | .17 | .15 | .14 | .129 |
| DM5EC390J | 39 | .17 | .15 | .14 | .129 |
| DM5EC430J | 43 | .17 | .15 | .14 | .129 |
| DM5EC470J | 47 | .17 | .15 | .14 | .129 |
| DM5EC500J | 50 | .17 | .15 | .14 | .129 |
| DM5EC510J | 51 | .18 | .16 | .15 | .139 |
| DM5EC560J | 56 | .19 | .17 | .16 | .147 |
| DM5EC620J | 62 | .20 | .18 | .17 | .155 |
| DM5EC680J | 68 | .21 | .19 | .18 | .17 |
| DM5EC750J | 75 | .21 | .19 | .18 | .164 |
| DM5EC820J | 82 | .23 | .21 | .20 | .183 |
| DM5FC910J | 91 | .25 | .23 | .21 | .197 |
| DM5FC101J | 100 | .26 | .24 | .22 | .205 |
| DM5FC111J | 110 | .28 | .25 | .24 | .219 |
| DM5FC121J | 120 | .30 | .27 | .26 | .235 |
| DM5FA131J† | 130 | .25 | .23 | .21 | .197 |
| DM5FA151J† | 150 | .28 | .25 | .24 | .219 |
| DM5FA161J† | 160 | .29 | .26 | .25 | .227 |
| DM5FA181J† | 180 | .32 | .29 | .27 | .249 |
| DM5FA201J† | 200 | .35 | .31 | .29 | .271 |

### TYPE DM-10—500 WVDC

(SCDM-10 values and prices the same.) **C** characteristic 1–18 pF; **E** characteristic 20–82 pF; **F** characteristic 91 pF and up.

| Elmenco Number | MIL-C-5D Type | Cap., pF | Net Each, Lots of 10-90 | 100-490 | 500-990 | 1000-4990 |
|---|---|---|---|---|---|---|
| DM-10-010D‡ | CM04CD010D03‡ | 1 | $0.16 | $0.15 | $0.14 | $0.127 |
| DM-10-020D‡ | ................ | 2 | .16 | .15 | .14 | .127 |
| DM-10-030D‡ | ................ | 3 | .16 | .15 | .14 | .127 |
| DM-10-050D‡ | CM04CD050D03‡ | 5 | .16 | .15 | .14 | .127 |
| DM-10-100J | CM04CD100J03 | 10 | .16 | .15 | .14 | .127 |
| DM-10-120J | CM04CD120J03 | 12 | .17 | .15 | .14 | .13 |
| DM-10-150J | CM04CD150J03 | 15 | .17 | .15 | .14 | .13 |
| DM-10-180J | CM04CD180J03 | 18 | .17 | .15 | .14 | .13 |
| DM-10-200J | CM04ED200J03 | 20 | .13 | .12 | .11 | .10 |
| DM-10-220J | CM04ED220J03 | 22 | .13 | .12 | .11 | .10 |
| DM-10-240J | CM04ED240J03 | 24 | .13 | .12 | .11 | .10 |
| DM-10-270J | CM04ED270J03 | 27 | .13 | .12 | .11 | .10 |
| DM-10-300J | CM04ED300J03 | 30 | .13 | .12 | .11 | .10 |
| DM-10-330J | CM04ED330J03 | 33 | .13 | .12 | .11 | .10 |
| DM-10-360J | CM04ED360J03 | 36 | .14 | .13 | .12 | .11 |
| DM-10-390J | CM04ED390J03 | 39 | .14 | .13 | .12 | .11 |

*Tolerance, ±1 pF. †100 WVDC. ‡Tolerance, ±0.5 pF. §300 WVDC.

### TYPE DM-10—WVDC (CONT'D)

| Elmenco Number | MIL-C-5D Type | Cap., pF | Net Each, Lots of 10-90 | 100-490 | 500-990 | 1000-4990 |
|---|---|---|---|---|---|---|
| DM-10-430J | CM04ED430J03 | 43 | $0.14 | $0.13 | $0.12 | $0.11 |
| DM-10-470J | CM04ED470J03 | 47 | .14 | .13 | .12 | .11 |
| DM-10-500J | ................ | 50 | .13 | .12 | .11 | .10 |
| DM-10-510J | CM04ED510J03 | 51 | .14 | .13 | .12 | .11 |
| DM-10-560J | CM04ED560J03 | 56 | .14 | .13 | .12 | .11 |
| DM-10-620J | CM04ED620J03 | 62 | .14 | .13 | .12 | .11 |
| DM-10-680J | CM04ED680J03 | 68 | .15 | .14 | .12 | .11 |
| DM-10-750J | CM04ED750J03 | 75 | .15 | .14 | .12 | .11 |
| DM-10-820J | CM04ED820J03 | 82 | .14 | .13 | .12 | .12 |
| DM-10-910J | CM04FD910J03 | 91 | .15 | .14 | .13 | .12 |
| DM-10-101J | CM04FD101J03 | 100 | .15 | .14 | .13 | .12 |
| DM-10-111J | CM04FD111J03 | 110 | .15 | .14 | .13 | .12 |
| DM-10-121J | CM04FD121J03 | 120 | .16 | .15 | .14 | .13 |
| DM-10-131J | CM04FD131J03 | 130 | .15 | .14 | .13 | .12 |
| DM-10-151J | CM04FD151J03 | 150 | .16 | .15 | .14 | .13 |
| DM-10-161J | CM04FD161J03 | 160 | .17 | .16 | .15 | .13 |
| DM-10-181J | CM04FD181J03 | 180 | .19 | .17 | .16 | .14 |
| DM-10-201J | CM04FD201J03 | 200 | .20 | .18 | .17 | .15 |
| DM-10-221J | CM04FD221J03 | 220 | .21 | .19 | .18 | .16 |
| DM-10-241J | CM04FD241J03 | 240 | .22 | .20 | .19 | .17 |
| DM-10-251J | ................ | 250 | .22 | .20 | .19 | .17 |
| DM-10-271J§ | CM04FC271J03§ | 270 | .21 | .19 | .18 | .16 |
| DM-10-301J§ | CM04FC301J03§ | 300 | .23 | .21 | .20 | .18 |
| DM-10-331J† | CM04FA331J03† | 330 | .22 | .20 | .19 | .17 |
| DM-10-361J† | CM04FA361J03† | 360 | .23 | .21 | .20 | .18 |
| DM-10-391J† | CM04FA391J03† | 390 | .25 | .23 | .21 | .19 |

### TYPE DM-15—500 WVDC

(SCDM-15 values and prices are the same.)

| | | | | | | |
|---|---|---|---|---|---|---|
| DM-15-010D‡ | CM05CD010D03‡ | 1 | $0.13 | $0.12 | $0.11 | $0.10 |
| DM-15-020D‡ | ................ | 2 | .13 | .12 | .11 | .10 |
| DM-15-030D‡ | ................ | 3 | .13 | .12 | .11 | .10 |
| DM-15-040D‡ | ................ | 4 | .13 | .12 | .11 | .10 |
| DM-15-050D‡ | CM05CD050D03‡ | 5 | .13 | .12 | .11 | .10 |
| DM-15-060D‡ | CM05CD060D03‡ | 6 | .13 | .12 | .11 | .10 |
| DM-15-070D‡ | CM05CD070D03‡ | 7 | .13 | .12 | .11 | .10 |
| DM-15-080D‡ | CM05CD080D03‡ | 8 | .13 | .12 | .11 | .10 |
| DM-15-100J | CM05CD100J03 | 10 | .13 | .12 | .11 | .10 |
| DM-15-120J | CM05CD120J03 | 12 | .13 | .12 | .11 | .10 |
| DM-15-150J | CM05CD150J03 | 15 | .13 | .12 | .11 | .10 |
| DM-15-180J | CM05CD180J03 | 18 | .13 | .12 | .11 | .10 |
| DM-15-200J | CM05ED200J03 | 20 | .12 | .11 | .10 | .09 |
| DM-15-220J | CM05ED220J03 | 22 | .12 | .11 | .10 | .09 |
| DM-15-240J | CM05ED240J03 | 24 | .12 | .11 | .10 | .09 |
| DM-15-270J | CM05ED270J03 | 27 | .12 | .11 | .10 | .09 |
| DM-15-300J | CM05ED300J03 | 30 | .12 | .11 | .10 | .09 |
| DM-15-330J | CM05ED330J03 | 33 | .12 | .11 | .10 | .09 |
| DM-15-360J | CM05ED360J03 | 36 | .12 | .11 | .10 | .09 |
| DM-15-390J | CM05ED390J03 | 39 | .12 | .11 | .10 | .09 |
| DM-15-430J | CM05ED430J03 | 43 | .12 | .11 | .10 | .09 |
| DM-15-470J | CM05ED470J03 | 47 | .12 | .11 | .10 | .09 |
| DM-15-500J | ................ | 50 | .12 | .11 | .10 | .09 |
| DM-15-510J | CM05ED510J03 | 51 | .12 | .11 | .10 | .09 |
| DM-15-620J | CM05ED620J03 | 62 | .12 | .11 | .10 | .09 |
| DM-15-680J | CM05ED680J03 | 68 | .12 | .11 | .10 | .09 |
| DM-15-750J | CM05ED750J03 | 75 | .12 | .11 | .10 | .09 |
| DM-15-820J | CM05ED820J03 | 82 | .12 | .11 | .10 | .09 |
| DM-15-910J | CM05FD910J03 | 91 | .12 | .11 | .10 | .09 |
| DM-15-101J | CM05FD101J03 | 100 | .12 | .11 | .10 | .09 |
| DM-15-111J | CM05FD111J03 | 110 | .12 | .11 | .10 | .09 |
| DM-15-121J | CM05FD121J03 | 120 | .12 | .11 | .10 | .09 |
| DM-15-131J | CM05FD131J03 | 130 | .13 | .12 | .11 | .10 |
| DM-15-151J | CM05FD151J03 | 150 | .13 | .12 | .11 | .10 |
| DM-15-161J | CM05FD161J03 | 160 | .13 | .12 | .11 | .10 |
| DM-15-181J | CM05FD181J03 | 180 | .13 | .12 | .11 | .10 |
| DM-15-201J | CM05FD201J03 | 200 | .13 | .12 | .11 | .10 |
| DM-15-221J | CM05FD221J03 | 220 | .14 | .13 | .12 | .11 |
| DM-15-241J | CM05FD241J03 | 240 | .15 | .14 | .13 | .12 |
| DM-15-251J | ................ | 250 | .15 | .14 | .13 | .12 |
| DM-15-271J | CM05FD271J03 | 270 | .15 | .14 | .13 | .12 |
| DM-15-301J | CM05FD301J03 | 300 | .16 | .15 | .14 | .13 |
| DM-15-331J | CM05FD331J03 | 330 | .18 | .16 | .15 | .14 |
| DM-15-361J | CM05FD361J03 | 360 | .18 | .17 | .16 | .15 |
| DM-15-391J | CM05FD391J03 | 390 | .19 | .17 | .16 | .15 |
| DM-15-431J | ................ | 430 | .20 | .18 | .17 | .16 |
| DM-15-471J | ................ | 470 | .21 | .19 | .18 | .16 |
| DM-15-501J | ................ | 500 | .21 | .19 | .18 | .17 |
| DM-15-511J | ................ | 510 | .22 | .20 | .19 | .18 |
| DM-15-561J§ | ................ | 560 | .22 | .20 | .19 | .18 |
| DM-15-621J§ | ................ | 620 | .24 | .21 | .20 | .19 |
| DM-15-681J§ | ................ | 680 | .26 | .23 | .22 | .21 |
| DM-15-751J§ | ................ | 750 | .28 | .25 | .23 | .22 |
| DM-15-821J§ | ................ | 820 | .30 | .27 | .26 | .24 |
| DM-15-911J† | ................ | 910 | .26 | .23 | .22 | .21 |
| DM-15-102J† | ................ | 1000 | .28 | .25 | .24 | .23 |
| DM-15-112J† | ................ | 1100 | .34 | .30 | .29 | .28 |
| DM-15-122J† | ................ | 1200 | .36 | .33 | .31 | .30 |

### TYPE DM-19—500 WVDC

| | | | | | | |
|---|---|---|---|---|---|---|
| DM-19-101J | ................ | 100 | $0.11 | $0.10 | $0.09 | $0.08 |
| DM-19-111J | ................ | 110 | .11 | .10 | .09 | .08 |
| DM-19-121J | ................ | 120 | .11 | .10 | .09 | .08 |
| DM-19-131J | ................ | 130 | .11 | .10 | .09 | .08 |
| DM-19-151J | ................ | 150 | .11 | .10 | .09 | .08 |
| DM-19-161J | ................ | 160 | .11 | .10 | .09 | .08 |
| DM-19-181J | ................ | 180 | .11 | .10 | .09 | .08 |
| DM-19-201J | ................ | 200 | .11 | .10 | .09 | .08 |
| DM-19-221J | ................ | 220 | .11 | .10 | .09 | .08 |

(CONTINUED ON FOLLOWING PAGE)

## DUR-MICA CAPACITORS (CONT'D)

### TYPE DM-19—500 WVDC (CONT'D)

| Elmenco Number | MIL-C-5D Type | Cap., pF | Net Each, Lots of 10-90 | 100-490 | 500-990 | 1000-4990 |
|---|---|---|---|---|---|---|
| M-19-241J | ............... | 240 | $0.11 | $0.10 | $0.09 | $0.084 |
| M-19-251J | ............... | 250 | .11 | .10 | .09 | .084 |
| M-19-271J | ............... | 270 | .13 | .12 | .11 | .095 |
| M-19-301J | ............... | 300 | .13 | .12 | .11 | .095 |
| M-19-331J | ............... | 330 | .13 | .12 | .11 | .095 |
| M-19-361J | ............... | 360 | .14 | .13 | .12 | .102 |
| M-19-391J | ............... | 390 | .14 | .13 | .12 | .102 |
| M-19-431J | CM06FD431J03 | 430 | .14 | .13 | .12 | .102 |
| M-19-471J | CM06FD471J03 | 470 | .15 | .14 | .13 | .113 |
| M-19-501J | ............... | 500 | .15 | .14 | .13 | .113 |
| M-19-511J | CM06FD511J03 | 510 | .15 | .14 | .13 | .113 |
| M-19-561J | CM06FD561J03 | 560 | .15 | .14 | .13 | .113 |
| M-19-621J | CM06FD621J03 | 620 | .17 | .15 | .14 | .129 |
| M-19-681J | CM06FD681J03 | 680 | .17 | .15 | .14 | .129 |
| M-19-751J | CM06FD751J03 | 750 | .18 | .17 | .16 | .14 |
| M-19-821J | CM06FD821J03 | 820 | .19 | .18 | .17 | .152 |
| M-19-911J | CM06FD911J03 | 910 | .19 | .18 | .17 | .152 |
| M-19-102J | CM06FD102J03 | 1000 | .21 | .19 | .18 | .165 |
| M-19-112J | CM06FD112J03 | 1100 | .23 | .21 | .19 | .175 |
| M-19-122J | CM06FD122J03 | 1200 | .24 | .22 | .21 | .188 |
| M-19-132J | CM06FD132J03 | 1300 | .25 | .24 | .22 | .198 |
| M-19-152J | CM06FD152J03 | 1500 | .28 | .27 | .25 | .222 |
| M-19-162J | CM06FD162J03 | 1600 | .28 | .27 | .25 | .222 |
| M-19-182J | CM06FD182J03 | 1800 | .30 | .29 | .27 | .245 |
| M-19-202J | CM06FD202J03 | 2000 | .33 | .31 | .29 | .27 |
| M-19-222J | CM06FD222J03 | 2200 | .36 | .34 | .32 | .282 |
| M-19-242J | CM06FD242J03 | 2400 | .37 | .35 | .33 | .306 |
| M-19-252J | ............... | 2500 | .39 | .37 | .35 | .318 |
| M-19-272J | CM06FD272J03 | 2700 | .42 | .40 | .37 | .34 |
| M-19-302J | CM06FD302J03 | 3000 | .46 | .43 | .41 | .372 |
| M-19-332J | CM06FD332J03 | 3300 | .49 | .46 | .43 | .398 |
| M-19-362J | CM06FD362J03 | 3600 | .53 | .50 | .47 | .433 |
| M-19-392J | CM06FD392J03 | 3900 | .56 | .52 | .49 | .455 |
| M-19-432J | CM06FD432J03 | 4300 | .62 | .56 | .54 | .50 |
| M-19-472J | CM06FD472J03 | 4700 | .66 | .60 | .59 | .535 |
| M-19-502J | ............... | 5000 | .70 | .65 | .63 | .572 |
| M-19-512J | ............... | 5100 | .72 | .66 | .64 | .585 |
| M-19-562J* | ............... | 5600 | .68 | .62 | .60 | .55 |
| M-19-622J* | ............... | 6200 | .73 | .67 | .65 | .597 |
| M-19-682J† | ............... | 6800 | .65 | .60 | .58 | .525 |
| M-19-752J† | ............... | 7500 | .72 | .66 | .64 | .575 |
| M-19-822J† | ............... | 8200 | .78 | .72 | .69 | .63 |

300 WVDC. †100 WVDC. **Note:** Values listed in DM-30 and 2 cases are "F" characteristic.

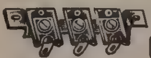
### TYPE DM-30—500 WVDC

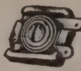
| Elmenco Number | MIL-C-5D Type | Cap., pF | Net Each, Lots of 10-90 | 100-490 | 400-990 | 1000-4990 |
|---|---|---|---|---|---|---|
| DM-30-432J | ............... | 4300 | $0.46 | Quantity Prices Available on Request | | |
| DM-30-472J | ............... | 4700 | .50 | | | |
| DM-30-502J | ............... | 5000 | .52 | | | |
| DM-30-512J | CM07FD512J03 | 5100 | .52 | | | |
| DM-30-562J | CM07FD562J03 | 5600 | .56 | | | |
| DM-30-622J | CM07FD622J03 | 6200 | .60 | | | |
| DM-30-682J | CM07FD682J03 | 6800 | .67 | | | |
| DM-30-752J | CM07FD752J03 | 7500 | .71 | | | |
| DM-30-822J | CM07FD822J03 | 8200 | .77 | | | |
| DM-30-912J | CM07FD912J03 | 9100 | .83 | | | |
| DM-30-103J | CM07FD103J03 | 10000 | .92 | | | |
| DM-30-113J | CM07FD113J03 | 11000 | .98 | | | |
| DM-30-123J | CM07FD123J03 | 12000 | 1.07 | | | |
| DM-30-133J | CM07FD133J03 | 13000 | 1.15 | | | |
| DM-30-153J | CM07FD153J03 | 15000 | 1.30 | | | |
| DM-30-163J | CM07FD163J03 | 16000 | 1.38 | | | |
| DM-30-183J | CM07FD183J03 | 18000 | 1.53 | | | |
| DM-30-203J | CM07FD203J03 | 20000 | 1.70 | | | |
| DM-30-223J* | ............... | 22000 | 1.57 | | | |
| DM-30-243J* | ............... | 24000 | 1.70 | | | |
| DM-30-253J* | ............... | 25000 | 1.78 | | | |
| DM-30-273J* | ............... | 27000 | 1.91 | | | |
| DM-30-303J* | ............... | 30000 | 2.10 | | | |
| DM-30-333J† | ............... | 33000 | 1.86 | | | |
| DM-30-363J† | ............... | 36000 | 2.02 | | | |

### TYPE DM-42—500 WVDC

| | | | |
|---|---|---|---|
| DM-42-203J | ............... | 20000 | Prices Available on Request |
| DM-42-223J | CM08FD223J03 | 22000 | |
| DM-42-243J | CM08FD243J03 | 24000 | |
| DM-42-253J | ............... | 25000 | |
| DM-42-273J | CM08FD273J03 | 27000 | |
| DM-42-303J | CM08FD303J03 | 30000 | |
| DM-42-333J | CM08FD333J03 | 33000 | |
| DM-42-363J | CM08FD363J03 | 36000 | |
| DM-42-393J | CM08FD393J03 | 39000 | |
| DM-42-433J | CM08FD433J03 | 43000 | |
| DM-42-473J | CM08FD473J03 | 47000 | |
| DM-42-503J | ............... | 50000 | |
| DM-42-513J | CM08FD513J03 | 51000 | |
| DM-42-563J* | CM08FC563J03* | 56000 | |
| DM-42-623J* | CM08FC623J03* | 62000 | |
| DM-42-683J* | CM08FC683J03* | 68000 | |
| DM-42-753J† | CM08FA753J03† | 75000 | |
| DM-42-823J† | CM08FA823J03† | 82000 | |

## TRIMMER AND PADDER CAPACITORS


A


B

### TRIMMERS

ll types 175 WVDC, 350 DCT.

**ype 40:** Miniature, ⅜" x ⅛". **Type 42:** Midget, ⅜" ¾". **Type 46:** Standard, " x ⅝". India ruby ica. Ceramic base.

**ote:** Type 46 trimmer ssembly with mtg. racket and adjusting haft for ease of tuning is lso available. Add prefix **S"** to trimmer number; rices on request. Type 0, 42 and 46 also availble as printed circuit rimmers. Add prefix **"PC"** o trimmer number; prices vailable on request.

### PADDERS

**ype 30, 30-M:** ⅞" x 15/16". 30" is 250 WVDC, 500 DCT; "30-M", 500 VVDC, 1000 VDCT.

**ote:** Type 30 (300 series) r Type 30-M (300-M eries) padders are availble with special adjustng screw to accommoate a tuning knob. Add refix **"L"** to padder umber. Prices available n request.

### TYPE 40, 42, 46 TRIMMERS (FIG. A)

| Elmenco No. | No. of Plates | Guar. Cap., pF | | Net Each, Lots of | |
|---|---|---|---|---|---|
| | | Tight (Min.) | Open* (Max.) | 1-24 | 25-99* |
| 400 | 1⅛ | 7 | 0.9 | $0.40 | $0.35 |
| 402 | 2 | 20 | 1.5 | .39 | .35 |
| 403 | 3 | 35 | 3 | .46 | .42 |
| 404 | 4 | 60 | 8 | .55 | .50 |
| 405 | 5 | 80 | 10 | .64 | .57 |
| 406 | 6 | 115 | 15 | .72 | .64 |
| 420 | 1⅛ | 12 | 1 | .39 | .35 |
| 421 | 1¾ | 25 | 2 | .39 | .35 |
| 422 | 2 | 40 | 4 | .39 | .35 |
| 423 | 3 | 100 | 7 | .44 | .40 |
| 424 | 4 | 150 | 14 | .53 | .47 |
| 425 | 5 | 200 | 24 | .61 | .54 |
| 426 | 6 | 250 | 37 | .66 | .61 |
| 427 | 7 | 300 | 55 | .76 | .68 |
| 428 | 8 | 350 | 70 | .81 | .74 |
| 429 | 9 | 400 | 90 | .89 | .80 |
| 4210 | 10 | 450 | 110 | 1.05 | .95 |
| 4211 | 11 | 500 | 130 | 1.14 | 1.02 |
| 4212 | 12 | 550 | 150 | 1.23 | 1.11 |
| 4213 | 13 | 600 | 170 | 1.34 | 1.21 |
| 4214 | 14 | 650 | 190 | 1.46 | 1.32 |
| 4215 | 15 | 700 | 210 | 1.63 | 1.46 |
| 460 | 1¼ | 15 | 1.5 | .39 | .35 |
| 461 | 1¾ | 30 | 2.7 | .39 | .35 |
| 462 | 2 | 80 | 5 | .39 | .35 |
| 463 | 3 | 180 | 9 | .44 | .40 |
| 464 | 4 | 280 | 25 | .53 | .47 |
| 465 | 5 | 380 | 50 | .59 | .54 |
| 466 | 6 | 480 | 80 | .66 | .59 |
| 467 | 7 | 580 | 110 | .75 | .67 |
| 468 | 8 | 680 | 140 | .83 | .74 |
| 469 | 9 | 780 | 170 | .89 | .80 |
| 4610 | 10 | 900 | 190 | Prices Available on Request | |
| 4611 | 11 | 1000 | 210 | | |
| 4612 | 12 | 1100 | 240 | | |
| 4613 | 13 | 1200 | 300 | | |
| 4614 | 14 | 1300 | 340 | | |
| 4615 | 15 | 1400 | 390 | | |

### TYPES 30 AND 30-M (FIG. B) PADDERS

| Elmenco No. | No. of Plates | Guar. Cap., pF | | Net Each, Lots of | |
|---|---|---|---|---|---|
| | | 1¾" lbs. (Min.) | Open* (Max.) | 1-24 | 25-99* |
| 302 | 2 | 130 | 15 | $0.76 | $0.68 |
| 303 | 3 | 340 | 65 | .83 | .74 |
| 304 | 4 | 550 | 100 | .88 | .80 |
| 305 | 5 | 760 | 190 | .95 | .85 |
| 306 | 6 | 970 | 275 | 1.01 | .91 |
| 307 | 7 | 1180 | 350 | 1.10 | .99 |
| 308 | 8 | 1390 | 450 | 1.18 | 1.06 |
| 309 | 9 | 1600 | 550 | 1.25 | 1.13 |
| 310 | 10 | 1890 | 650 | 1.34 | 1.21 |
| 311 | 11 | 2110 | 780 | 1.43 | 1.29 |
| 312 | 12 | 2330 | 880 | 1.51 | 1.35 |
| 313 | 13 | 2605 | 1150 | 1.58 | 1.43 |
| 314 | 14 | 2830 | 1300 | 1.69 | 1.52 |
| 315 | 15 | 3055 | 1400 | 1.80 | 1.63 |
| 302-M | 2 | 120 | 15 | .77 | .69 |
| 303-M | 3 | 320 | 65 | .85 | .76 |
| 304-M | 4 | 500 | 100 | .92 | .84 |
| 305-M | 5 | 690 | 180 | .99 | .90 |
| 306-M | 6 | 880 | 265 | 1.08 | .97 |
| 307-M | 7 | 1070 | 340 | 1.16 | 1.05 |
| 308-M | 8 | 1260 | 425 | 1.27 | 1.14 |
| 309-M | 9 | 1415 | 525 | 1.35 | 1.22 |
| 310-M | 10 | 1600 | 615 | 1.45 | 1.33 |
| 311-M | 11 | 1785 | 730 | 1.55 | 1.40 |
| 312-M | 12 | 1970 | 800 | 1.64 | 1.49 |
| 313-M | 13 | 2155 | 1000 | 1.69 | 1.52 |
| 314-M | 14 | 2340 | 1100 | 1.74 | 1.57 |
| 315-M | 15 | 2525 | 1200 | 1.86 | 1.67 |

*At 3 turns.

★LARGER QUANTITY PRICES
AVAILABLE ON REQUEST

# Elmenco Film Capacitors

## TYPE DP MYLAR® AND MYLAR PAPER CAPACITORS

.05 ± 10%
600V-EM

Designed for use in a variety of circuits ranging from TV bypass to critical industrial applications requiring stringent electrical and environmental characteristics. Non-inductively wound and vacuum dipped to obtain solid impregnation and rugged moisture-resistant coat. Special winding design provides insulation resistance comparable to competitive polyester film units. High reliability maintained in constant operation at 125° C at full rated voltage (derating required at higher temperatures). Miniaturized for transistor circuitry yet compare favorably in price with commercial general purpose units. Crimped radial leads to facilitate use in printed circuits. Leads are tinned copper clad steel. #20 gauge and 1⅝" lg. min. below the crimp. Standard tolerance, ±10%; ±5%, 2% and 1% available. ®Reg. DuPont TM.

### 100 WVDC

Pure Mylar dielectric; derate 1%/°C over 85° C.

| Elmenco No. 1DP- | Cap., µF | Net Each, Lots of 5-20 | 25-95 | 100-995 | 1000 Up |
|---|---|---|---|---|---|
| 1-502 | .005 | $0.14 | $0.10 | $0.08 | $0.069 |
| 1-602 | .006 | .14 | .10 | .08 | .069 |
| 1-682 | .0068 | .14 | .10 | .08 | .069 |
| 1-752 | .0075 | .14 | .10 | .08 | .069 |
| 1-103 | .01 | .14 | .10 | .08 | .069 |
| 1-203 | .02 | .14 | .10 | .08 | .069 |
| 1-223 | .022 | .14 | .10 | .08 | .069 |
| 1-253 | .025 | .14 | .10 | .08 | .071 |
| 1-303 | .03 | .14 | .10 | .08 | .072 |
| 1-333 | .033 | .15 | .10 | .09 | .075 |
| 1-403 | .04 | .15 | .10 | .09 | .079 |
| 2-473 | .047 | .17 | .12 | .11 | .082 |
| 2-503 | .05 | .17 | .12 | .11 | .086 |
| 2-563 | .056 | .17 | .12 | .11 | .086 |
| 2-683 | .068 | .18 | .12 | .11 | .09 |
| 2-753 | .075 | .18 | .12 | .11 | .093 |
| 2-104 | .1 | .19 | .13 | .12 | .099 |
| 3-154 | .15 | .23 | .16 | .15 | .12 |
| 3-204 | .2 | .26 | .18 | .16 | .134 |
| 3-224 | .22 | .27 | .19 | .17 | .139 |
| 3-254 | .25 | .28 | .20 | .18 | .143 |
| 3-334 | .33 | .29 | .21 | .19 | .15 |
| 4-474 | .47 | .34 | .24 | .22 | .175 |
| 4-504 | .5 | .35 | .25 | .23 | .183 |
| 5-684 | .68 | .43 | .30 | .27 | .224 |
| 5-105 | 1.0 | .52 | .37 | .34 | .276 |

### 200 WVDC

| Elmenco No. 2DP- | Cap., µF | Net Each, Lots of 5-20 | 25-95 | 100-995 | 1000 Up |
|---|---|---|---|---|---|
| 3-104 | .1 | $0.21 | $0.15 | $0.14 | $0.109 |
| 3-154 | .15 | .26 | .18 | .16 | .129 |
| 4-204 | .2 | .28 | .20 | .18 | .148 |
| 4-224 | .22 | .31 | .21 | .19 | .158 |
| 4-254 | .25 | .32 | .22 | .20 | .165 |
| 5-334 | .33 | .37 | .26 | .24 | .195 |
| 5-474 | .47 | .45 | .32 | .29 | .24 |
| 5-504 | .5 | .46 | .33 | .30 | .246 |

### 400 WVDC

| Elmenco No. 4DP- | Cap., µF | Net Each, Lots of 5-20 | 25-95 | 100-995 | 1000 Up |
|---|---|---|---|---|---|
| 1-103 | .01 | $0.14 | $0.10 | $0.08 | $0.067 |
| 1-153 | .015 | .14 | .10 | .08 | .071 |
| 2-203 | .02 | .15 | .10 | .09 | .079 |
| 2-223 | .022 | .15 | .10 | .09 | .079 |
| 2-253 | .025 | .17 | .12 | .11 | .083 |
| 2-303 | .03 | .17 | .12 | .11 | .086 |
| 2-333 | .033 | .17 | .12 | .11 | .086 |
| 3-403 | .04 | .19 | .13 | .12 | .097 |
| 3-473 | .047 | .19 | .13 | .12 | .097 |
| 3-563 | .056 | .19 | .14 | .12 | .102 |
| 3-683 | .068 | .21 | .16 | .14 | .107 |
| 3-753 | .075 | .21 | .16 | .14 | .112 |
| 3-104 | .1 | .21 | .16 | .14 | .112 |
| 4-154 | .15 | .24 | .17 | .15 | .127 |
| 5-204 | .2 | .32 | .22 | .20 | .164 |
| 5-224 | .22 | .32 | .23 | .21 | .172 |
| 5-254 | .25 | .34 | .24 | .22 | .176 |
| 5-274 | .27 | .35 | .25 | .23 | .184 |
| 5-334 | .33 | .39 | .28 | .25 | .206 |
| 6-474 | .47 | .46 | .33 | .30 | .246 |
| 6-504 | .5 | .52 | .37 | .34 | .276 |

**DIMENSIONS FOR TYPE DP CAPACITORS**

| Type | L. x H. x W. Inches* |
|---|---|
| DP-1 | 23/32 x 5/8 x 3/8 |
| DP-2 | 29/32 x 11/16 x 7/16 |
| DP-3 | 1 9/32 x 3/4 x 17/32 |
| DP-4 | 1 3/8 x 29/32 x 21/32 |
| DP-5 | 1 9/16 x 1 x 3/4 |
| DP-6 | 2 3/8 x 1 3/16 x 15/16 |

*Include highest capacitance values in each size. Since dipped unit size varies with size of winding, lower capacities are smaller.

### 600 WVDC

| Elmenco No. 6DP- | Cap., µF | Net Each, Lots of 5-20 | 25-95 | 100-995 | 1000 Up |
|---|---|---|---|---|---|
| 1-102 | .001 | $0.14 | $0.10 | $0.08 | $0.069 |
| 1-122 | .0012 | .14 | .10 | .08 | .069 |
| 1-152 | .0015 | .14 | .10 | .08 | .069 |
| 1-202 | .002 | .14 | .10 | .08 | .069 |
| 1-222 | .0022 | .14 | .10 | .08 | .069 |
| 1-252 | .0025 | .14 | .10 | .08 | .069 |
| 1-272 | .0027 | .14 | .10 | .08 | .069 |
| 1-302 | .003 | .14 | .10 | .08 | .069 |
| 1-332 | .0033 | .14 | .10 | .08 | .069 |
| 1-392 | .0039 | .14 | .10 | .08 | .069 |
| 1-402 | .004 | .14 | .10 | .08 | .069 |
| 1-472 | .0047 | .14 | .10 | .08 | .069 |
| 1-502 | .005 | .14 | .10 | .08 | .069 |
| 1-562 | .0056 | .14 | .10 | .08 | .069 |
| 1-602 | .006 | .14 | .10 | .08 | .071 |
| 1-682 | .0068 | .14 | .10 | .08 | .071 |
| 2-752 | .0075 | 14 | .10 | .08 | .072 |
| 2-802 | .008 | .14 | .10 | .08 | .072 |
| 2-822 | .0082 | .14 | .10 | .08 | .072 |
| 2-103 | .01 | .14 | .10 | .08 | .074 |
| 2-123 | .012 | .15 | .11 | .10 | .077 |
| 2-153 | .015 | .15 | .11 | .10 | .077 |
| 2-183 | .018 | .15 | .11 | .10 | .079 |
| 2-203 | .02 | .16 | .12 | .11 | .085 |
| 2-223 | .022 | .16 | .12 | .11 | .085 |
| 2-243 | .024 | .18 | .12 | .11 | .09 |
| 2-253 | .025 | .18 | .12 | .11 | .09 |
| 3-273 | .027 | .18 | .12 | .11 | .09 |
| 3-303 | .03 | .18 | .12 | .11 | .09 |
| 3-333 | .033 | .18 | .12 | .11 | .09 |
| 3-363 | .036 | .19 | .13 | .12 | .094 |
| 3-393 | .039 | .19 | .13 | .12 | .094 |
| 3-403 | .04 | .19 | .13 | .12 | .099 |
| 3-473 | .047 | .19 | .13 | .12 | .099 |
| 3-503 | .05 | .23 | .17 | .15 | * |
| 3-563 | .056 | .20 | .14 | .13 | .104 |
| 4-683 | .068 | .23 | .16 | .15 | .121 |
| 4-753 | .075 | .25 | .17 | .16 | .126 |
| 4-823 | .082 | .25 | .17 | .16 | .126 |
| 4-104 | .1 | .26 | .19 | .17 | .131 |
| 5-154 | .15 | .32 | .23 | .21 | .162 |
| 5-204 | .2 | .38 | .27 | .25 | .195 |
| 5-224 | .22 | .38 | .27 | .25 | .195 |
| 5-254 | .25 | .39 | .28 | .25 | .20 |
| 6-334 | .33 | .53 | .38 | .34 | .274 |
| 6-474 | .47 | .73 | .52 | .47 | .38 |
| 6-504 | .5 | .74 | .53 | .48 | .388 |

### 1600 WVDC

| Elmenco No. 16DP- | Cap., µF | Net Each, Lots of 5-20 | 25-95 | 100-995 | 1000 Up |
|---|---|---|---|---|---|
| 2-102 | .001 | $0.15 | $0.12 | $0.11 | $0.083 |
| 2-152 | .0015 | .15 | .12 | .11 | .083 |
| 2-182 | .0018 | .15 | .12 | .11 | .083 |
| 2-202 | .002 | .16 | .13 | .12 | .088 |
| 2-222 | .0022 | .16 | .13 | .12 | .088 |
| 2-252 | .0025 | .16 | .13 | .12 | .088 |
| 2-272 | .0027 | .16 | .13 | .12 | .088 |
| 2-302 | .003 | .16 | .13 | .12 | .088 |
| 2-332 | .0033 | .16 | .13 | .12 | .088 |
| 2-402 | .004 | .16 | .13 | .12 | .088 |
| 2-472 | .0047 | .20 | .14 | .13 | .107 |
| 2-502 | .005 | .20 | .14 | .13 | .107 |
| 3-602 | .006 | .20 | .14 | .13 | .107 |
| 3-682 | .0068 | .22 | .15 | .14 | .125 |
| 3-702 | .007 | .22 | .15 | .14 | .125 |
| 3-752 | .0075 | .22 | .15 | .14 | .125 |
| 3-802 | .008 | .22 | .15 | .14 | .125 |
| 3-822 | .0082 | .22 | .15 | .14 | .125 |
| 3-103 | .01 | .27 | .19 | .17 | .142 |
| 4-153 | .015 | .27 | .19 | .17 | .142 |
| 4-183 | .018 | .27 | .19 | .17 | .142 |
| 4-203 | .02 | .30 | .22 | .19 | .162 |
| 5-223 | .022 | .31 | .23 | .20 | .167 |
| 5-253 | .025 | .34 | .24 | .22 | .174 |
| 5-303 | .03 | .34 | .24 | .22 | .174 |
| 5-333 | .033 | .37 | .25 | .22 | .189 |
| 5-403 | .04 | .37 | .25 | .23 | .189 |
| 5-473 | .047 | .38 | .28 | .26 | .205 |
| 5-503 | .05 | .38 | .28 | .26 | .205 |

*Price on Request.

## PRECISION DIPPED MYLAR* TUBULARS

Precision dipped tubular capacitors that combine missile and computer quality with radio-TV cost. Type MD (100 WVDC) have Mylar dielectric; Type MPD (200, 400 and 600 WVDC) have Mylar-paper dielectric. Non-inductively wound and vacuum dipped to obtain solid impregnation and a rugged, moisture-proof coat. Miniaturized for transistor circuitry. Offer high reliability in operation at 125° C without derating. Case dimensions similar to the Elmenco Type DP capacitors described elsewhere. **Tolerance:** ±10%; available in ±5%, ±2% and ±1%.
*Registered DuPont trademark.

### TYPE 1MD—100 WVDC

| Elmenco No. 1MD- | Cap., µF | Net Each, Lots of 5-20 | 25-95 | 100-995 | 1000 Up |
|---|---|---|---|---|---|
| 1-502 | .005 | $0.14 | $0.10 | $0.08 | $0.069 |
| 1-512 | .0051 | .14 | .10 | .08 | .069 |
| 1-562 | .0056 | .14 | .10 | .08 | .069 |
| 1-602 | .006 | .14 | .10 | .08 | .069 |
| 1-622 | .0062 | .14 | .10 | .08 | .069 |
| 1-682 | .0068 | .14 | .10 | .08 | .069 |
| 1-752 | .0075 | .14 | .10 | .08 | .069 |
| 1-822 | .0082 | .14 | .10 | .08 | .069 |
| 1-912 | .0091 | .14 | .10 | .08 | .069 |
| 1-103 | .01 | .14 | .10 | .08 | .069 |
| 1-123 | .012 | .14 | .10 | .08 | .069 |
| 1-153 | .015 | .14 | .10 | .08 | .069 |
| 1-183 | .018 | .14 | .10 | .08 | .069 |
| 1-203 | .02 | .14 | .10 | .08 | .069 |
| 1-223 | .022 | .14 | .10 | .08 | .069 |
| 1-242 | .024 | .14 | .10 | .08 | .071 |
| 1-253 | .025 | .14 | .10 | .08 | .071 |
| 1-273 | .027 | .14 | .10 | .08 | .072 |
| 1-303 | .03 | .14 | .10 | .08 | .072 |
| 1-333 | .033 | .15 | .10 | .09 | .075 |
| 1-363 | .036 | .15 | .10 | .09 | .079 |
| 1-393 | .039 | .15 | .10 | .09 | .079 |
| 1-403 | .04 | .15 | .10 | .09 | .079 |
| 2-433 | .043 | .17 | .12 | .11 | .082 |
| 2-473 | .047 | .17 | .12 | .11 | .082 |
| 2-503 | .05 | .17 | .12 | .11 | .086 |
| 2-563 | .056 | .17 | .12 | .11 | .086 |
| 2-623 | .062 | .18 | .12 | .11 | .09 |
| 2-683 | .068 | .18 | .12 | .11 | .09 |
| 2-753 | .075 | .18 | .12 | .11 | .093 |
| 2-823 | .082 | .19 | .13 | .12 | .096 |
| 2-913 | .091 | .19 | .13 | .12 | .099 |
| 2-104 | .1 | .19 | .13 | .12 | .099 |
| 3-124 | .12 | .19 | .13 | .12 | .099 |
| 3-154 | .15 | .23 | .16 | .15 | .12 |
| 3-184 | .18 | .24 | .17 | .16 | .127 |
| 3-204 | .2 | .26 | .18 | .16 | .134 |
| 3-224 | .22 | .27 | .19 | .17 | .139 |
| 3-244 | .24 | .28 | .20 | .18 | .143 |
| 3-254 | .25 | .28 | .20 | .18 | .143 |
| 3-274 | .27 | .29 | .21 | .19 | .15 |
| 3-304 | .3 | .29 | .21 | .19 | .15 |
| 4-334 | .33 | .29 | .21 | .19 | .15 |
| 4-394 | .39 | .34 | .24 | .22 | .175 |
| 4-474 | .47 | .34 | .24 | .22 | .175 |
| 4-504 | .5 | .35 | .25 | .23 | .183 |
| 4-564 | .56 | .43 | .30 | .27 | .224 |
| 5-624 | .62 | .43 | .30 | .27 | .224 |
| 5-684 | .68 | .43 | .30 | .27 | .224 |
| 5-754 | .75 | .45 | .32 | .29 | .24 |
| 5-824 | .82 | .52 | .37 | .34 | .276 |
| 5-105 | 1.0 | .52 | .37 | .34 | .276 |

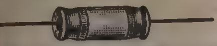
### TYPE 2MPD—200 WVDC

| Elmenco No. 2MPD- | Cap., µF | Net Each, Lots of 5-20 | 25-95 | 100-995 | 1000 Up |
|---|---|---|---|---|---|
| 3-104 | .1 | $0.21 | $0.15 | $0.14 | $0.109 |
| 3-124 | .12 | .23 | .16 | .15 | .12 |
| 3-154 | .15 | .26 | .18 | .16 | .129 |
| 3-184 | .18 | .27 | .19 | .17 | .14 |
| 4-204 | .2 | .28 | .20 | .18 | .148 |
| 4-224 | .22 | .31 | .21 | .19 | .158 |
| 4-254 | .25 | .32 | .22 | .20 | .165 |
| 4-274 | .27 | .33 | .24 | .21 | .175 |
| 5-304 | .3 | .37 | .26 | .24 | .195 |
| 5-334 | .33 | .37 | .26 | .24 | .195 |
| 5-394 | .39 | .41 | .29 | .27 | .219 |
| 5-474 | .47 | .45 | .32 | .29 | .24 |
| 5-504 | .5 | .46 | .33 | .30 | .246 |

**ASK FOR STOCK VALUES AND PRICES ON 400 AND 600 WVDC UNITS**

# Arco PRECISION POLYSTYRENE CAPACITORS

## TYPE PJ POLYSTYRENE CAPACITORS



Superior quality, polystyrene dielectric enclosed in silicone-treated fused polystyrene jacket. **Dissipa-on:** .01% max. at 25° C; .02% max. at 85° C. **Temperature ange:** −55° C to +85° C. **Temperature Coefficient:** −120, 15 ppm/° C. **Stability:** ±0.1% max. capacitance drift. **Toler-nce:** ±5% standard; ±10%, ±3%, ±2%, ±1% and .5% n request.

### 400 WVDC

| ap., µF | Arco No. | Size, Inches Dia. x Length | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|
| | | | 1-9 | 10-24 | 25-49 | 50-99* |
| 002 | 4PJ-202J | 9/32 x 1 1/16 | $1.49 | $1.06 | $0.85 | $0.638 |
| 0033 | 4PJ-332J | 9/32 x 1 1/16 | 1.49 | 1.06 | .85 | .638 |
| 0047 | 4PJ-472J | 9/32 x 1 1/16 | 1.49 | 1.06 | .85 | .638 |
| 005 | 4PJ-502J | 9/32 x 1 1/16 | 1.49 | 1.06 | .85 | .638 |
| 0068 | 4PJ-682J | 5/16 x 1 1/16 | 1.53 | 1.09 | .872 | .654 |
| 01 | 4PJ-103J | 5/16 x 7/8 | 1.60 | 1.15 | .916 | .687 |
| 015 | 4PJ-153J | 11/32 x 7/8 | 1.68 | 1.20 | .958 | .719 |
| 02 | 4PJ-203J | 3/8 x 7/8 | 1.75 | 1.25 | 1.00 | .75 |
| 022 | 4PJ-223J | 3/8 x 7/8 | 1.77 | 1.27 | 1.01 | .761 |
| 033 | 4PJ-333J | 13/32 x 1 | 1.92 | 1.37 | 1.10 | .822 |
| 047 | 4PJ-473J | 7/16 x 1 1/4 | 2.10 | 1.50 | 1.20 | .899 |
| 05 | 4PJ-503J | 7/16 x 1 1/4 | 2.16 | 1.54 | 1.23 | .924 |
| 068 | 4PJ-683J | 1/2 x 1 1/4 | 2.49 | 1.78 | 1.42 | 1.07 |
| 1 | 4PJ-104J | 17/32 x 1 5/8 | 3.12 | 2.23 | 1.78 | 1.34 |
| 15 | 4PJ-154J | 5/8 x 1 5/8 | 3.99 | 2.85 | 2.28 | 1.71 |
| 2 | 4PJ-204J | 11/16 x 1 3/4 | 4.90 | 3.50 | 2.80 | 2.10 |
| 22 | 4PJ-224J | 11/16 x 1 3/4 | 5.18 | 3.70 | 2.96 | 2.22 |

**ote:** Type PJ 200, 600 and 1000 WVDC units available.

### 100 WVDC*

| Cap., µF | Arco No. | Size, Inches Dia. x Length | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|
| | | | 1-9 | 10-24 | 25-49 | 50-99* |
| .002 | 1PJ-202J | 9/32 x 1 1/16 | $1.49 | $1.06 | $0.85 | $0.638 |
| .0033 | 1PJ-332J | 9/32 x 1 1/16 | 1.49 | 1.06 | .85 | .638 |
| .0047 | 1PJ-472J | 9/32 x 1 1/16 | 1.49 | 1.06 | .85 | .638 |
| .005 | 1PJ-502J | 9/32 x 1 1/16 | 1.49 | 1.06 | .85 | .638 |
| .0068 | 1PJ-682J | 9/32 x 1 1/16 | 1.49 | 1.06 | .85 | .638 |
| .01 | 1PJ-103J | 9/32 x 1 1/16 | 1.49 | 1.06 | .85 | .638 |
| .015 | 1PJ-153J | 5/16 x 1 1/16 | 1.51 | 1.08 | .862 | .647 |
| .02 | 1PJ-203J | 5/16 x 1 1/16 | 1.53 | 1.10 | .876 | .657 |
| .022 | 1PJ-223J | 5/16 x 1 1/16 | 1.54 | 1.10 | .88 | .66 |
| .033 | 1PJ-333J | 5/16 x 7/8 | 1.60 | 1.13 | .912 | .684 |
| .047 | 1PJ-473J | 3/8 x 7/8 | 1.67 | 1.19 | .952 | .714 |
| .05 | 1PJ-503J | 3/8 x 7/8 | 1.69 | 1.21 | .964 | .723 |
| .068 | 1PJ-683J | 13/32 x 7/8 | 1.83 | 1.31 | 1.04 | .783 |
| .1 | 1PJ-104J | 7/16 x 1 | 2.09 | 1.50 | 1.20 | .897 |
| .15 | 1PJ-154J | 7/16 x 1 1/4 | 2.54 | 1.81 | 1.45 | 1.09 |
| .2 | 1PJ-204J | 1/2 x 1 1/4 | 2.99 | 2.14 | 1.71 | 1.28 |
| .22 | 1PJ-224J | 1/2 x 1 1/4 | 3.12 | 2.23 | 1.78 | 1.34 |
| .33 | 1PJ-334J | 17/32 x 1 5/8 | 3.82 | 2.73 | 2.18 | 1.64 |
| .39 | 1PJ-394J | 9/16 x 1 5/8 | 4.20 | 3.00 | 2.40 | 1.80 |
| .47 | 1PJ-474J | 5/8 x 1 5/8 | 4.69 | 3.35 | 2.68 | 2.01 |
| .5 | 1PJ-504J | 5/8 x 1 5/8 | 4.97 | 3.55 | 2.84 | 2.13 |

*Available in any capacitance values to tolerances of ±1% from stock.

**★LARGER QUANTITY PRICES AVAILABLE ON REQUEST.**

## TYPE PT POLYSTYRENE CAPACITORS

olystyrene dielectric, hermetically sealed tubular capacitors give ugged stability for long life. Same superior quality and electrical haracteristics as Type PJ.

### 100 WVDC

| ap., µF | Arco No. | Size, Inches Dia. x Length | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|
| | | | 1-9 | 10-24 | 25-49 | 50-99* |
| 002 | 1PT-202J | .312 x 7/8 | $3.17 | $2.27 | $1.81 | $1.36 |
| 0033 | 1PT-332J | .312 x 7/8 | 3.17 | 2.27 | 1.81 | 1.36 |
| 0047 | 1PT-472J | .312 x 7/8 | 3.17 | 2.27 | 1.81 | 1.36 |
| 005 | 1PT-502J | .312 x 7/8 | 3.17 | 2.27 | 1.81 | 1.36 |
| 0068 | 1PT-682J | .312 x 7/8 | 3.17 | 2.27 | 1.81 | 1.36 |
| 01 | 1PT-103J | .312 x 7/8 | 3.17 | 2.27 | 1.81 | 1.36 |
| 015 | 1PT-153J | .312 x 7/8 | 3.20 | 2.29 | 1.83 | 1.37 |
| 02 | 1PT-203J | .312 x 7/8 | 3.22 | 2.30 | 1.84 | 1.38 |
| 022 | 1PT-223J | .312 x 7/8 | 3.24 | 2.31 | 1.85 | 1.39 |
| 033 | 1PT-333J | .312 x 1 | 3.30 | 2.36 | 1.89 | 1.41 |
| 047 | 1PT-473J | .400 x 1 | 3.38 | 2.42 | 1.93 | 1.45 |
| 05 | 1PT-503J | .400 x 1 | 3.40 | 2.43 | 1.94 | 1.46 |
| 068 | 1PT-683J | .400 x 1 | 3.57 | 2.55 | 2.04 | 1.53 |
| 1 | 1PT-104J | .500 x 1 1/8 | 3.89 | 2.78 | 2.22 | 1.67 |
| 15 | 1PT-154J | .500 x 1 7/16 | 4.38 | 3.13 | 2.50 | 1.88 |
| 2 | 1PT-204J | .500 x 1 7/16 | 4.90 | 3.50 | 2.80 | 2.10 |
| 22 | 1PT-224J | .500 x 1 7/16 | 5.04 | 3.60 | 2.88 | 2.16 |
| 33 | 1PT-334J | .562 x 1 13/16 | 5.85 | 4.18 | 3.34 | 2.51 |
| 39 | 1PT-394J | .562 x 1 13/16 | 6.30 | 4.50 | 3.60 | 2.70 |
| 47 | 1PT-474J | .670 x 1 7/8 | 6.86 | 4.90 | 3.92 | 2.94 |
| 5 | 1PT-504J | .670 x 1 7/8 | 7.18 | 5.13 | 4.10 | 3.08 |

### 400 WVDC

| Cap., µF | Arco No. | Size, Inches Dia. x Length | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|
| | | | 1-9 | 10-24 | 25-49 | 50-99* |
| .002 | 4PT-202J | .312 x 7/8 | $3.17 | $2.27 | $1.81 | $1.36 |
| .0033 | 4PT-332J | .312 x 7/8 | 3.17 | 2.27 | 1.81 | 1.36 |
| .0047 | 4PT-472J | .312 x 7/8 | 3.17 | 2.27 | 1.81 | 1.36 |
| .005 | 4PT-502J | .312 x 7/8 | 3.17 | 2.27 | 1.81 | 1.36 |
| .0068 | 4PT-682J | .312 x 7/8 | 3.22 | 2.30 | 1.84 | 1.38 |
| .01 | 4PT-103J | .312 x 1 | 3.31 | 2.36 | 1.89 | 1.42 |
| .015 | 4PT-153J | .400 x 1 | 3.39 | 2.42 | 1.94 | 1.45 |
| .02 | 4PT-203J | .400 x 1 | 3.48 | 2.48 | 1.99 | 1.49 |
| .022 | 4PT-223J | .400 x 1 | 3.50 | 2.50 | 2.00 | 1.50 |
| .033 | 4PT-333J | .400 x 1 1/8 | 3.68 | 2.63 | 2.10 | 1.58 |
| .047 | 4PT-473J | .500 x 1 7/16 | 3.89 | 2.78 | 2.22 | 1.67 |
| .05 | 4PT-503J | .500 x 1 7/16 | 3.96 | 2.83 | 2.26 | 1.70 |
| .068 | 4PT-683J | .500 x 1 7/16 | 4.34 | 3.10 | 2.48 | 1.86 |
| .1 | 4PT-104J | .562 x 1 13/16 | 5.04 | 3.60 | 2.88 | 2.16 |
| .15 | 4PT-154J | .670 x 1 7/8 | 6.06 | 4.33 | 3.46 | 2.60 |
| .2 | 4PT-204J | .750 x 1 7/8 | 7.07 | 5.05 | 4.04 | 3.03 |
| .22 | 4PT-224J | .750 x 1 7/8 | 7.42 | 5.30 | 4.24 | 3.18 |
| .33 | 4PT-334J | 1.0 x 1 15/16 | 9.38 | 6.70 | 5.36 | 4.02 |
| .39 | 4PT-394J | 1.0 x 1 15/16 | 10.43 | 7.45 | 5.96 | 4.47 |

**Note:** Type PT 200, 600 and 1000 WVDC units available.

**★LARGER QUANTITY PRICES AVAILABLE ON REQUEST.**

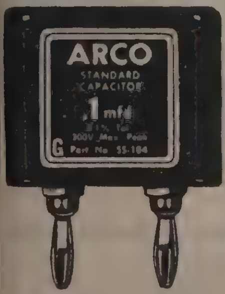
## TYPE PE POLYSTYRENE CAPACITORS

**apacitance Range:** .001–.01 µF (lower nd higher values available). **Tolerance:** 5%, ±2%, ±1%, ±½%, ±¼%. **Volt-e Rating:** 100 WVDC. **Insulation Resist-ace:** $10^{13}$ ohms min. at 25° C. – $10^{12}$ ohms in. at 85° C. **Dissipation Factor:** .01% ax. at 25° C; –.02% max. at 85° C. **ielectric Absorption:** 0.05% max. at all mperatures. **Temperature Coefficient:** 190, ±30 ppm/° C. **Stability:** ±0.1% ax. drift under fixed or variable operating nditions within specified max. limits.

.01 MFD ± 0.5%
100 WVDC

### .001 THRU .01 µF STOCK VALUES

| Tolerance | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 | 100-499 | 500-999 |
| ±¼% | $3.85 | $2.53 | $2.09 | $1.36 | $1.28 | $1.24 |
| ±½% | 2.69 | 1.80 | 1.46 | 1.02 | .96 | .93 |
| ±1% | 1.92 | 1.34 | 1.04 | .85 | .80 | .77 |
| ±2% | 1.61 | 1.15 | .88 | .77 | .72 | .70 |
| ±5% | 1.38 | .99 | .73 | .68 | .64 | .62 |



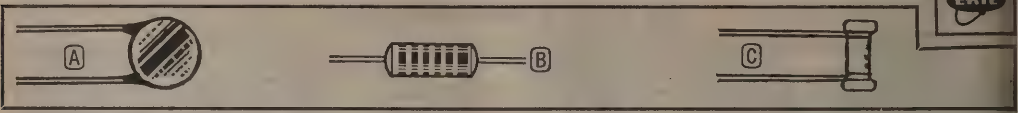
**Accuracy of Calibration:** ±0.1% +0.5 pF of nominal printed on capacitor at 1000 cycles frequency and 23° C. **Long Term Stability:** ±0.05% +0.1 pF.

## LABORATORY STANDARDS

| Arco No. | Cap. µF | Max. Diss. Factor | Min. Leak. Resist. Megohms | Net Each | Arco No. | Cap. µF | Max. Diss. Factor | Min. Leak. Resist. Megohms | Net Each |
|---|---|---|---|---|---|---|---|---|---|
| SS-101 | .0001 | .0015 | 50,000 | $13.00 | SS-203 | .02 | .0005 | 50,000 | $16.00 |
| SS-201 | .0002 | .0015 | 50,000 | 13.00 | SS-303 | .03 | .0005 | 50,000 | 16.00 |
| SS-301 | .0003 | .0015 | 50,000 | 13.00 | SS-403 | .04 | .0005 | 50,000 | 17.00 |
| SS-401 | .0004 | .0015 | 50,000 | 13.00 | SS-503 | .05 | .0005 | 50,000 | 17.00 |
| SS-501 | .0005 | .001 | 50,000 | 13.00 | SS-603 | .06 | .0005 | 50,000 | 18.00 |
| SS-601 | .0006 | .001 | 50,000 | 13.00 | SS-703 | .07 | .0005 | 50,000 | 19.00 |
| SS-701 | .0007 | .001 | 50,000 | 13.00 | SS-803 | .08 | .0005 | 50,000 | 20.00 |
| SS-801 | .0008 | .001 | 50,000 | 13.00 | SS-903 | .09 | .0005 | 50,000 | 21.00 |
| SS-901 | .0009 | .001 | 50,000 | 13.00 | SS-104 | .1 | .0005 | 50,000 | 22.00 |
| SS-102 | .001 | .001 | 50,000 | 13.00 | SS-204 | .2 | .0005 | 25,000 | 24.00 |
| SS-202 | .002 | .0005 | 50,000 | 13.00 | SS-304 | .3 | .0005 | 17,000 | 26.00 |
| SS-302 | .003 | .0005 | 50,000 | 13.00 | SS-404 | .4 | .0005 | 12,500 | 28.00 |
| SS-402 | .004 | .0005 | 50,000 | 14.00 | SS-504 | .5 | .0005 | 10,000 | 30.00 |
| SS-502 | .005 | .0005 | 50,000 | 14.00 | SS-604 | .6 | .0005 | 10,000 | 40.00 |
| SS-602 | .006 | .0005 | 50,000 | 14.00 | SS-704 | .7 | .0005 | 10,000 | 43.00 |
| SS-702 | .007 | .0005 | 50,000 | 14.00 | SS-804 | .8 | .0005 | 10,000 | 46.00 |
| SS-802 | .008 | .0005 | 50,000 | 15.00 | SS-904 | .9 | .0005 | 10,000 | 49.00 |
| SS-902 | .009 | .0005 | 50,000 | 15.00 | SS-105 | 1.0 | .0005 | 10,000 | 52.00 |
| SS-103 | .01 | .0005 | 50,000 | 15.00 | | | | | |

NOTE: Peak voltage for capacity values from .0001 µF to .04 µF is 500 volts. From .05 µF to 1.0 µF is 300 volts.

# Erie CERAMICON® CERAMIC DISC CAPACITORS



## CERAMICON® CERAMIC DISC CAPACITORS (FIG. A)

Have flat ceramic dielectric with silver fired onto the dielectric. Lead wires soldered to silver electrodes. Case is phenolic, vacuum-wax impregnated. Very efficient at high frequencies. Reliable to 85° C. **Size:** All are .156" thick. Style 831, .290" dia.; Style 801, .360" dia.; Style 851, .437" dia.; Style 871, .490" dia.; Style 811, .593" dia.; Style 841, .675" dia. Standard lead lgth., 1½" min.

### GENERAL PURPOSE HI-K® CERAMICONS

Popular for by-pass and non-critical coupling applications. **WVDC:** 1000. **Tolerance:** ±10% except 10K–20K pF, ±20%.

| Erie Number | Cap., pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 | 1M-5M |
|---|---|---|---|---|---|---|---|
| 831-000 X5FO 470K | 47 | 15.2c | 11.4c | 9.5c | 6.8c | 6.5c | 3.8c |
| 831-000 X5FO 560K | 56 | 15.2c | 11.4c | 9.5c | 6.8c | 6.5c | 3.8c |
| 831-000 X5FO 680K | 68 | 15.2c | 11.4c | 9.5c | 6.8c | 6.5c | 3.8c |
| 831-000 X5FO 101K | 100 | 15.2c | 11.4c | 9.5c | 6.8c | 6.5c | 3.8c |
| 831-000 X5FO 151K | 150 | 15.2c | 11.4c | 9.5c | 6.8c | 6.5c | 3.8c |
| 831-000 X5FO 201K | 200 | 15.2c | 11.4c | 9.5c | 6.8c | 6.5c | 3.8c |
| 831-000 X5FO 221K | 220 | 15.2c | 11.4c | 9.5c | 6.8c | 6.5c | 3.8c |
| 831-000 X5FO 271K | 270 | 15.2c | 11.4c | 9.5c | 6.8c | 6.5c | 3.8c |
| 831-000 X5FO 331K | 330 | 15.2c | 11.4c | 9.5c | 6.8c | 6.5c | 3.8c |
| 831-000 X5FO 391K | 390 | 15.2c | 11.4c | 9.5c | 6.8c | 6.5c | 3.8c |
| 831-000 X5FO 471K | 470 | 15.2c | 11.4c | 9.5c | 6.8c | 6.5c | 3.8c |
| 831-000 X5FO 501K | 500 | 15.2c | 11.4c | 9.5c | 6.8c | 6.5c | 3.8c |
| 801-000 X5FO 681K | 680 | 15c | 11.3c | 9.4c | 6.8c | 6.4c | 3.8c |
| 801-000 X5FO 102K | 1000 | 15c | 11.3c | 9.4c | 6.8c | 6.4c | 3.8c |
| 851-000 X5FO 152K | 1500 | 15c | 11.3c | 9.4c | 6.8c | 6.4c | 3.8c |
| 871-000 X5FO 202K | 2000 | 15.8c | 11.9c | 9.9c | 7.1c | 6.7c | 4c |
| 811-000 X5FO 222K | 2200 | 16c | 12c | 10c | 7.2c | 6.8c | 4c |
| 811-000 X5FO 332K | 3300 | 16c | 12c | 10c | 7.2c | 6.8c | 4c |
| 811-000 X5RO 472K | 4700 | 12c | 9c | 7.5c | 5.4c | 5.1c | 3c |
| 811-000 X5RO 502K | 5000 | 12c | 9c | 7.5c | 5.4c | 5.1c | 3c |
| 811-000 Z5UO 103M | 10K | 12.8c | 9.6c | 8c | 5.8c | 5.4c | 3.2c |
| 841-000 Z5UO 153M | 15K | 15.8c | 11.9c | 9.9c | 7.1c | 6.7c | 4c |
| 841-000 Z5UO 203M | 20K | 15.8c | 11.9c | 9.9c | 7.1c | 6.7c | 4c |

### NPO TEMPERATURE COMPENSATING TYPES

Widely used in tuning and resonant circuits. **WVDC:** 1000; 1500 VDC flash test. **Capacity Tolerance:** 5 pF, ±.25 pF; 8.2 and 10 pF, ±.5 pF; 12 pF and up, ±5%.

| Erie Number | Cap., pF | 1-49 | 50-99 | 100-249 | 250-499 | 500-999 | 1M-5M |
|---|---|---|---|---|---|---|---|
| 831-000 COGO 509C | 5 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 831-000 COGO 829D | 8.2 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 831-000 COGO 100D | 10 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 831-000 COGO 120J | 12 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 801-000 COGO 150J | 15 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 801-000 COGO 180J | 18 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 801-000 COGO 200J | 20 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 801-000 COGO 220J | 22 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 851-000 COGO 270J | 27 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 851-000 COGO 330J | 33 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 851-000 COGO 470J | 47 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 811-000 COGO 680J | 68 | 12.4c | 9.3c | 7.8c | 5.6c | 5.3c | 3.1c |
| 811-000 COGO 750J | 75 | 12.4c | 9.3c | 7.8c | 5.6c | 5.3c | 3.1c |
| 841-000 COGO 820J | 82 | 12.4c | 9.3c | 7.8c | 5.6c | 5.3c | 3.1c |
| 841-000 COGO 101J | 100 | 12.4c | 9.3c | 7.8c | 5.6c | 5.3c | 3.1c |

### N750 TEMPERATURE COMPENSATING TYPES

Similar to NPO types except capacity tolerance, 10 pF, ±.5 pF; 12 pF and up, ±5%.

| Erie Number | Cap., pF | 1-49 | 50-99 | 100-249 | 250-499 | 500-999 | 1M-5M |
|---|---|---|---|---|---|---|---|
| 831-000 U2JO 100D | 10 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 831-000 U2JO 120J | 12 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 831-000 U2JO 150J | 15 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 831-000 U2JO 180J | 18 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 831-000 U2JO 200J | 20 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 831-000 U2JO 220J | 22 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 831-000 U2JO 270J | 27 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 831-000 U2JO 330J | 33 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 801-000 U2JO 390J | 39 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 801-000 U2JO 470J | 47 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 801-000 U2JO 500J | 50 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 801-000 U2JO 560J | 56 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 851-000 U2JO 680J | 68 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 851-000 U2JO 750J | 75 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 851-000 U2JO 820J | 82 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |
| 851-000 U2JO 101J | 100 | 10c | 7.5c | 6.3c | 4.5c | 4.3c | 2.5c |

### MIL-C-11015C HI-K CERAMICONS

**WVDC:** 1000. **Tolerance:** Suffix **K** to MIL Designation No. indicates ±10%; **M**, ±20%; **X**, +80% and −20%.

| MIL Designation | Cap., pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 | 1M-5M |
|---|---|---|---|---|---|---|---|
| CK60 BX 2R2K | 2.2 | 23.4c | 17.6c | 14.6c | 10.5c | 9.9c | 5.9c |
| CK60 BX 3R3K | 3.3 | 23.4c | 17.6c | 14.6c | 10.5c | 9.9c | 5.9c |
| CK60 BX 4R7K | 4.7 | 23.4c | 17.6c | 14.6c | 10.5c | 9.9c | 5.9c |
| CK60 BX 6R8K | 6.8 | 23.4c | 17.6c | 14.6c | 10.5c | 9.9c | 5.9c |
| CK60 BX 100K | 10 | 23.4c | 17.6c | 14.6c | 10.5c | 9.9c | 5.9c |
| CK60 BX 150K | 15 | 23.4c | 17.6c | 14.6c | 10.5c | 9.9c | 5.9c |
| CK60 BX 220K | 22 | 23.4c | 17.6c | 14.6c | 10.5c | 9.9c | 5.9c |
| CK60 BX 330K | 33 | 23.4c | 17.6c | 14.6c | 10.5c | 9.9c | 5.9c |

### MIL-C-11015C HI-K CERAMICONS (CONT'D)

| MIL Designation | Cap., pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 | 1M Up |
|---|---|---|---|---|---|---|---|
| CK60 BX 330M | 33 | 22.6c | 17c | 14.1c | 10.2c | 9.6c | 5.7c |
| CK60 BX 470K | 47 | 23.4c | 17.6c | 14.6c | 10.5c | 9.9c | 5.9c |
| CK60 BX 470M | 47 | 22.6c | 17c | 14.1c | 10.2c | 9.6c | 5.7c |
| CK60 BX 680K | 68 | 23.4c | 17.6c | 14.6c | 10.5c | 9.9c | 5.9c |
| CK60 BX 680M | 68 | 22.6c | 17c | 14.1c | 10.2c | 9.6c | 5.7c |
| CK60 BX 101K | 100 | 23.4c | 17.6c | 14.6c | 10.5c | 9.9c | 5.9c |
| CK60 BX 101M | 100 | 22.6c | 17c | 14.1c | 10.2c | 9.6c | 5.7c |
| CK60 BX 151K | 150 | 23.4c | 17.6c | 14.6c | 10.5c | 9.9c | 5.9c |
| CK60 BX 151M | 150 | 22.6c | 17c | 14.1c | 10.2c | 9.6c | 5.7c |
| CK60 AX 221K | 220 | 19.4c | 14.6c | 12.1c | 8.7c | 8.2c | 4.9c |
| CK60 AX 221M | 220 | 18.6c | 14c | 11.6c | 8.4c | 7.9c | 4.7c |
| CK61 BX 221K | 220 | 23.4c | 17.6c | 14.6c | 10.5c | 9.9c | 5.9c |
| CK61 BX 221M | 220 | 22.6c | 17c | 14.1c | 10.2c | 9.6c | 5.7c |
| CK60 AX 331K | 330 | 19.4c | 14.6c | 12.1c | 8.7c | 8.2c | 4.9c |
| CK60 AX 331M | 330 | 18.6c | 14c | 11.6c | 8.4c | 7.9c | 4.7c |
| CK61 BX 331K | 330 | 23.4c | 17.6c | 14.6c | 10.5c | 9.9c | 5.9c |
| CK61 BX 331M | 330 | 22.6c | 17c | 14.1c | 10.2c | 9.6c | 5.7c |
| CK60 AX 471K | 470 | 19.4c | 14.6c | 12.1c | 8.7c | 8.2c | 4.9c |
| CK60 AX 471M | 470 | 18.6c | 14c | 11.6c | 8.4c | 7.9c | 4.7c |
| CK60 AW 471M | 470 | 18.2c | 13.7c | 11.4c | 8.2c | 7.7c | 4.6c |
| CK61 BX 471K | 470 | 23.4c | 17.6c | 14.6c | 10.5c | 9.9c | 5.9c |
| CK61 BX 471M | 470 | 22.6c | 17c | 14.1c | 10.2c | 9.6c | 5.7c |
| CK60 AW 681M | 680 | 18.2c | 13.7c | 11.4c | 8.2c | 7.7c | 4.6c |
| CK61 BX 681K | 680 | 23.4c | 17.6c | 14.6c | 10.5c | 9.9c | 5.9c |
| CK61 BX 681M | 680 | 22.6c | 17c | 14.1c | 10.2c | 9.6c | 5.7c |
| CK60 AW 102M | 1000 | 18.2c | 13.7c | 11.4c | 8.2c | 7.7c | 4.6c |
| CK62 BX 102K | 1000 | 23.8c | 17.9c | 14.9c | 10.7c | 10.1c | 6c |
| CK62 BX 102M | 1000 | 23c | 17.3c | 14.4c | 10.4c | 9.8c | 5.8c |
| CK60 AW 152M | 1500 | 18.2c | 13.7c | 11.4c | 8.2c | 7.7c | 4.6c |
| CK62 BX 152K | 1500 | 23.8c | 17.9c | 14.9c | 10.7c | 10.1c | 6c |
| CK62 BX 152M | 1500 | 23c | 17.3c | 14.4c | 10.4c | 9.8c | 5.8c |
| CK61 AW 222M | 2200 | 18.2c | 13.7c | 11.4c | 8.2c | 7.7c | 4.6c |
| CK62 AX 222K | 2200 | 19.8c | 14.9c | 12.4c | 8.9c | 8.4c | 5c |
| CK62 AX 222M | 2200 | 19c | 14.3c | 11.9c | 8.6c | 8.1c | 4.8c |
| CK63 BX 222K | 2200 | 25.6c | 19.2c | 16c | 11.5c | 10.9c | 6.4c |
| CK63 BX 222M | 2200 | 24.8c | 16.8c | 15.5c | 11.2c | 10.5c | 6.2c |
| CK62 AW 332M | 3300 | 20.8c | 15.6c | 13c | 9.4c | 8.8c | 5.2c |
| CK63 BX 332K | 3300 | 25.6c | 19.2c | 16c | 11.5c | 10.9c | 6.4c |
| CK63 BX 332M | 3300 | 24.8c | 18.6c | 15.5c | 11.2c | 10.5c | 6.2c |
| CK62 AW 472M | 4700 | 20.8c | 15.6c | 13c | 9.4c | 8.8c | 5.2c |
| CK63 AW 472M | 4700 | 23.8c | 17.9c | 14.9c | 10.7c | 10.1c | 6c |
| CK62 AW 682M | 6800 | 20.8c | 15.6c | 13c | 9.4c | 8.8c | 5.2c |
| CK63 AY 103M | 10K | 22c | 16.5c | 13.8c | 9.9c | 9.4c | 5.5c |
| CK63 AW 103M | 10K | 23.8c | 17.9c | 14.9c | 10.7c | 10.1c | 6c |

## HIGH-CAPACITANCE, LOW-VOLTAGE TRANSCAP® DISC CERAMICONS (FIG. A)

Low-cost disc-type capacitors for 12 and 25-volt transistorized applications such as by-passing and filtering. Both types have passed 1000-hour life tests at 85° C, Series 5600 at 12 volts and Series 5800 at 37½ volts (150% of rated voltage). **Voltage:** Series 5600, 12 WVDC; 5800, 25 WVDC. **Tolerance:** 5600, ±20%; 5800, +80% and −20%. **Size, O.D.:** 5635, .275"; 5655, .420"; 5615, .550"; 5645, .660"; 5685, .800"; 5835, .290"; 5855, .437"; 5815, .593"; 5865, .895".

| Erie Number | Cap., µF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 | 1M-5M |
|---|---|---|---|---|---|---|---|
| 5635-000 Y5FO 503M | .05 | 21.6c | 16.2c | 13.5c | 9.7c | 9.2c | 5.4c |
| 5655-000 Y5FO 104M | .1 | 22.4c | 16.8c | 14c | 10.1c | 9.5c | 5.6c |
| 5615-000 Y5FO 224M | .22 | 33.6c | 25.2c | 21c | 15.1c | 14.3c | 8.4c |
| 5645-000 Y5FO 334M | .33 | 44c | 33c | 27.5c | 19.8c | 18.7c | 11c |
| 5685-000 Y5FO 474M | .47 | 55.2c | 41.4c | 34.5c | 24.8c | 23.5c | 13.8c |
| 5835-000 Y5UO 103Z | .01 | 20c | 15c | 12.5c | 9c | 8.5c | 5c |
| 5835-000 Y5UO 203Z | .02 | 24c | 18c | 15c | 10.8c | 10.2c | 6c |
| 5855-000 Y5UO 503Z | .05 | 30.2c | 22.7c | 18.9c | 13.6c | 12.8c | 7.6c |
| 5815-000 Y5UO 104Z | .1 | 32c | 24c | 20c | 14.4c | 13.6c | 8c |
| 5815-000 Y5UO 204Z* | .2 | 62c | 46.5c | 38.8c | 27.9c | 26.4c | 15.5c |
| 5865-000 Y5UO 224Z | .22 | 48c | 36c | 30c | 21.6c | 20.4c | 12c |
| 5865-000 Y5UO 474Z* | .47 | 94c | 70.5c | 58.8c | 42.3c | 40c | 23.5c |

*Dual unit.

## TRANSISTOR DISC CERAMICONS—100 WVDC (FIG. A)

Rated 100 WVDC. **Tolerance:** +80%, −20%. **Size, O.D.:** Style 835, .275"; Style 805, .344"; Style 855, .420".

| Erie Number | Cap., µF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 | 1M-5M |
|---|---|---|---|---|---|---|---|
| 835-000 X5VO 502Z | .005 | 12.4c | 9.3c | 7.8c | 5.6c | 5.3c | 3.1c |
| 805-000 X5VO 103Z | .01 | 20.4c | 15.3c | 12.8c | 9.2c | 8.7c | 5.1c |
| 855-000 X5VO 203Z | .02 | 20.4c | 15.3c | 12.8c | 9.2c | 8.7c | 5.1c |

# rie CERAMICON® CERAMIC TUBULAR, AND TRIMMER CAPACITORS

ERIE
TECHNOLOGICAL
PRODUCTS, INC

ERIE

## CERAMICON® CERAMIC TUBULAR CAPACITORS

### GENERAL PURPOSE TUBULARS (FIG. B)

all fixed capacitors consisting of a ceramic dielectric with silver ctrodes. Excellent high frequency characteristics, suited for ipling and by-passing in all except frequency determining cir- ts. **WVDC:** 500; 1500 VDC flash test. **Tolerance:** ±10%. **erating Temperature Range:** −55° C to +85° C. All are Style (Fig. B), .250″ dia. x .562″ lg.

| Erie Number | Cap., pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999* |
|---|---|---|---|---|---|---|
| 5-005 X5RO 820K | 82 | 21.2c | 15.9c | 13.3c | 9.5c | 9c |
| 5-005 X5RO 101K | 100 | 21.2c | 15.9c | 13.3c | 9.5c | 9c |
| 5-005 X5RO 151K | 150 | 22.8c | 17.1c | 14.3c | 10.3c | 9.7c |
| 5-005 X5RO 201K | 200 | 22.8c | 17.1c | 14.3c | 10.3c | 9.7c |
| 5-005 X5RO 221K | 220 | 22.8c | 17.1c | 14.3c | 10.3c | 9.7c |
| 5-005 X5RO 251K | 250 | 22.8c | 17.1c | 14.3c | 10.3c | 9.7c |
| 5-005 X5RO 271K | 270 | 22.8c | 17.1c | 14.3c | 10.3c | 9.7c |
| 5-005 X5RO 301K | 300 | 22.8c | 17.1c | 14.3c | 10.3c | 9.7c |
| 5-005 X5RO 331K | 330 | 22.8c | 17.1c | 14.3c | 10.3c | 9.7c |
| 5-005 X5RO 391K | 390 | 22.8c | 17.1c | 14.3c | 10.3c | 9.7c |
| 5-005 X5RO 471K | 470 | 22.8c | 17.1c | 14.3c | 10.3c | 9.7c |
| 5-005 X5RO 501K | 500 | 22.8c | 17.1c | 14.3c | 10.3c | 9.7c |
| 5-005 X5RO 561K | 560 | 22.8c | 17.1c | 14.3c | 10.3c | 9.7c |
| 5-005 X5RO 681K | 680 | 22.8c | 17.1c | 14.3c | 10.3c | 9.7c |
| 5-005 X5RO 821K | 820 | 22.8c | 17.1c | 14.3c | 10.3c | 9.7c |
| 5-005 X5RO 102K | 1000 | 22.8c | 17.1c | 14.3c | 10.3c | 9.7c |

### NPO TEMPERATURE COMPENSATING TUBULARS

ghly stable capacitors ideal for circuits which demand great bility, high Q, low loss and close tolerance. Meet specs on EIA . RS198 for Class 1; Temp. Comp., Class 2 Hi-K; are on L for MIL-C-20D and MIL-C-11015C (85° C). WVDC: 500; 0 VDC flash test. **Capacity Tolerance:** 0.5–10 pF, ±.25 pF; pF and up, ±5%. **TC Tolerance, PPM/° C:** 0.5–2.0 pF, ±250; -3.3 pF, ±120; 4.7-10 pF, ±60; 12 pF and up, ±30. **Size:** le 301, .200″ dia. x .400″ w. with 1.25″ lg. leads; non-insulated h white baked enamel coating. Style 315, .250″ dia. x .562″ lg. cision molded body with 1.25″ lg. leads. Style 316, same as but .250″ dia. x .812″ lg. body.

| Erie Number | Fig | Cap., pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999* |
|---|---|---|---|---|---|---|---|
| 1-000 COKO 508C | C | 0.5 | 20c | 15c | 13c | 9c | 8.5c |
| 1-000 COKO 688C | C | 0.68 | 20c | 15c | 13c | 9c | 8.5c |
| 1-000 COKO 109C | C | 1.0 | 20c | 15c | 13c | 9c | 8.5c |
| 1-000 COKO 159C | C | 1.5 | 20c | 15c | 13c | 9c | 8.5c |
| 1-000 COKO 209C | C | 2.0 | 20c | 15c | 13c | 9c | 8.5c |
| 1-000 COJO 229C | C | 2.2 | 20c | 15c | 13c | 9c | 8.5c |
| 1-000 COJO 309C | C | 3.0 | 20c | 15c | 13c | 9c | 8.5c |
| 1-000 COJO 339C | C | 3.3 | 20c | 15c | 13c | 9c | 8.5c |
| 1-000 COHO 479C | C | 4.7 | 20c | 15c | 13c | 9c | 8.5c |
| 1-000 COHO 509C | C | 5.0 | 20c | 15c | 13c | 9c | 8.5c |
| 1-000 COHO 689C | C | 6.8 | 26c | 19.5c | 16.3c | 11.7c | 11.1c |
| 1-000 COHO 829C | C | 8.2 | 26c | 19.5c | 16.3c | 11.7c | 11.1c |
| 1-000 COHO 100C | C | 10 | 26c | 19.5c | 16.3c | 11.7c | 11.1c |
| 5-000 COHO 100D | B | 10 | 23.2c | 17.4c | 14.5c | 10.4c | 9.9c |
| 1-000 COGO 120J | C | 12 | 13.2c | 9.9c | 8.3c | 5.9c | 5.6c |
| 5-000 COGO 120J | B | 12 | 23.2c | 17.4c | 14.5c | 10.4c | 9.9c |
| 1-000 COGO 150J | C | 15 | 13.2c | 9.9c | 8.3c | 5.9c | 5.6c |
| 5-000 COGO 150J | B | 15 | 23.2c | 17.4c | 14.5c | 10.4c | 9.9c |
| 1-000 COGO 180J | C | 18 | 13.2c | 9.9c | 8.3c | 5.9c | 5.6c |
| 1-000 COGO 200J | C | 20 | 13.2c | 9.9c | 8.3c | 5.9c | 5.6c |
| 5-000 COGO 200J | B | 20 | 23.2c | 17.4c | 14.5c | 10.4c | 9.9c |
| 1-000 COGO 220J | C | 22 | 13.2c | 9.9c | 8.3c | 5.9c | 5.6c |
| 5-000 COGO 220J | B | 22 | 23.2c | 17.4c | 14.5c | 10.4c | 9.9c |
| 1-000 COGO 240J | C | 24 | 13.2c | 9.9c | 8.3c | 5.9c | 5.6c |
| 5-000 COGO 240J | B | 24 | 23.2c | 17.4c | 14.5c | 10.4c | 9.9c |

### N750 TEMPERATURE COMPENSATING TUBULARS

VDC: 500. **Capacity Tolerance:** 5 and 10 pF, ±.25 pF; 100 pF, 5%. **TC Tolerance, PPM/° C:** ±120.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1-000 U2JO 509C | C | 5 | 20c | 15c | 13c | 9c | 8.5c |
| 1-000 U2JO 100C | C | 10 | 26c | 19.5c | 16.3c | 11.7c | 11.1c |
| 5-000 U2JO 101J | B | 100 | 24.4c | 18.3c | 15.3c | 11c | 10.4c |

**SEE PRECEDING PAGE FOR ILLUSTRATIONS**

**★1000-5000 QUANTITY PRICES ON REQUEST.**

**FOR LARGER QUANTITY ORDERS**
**cramer OFFERS**
**MANUFACTURER-COMPETITIVE PRICING**
**IN MOST INSTANCES.**
**WRITE OR CALL FOR QUOTATION**

### MIL-C-20D TEMPERATURE COMPENSATING TYPES

Equivalent to Erie series 301, 315 and 316 Ceramicons, but meet MIL-C-20D specifications in NPO/N750 types. Capacity tolerance is indicated by Suffix to Type No.; e.g., **C,** ±.25 pF; **G,** ±2%; **J,** ±5%.

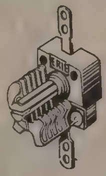
#### ERIE STYLE 301 (FIG. C)

| MIL Desig. CC20- For NPO Coeffic. | For N750 Coeffic. | Cap., pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999* |
|---|---|---|---|---|---|---|---|
| CK 0R5C | ........ | 0.5 | 36c | 27c | 23c | 16c | 15c |
| CK R75C | ........ | 0.75 | 36c | 27c | 23c | 16c | 15c |
| CK 010C | ........ | 1.0 | 36c | 27c | 23c | 16c | 15c |
| CK 1R5C | ........ | 1.5 | 36c | 27c | 23c | 16c | 15c |
| CK 020C | UK 020C | 2.0 | 36c | 27c | 23c | 16c | 15c |
| CJ 030C | UJ 030C | 3.0 | 36c | 27c | 23c | 16c | 15c |
| CH 040C | UJ 040C | 4.0 | 36c | 27c | 23c | 16c | 15c |
| CH 050C | UJ 050C | 5.0 | 36c | 27c | 23c | 16c | 15c |
| CH 060C | UJ 060C | 6.0 | 36c | 27c | 23c | 16c | 15c |
| CH 070C | UJ 070C | 7.0 | 42c | 31.5c | 26.3c | 18.9c | 17.8c |
| CH 080C | UJ 080C | 8.0 | 42c | 31.5c | 26.3c | 18.9c | 17.8c |
| CH 090C | UJ 090C | 9.0 | 42c | 31.5c | 26.3c | 18.9c | 17.8c |
| CH 100C | UJ 100C | 10.0 | 42c | 31.5c | 26.3c | 18.9c | 17.8c |
| ........ | UJ 120J | 12.0 | 36c | 27c | 23c | 16c | 15c |
| CH 120G | ........ | 12.0 | 46.8c | 35.1c | 29.3c | 21.1c | 19.9c |
| ........ | UJ 150J | 15.0 | 36c | 27c | 23c | 16c | 15c |
| CH 150G | ........ | 15.0 | 46.8c | 35.1c | 29.3c | 21.1c | 19.9c |
| CH 180G | ........ | 18.0 | 46.8c | 35.1c | 29.3c | 21.1c | 19.9c |
| CH 200G | ........ | 20.0 | 46.8c | 35.1c | 29.3c | 21.1c | 19.9c |
| CH 220G | ........ | 22.0 | 46.8c | 35.1c | 29.3c | 21.1c | 19.9c |

#### ERIE STYLE 315 (FIG. B)

| MIL Desig. CC21- For NPO Coeffic. | For N750 Coeffic. | Cap., pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999* |
|---|---|---|---|---|---|---|---|
| CH 040C | ........ | 4 | 41.2c | 30.9c | 25.8c | 18.5c | 17.5c |
| CH 050C | ........ | 5 | 41.2c | 30.9c | 25.8c | 18.5c | 17.5c |
| CH 100C | UJ 100C | 10 | 52.4c | 39.3c | 32.8c | 23.6c | 22.3c |
| CH 120J | UJ 120J | 12 | 39.2c | 29.4c | 24.5c | 17.6c | 16.7c |
| CH 150J | UJ 150J | 15 | 39.2c | 29.4c | 24.5c | 17.6c | 16.7c |
| CH 180J | UJ 180J | 18 | 39.2c | 29.4c | 24.5c | 17.6c | 16.7c |
| ........ | UJ 200J | 20 | 39.2c | 29.4c | 24.5c | 17.6c | 16.7c |
| CH 220J | UJ 220J | 22 | 39.2c | 29.4c | 24.5c | 17.6c | 16.7c |
| CH 240J | UJ 240J | 24 | 39.2c | 29.4c | 24.5c | 17.6c | 16.7c |
| ........ | UJ 270J | 27 | 39.2c | 29.4c | 24.5c | 17.6c | 16.7c |
| ........ | UJ 300J | 30 | 39.2c | 29.4c | 24.5c | 17.6c | 16.7c |
| ........ | UJ 330J | 33 | 39.2c | 29.4c | 24.5c | 17.6c | 16.7c |
| ........ | UJ 360J | 36 | 39.2c | 29.4c | 24.5c | 17.6c | 16.7c |
| ........ | UJ 390J | 39 | 39.2c | 29.4c | 24.5c | 17.6c | 16.7c |
| ........ | UJ 430J | 43 | 39.2c | 29.4c | 24.5c | 17.6c | 16.7c |
| ........ | UJ 470J | 47 | 39.2c | 29.4c | 24.5c | 17.6c | 16.7c |
| ........ | UJ 510J | 51 | 39.2c | 29.4c | 24.5c | 17.6c | 16.7c |
| ........ | UJ 560J | 56 | 39.2c | 29.4c | 24.5c | 17.6c | 16.7c |
| ........ | UJ 620J | 62 | 39.2c | 29.4c | 24.5c | 17.6c | 16.7c |

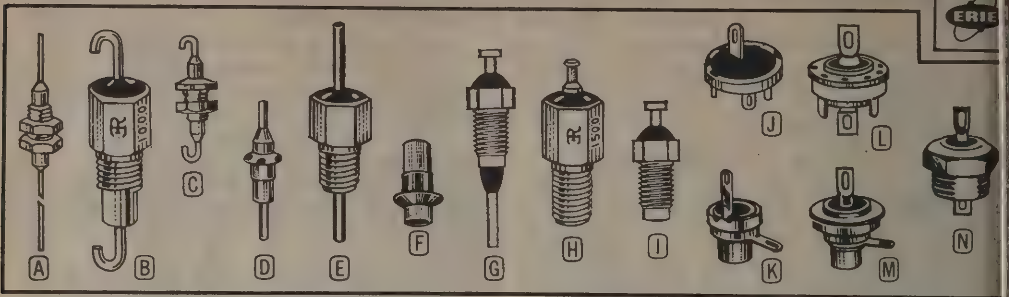
### SERIES 540 AIR TRIMMERS



Plates precision-machined from solid brass extrusions. Low-loss steatite base. For printed circuit or point-to-point wiring. **WVDC:** 375 (750 VDC flash test). **Initial Q:** 1500 min. **Mounting:** Suffix **001**, PC tabs; **011**, lug and screw mtg. flush to chassis; **021**, lug and shaft-through-chassis mounting.

| Erie Number | Cap. Range, pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|
| 540-001 | 1.2– 4.2 | $0.56 | $0.51 | $0.45 | $0.45 | $0.32 |
| 540-011 | 1.2– 4.2 | .60 | .54 | .48 | .48 | .34 |
| 540-021 | 1.2– 4.2 | .60 | .54 | .48 | .48 | .34 |
| 541-001 | 1.3– 6.7 | .575 | .525 | .465 | .465 | .325 |
| 541-011 | 1.3– 6.7 | .605 | .545 | .485 | .485 | .345 |
| 541-021 | 1.3– 6.7 | .605 | .545 | .485 | .485 | .345 |
| 542-001 | 1.4– 9.2 | .58 | .53 | .47 | .47 | .33 |
| 542-011 | 1.4– 9.2 | .61 | .55 | .49 | .49 | .35 |
| 542-021 | 1.4– 9.2 | .61 | .55 | .49 | .49 | .35 |
| 543-001 | 1.5–11.6 | .595 | .545 | .485 | .485 | .335 |
| 543-011 | 1.5–11.6 | .615 | .555 | .495 | .495 | .355 |
| 543-021 | 1.5–11.6 | .615 | .555 | .495 | .495 | .355 |
| 544-001 | 1.7–14.1 | .60 | .55 | .49 | .49 | .34 |
| 544-011 | 1.7–14.1 | .64 | .58 | .51 | .51 | .36 |
| 544-021 | 1.7–14.1 | .64 | .58 | .51 | .51 | .36 |
| 545-001 | 1.8–16.7 | .62 | .56 | .495 | .495 | .35 |
| 545-011 | 1.8–16.7 | .66 | .60 | .53 | .53 | .37 |
| 545-021 | 1.8–16.7 | .66 | .60 | .53 | .53 | .37 |
| 546-001 | 2.0–19.3 | .64 | .57 | .50 | .50 | .36 |
| 546-011 | 2.0–19.3 | .68 | .62 | .54 | .54 | .38 |
| 546-021 | 2.0–19.3 | .68 | .62 | .54 | .54 | .38 |
| 547-001 | 2.2–21.9 | .66 | .59 | .51 | .51 | .37 |
| 547-011 | 2.2–21.9 | .70 | .64 | .55 | .55 | .39 |
| 547-021 | 2.2–21.9 | .70 | .64 | .55 | .55 | .39 |
| 548-001 | 2.4–24.5 | .68 | .60 | .52 | .52 | .38 |
| 548-011 | 2.4–24.5 | .72 | .66 | .56 | .56 | .40 |
| 548-021 | 2.4–24.5 | .72 | .66 | .56 | .56 | .40 |

# Erie CERAMICON® FEED-THRU, STAND-OFF, BUTTON® MICA CAPACITORS



## FEED-THRU CERAMICONS®

Bypass RF to ground. Style 362 wire and 327 hook terminals can serve as tie points or support other elements; long enough for point-to-point wiring. Style 2499, miniature version of 327, is popular in aerospace. Styles 2499, 2443 and 327 are sealed in metal housings with low-loss thermosetting plastic. Style 2425 is 0.988″ lg. overall with miniature 8-32 bushing. **WVDC:** 500 volts except 2425-001, 200 volts (−55° C, +85° C); 2425-003, 100 volts (−55° C, +125° C). **Tol.:** ±20% unless otherwise noted.

| Erie Number | † | Cap., pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| 321-000 X5UO 102M‡ | A | 1000 | 1.124 | 0.843 | 0.703 | 0.506 | 0.478 |
| 327-005 X5UO 102M‡ | B | 1000 | 1.62 | 1.215 | 1.013 | .729 | .689 |
| 327-005 X5UO 152M‡ | B | 1500 | 1.62 | 1.215 | 1.013 | .729 | .689 |
| 357-000 X5UO 102M‡ | C | 1000 | 1.124 | .843 | .703 | .506 | .478 |
| 357-000 X5UO 152M‡ | C | 1500 | 1.124 | .843 | .703 | .506 | .478 |
| 362-000 X5UO 102M‡ | A | 1000 | 1.124 | .843 | .703 | .506 | .478 |
| 362-000 X5UO 152M‡ | A | 1500 | 1.124 | .843 | .703 | .506 | .478 |
| 2404-000 U2MO 500M | D | 50 | .224 | .168 | .14 | .101 | .095 |
| 2404-000 X5UO 101M | D | 100 | .224 | .168 | .14 | .101 | .095 |
| 2404-000 X5UO 102P* | D | 1000 | .224 | .168 | .14 | .101 | .095 |
| 2404-014 X5UO 501M* | F | 500 | .18 | .135 | .113 | .081 | .077 |
| 2404-014 X5UO 102P* | F | 1000 | .18 | .135 | .113 | .081 | .077 |
| 2425-001 X5U 101AA§ | G | 100 | 2.46 | 1.845 | 1.538 | 1.107 | 1.046 |
| 2425-001 X5U 102AA§ | G | 1000 | 2.46 | 1.845 | 1.538 | 1.107 | 1.046 |
| 2425-001 X5U 152AA§ | G | 1500 | 2.46 | 1.845 | 1.538 | 1.107 | 1.046 |
| 2425-001 X5U 202AA§ | G | 2000 | 2.46 | 1.845 | 1.538 | 1.107 | 1.046 |
| 2425-001 X5U 501AA§ | G | 500 | 2.46 | 1.845 | 1.538 | 1.107 | 1.046 |
| 2425-001 X5V 502AA§ | G | 5000 | 2.46 | 1.845 | 1.538 | 1.107 | 1.046 |
| 2425-003 W5UO 101AA§ | G | 100 | 2.628 | 1.971 | 1.643 | 1.183 | 1.117 |
| 2425-003 W5UO 102AA§ | G | 1000 | 2.628 | 1.971 | 1.643 | 1.183 | 1.117 |
| 2425-003 W5UO 152AA§ | G | 1500 | 2.628 | 1.971 | 1.643 | 1.183 | 1.117 |
| 2425-003 W5UO 202AA§ | G | 2000 | 2.628 | 1.971 | 1.643 | 1.183 | 1.117 |
| 2425-003 W5UO 501AA§ | G | 500 | 2.628 | 1.971 | 1.643 | 1.183 | 1.117 |
| 2425-003 W5WO 502AA§ | G | 5000 | 2.628 | 1.971 | 1.643 | 1.183 | 1.117 |
| 2443-000 X5SO 102M | E | 1000 | 1.36 | 1.02 | .85 | .612 | .578 |
| 2443-000 X5SO 152M | E | 1500 | 1.36 | 1.02 | .85 | .612 | .578 |
| 2443-001 X5SO 102M | E | 1000 | 1.42 | 1.065 | .888 | .638 | .604 |
| 2443-001 X5SO 152M | E | 1500 | 1.42 | 1.065 | .888 | .638 | .604 |
| 2499-003 X5SO 102M | E | 1000 | 1.50 | 1.125 | .938 | .675 | .638 |
| 2499-003 X5SO 152M | E | 1500 | 1.50 | 1.125 | .938 | .675 | .638 |

*Tol., +100%, −0. §Tol., GMV (guaranteed min. value). †Illus. figure. ‡Nuts supplied. Lockwashers available: Net per 1000, Lots 1–99, **$25.00; 100 Up, $20.00.** Extra nuts, same prices.

## MIL-C-11015C FEED-THRU CERAMICONS (FIG. B)
### ERIE STYLE 327

Meet MIL specs. With nuts and washers. **WVDC:** 500.

| MIL Designation | Cap. Tol. | Cap. pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| CK70 AX 100K | ±10% | 10 | $1.968 | $1.476 | $1.23 | $0.886 | $0.836 |
| CK70 AX 330K | ±10% | 33 | 1.968 | 1.476 | 1.23 | .886 | .836 |
| CK70 AX 470K | ±10% | 47 | 1.968 | 1.476 | 1.23 | .886 | .836 |
| CK70 AX 680K | ±10% | 68 | 1.968 | 1.476 | 1.23 | .886 | .836 |
| CK70 AX 101K | ±10% | 100 | 1.968 | 1.476 | 1.23 | .886 | .836 |
| CK70 AX 471K | ±10% | 470 | 1.944 | 1.458 | 1.215 | .875 | .826 |
| CK70 AX 681K | ±10% | 680 | 1.944 | 1.458 | 1.215 | .875 | .826 |
| CK70 AX 100M | ±20% | 10 | 1.908 | 1.431 | 1.193 | .859 | .811 |
| CK70 AX 330M | ±20% | 33 | 1.908 | 1.431 | 1.193 | .859 | .811 |
| CK70 AX 470M | ±20% | 47 | 1.908 | 1.431 | 1.193 | .859 | .811 |
| CK70 AX 680M | ±20% | 68 | 1.908 | 1.431 | 1.193 | .859 | .811 |
| CK70 AX 101M | ±20% | 100 | 1.908 | 1.431 | 1.193 | .859 | .811 |
| CK70 AX 471M | ±20% | 470 | 1.884 | 1.413 | 1.178 | .848 | .801 |
| CK70 AX 681M | ±20% | 680 | 1.884 | 1.413 | 1.178 | .848 | .801 |
| CK70 AW 102M | ±20% | 1000 | 1.884 | 1.413 | 1.178 | .848 | .801 |
| CK70 AW 152M | ±20% | 1500 | 1.884 | 1.413 | 1.178 | .848 | .801 |

## STAND-OFF CERAMICONS

By-pass RF to ground and mechanically support other elements. Ideal for VHF and UHF uses. Style 326 features capacitor sealed in thermosetting low-loss plastic insulation. Style 2425, 0.533″ lg. overall with miniature 8-32 bushing. **WVDC:** 500 volts except 2425-061, 200 volts (−55° C, +85° C); 2425-063, 100 volts (−55° C, +125° C). **Tolerance:** ±20% except as noted.

| Erie Number | Cap., pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|
| 326-000 X5UO 102M*† | 1000 | $1.316 | $0.987 | $0.823 | $0.592 | $0.559 |
| 326-000 X5UO 152M*† | 1500 | 1.316 | .987 | .823 | .592 | .559 |

*Nuts supplied. Lockwashers available: Net per 1000, Lots 1–99, **$25.00; 100 Up, $20.00.** Extra nuts, same prices. †Fig. H.

## STAND-OFF CERAMICONS (CONT'D)

| Erie Number | Cap. pF‡ | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 50<br>99 |
|---|---|---|---|---|---|---|
| 2425-061 X5UO 101AA• | 100 | $2.46 | $1.845 | $1.538 | $1.107 | $1.0 |
| 2425-061 X5UO 102AA• | 1000 | 2.46 | 1.845 | 1.538 | 1.107 | 1.0 |
| 2425-061 X5UO 152AA• | 1500 | 2.46 | 1.845 | 1.538 | 1.107 | 1.0 |
| 2425-061 X5UO 202AA• | 2000 | 2.46 | 1.845 | 1.538 | 1.107 | 1.0 |
| 2425-061 X5UO 501AA• | 500 | 2.46 | 1.845 | 1.538 | 1.107 | 1.0 |
| 2425-061 X5VO 502AA• | 5000 | 2.46 | 1.845 | 1.538 | 1.107 | 1.0 |
| 2425-063 W5UO 101AA• | 100 | 2.628 | 1.971 | 1.643 | 1.183 | 1.1 |
| 2425-063 W5UO 102AA• | 1000 | 2.628 | 1.971 | 1.643 | 1.183 | 1.1 |
| 2425-063 W5UO 152AA• | 1500 | 2.628 | 1.971 | 1.643 | 1.183 | 1.1 |
| 2425-063 W5UO 202AA• | 2000 | 2.628 | 1.971 | 1.643 | 1.183 | 1.1 |
| 2425-063 W5UO 501AA• | 500 | 2.628 | 1.971 | 1.643 | 1.183 | 1.1 |
| 2425-063 W5WO 502AA• | 5000 | 2.628 | 1.971 | 1.643 | 1.183 | 1.1 |

•Fig. I. ‡Tolerance, GMV.

## MIL-C-11015C STAND-OFF CERAMICONS (FIG. H)
### ERIE STYLE 326

Meet MIL specs. Nuts and washers included. All 500 WVDC

| MIL or Erie Designation | Cap. Tol. | Cap. pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-99 |
|---|---|---|---|---|---|---|---|
| CK80 AX 100K | ±10% | 10 | $1.68 | $1.26 | $1.05 | $0.756 | $0.714 |
| CK80 AX 330K | ±10% | 33 | 1.68 | 1.26 | 1.05 | .756 | .714 |
| CK80 AX 470K | ±10% | 47 | 1.68 | 1.26 | 1.05 | .756 | .714 |
| CK80 AX 680K | ±10% | 68 | 1.68 | 1.26 | 1.05 | .756 | .714 |
| CK80 AX 101K | ±10% | 100 | 1.68 | 1.26 | 1.05 | .756 | .714 |
| CK80 AX 471K | ±10% | 470 | 1.68 | 1.26 | 1.05 | .756 | .714 |
| CK80 AX 681K | ±10% | 680 | 1.68 | 1.26 | 1.05 | .756 | .714 |
| CK80 AX 100M | ±20% | 10 | 1.62 | 1.215 | 1.013 | .729 | .689 |
| CK80 AX 330M | ±20% | 33 | 1.62 | 1.215 | 1.013 | .729 | .689 |
| CK80 AX 470M | ±20% | 47 | 1.62 | 1.215 | 1.013 | .729 | .689 |
| CK80 AX 680M | ±20% | 68 | 1.62 | 1.215 | 1.013 | .729 | .689 |
| CK80 AX 101M | ±20% | 100 | 1.62 | 1.215 | 1.013 | .729 | .689 |
| CK80 AX 471M | ±20% | 470 | 1.62 | 1.215 | 1.013 | .729 | .689 |
| CK80 AX 681M | ±20% | 680 | 1.62 | 1.215 | 1.013 | .729 | .689 |
| CK80 AW 102M | ±20% | 1000 | 1.62 | 1.215 | 1.013 | .729 | .689 |
| CK80 AW 152M | ±20% | 1500 | 1.62 | 1.215 | 1.013 | .729 | .689 |

## RESIN SEALED BUTTON® MICA CAPACITORS

Midget size, minimum series inductance, and high leakage resistance. High stability, −55° C to +85° C. Unmatched over VHF and UHF work. Meet MIL-C-10950B specifications. Series 654-017 (MIL CB11) has ring-type shell, 3 soldering ears (Fig. J) high potential terminals for feed-thru connection. Series 662-00 (MIL CB21) is Fig. K; mounts with 3-48 screw. **WVDC:** 500

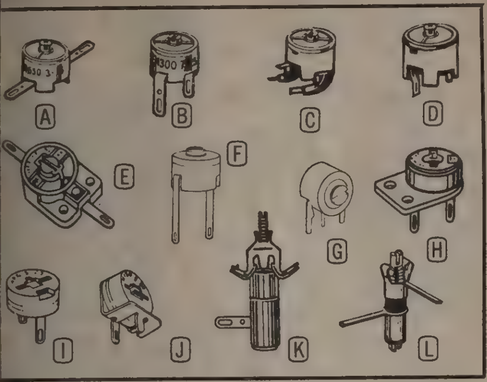
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CB21 PD 150K | ±10% | 15 | $0.84 | $0.70 | $0.56 | $0.42 | $0.308 |
| CB21 PD 240J | ±5% | 24 | 1.08 | .90 | .72 | .54 | .396 |
| CB21 PD 470K | ±10% | 47 | .84 | .70 | .56 | .42 | .308 |
| CB21 PD 101K | ±10% | 100 | .84 | .70 | .56 | .42 | .308 |
| CB21 PD 151K | ±10% | 150 | .84 | .70 | .56 | .42 | .308 |
| CB21 PD 201K | ±10% | 200 | .84 | .70 | .56 | .42 | .308 |
| CB21 PD 241J | ±5% | 240 | 1.08 | .90 | .72 | .54 | .396 |
| CB21 PD 471K | ±10% | 470 | 1.01 | .838 | .67 | .502 | .369 |
| CB21 PD 471J | ±5% | 470 | 1.26 | 1.05 | .84 | .63 | .462 |
| CB21 PD 102K | ±10% | 1000 | 1.70 | 1.41 | 1.13 | .848 | .622 |
| CB21 PD 102J | ±5% | 1000 | 2.12 | 1.76 | 1.41 | 1.06 | .776 |
| CB11 RD 150K | ±10% | 15 | .855 | .713 | .57 | .428 | .314 |
| CB11 RD 240K | ±10% | 24 | .855 | .713 | .57 | .428 | .314 |
| CB11 RD 470K | ±10% | 47 | .855 | .713 | .57 | .428 | .314 |
| CB11 RD 101K | ±10% | 100 | .855 | .713 | .57 | .428 | .314 |
| CB11 RD 151K | ±10% | 150 | .855 | .713 | .57 | .428 | .314 |
| CB11 RD 201K | ±10% | 200 | .855 | .713 | .57 | .428 | .314 |
| CB11 RD 241K | ±10% | 240 | .855 | .713 | .57 | .428 | .314 |
| CB11 RD 471K | ±10% | 470 | 1.01 | .838 | .67 | .503 | .369 |
| CB11 RD 471J | ±5% | 470 | 1.28 | 1.06 | .85 | .638 | .468 |
| CB11 RD 102K | ±10% | 1000 | 1.71 | 1.43 | 1.14 | .855 | .627 |
| CB11 RD 102J | ±5% | 1000 | 2.13 | 1.78 | 1.42 | 1.065 | .781 |

## GOLD SEAL® BUTTON MICAS

Exceed MIL-C-10950B specifications. Hermetic glass seal; gold-plated exterior metal parts. Temp. range, −55° C to +200° C. Type 2921-604 471K (MIL CB55RD) and 2921-604 102K (MIL CB56RD) are Fig. L; have three solder ears (third ground tab is hidden by flag tab). Type 2922-615 471K (MIL CB65PD) and 2922-615 102K (MIL CB66PD) are Fig. M; have 3-48 screw mount for stand-off connection. Type 2923-609 471K (MIL CB60RD) and 2923-609 102K (MIL CB61RD) are Fig. N; have flat hex-nut body and single flag tab for feed-thru connection. **WVDC:** 500.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2921-604 471K | ±10% | 470 | $3.72 | $3.10 | $2.48 | $1.86 | $1.364 |
| 2921-604 102K | ±10% | 1000 | 4.26 | 3.55 | 2.84 | 2.13 | 1.562 |
| 2922-615 471K | ±10% | 470 | 2.61 | 2.175 | 1.74 | 1.305 | .957 |
| 2922-615 102K | ±10% | 1000 | 3.135 | 2.163 | 2.09 | 1.568 | 1.15 |
| 2923-609 471K | ±10% | 470 | 4.05 | 3.375 | 2.70 | 2.025 | 1.485 |
| 2923-609 102K | ±10% | 1000 | 4.575 | 3.813 | 3.05 | 2.288 | 1.678 |

# Erie CERAMIC AND PLASTIC TRIMMER CAPACITORS



## ERIE STYLE 538
## MINIATURE CERAMIC DISC TRIMMERS

able under the most exacting conditions. Top of base and underle of titanium dioxide rotor are lapped optically flat. Silver ectrodes are applied to top of base and rotor, so that capacity changed by varying the amount of overlap; change per degree of tation is approximately constant. 200 WVDC. Body .375″ dia. x h. (538 006, .275″ h.). Style 538 000 is Fig. A; 538 002 is Fig. B; 8 006 is Fig. C; 538 011 is Fig. D.

| Range pF | Diel. Type | Erie Number* 538 | 538 | 538 | 538 | MIL No.* CV31 |
|---|---|---|---|---|---|---|
| 2–8 | A | 000 A | 002 A | 006 A | 011 A | A 080 |
| 5.5–18 | A | 000 A | 002 A | 006 A | 011 A | A 180 |
| 2.5–11 | B | 000 B | 002 B | 006 B | 011 B | B 110 |
| 7–25 | B | 000 B | 002 B | 006 B | 011 B | B 250 |
| 3–10 | C | 000 C | 002 C | 006 C | 011 C | C 100 |
| 8–25 | C | 000 C | 002 C | 006 C | 011 C | C 250 |
| 3–15 | D | 000 D | 002 D | 006 D | 011 D | D 150 |
| 9–35 | D | 000 D | 002 D | 006 D | 011 D | D 350 |
| 15–60 | F | 000 F | 002 F | 006 F | 011 F | E 600† |

### STYLE 538 NET PRICES

| Erie Series | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|
| 8 000, suffix F | $1.978 | $1.59 | $1.317 | $0.787 | $0.653 |
| 8 000, all others | 1.69 | 1.35 | 1.125 | .675 | .563 |
| 8 002, suffix F | 1.978 | 1.59 | 1.317 | .787 | .653 |
| 8 002, all others | 1.69 | 1.35 | 1.125 | .675 | .563 |
| 8 006, suffix F | 2.148 | 1.725 | 1.432 | .855 | .709 |
| 8 006, all others | 1.86 | 1.485 | 1.24 | .743 | .619 |
| 8 011, suffix F | 2.336 | 1.878 | 1.557 | .931 | .773 |
| 8 011, all others | 2.048 | 1.638 | 1.365 | .819 | .683 |
| V31, suffix E* | 2.616 | 2.103 | 1.744 | 1.044 | .866 |
| V31, all others* | 2.329 | 1.863 | 1.553 | .932 | .776 |

These Series 538 trimmers meet applicable requirements of IL-C-81. †Dielectric type E.

## STYLE 503 CERAMIC DISC TRIMMERS

ighly stable ceramic disc trimmers similar to Style 538 but ysically larger and 500 WVDC. Body size, .843″ x .656″. Style 3 000 is Fig. E; Style 503 001 and MIL-C-81 types (Erie yle 503 041) same, but leads are bent down.

| Range pF | Diel. Type | Erie Number* | Erie Number* | MIL-C-81 Number |
|---|---|---|---|---|
| 5–7 | A | 503 000 A | 503 001 A | CV11-A 070 |
| 3–12 | A | 503 000 A | 503 001 A | CV11-A 120 |
| 5–25 | A | 503 000 A | 503 001 A | CV11-A 250 |
| 3–13 | B | | | CV11-B 130 |
| 5–20 | B | 503 000 B | 503 001 B | CV11-B 200 |
| 4–30 | C | 503 000 C | 503 001 C | CV11-C 300 |
| 7–45 | C | 503 000 C | 503 001 C | CV11-C 450 |
| 2–6 | D | | | CV11-D 060 |
| 4–30 | D | 503 000 D | 503 001 D | CV11-D 300 |
| 5–50 | D | 503 000 D | 503 001 D | |
| 7–45 | D | 503 000 D | 503 001 D | CV11-D 450 |
| 1–110 | F | 503 000 F | 503 001 F | |

### STYLE 503 NET PRICES

| Erie Series | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|
| 503 000, suffix F | $1.726 | $1.376 | $1.152 | $0.821 | $0.683 |
| 503 000, all others | 1.334 | 1.049 | .89 | .668 | .547 |
| 503 001, suffix F | 1.726 | 1.376 | 1.152 | .821 | .683 |
| 503 001, all others | 1.334 | 1.049 | .89 | .668 | .547 |
| MIL-C-81, all types | 1.426 | 1.14 | .98 | .759 | .638 |

**★COMPLETE PART NO.**
**INCLUDES CAPACITANCE RANGE**

## STYLE 518 SUBMINIATURE CERAMIC DISC TRIMMERS

Similar to Style 538 but smaller and 100 WVDC. Body, .218″ dia. x .145″ h. Style 518 000 and 511 000 are Figure F; 518 002 and 511 002 Figure G. Style 518 002 has .016″ dia. wire.

| Erie Number | Range, pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|
| 518 000 A | 2.5–9 | $4.95 | $4.25 | $3.75 | $3.50 | $2.60 |
| 518 000 A | 3.5–20 | 4.95 | 4.25 | 3.75 | 3.50 | 2.60 |
| 518 000 A | 5–25 | 4.95 | 4.25 | 3.75 | 3.50 | 2.60 |
| 518 000 G | 7–40 | 4.95 | 4.25 | 3.75 | 3.50 | 2.60 |
| 518 002 A | 2.5–9 | 4.95 | 4.25 | 3.75 | 3.50 | 2.60 |
| 518 002 A | 3.5–20 | 4.95 | 4.25 | 3.75 | 3.50 | 2.60 |
| 518 002 A | 5–25 | 4.95 | 4.25 | 3.75 | 3.50 | 2.60 |
| 518 002 G | 7–40 | 4.95 | 4.25 | 3.75 | 3.50 | 2.60 |
| 511 000 A | 1–3 | 2.10 | 1.50 | 1.25 | 1.05 | .90 |
| 511 000 A | 3–9 | 2.10 | 1.50 | 1.25 | 1.05 | .90 |
| 511 000 E | 2–5 | 2.10 | 1.50 | 1.25 | 1.05 | .90 |
| 511 000 E | 5–15 | 2.10 | 1.50 | 1.25 | 1.05 | .90 |
| 511 000 G | 6–22 | 2.10 | 1.50 | 1.25 | 1.05 | .90 |
| 511 002 A | 1.2–3 | 2.40 | 1.75 | 1.45 | 1.20 | 1.05 |
| 511 002 A | 3.2–9 | 2.40 | 1.75 | 1.45 | 1.20 | 1.05 |
| 511 002 E | 2.2–5 | 2.40 | 1.75 | 1.45 | 1.20 | 1.05 |
| 511 002 E | 5.2–15 | 2.40 | 1.75 | 1.45 | 1.20 | 1.05 |
| 511 002 G | 6.2–22 | 2.40 | 1.75 | 1.45 | 1.20 | 1.05 |

## STYLE 539 MINIATURE CERAMIC DISC TRIMMERS

For point-to-point and printed circuit wiring. Two 0.068″ dia. mounting holes spaced .260″, accept #0 screws. Rated 200 WVDC. Style 539 000 similar to Fig. E, but smaller (.370″ w.); 539 002 same, but leads bent down.

| Range pF | Diel. Type | Erie No.* | Erie No.* | MIL No.* |
|---|---|---|---|---|
| 1.5–8 | A | 539 000 A | 539 002 A | CV34-A 080 |
| 4–15 | A | 539 000 A | 539 002 A | CV34-A 150 |
| 4–20 | D | 539 000 D | 539 002 D | CV34-D 200 |
| 8–35 | D | 539 000 D | 539 002 D | CV34-D 350 |
| 15–60 | F | 539 000 F | 539 002 F | CV34-E 600† |

### STYLE 539 NET PRICES

| Erie Series | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|
| 539, suffix F | $2.069 | $1.665 | $1.38 | $0.825 | $0.684 |
| 539, all others | 1.781 | 1.425 | 1.188 | .713 | .594 |
| CV34, suffix F* | 2.351 | 1.89 | 1.567 | .937 | .778 |
| CV34, all others* | 2.063 | 1.65 | 1.375 | .825 | .688 |

*Meet applicable requirements of MIL-C-81. †Dielectric type E.

## STYLE 557 CERAMIC DISC TRIMMERS

Excellent stability and high max.-to-min. capacitance ratio. Phenolic base; .500″ dia. ceramic rotor. Rated 350 WVDC. Body .500″ dia. x .324″ h. Style 557 000 and 557 006, Fig. H, have .531″ x .750″ base with two .124″ dia. mounting holes spaced .312″; 557 006 has top-extending screw. Style 557 013 and MIL type 557 091, Fig. I, have no mounting holes.

| Range pF | Diel. Type | Erie No.* 557 | Erie No.* 557 | Erie No.* 557 | Erie No.* 557 |
|---|---|---|---|---|---|
| 1.5–7 | A | 000 A | 006 A | 013 A | 091 A |
| 3–12 | A | 000 A | 006 A | 013 A | 091 A |
| 5–25 | A | 000 A | 006 A | 013 A | 091 A |
| 5–20 | B | 000 B | 006 B | 013 B | 091 B |
| 5–30 | E | 000 E | 006 E | 013 E | 091 E |
| 8–50 | E | 000 E | 006 E | 003 E | 091 E |
| 10–75 | F | 000 F | 006 F | 013 F | 091 F |

### STYLE 557 NET PRICES

| Erie Series | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|
| 557 000, suffix F | $1.285 | $1.072 | $0.857 | $0.503 | $0.45 |
| 557 000, all others | 1.089 | .908 | .726 | .427 | .382 |
| 557 006, suffix F | 1.285 | 1.072 | .857 | .531 | .475 |
| 557 006, all others | 1.089 | .908 | .726 | .455 | .407 |
| 557 013, suffix F | 1.285 | 1.072 | .857 | .478 | .427 |
| 557 013, all others | 1.089 | .908 | .726 | .402 | .359 |
| 557 091, suffix F* | 1.43 | 1.193 | .954 | .549 | .49 |
| 557 091, all others* | 1.234 | 1.029 | .823 | .473 | .422 |

*These Series 557 trimmers meet applicable MIL-C-81 specs.

## STYLE 3192 CERAMIC DISC TRIMMERS (FIG. J)

Same as Style 557, but for printed circuit mounting.

| Erie No.* 3192 | Range, pF | Diel. Type | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| 000 A | 2.5–7 | A | $1.37 | $1.14 | $0.91 | $0.53 | $0.48 |
| 000 A | 4–12 | A | 1.37 | 1.14 | .91 | .53 | .48 |
| 000 A | 6–25 | A | 1.37 | 1.14 | .91 | .53 | .48 |
| 000 B | 6–20 | B | 1.37 | 1.14 | .91 | .53 | .48 |
| 000 E | 9–50 | E | 1.37 | 1.14 | .91 | .53 | .48 |
| 000 E | 6–30 | E | 1.37 | 1.14 | .91 | .53 | .48 |
| 000 F | 11–75 | F | 1.37 | 1.14 | .91 | .53 | .48 |

## STYLE 532/535 PLASTIC TUBULAR TRIMMERS

Compact tubular trimmers ideal for applications calling for a low minimum capacity and a high ratio of maximum to minimum capacity. Dielectric is molded plastic. Style 532 is Fig. K; Style 535, Fig. L.

| Erie Number | Range, pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|
| 532 001 3R | 0.5–5 | $0.363 | $0.303 | $0.242 | $0.154 | $0.138 |
| 532 000 8R | 1–8 | .363 | .303 | .242 | .154 | .138 |
| 535 000 4R | 0.7–3 | .463 | .386 | .309 | .18 | .161 |

# Erie MONOBLOC SUBMINIATURE CERAMIC CAPACITORS

## MONOBLOC SUBMINIATURE CERAMICS

Subminiature ceramic capacitors produced by Erie's exclusive Monobloc Process®. This unique process utilizes ceramic films prepared from proprietary formulations which are subsequently fired into solid structures of one or more layers. Maximum capacitance-to-volume ratio—up to 20 µF per cubic inch—is obtained consistent with fine performance and dependability. Besides high volumetric efficiency, other features include: A wide range of capacitance values (from 5 pF to 0.5 µF); inherent stability with monolithic structure; conservative ratings for long, trouble-free life. Available to established reliability, military, and commercial specifications, and in choice of hermetically sealed glass-encased, precision molded, and phenolic-coated models.

### TUBULAR MONOBLOC
### PRECISION MOLDED CAPACITORS (FIG. A)
### NPO HIGH STABILITY TYPES

**Rated Voltage:** 100 WVDC. **Capacity Tolerance:** ±10%.

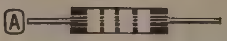
| Erie Number | Fig. | Cap., pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| 8003-000 COGO 689K | A | 6.8 | $0.90 | $0.66 | $0.54 | $0.45 | $0.39 |
| 8003-000 COGO 829K | A | 8.2 | .90 | .66 | .54 | .45 | .39 |
| 8003-000 COGO 100K | A | 10 | .90 | .66 | .54 | .45 | .39 |
| 8013-000 COGO 100K | A | 10 | .81 | .59 | .49 | .41 | .35 |
| 8123-000 COGO 100K | B | 10 | .81 | .59 | .49 | .41 | .35 |
| 8003-000 COGO 120K | A | 12 | .90 | .66 | .54 | .45 | .39 |
| 8123-000 COGO 120K | B | 12 | .81 | .59 | .49 | .41 | .35 |
| 8003-000 COGO 150K | A | 15 | .90 | .66 | .54 | .45 | .39 |
| 8123-000 COGO 150K | B | 15 | .81 | .59 | .49 | .41 | .35 |
| 8003-000 COGO 180K | A | 18 | .90 | .66 | .54 | .45 | .39 |
| 8123-000 COGO 180K | B | 18 | .81 | .59 | .49 | .41 | .35 |
| 8003-000 COGO 220K | A | 22 | .99 | .73 | .59 | .50 | .43 |
| 8123-000 COGO 220K | B | 22 | .81 | .59 | .49 | .41 | .35 |
| 8003-000 COGO 270K | A | 27 | .99 | .73 | .59 | .50 | .43 |
| 8123-000 COGO 270K | B | 27 | .81 | .59 | .49 | .41 | .35 |
| 8003-000 COGO 330K | A | 33 | .99 | .73 | .59 | .50 | .43 |
| 8123-000 COGO 330K | B | 33 | .90 | .66 | .54 | .45 | .39 |
| 8003-000 COGO 390K | A | 39 | .99 | .73 | .59 | .50 | .43 |
| 8123-000 COGO 390K | B | 39 | .90 | .66 | .54 | .45 | .39 |
| 8003-000 COGO 470K | A | 47 | 1.08 | .79 | .65 | .54 | .47 |
| 8013-000 COGO 470K | A | 47 | .99 | .73 | .59 | .50 | .43 |
| 8123-000 COGO 470K | B | 47 | .90 | .66 | .54 | .45 | .39 |
| 8003-000 COGO 560K | A | 56 | 1.08 | .79 | .65 | .54 | .47 |
| 8123-000 COGO 560K | B | 56 | .90 | .66 | .54 | .45 | .39 |
| 8003-000 COGO 680K | A | 68 | 1.17 | .86 | .70 | .59 | .51 |
| 8123-000 COGO 680K | B | 68 | .90 | .66 | .54 | .45 | .39 |
| 8003-000 COGO 820K | A | 82 | 1.17 | .86 | .70 | .59 | .51 |
| 8123-000 COGO 820K | B | 82 | .90 | .66 | .54 | .45 | .39 |
| 8003-000 COGO 101K | A | 100 | 1.29 | .95 | .77 | .65 | .56 |
| 8013-000 COGO 101K | A | 100 | 1.20 | .88 | .72 | .60 | .52 |
| 8123-000 COGO 101K | B | 100 | 1.08 | .79 | .65 | .54 | .47 |
| 8003-000 COGO 121K | A | 120 | 1.29 | .95 | .77 | .65 | .56 |
| 8123-000 COGO 121K | B | 120 | 1.08 | .79 | .65 | .54 | .47 |
| 8003-000 COGO 151K | A | 150 | 1.38 | 1.01 | .83 | .69 | .60 |
| 8123-000 COGO 151K | B | 150 | 1.08 | .79 | .65 | .54 | .47 |
| 8123-000 COGO 181K | B | 180 | 1.26 | .92 | .76 | .63 | .55 |
| 8123-000 COGO 221K | B | 220 | 1.26 | .92 | .76 | .63 | .55 |
| 8133-000 COGO 271K | B | 270 | 1.20 | .88 | .72 | .60 | .52 |
| 8133-000 COGO 331K | B | 330 | 1.20 | .88 | .72 | .60 | .52 |
| 8133-000 COGO 391K | B | 390 | 1.20 | .88 | .72 | .60 | .52 |
| 8133-000 COGO 471K | B | 470 | 1.38 | 1.01 | .83 | .69 | .60 |
| 8133-000 COGO 561K | B | 560 | 1.38 | 1.01 | .83 | .69 | .60 |
| 8133-000 COGO 681K | B | 680 | 1.38 | 1.01 | .83 | .69 | .60 |
| 8133-000 COGO 821K | B | 820 | 1.50 | 1.10 | .90 | .75 | .65 |
| 8133-000 COGO 102K | B | 1000 | 1.50 | 1.10 | .90 | .75 | .65 |

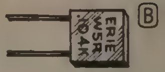
### RECTANGULAR MONOBLOC
### PRECISION MOLDED CAPACITORS (FIG. B)

Meet MIL-C-11015D specifications.

***CK05 TYPES—±10% TOL.**

| MIL Number* | Cap., pF | WV DC | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| CK05 BX 100K | 10 | 200 | $0.54 | $0.50 | $0.45 | $0.42 | $0.39 |
| CK05 BX 120K | 12 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 150K | 15 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 180K | 18 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 220K | 22 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 270K | 27 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 330K | 33 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 390K | 39 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 470K | 47 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 560K | 56 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 680K | 68 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 820K | 82 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 101K | 100 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 121K | 120 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 151K | 150 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 181K | 180 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 221K | 220 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 271K | 270 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 331K | 330 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 391K | 390 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 471K | 470 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 561K | 560 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 681K | 680 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 821K | 820 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 102K | 1000 | 200 | .54 | .50 | .45 | .42 | .39 |
| CK05 BX 122K | 1200 | 100 | .56 | .52 | .47 | .43 | .40 |
| CK05 BX 152K | 1500 | 100 | .56 | .52 | .47 | .43 | .40 |
| CK05 BX 182K | 1800 | 100 | .56 | .52 | .47 | .43 | .40 |
| CK05 BX 222K | 2200 | 100 | .57 | .54 | .48 | .44 | .41 |
| CK05 BX 272K | 2700 | 100 | .57 | .54 | .48 | .44 | .41 |
| CK05 BX 332K | 3300 | 100 | .59 | .55 | .49 | .46 | .42 |





***CK05 TYPES—±10% TOL. (Cont'd)**

| MIL Number* | Cap., pF | WV DC | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| CK05 BX 392K | 3900 | 100 | $0.59 | $0.55 | $0.49 | $0.46 | $0.42 |
| CK05 BX 472K | 4700 | 100 | .59 | .55 | .49 | .46 | .42 |
| CK05 BX 562K | 5600 | 100 | .60 | .57 | .51 | .47 | .43 |
| CK05 BX 682K | 6800 | 100 | .60 | .57 | .51 | .47 | .43 |
| CK05 BX 822K | 8200 | 100 | .64 | .59 | .53 | .49 | .45 |
| CK05 BX 103K | 10K | 100 | .64 | .59 | .53 | .49 | .45 |
| CK05 BX 123K | 12K | 50 | .69 | .64 | .58 | .54 | .49 |
| CK05 BX 153K | 15K | 50 | .69 | .64 | .58 | .54 | .49 |
| CK05 BX 183K | 18K | 50 | .80 | .75 | .67 | .62 | .56 |
| CK05 BX 223K | 22K | 50 | .80 | .75 | .67 | .62 | .56 |
| CK05 BX 273K | 27K | 50 | .88 | .82 | .73 | .68 | .62 |

***CK06 TYPES—±10% TOL.**

| MIL Number* | Cap., pF | WV DC | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| CK06 BX 122K | 1200 | 200 | $0.56 | $0.52 | $0.47 | $0.43 | $0.40 |
| CK06 BX 152K | 1500 | 200 | .56 | .52 | .47 | .43 | .40 |
| CK06 BX 182K | 1800 | 200 | .56 | .52 | .47 | .43 | .40 |
| CK06 BX 222K | 2200 | 200 | .56 | .52 | .47 | .43 | .40 |
| CK06 BX 272K | 2700 | 200 | .56 | .52 | .47 | .43 | .40 |
| CK06 BX 332K | 3300 | 200 | .56 | .52 | .47 | .43 | .40 |
| CK06 BX 392K | 3900 | 200 | .56 | .52 | .47 | .43 | .40 |
| CK06 BX 472K | 4700 | 200 | .56 | .52 | .47 | .43 | .40 |
| CK06 BX 562K | 5600 | 200 | .60 | .56 | .51 | .47 | .43 |
| CK06 BX 682K | 6800 | 200 | .60 | .56 | .51 | .47 | .43 |
| CK06 BX 822K | 8200 | 200 | .60 | .56 | .51 | .47 | .43 |
| CK06 BX 103K | 10K | 200 | .60 | .56 | .51 | .47 | .43 |
| CK06 BX 123K | 12K | 100 | .67 | .62 | .56 | .52 | .47 |
| CK06 BX 153K | 15K | 100 | .67 | .62 | .56 | .52 | .47 |
| CK06 BX 183K | 18K | 100 | .74 | .70 | .62 | .58 | .53 |
| CK06 BX 223K | 22K | 100 | .74 | .70 | .62 | .58 | .53 |
| CK06 BX 273K | 27K | 100 | .82 | .77 | .69 | .64 | .58 |
| CK06 BX 333K | 33K | 100 | .90 | .84 | .75 | .70 | .64 |
| CK06 BX 393K | 39K | 100 | .98 | .91 | .82 | .76 | .69 |
| CK06 BX 473K | 47K | 100 | .98 | .91 | .82 | .76 | .69 |
| CK06 BX 563K | 56K | 100 | 1.05 | .99 | .88 | .82 | .75 |
| CK06 BX 683K | 68K | 100 | 1.13 | 1.06 | .95 | .88 | .80 |
| CK06 BX 823K | 82K | 100 | 1.21 | 1.13 | 1.01 | .94 | .86 |
| CK06 BX 104K | 100K | 100 | 1.36 | 1.28 | 1.14 | 1.06 | .97 |
| CK06 BX 124K | 120K | 50 | 1.41 | 1.33 | 1.19 | 1.11 | 1.02 |
| CK06 BX 154K | 150K | 50 | 1.46 | 1.39 | 1.27 | 1.18 | 1.10 |
| CK06 BX 184K | 180K | 50 | 1.56 | 1.48 | 1.34 | 1.26 | 1.17 |

***CK05 TYPES—±20% TOL.**

| MIL Number* | Cap., pF | WV DC | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| CK05 BX 100M | 10 | 200 | $0.46 | $0.42 | $0.38 | $0.35 | $0.32 |
| CK05 BX 150M | 15 | 200 | .46 | .42 | .38 | .35 | .32 |
| CK05 BX 220M | 22 | 200 | .46 | .42 | .38 | .35 | .32 |
| CK05 BX 330M | 33 | 200 | .46 | .42 | .38 | .35 | .32 |
| CK05 BX 470M | 47 | 200 | .46 | .42 | .38 | .35 | .32 |
| CK05 BX 680M | 68 | 200 | .46 | .42 | .38 | .35 | .32 |
| CK05 BX 101M | 100 | 200 | .46 | .42 | .38 | .35 | .32 |
| CK05 BX 151M | 150 | 200 | .46 | .42 | .38 | .35 | .32 |
| CK05 BX 221M | 220 | 200 | .46 | .42 | .38 | .35 | .32 |
| CK05 BX 331M | 330 | 200 | .46 | .42 | .38 | .35 | .32 |
| CK05 BX 471M | 470 | 200 | .46 | .42 | .38 | .35 | .32 |
| CK05 BX 681M | 680 | 200 | .46 | .42 | .38 | .35 | .32 |
| CK05 BX 102M | 1000 | 200 | .46 | .42 | .38 | .35 | .32 |
| CK05 BX 152M | 1500 | 100 | .50 | .46 | .42 | .38 | .35 |
| CK05 BX 222M | 2200 | 100 | .51 | .48 | .43 | .40 | .36 |
| CK05 BX 332M | 3300 | 100 | .53 | .49 | .44 | .41 | .37 |
| CK05 BX 472M | 4700 | 100 | .53 | .49 | .44 | .41 | .37 |
| CK05 BX 682M | 6800 | 100 | .54 | .51 | .46 | .42 | .39 |
| CK05 BX 103M | 10K | 100 | .59 | .55 | .49 | .46 | .42 |
| CK05 BX 153M | 15K | 50 | .62 | .56 | .52 | .48 | .43 |
| CK05 BX 223M | 22K | 50 | .69 | .64 | .58 | .54 | .49 |

***CK06 TYPES—±20% TOL.**

| MIL Number* | Cap., pF | WV DC | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| CK06 BX 152M | 1500 | 200 | $0.48 | $0.44 | $0.40 | $0.37 | $0.34 |
| CK06 BX 222M | 2200 | 200 | .48 | .44 | .40 | .37 | .34 |
| CK06 BX 332M | 3300 | 200 | .48 | .44 | .40 | .37 | .34 |
| CK06 BX 472M | 4700 | 200 | .48 | .44 | .40 | .37 | .34 |
| CK06 BX 682M | 6800 | 200 | .52 | .48 | .44 | .41 | .37 |
| CK06 BX 103M | 10K | 200 | .52 | .48 | .44 | .41 | .37 |
| CK06 BX 153M | 15K | 100 | .59 | .55 | .49 | .46 | .42 |
| CK06 BX 223M | 22K | 100 | .67 | .62 | .56 | .52 | .47 |
| CK06 BX 333M | 33K | 100 | .81 | .75 | .68 | .62 | .57 |
| CK06 BX 473M | 47K | 100 | .88 | .83 | .74 | .68 | .63 |
| CK06 BX 683M | 68K | 100 | 1.04 | .97 | .87 | .80 | .74 |
| CK06 BX 104M | 100K | 100 | 1.27 | 1.19 | 1.07 | .98 | .90 |
| CK06 BX 154M | 150K | 50 | 1.44 | 1.36 | 1.23 | 1.15 | 1.06 |

***Mil CK-CW, CKR-BX and CKR-CW available on request.**

**COMPLETE SPECIFICATIONS AND PRICING ON MONOBLOC HERMETICALLY SEALED GLASS-ENCASED NPO HIGH STABILITY AND GENERAL PURPOSE TYPE CERAMIC CAPACITORS AVAILABLE ON REQUEST.**

# Erie MONOBLOC SUBMINIATURE CERAMIC AND TRIMMER CAPACITORS

ERIE TECHNOLOGICAL PRODUCTS INC

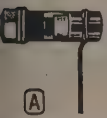
## MONOBLOC SUBMINIATURE CERAMICS

### ONOBLOC PRECISION MOLDED CAPACITORS (CONT'D)

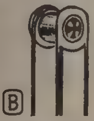
| Erie Number | † | Cap. pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999* |
|---|---|---|---|---|---|---|---|
| 0-000 X5PO 569K | A | 5.6 | $0.64 | $0.48 | $0.40 | $0.288 | $0.272 |
| 0-000 X5PO 689K | A | 6.8 | .64 | .48 | .40 | .288 | .272 |
| 00-000 X5PO 829K | A | 8.2 | .64 | .48 | .40 | .288 | .272 |
| 00-000 X5PO 100K | A | 10 | .64 | .48 | .40 | .288 | .272 |
| 00-000 X5PO 120K | A | 12 | .64 | .48 | .40 | .288 | .272 |
| 00-000 X5PO 150K | A | 15 | .64 | .48 | .40 | .288 | .272 |
| 00-000 X5PO 180K | A | 18 | .64 | .48 | .40 | .288 | .272 |
| 00-000 X5PO 220K | A | 22 | .64 | .48 | .40 | .288 | .272 |
| 00-000 X5PO 270K | A | 27 | .64 | .48 | .40 | .288 | .272 |
| 00-000 X5PO 330K | A | 33 | .64 | .48 | .40 | .288 | .272 |
| 00-000 X5PO 390K | A | 39 | .64 | .48 | .40 | .288 | .272 |
| 00-000 X5PO 470K | A | 47 | .64 | .48 | .40 | .288 | .272 |
| 00-000 X5PO 560K | A | 56 | .64 | .48 | .40 | .288 | .272 |
| 00-000 X5PO 680K | A | 68 | .64 | .48 | .40 | .288 | .272 |
| 00-000 X5PO 820K | A | 82 | .64 | .48 | .40 | .288 | .272 |
| 00-000 X5PO 101K | A | 100 | .64 | .48 | .40 | .288 | .272 |
| 00-000 X5PO 121K | A | 120 | .64 | .48 | .40 | .288 | .272 |
| 00-000 X5PO 151K | A | 150 | .64 | .48 | .40 | .288 | .272 |
| 00-000 X5PO 181K | A | 180 | .64 | .48 | .40 | .288 | .272 |
| 03-000 W5RO 181K | A | 180 | .81 | .59 | .49 | .41 | .35 |
| 90-000 X5TO 221K | A | 220 | .64 | .48 | .40 | .288 | .272 |
| 03-000 W5RO 221K | A | 220 | .81 | .59 | .49 | .41 | .35 |
| 90-000 X5TO 271K | A | 270 | .64 | .48 | .40 | .288 | .272 |
| 03-000 W5RO 271K | A | 270 | .81 | .59 | .49 | .41 | .35 |
| 23-000 W5RO 271K | B | 270 | .66 | .48 | .40 | .33 | .29 |
| 90-000 X5TO 331K | A | 330 | .64 | .48 | .40 | .288 | .272 |
| 03-000 W5RO 331K | A | 330 | .81 | .59 | .49 | .41 | .35 |
| 23-000 W5RO 331K | B | 330 | .66 | .48 | .40 | .33 | .29 |
| 90-000 X5UO 391M | A | 390 | .596 | .447 | .373 | .268 | .253 |
| 03-000 W5RO 391K | A | 390 | .81 | .59 | .49 | .41 | .35 |
| 23-000 W5RO 391K | B | 390 | .66 | .48 | .40 | .33 | .29 |
| 90-000 X5UO 471M | A | 470 | .596 | .447 | .373 | .268 | .253 |
| 03-000 W5RO 471K | A | 470 | .81 | .59 | .49 | .41 | .35 |
| 13-000 W5RO 471K | A | 470 | .72 | .53 | .43 | .36 | .31 |
| 23-000 W5RO 471K | B | 470 | .66 | .48 | .40 | .33 | .29 |
| 90-000 X5UO 561M | A | 560 | .596 | .447 | .373 | .268 | .253 |
| 03-000 W5RO 561K | A | 560 | .81 | .59 | .49 | .41 | .35 |
| 23-000 W5RO 561K | B | 560 | .66 | .48 | .40 | .33 | .29 |
| 90-000 X5UO 681M | A | 680 | .596 | .447 | .373 | .268 | .253 |
| 03-000 W5RO 681K | A | 680 | .81 | .59 | .49 | .41 | .35 |
| 23-000 W5RO 681K | B | 680 | .66 | .48 | .40 | .33 | .29 |
| 90-000 X5VO 821P | A | 820 | .552 | .414 | .345 | .248 | .235 |
| 03-000 W5RO 821K | A | 820 | .81 | .59 | .49 | .41 | .35 |
| 23-000 W5RO 821K | B | 820 | .66 | .48 | .40 | .33 | .29 |
| 90-000 X5VO 102P | A | 1000 | .552 | .414 | .345 | .248 | .235 |
| 03-000 W5RO 102K | A | 1000 | .81 | .59 | .49 | .41 | .35 |
| 13-000 W5RO 102K | A | 1000 | .81 | .59 | .49 | .41 | .35 |
| 23-000 W5RO 102K | B | 1000 | .66 | .48 | .40 | .33 | .29 |
| 90-000 X5VO 122P | A | 1200 | .552 | .414 | .345 | .248 | .235 |

ee preceding page for illustrations.

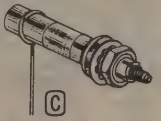
### PRECISION GLASS AND QUARTZ TRIMMERS



A



B



C

g. A types have 1.5″ lg. wire lead and #10-32 bushing with hex it for panel mount. Fig. B types have four 1.0″ lg. wire leads reiiring #64 .036″ dia. holes for printed circuit mount. **WVDC:** 00. **Q:** 500 min. at 1 MHz. **Insulation Resistance:** 1000 megims min. **Temperature Coefficient Tolerance, PPM/° C:** ±50 unless otherwise noted.

### GLASS DIELECTRIC TRIMMERS

| Erie No. or MIL Designation | Fig. | Cap., pF | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-299 | 300-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| 560-013 | A | .8– 4.5 | $3.20 | $2.95 | $2.50 | $2.10 | $2.00 | $1.70 |
| 562-013 | A | .8– 8.5 | 3.40 | 3.05 | 2.70 | 2.25 | 2.15 | 1.80 |
| 564-013* | A | .7–12.0 | 3.75 | 3.40 | 2.95 | 2.45 | 2.35 | 2.00 |
| 566-013† | A | .8–18.0 | 4.35 | 3.95 | 3.40 | 2.85 | 2.70 | 2.35 |
| 568-013† | A | 1.0–30.0 | 4.55 | 4.15 | 3.60 | 3.05 | 2.90 | 2.40 |
| 561-013 | B | .8– 4.5 | 2.80 | 2.60 | 2.20 | 1.85 | 1.75 | 1.50 |
| 563-013 | B | .8– 8.5 | 3.00 | 2.75 | 2.40 | 2.00 | 1.90 | 1.65 |
| 565-013* | B | .8–12.0 | 3.35 | 3.05 | 2.65 | 2.20 | 2.10 | 1.80 |
| 567-013† | B | .8–18.0 | 3.95 | 3.60 | 3.10 | 2.60 | 2.45 | 2.10 |
| 569-013† | B | 1.0–30.0 | 4.15 | 3.80 | 3.30 | 2.80 | 2.65 | 2.25 |

### MIL-C-14409B GLASS TRIMMERS

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| C40J4R5 | A | .8– 4.5 | $3.20 | $2.95 | $2.50 | $2.10 | $2.00 | $1.70 |
| C40J8R5 | A | .8– 8.5 | 3.40 | 3.05 | 2.70 | 2.25 | 2.15 | 1.80 |
| C40H120† | A | .8–12.0 | 3.75 | 3.40 | 2.95 | 2.45 | 2.35 | 2.00 |
| C40H180† | A | .8–18.0 | 4.35 | 3.95 | 3.40 | 2.85 | 2.70 | 2.35 |
| C40H300† | A | 1.0–30.0 | 4.55 | 4.15 | 3.60 | 3.05 | 2.90 | 2.40 |
| C41J4R5 | B | .8– 4.5 | 2.80 | 2.60 | 2.20 | 1.85 | 1.75 | 1.50 |
| C41J8R5 | B | .8– 8.5 | 3.00 | 2.75 | 2.40 | 2.00 | 1.90 | 1.65 |
| C41H120† | B | .8–12.0 | 3.35 | 3.05 | 2.65 | 2.20 | 2.10 | 1.80 |
| C41H180† | B | .8–18.0 | 3.95 | 3.60 | 3.10 | 2.60 | 2.45 | 2.10 |
| C41H300† | B | 1.0–30.0 | 4.15 | 3.80 | 3.30 | 2.80 | 2.65 | 2.25 |
| C51J5R5 | .... | .8– 5.5 | 3.40 | 3.05 | 2.75 | 2.40 | 2.15 | 2.00 |
| C51J110 | .... | .8–11 | 3.80 | 3.40 | 3.05 | 2.65 | 2.40 | 2.20 |

C tolerance, PPM°/C: *0±75; †0±100.

### PRECISION MOLDED G-P MONOBLOCS

Available in tubular (Fig. A) or rectangular (Fig. B) configurations. **WVDC:** 100. **Capacitance Tolerance:** ±10%, except types with Suffix **M** to Erie No., ±20%; Suffix **P**, +100% and −0. **Size:** Style 390 and 8003, .100″ dia. x .260″ lg. with axial leads; 8013, .100″ dia. x .170″ lg. with axial leads; 8123, .200″ sq. x .100″ thick with radial leads; 8133, .300″ sq. x .100″ thick with radial leads. All have wire leads 1.50″ lg. min.

| Erie Number | † | Cap. pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999* |
|---|---|---|---|---|---|---|---|
| 8003-000 W5RO 122K | A | 1200 | $0.81 | $0.59 | $0.49 | $0.41 | $0.35 |
| 8133-000 W5RO 122K | B | 1200 | .66 | .48 | .40 | .33 | .29 |
| 8003-000 W5RO 152K | A | 1500 | .81 | .59 | .49 | .41 | .35 |
| 8133-000 W5RO 152K | B | 1500 | .66 | .48 | .40 | .33 | .29 |
| 8003-000 W5RO 182K | A | 1800 | .84 | .62 | .50 | .42 | .36 |
| 8133-000 W5RO 182K | B | 1800 | .66 | .48 | .40 | .33 | .29 |
| 8003-000 W5RO 222K | A | 2200 | .84 | .62 | .50 | .42 | .36 |
| 8133-000 W5RO 222K | B | 2200 | .66 | .48 | .40 | .33 | .29 |
| 8003-000 W5RO 272K | A | 2700 | .84 | .62 | .50 | .42 | .36 |
| 8133-000 W5RO 272K | B | 2700 | .66 | .48 | .40 | .33 | .29 |
| 8003-000 W5RO 332K | A | 3300 | .84 | .62 | .50 | .42 | .36 |
| 8133-000 W5RO 332K | B | 3300 | .66 | .48 | .40 | .33 | .29 |
| 8003-000 W5RO 392K | A | 3900 | .90 | .66 | .54 | .45 | .39 |
| 8133-000 W5RO 392K | B | 3900 | .69 | .51 | .41 | .35 | .30 |
| 8003-000 W5RO 472K | A | 4700 | .90 | .66 | .54 | .45 | .39 |
| 8013-000 W5RO 472K | A | 4700 | .81 | .59 | .49 | .41 | .35 |
| 8133-000 W5RO 472K | B | 4700 | .69 | .51 | .41 | .35 | .30 |
| 8003-000 W5RO 562K | A | 5600 | .90 | .66 | .54 | .45 | .39 |
| 8133-000 W5RO 562K | B | 5600 | .69 | .51 | .41 | .35 | .30 |
| 8003-000 W5RO 682K | A | 6800 | .99 | .73 | .59 | .50 | .43 |
| 8133-000 W5RO 682K | B | 6800 | .69 | .51 | .41 | .35 | .30 |
| 8003-000 W5RO 822K | A | 8200 | .99 | .73 | .59 | .50 | .43 |
| 8133-000 W5RO 822K | B | 8200 | .69 | .51 | .41 | .35 | .30 |
| 8003-000 W5RO 103K | A | 10K | 1.05 | .77 | .63 | .53 | .46 |
| 8013-000 W5RO 103K | ... | 10K | .96 | .70 | .58 | .48 | .42 |
| 8133-000 W5RO 103K | B | 10K | .72 | .53 | .43 | .36 | .31 |
| 8003-000 W5RO 123K | A | 12K | 1.17 | .86 | .70 | .59 | .51 |
| 8133-000 W5RO 123K | B | 12K | .72 | .53 | .43 | .36 | .31 |
| 8003-000 W5RO 153K | A | 15K | 1.50 | 1.10 | .90 | .75 | .65 |
| 8133-000 W5RO 153K | B | 15K | .72 | .53 | .43 | .36 | .31 |
| 8003-000 W5RO 183K | A | 18K | 1.83 | 1.34 | 1.10 | .92 | .79 |
| 8133-000 W5RO 183K | B | 18K | .81 | .59 | .49 | .41 | .35 |
| 8003-000 W5RO 223K | A | 22K | 2.31 | 1.69 | 1.39 | 1.16 | 1.00 |
| 8003-000 W5RO 223M | ... | 22K | 2.22 | 1.63 | 1.33 | 1.11 | .96 |
| 8133-000 W5RO 223K | B | 22K | .81 | .59 | .49 | .41 | .35 |
| 8133-000 W5RO 273K | B | 27K | .84 | .62 | .50 | .42 | .36 |
| 8133-000 W5RO 333K | B | 33K | .84 | .62 | .50 | .42 | .36 |
| 8133-000 W5RO 393K | B | 39K | .99 | .73 | .59 | .50 | .43 |
| 8133-000 W5RO 473K | B | 47K | 1.17 | .86 | .70 | .59 | .51 |
| 8133-000 W5RO 563K | B | 56K | 1.32 | .97 | .79 | .66 | .57 |
| 8133-000 W5RO 683K | B | 68K | 1.50 | 1.10 | .90 | .75 | .65 |
| 8133-000 W5RO 823K | B | 82K | 1.56 | 1.14 | .94 | .78 | .68 |
| 8133-000 W5RO 104K | B | .1‡ | 1.56 | 1.14 | .94 | .78 | .68 |
| 8133-000 Z5UO 154M | B | .15‡ | 1.02 | .75 | .61 | .51 | .44 |
| 8133-000 Z5UO 224M | B | .22‡ | 1.14 | .84 | .68 | .57 | .49 |
| 8133-000 Z5UO 334M | B | .33‡ | 1.38 | 1.01 | .83 | .69 | .60 |
| 8133-000 Z5UO 474M | B | .47‡ | 1.59 | 1.17 | .95 | .80 | .69 |
| 8133-000 Z5UO 684M | B | .68‡ | 2.10 | 1.89 | 1.58 | 1.37 | 1.26 |
| 8133-000 Z5VO 105M | B | 1.0‡ | 3.42 | 3.08 | 2.59 | 2.22 | 2.05 |

†See preceding page for illustrations. ‡μF. ***1000-5000 Quantity Prices Available on Request.**

### QUARTZ DIELECTRIC TRIMMERS

| Erie No. or MIL Designation | Fig. | Cap., pF | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-299 | 300-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| 560-053 | A | .6– 1.8 | $5.00 | $4.50 | $4.05 | $3.55 | $3.25 | $2.90 |
| 562-053 | A | .6– 5.5 | 5.60 | 5.05 | 4.55 | 4.00 | 3.65 | 3.10 |
| 566-053 | A | .6– 9.5 | 7.40 | 6.65 | 6.00 | 5.25 | 4.75 | 4.20 |
| 568-053 | A | .8–16.0 | 9.20 | 8.30 | 7.45 | 6.55 | 5.85 | 5.30 |
| 561-053 | B | .6– 1.8 | 4.60 | 4.15 | 3.75 | 3.30 | 2.95 | 2.45 |
| 563-053 | B | .6– 5.5 | 5.20 | 4.70 | 4.20 | 3.70 | 3.35 | 3.05 |
| 567-053 | B | .6– 9.5 | 7.00 | 6.30 | 5.65 | 4.95 | 4.45 | 4.00 |
| 569-053 | B | .8–16.0 | 8.80 | 7.90 | 7.10 | 6.20 | 5.60 | 5.10 |

### MIL-C-14409B QUARTZ DIELECTRIC TRIMMERS

| Erie No. or MIL Designation | Fig. | Cap., pF | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-299 | 300-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| PC40Q1R8 | .... | .6– 1.8 | $4.60 | $4.15 | $3.75 | $3.30 | $2.95 | $2.45 |
| PC40Q5R5 | .... | .6– 5.5 | 5.60 | 5.05 | 4.55 | 4.00 | 3.65 | 3.10 |
| PC40Q9R5 | .... | .6– 9.5 | 7.40 | 6.65 | 6.00 | 5.25 | 4.75 | 4.20 |
| PC40Q160 | .... | .8–16 | 9.20 | 8.30 | 7.45 | 6.55 | 5.85 | 5.30 |
| PC41Q1R8 | .... | .6– 1.8 | 4.60 | 4.15 | 3.75 | 3.30 | 2.95 | 2.45 |
| PC41Q5R5 | .... | .6– 6.5 | 5.20 | 4.70 | 4.20 | 3.70 | 3.35 | 3.05 |
| PC41Q9R5 | .... | .6– 9.5 | 7.00 | 6.30 | 5.65 | 4.95 | 4.45 | 4.00 |
| PC41Q160 | .... | .8–16 | 8.80 | 7.90 | 7.10 | 6.20 | 5.60 | 5.10 |

### SPLIT-BUSHING GLASS TRIMMERS (FIG. C)

External split-bushing glass trimmers. Linear, non-reversing capacitance change. Insulation resistance, $10^{12}$ ohms min. at 25° C. TC, PPM/° C, type 582-003, −75±75; 586-003 and 588-003, 0±100. ¼″-28 thread; 2″ lg. wire lead.

| Erie Number | Range, pF | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-299 | 300-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| 582-003* | .7– 9.0 | $1.66 | $1.50 | $1.34 | $1.12 | $1.07 | $0.95 |
| 586-003‡ | .8–17.0 | 1.80 | 1.60 | 1.42 | 1.20 | 1.12 | 1.00 |
| 588-003‡ | 2.0–30.0 | 2.00 | 1.88 | 1.55 | 1.30 | 1.22 | 1.10 |

*WVDC, 1250. ‡WVDC, 750.

# Erie Capacitors, Filters

## "RED CAP" CERAMIC CAPACITORS

Molobloc process construction. Meet or exceed all applicable requirements of MIL-C-20 and MIL-C-11015. Lower value capacitors incorporate electrically and mechanically rugged, single plates. Higher values are obtained by stacking parallel plates with noble metal electrodes and firing at very high temperatures to form an inherently reliable, fused monolithic "bloc". Encapsulated with Jet Seal, a hard, bright polymeric coating, to provide mechanical and electrical protection under the most severe environmental conditions.

### GENERAL PURPOSE TYPES

### ±20% TOLERANCE

For applications in circuits requiring the utmost in volumetric efficiency at temperatures between −55° C and +85° C. Not intended for resonant or frequency determining applications.

#### 50 VOLTS

| Erie Number | Cap., µF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|
| 8121-050-651-103M | .01 | $0.42 | $0.31 | $0.25 | $0.21 | $0.18 |
| 8121-050-651-153M | .015 | .45 | .33 | .27 | .23 | .20 |
| 8121-050-651-223M | .022 | .51 | .37 | .31 | .26 | .22 |
| 8121-050-651-273M | .027 | .57 | .42 | .34 | .29 | .25 |
| 8121-050-651-333M | .033 | .63 | .46 | .38 | .32 | .27 |
| 8121-050-651-473M | .047 | .69 | .51 | .41 | .35 | .30 |
| 8121-050-651-683M | .068 | .81 | .59 | .49 | .41 | .35 |
| 8121-050-651-104M | .1 | .96 | .70 | .58 | .48 | .42 |
| 8121-050-651-154M | .15 | 1.08 | .79 | .65 | .54 | .47 |
| 8131-050-651-224M | .22 | .81 | .59 | .49 | .41 | .35 |
| 8131-050-651-334M | .33 | .96 | .70 | .58 | .48 | .42 |
| 8131-050-651-474M | .47 | 1.14 | .84 | .68 | .57 | .49 |
| 8131-050-651-684M | .68 | 1.23 | .90 | .74 | .62 | .53 |
| 8131-050-651-105M | 1.0 | 1.59 | 1.17 | .95 | .80 | .69 |
| 8141-050-651-155M | 1.5 | 2.34 | 1.72 | 1.40 | 1.17 | 1.01 |
| 8141-050-651-225M | 2.2 | 3.18 | 2.33 | 1.91 | 1.59 | 1.38 |
| 8151-050-651-335M | 3.3 | 4.47 | 3.28 | 2.68 | 2.24 | 1.94 |
| 8151-050-651-475M | 4.7 | 5.70 | 4.18 | 3.42 | 2.85 | 2.47 |

#### 100 VOLTS

| Erie Number | Cap., µF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|
| 8121-100-651-682M | 6800 | $0.30 | $0.218 | $0.178 | $0.149 | $0.129 |
| 8121-100-651-103M | .01 | .48 | .35 | .29 | .24 | .21 |
| 8121-100-651-153M | .015 | .51 | .37 | .31 | .26 | .22 |
| 8121-100-651-223M | .022 | .60 | .44 | .36 | .30 | .26 |
| 8121-100-651-273M | .027 | .66 | .48 | .40 | .33 | .29 |
| 8121-100-651-333M | .033 | .72 | .53 | .43 | .36 | .31 |
| 8121-100-651-473M | .047 | .81 | .59 | .49 | .41 | .35 |
| 8121-100-651-683M | .068 | .96 | .70 | .58 | .48 | .42 |
| 8131-100-651-104M | .1 | .78 | .57 | .47 | .39 | .34 |
| 8131-100-651-154M | .15 | .84 | .62 | .50 | .42 | .36 |
| 8131-100-651-224M | .22 | .93 | .68 | .56 | .47 | .40 |
| 8131-100-651-274M | .27 | 1.05 | .77 | .63 | .53 | .46 |
| 8131-100-651-334M | .33 | 1.11 | .81 | .67 | .56 | .48 |
| 8131-100-651-474M | .47 | 1.44 | 1.06 | .86 | .72 | .62 |
| 8141-100-651-684M | .68 | 1.74 | 1.28 | 1.04 | .87 | .75 |
| 8141-100-651-105M | 1.0 | 2.19 | 1.61 | 1.31 | 1.10 | .95 |
| 8151-100-651-155M | 1.5 | 2.94 | 2.16 | 1.76 | 1.47 | 1.27 |
| 8151-100-651-225M | 2.2 | 3.99 | 2.93 | 2.39 | 2.00 | 1.73 |

### STABLE TYPES, 100 VOLTS, ±10% TOLERANCE

For applications in circuits requiring excellent volumetric efficiency with good stability. ±15% delta C, −55° C to +125° C.

| Erie Number | Cap., pF | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|
| 8101-100 W5RO 151K | 150 | $0.36 | $0.26 | $0.22 | $0.18 | $0.16 |
| 8101-100 W5RO 221K | 220 | .36 | .26 | .22 | .18 | .16 |
| 8101-100 W5RO 331K | 330 | .36 | .26 | .22 | .18 | .16 |
| 8111-100 W5RO 471K | 470 | .36 | .26 | .22 | .18 | .16 |
| 8111-100 W5RO 681K | 680 | .36 | .26 | .22 | .18 | .16 |
| 8121-100 W5RO 102K | 1000 | .33 | .24 | .20 | .17 | .14 |
| 8121-100 W5RO 152K | 1500 | .33 | .24 | .20 | .17 | .14 |
| 8121-100 W5RO 222K | 2200 | .42 | .31 | .25 | .21 | .18 |
| 8121-100 W5RO 332K | 3300 | .45 | .33 | .27 | .23 | .20 |
| 8121-100 W5RO 472K | 4700 | .45 | .33 | .27 | .23 | .20 |
| 8121-100 W5RO 682K | 6800 | .51 | .37 | .31 | .26 | .22 |
| 8121-100 W5RO 103K | 10K | .60 | .44 | .36 | .30 | .26 |
| 8131-100 W5RO 153K | 15K | .75 | .55 | .45 | .38 | .33 |
| 8131-100 W5RO 223K | 22K | .87 | .64 | .52 | .44 | .38 |
| 8131-100 W5RO 333K | 33K | .96 | .70 | .58 | .48 | .42 |
| 8131-100 W5RO 473K | 47K | 1.11 | .81 | .67 | .56 | .48 |
| 8131-100 W5RO 683K | 68K | 1.41 | 1.03 | .85 | .71 | .61 |
| 8131-100 W5RO 104K | 100K | 1.74 | 1.28 | 1.04 | .87 | .75 |
| 8141-100 W5RO 224K | 220K | 3.72 | 2.73 | 2.23 | 1.86 | 1.61 |
| 8151-100 W5RO 334K | 330K | 4.68 | 3.43 | 2.81 | 2.34 | 2.03 |
| 8151-100 W5RO 474K | 470K | 6.06 | 4.44 | 3.64 | 3.03 | 2.63 |
| 8151-100 W5RO 564K | 560K | 7.29 | 5.38 | 4.37 | 3.65 | 3.16 |

### ULTRA-STABLE TYPES, 100 VOLTS, ±10% TOLERANCE

Ultimate in capacitance stability and high Q over broad temperature and frequency range. 0±30 ppm/° C; −55° C to +150° C.

| | | | | | | |
|---|---|---|---|---|---|---|
| 8101-100 COGO 479D* | 4.7 | $0.36 | $0.26 | $0.22 | $0.18 | $0.16 |
| 8101-100 COGO 689D* | 6.8 | .36 | .26 | .22 | .18 | .16 |
| 8101-100 COGO 100K | 10 | .36 | .26 | .22 | .18 | .16 |
| 8111-100 COGO 150K | 15 | .36 | .26 | .22 | .18 | .16 |
| 8111-100 COGO 220K | 22 | .36 | .26 | .22 | .18 | .16 |
| 8121-100 COGO 330K | 33 | .33 | .24 | .20 | .17 | .14 |
| 8121-100 COGO 470K | 47 | .60 | .44 | .36 | .30 | .26 |
| 8121-100 COGO 680K | 68 | .60 | .44 | .36 | .30 | .26 |
| 8121-100 COGO 101K | 100 | .66 | .48 | .40 | .33 | .29 |
| 8121-100 COGO 151K | 150 | .69 | .51 | .41 | .35 | .30 |
| 8121-100 COGO 221K | 220 | .78 | .57 | .47 | .39 | .34 |
| 8121-100 COGO 331K | 330 | .90 | .66 | .54 | .45 | .39 |
| 8121-100 COGO 471K | 470 | 1.05 | .77 | .63 | .53 | .46 |
| 8121-100 COGO 681K | 680 | 1.26 | .92 | .76 | .63 | .55 |
| 8121-100 COGO 102K | 1000 | 1.56 | 1.14 | .94 | .78 | .68 |
| 8131-100 COGO 152K | 1500 | 1.23 | .90 | .74 | .62 | .53 |
| 8131-100 COGO 222K | 2200 | 1.62 | 1.19 | .97 | .81 | .70 |
| 8131-100 COGO 332K | 3300 | 2.10 | 1.54 | 1.26 | 1.05 | .91 |
| 8141-100 COGO 472K | 4700 | 3.06 | 2.24 | 1.84 | 1.53 | 1.33 |
| 8141-100 COGO 682K | 6800 | 4.14 | 3.04 | 2.48 | 2.07 | 1.79 |
| 8141-100 COGO 103K | 10K | 5.64 | 4.14 | 3.38 | 2.82 | 2.44 |

*Tolerance, ±.5 pF.

## TIN-PLATED DC FILTERS FOR 30 kHz TO 10 GHz OPERATION

A wide selection of precision-built, low-pass EMI suppression filters. Hermetically sealed in tin-plated subminiature cases for positive protection against any environmental condition. Available in L, T and pi-section types for operation in various frequency ranges up to 10 GHz. **Tolerance:** ±.010. **Operating Temperature Range:** −55° C to +85°, 125° or 150° C as specified. **Case Size:** Series 9010, 0.645″ dia.; all others, 0.375″ dia.; overall length given in tables below. All have two flag terminals and ¼-28 threaded bushing 0.190″ lg. Supplied with lockwasher and hex nut.

**Note:** Curves showing minimum full-load insertion loss characteristics, measured per MIL-STD-220, are available.

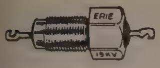
| Erie Number | WVDC at 85/125/150 ° C | Type of Filter | Overall Lgth., Inches | Rated DC Amps | Max. DC Ohms | Typ. Wt., Gm | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9001-100-0005* | 60/40 | L section | 1.128† | 1 | .35 | 6 | $13.60 | $12.50 | $11.10 | $ 9.50 | $ 8.60 | $ 7.85 |
| 9051-100-0000* | 80/50 | L section | .672 | 10 | .008 | 2.2 | 6.55 | 6.00 | 5.35 | 4.60 | 4.15 | 3.80 |
| 9009-103-0000* | 80/50 | L section | .892 | 10 | .01 | 3.5 | 8.80 | 8.10 | 7.20 | 6.15 | 5.55 | 5.10 |
| 9050-100-0000* | 80/50 | L section | .772 | 15 | .008 | 1.8 | 5.15 | 4.75 | 4.20 | 3.60 | 3.25 | 3.00 |
| 9916-100-6000‡ | 80/50 | C section‡ | .772 | 10 | .004 | 2 | 8.55 | 7.90 | 7.00 | 6.00 | 5.40 | 4.95 |
| 9921-100-6001§ | 80/50 | C section§ | .770 | 15 | .004 | 5 | 6.55 | 6.05 | 5.35 | 4.60 | 4.15 | 3.80 |
| 9000-100-0003 | 100/50 | L section | 1.078 | 1 | .35 | 8.5 | 13.50 | 12.45 | 11.00 | 9.45 | 8.50 | 7.80 |
| 9000-100-0007 | 100/50 | L section | 1.078 | 5 | .04 | 8.5 | 13.80 | 12.70 | 11.25 | 9.65 | 8.70 | 8.00 |
| 9001-100-1000 | 100/50 | Pi section | 1.128 | .25 | 1.5 | 8.5 | 15.85 | 14.60 | 12.95 | 11.10 | 10.00 | 9.20 |
| 9001-100-1003 | 100/50 | Pi section | 1.128 | 1 | .32 | 8.5 | 14.40 | 13.25 | 11.75 | 10.10 | 9.10 | 8.35 |
| 9001-100-1008 | 100/50 | Pi section | 1.128 | 5 | .04 | 8.5 | 14.40 | 13.25 | 11.75 | 10.10 | 9.10 | 8.35 |
| 9922-100-6000# | 125/100/75 | C section• | .814 | 15 | .004 | 6 | 10.75 | 9.90 | 8.80 | 7.55 | 6.80 | 6.25 |
| 9000-100-0012# | 150/100 | L section | 1.078 | .25 | 1.5 | 8.5 | 16.75 | 15.40 | 13.65 | 11.70 | 10.60 | 9.70 |
| 9000-100-0015# | 150/100 | L section | 1.078 | 1 | .25 | 8.5 | 15.15 | 13.95 | 12.35 | 10.60 | 9.55 | 8.75 |
| 9001-100-1013# | 150/100 | Pi section | 1.128 | 1 | .25 | 8.5 | 16.20 | 14.90 | 13.20 | 11.35 | 10.25 | 9.40 |
| 9001-100-1017# | 150/100 | Pi section | 1.128 | 5 | .015 | 8.5 | 16.35 | 15.05 | 13.35 | 11.45 | 10.30 | 9.45 |
| 9005-100-2001# | 150/100 | T section | 1.128 | 4 | .05 | 12 | 24.85 | 22.85 | 20.25 | 17.40 | 15.70 | 14.38 |

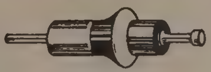
*For 10 kHz to 10 GHz operation. †Available 1.15″ l. ‡Capacitance, 1.4 µF GMV; for 30 kHz to 1 GHz operation. §1.42 µF GMV; for 50 kHz to 1 GHz operation. #Insulation resistance, 1000 megs; all others, 100 megs. •Capacitance, .47 µV GMV for 50 kHz to 1 GHz operation.

**OTHER TIN-PLATED FILTERS AVAILABLE—WRITE FOR DETAILS.**

# Erie Electronic Filters

ERIE
TECHNOLOGICAL
PRODUCTS, INC.


1202 Series, 1280-001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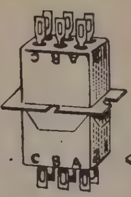
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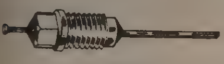
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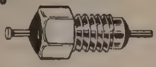
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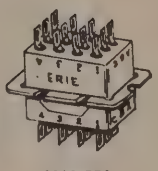
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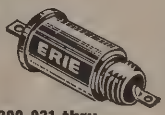
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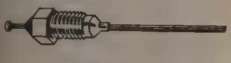
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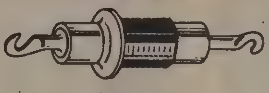

1204-050

## SUBMINIATURE LOW-PASS FILTERS FOR EMI SUPPRESSION

ie Filtercons are high-frequency low-pass RF filters designed provide maximum effective attenuation in the UHF range, minating parallel resonance peaks. Performance superior to ndard tubular feed-thru capacitors at frequencies above 100 Hz. Erie Broad-Band EMI Suppression Filters are miniaturized L-section types for use in low-voltage circuits; suppress interference caused by switches, relays, etc. over an extremely wide frequency range. For both Filtercons and broadband types, minimum insertion loss figures are per MIL-STD-220 for a temperature range of −55° C to +125° C unless otherwise noted.

### SINGLE-SECTION FILTERCONS™

gle-section, low-pass EMI filters for bushing or eyelet mount-. **Series 1201:** Small bushing type for rugged use; filter element dered inside the bushing; ends potted with resin. **Series 1202:** rge-bushing version of 1201; same husky construction but has ok terminals. **Type 1203:** Miniature version of 1201 with heavily ned eyelet for soldering into chassis. **Type 1204:** Same as 1202 ies but with tinned eyelet for solder installation. **Type 1250:** Subminiature, low-voltage bushing type similar in construction to the larger 1201 series; offers improved volumetric efficiency and simple mounting. **Series 1270 and 1280:** Larger versions of type 1250, 1270-009 and -024 have miniature bushing; 1270-016 and -025 have high capacity bushing; 1280-001 is for high voltage use. Filtercon EMI filters listed in table below are stock items. Other models are available on special order; prices on request.

| Erie Number | Mounting Thd. x Lgth. | WVDC | Min. No-Load Insertion Loss Over MIL-STD-220 Temp. Range | Cap., pF† | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|---|---|
| 201-051 | #12-32 x .218″* | 200 | 45 dB, 200 MHz to 10 GHz | 1500 | $2.40 | $2.40 | $2.02 | $1.68 | $1.56 | $1.44 |
| 201-052 | #12-28 x .218″* | 200 | 45 dB, 200 MHz to 10 GHz | 1500 | 2.40 | 2.40 | 2.02 | 1.68 | 1.56 | 1.44 |
| 201-054 | #12-32 x .218″ | 200 | 45 dB, 200 MHz to 10 GHz | 1500 | 2.40 | 2.40 | 2.02 | 1.68 | 1.56 | 1.44 |
| 202-005 | 5/16-32 x .343* | 1000 | 45 dB, 100 MHz to 10 GHz‡ | 2000 | 1.84 | 1.84 | 1.56 | 1.29 | 1.20 | 1.10 |
| 202-051 | 5/16-32 x .343″* | 500 | 50 dB, 100 MHz to 10 GHz | 3000 | 1.84 | 1.84 | 1.56 | 1.29 | 1.20 | 1.10 |
| 202-052 | 5/16-24 x .343″* | 500 | 50 dB, 100 MHz to 10 GHz | 3000 | 1.84 | 1.84 | 1.56 | 1.29 | 1.20 | 1.10 |
| 202-054 | 5/16-32 x .343″* | 500 | 50 dB, 100 MHz to 10 GHz | 3000 | 1.84 | 1.84 | 1.56 | 1.29 | 1.20 | 1.10 |
| 203-050 | .160″ dia. mtg. hole | 200 | 45 dB, 200 MHz to 10 GHz | 1500 | 1.28 | 1.28 | 1.09 | .90 | .83 | .77 |
| 204-050 | .250″ dia. mtg. hole | 500 | 50 dB, 100 MHz to 10 GHz | 3000 | 1.20 | 1.20 | 1.02 | .84 | .78 | .72 |
| 214-001 | .160″ dia. mtg. hole | 250§ | 38 dB, 200 MHz to 10 GHz | 1750 | .98 | .98 | .83 | .69 | .64 | .59 |
| 217-000 | .180″ dia. mtg. hole | 350• | 55 dB, 200 MHz to 10 GHz▲ | 3000 | 1.60 | 1.60 | 1.36 | 1.12 | 1.04 | .96 |
| 221-001 | #12-32 x .250″* | 300 | 50 dB, 100 MHz to 10 GHz | 4000 | 3.25 | 2.60 | 2.28 | 1.95 | 1.69 | 1.56 |
| 250-003 | #8-32 x .216″* | 200§ | 50 dB, 200 MHz to 10 GHz | 1500 | 3.36 | 3.36 | 2.86 | 2.35 | 2.18 | 2.02 |
| 270-009 | #12-32 x .250″* | 200 | 45 dB, 200 MHz to 10 GHz | 1500 | 2.20 | 2.20 | 1.87 | 1.54 | 1.43 | 1.32 |
| 270-016 | #12-32 x .250″* | 200§ | 50 dB, 100 MHz to 10 GHz | 5000 | 2.20 | 2.20 | 1.87 | 1.54 | 1.43 | 1.32 |
| 270-024 | #12-32 x .250″ | 200 | 45 dB, 200 MHz to 10 GHz | 1500 | 2.16 | 1.89 | 1.62 | 1.51 | 1.40 | 1.30 |
| 270-025 | #12-32 x .250″ | 200§ | 50 dB, 100 MHz to 10 GHz | 5000 | 2.20 | 2.20 | 1.87 | 1.54 | 1.43 | 1.32 |
| 280-001 | 3/8-32 x .625″* | 1500 | 50 dB, 100 MHz to 10 GHz‡ | 1500 | 3.50 | 3.50 | 2.98 | 2.45 | 2.28 | 2.10 |

ith lockwasher and nut. †Min. capacitance at 1 kHz, .5 to 5 V rms at 25° C. ‡Operating range, −55° C to +85° C. §WVDC given 85° C; derate 50% for 125° C operation. •At 85° C; 200 WVDC at 125° C. ▲Operating range, −40° C to +125° C.

### SERIES 1206 AND 1212 MULTI-SECTION FILTERCONS

iniature multiple-channel filters. Elements are soldered into ver-plated brass case with hermetically sealed low-loss glass d-seals. Cross-channel separation exceeds 50 dB to virtually eliminate cross-channel coupling. Rated 350 WVDC. Tapped holes for #4-40 bolts. Min. insertion loss 50 dB, 100–2000 MHz except as noted.

| Erie No. | Sections | Body Lgth.† | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999 | Erie No. | Sections | Body Lgth.† | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 206-502 | 6 | 1.125″ | $16.11 | $14.96 | $13.24 | $12.66 | $12.09 | 1206-554* | 6 | .750″ | $17.55 | $16.90 | $16.20 | $14.85 | $14.18 | $13.85 |
| 212-502 | 12 | 1.125″ | 20.69 | 19.21 | 17.00 | 16.26 | 15.52 | 1212-554* | 12 | .750″ | 18.48 | 17.76 | 17.05 | 15.62 | 14.92 | 14.58 |

in. insertion loss 45 dB, 100–200 MHz; 50 dB, 200–2000 MHz. †Not including .281″ lg. terminals, each end.

### SERIES 1200 BROADBAND L-SECTION EMI SUPPRESSION FILTERS

oadband filters specifically designed to suppress RF interence caused by electromechanical switches, relays, motor comutators, SCR and transistor switching, etc. Offering lightweight, mpact construction excellent for aerospace applications, these n-polar devices are suitable for use on either low-voltage DC or C lines. Combine operating reliability and high attenuation own to 30 kHz) in a miniature, hermetically sealed, silver-plated el case. **WVDC:** 50 at 85° C; 35 at 105° C; 28 at 125° C (or equivalent AC peak). **Approx. Size:** .375″ dia. x .720″ lg., hex case types .995″ lg.; 1/4-32 bushing. Terminal styles available: Series 1200-000 thru -005, two #22 wire leads 1″ lg. min.; 1200-010 thru -015, one #22 wire lead, one flag terminal; 1200-021 thru -025 and -028, two flag terminals and .187″ lg. thread; 1200-091 thru -095 and -098, two flag terminals and .312″ lg. thread; 1200-016 thru -020 and -027, two flag terminals, .320″ lg. thread, hex case. With washer and nut.

#### SERIES 1200 SPECIFICATIONS

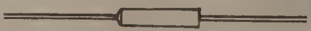
| Erie Number 1200- | | | | | Min. No-Load Insertion Loss per MIL-STD-220 30 kHz | 150 kHz | 300 kHz | 1 MHz | 10 MHz | 1 GHz | Max. mA DC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 03 | 013 | 016 | 028 | 098 | 44 | 70 | 70 | 70 | 70 | 70 | 60 |
| 02 | 012 | 017 | 023 | 093 | 24 | 52 | 64 | 70 | 70 | 70 | 150 |
| 04 | 014 | 018 | 024 | 094 | 18 | 42 | 56 | 70 | 70 | 70 | 250 |
| 01 | 011 | 019 | 021 | 091 | 16 | 35 | 44 | 62 | 70 | 70 | 300 |
| 00 | 010 | 020 | 022 | 092 | 15 | 31 | 37 | 55 | 70 | 70 | 450 |
| 05 | 015 | 027 | 025 | 095 | 15 | 28 | 33 | 44 | 64 | 70 | 10A |

#### SERIES 1200 NET PRICES

| Erie No. 1200- | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|
| 000 thru 004 | $13.14 | $12.37 | $10.82 | $10.05 | $9.28 | $8.50 |
| 005 | 12.29 | 11.57 | 10.12 | 9.40 | 8.68 | 7.95 |
| 010 thru 014 | 13.14 | 12.37 | 10.82 | 10.05 | 9.28 | 8.50 |
| 015 | 12.29 | 11.57 | 10.12 | 9.40 | 8.68 | 7.95 |
| 016 thru 024 | 13.14 | 12.37 | 10.82 | 10.05 | 9.28 | 8.50 |
| 025, 027 | 12.29 | 11.57 | 10.12 | 9.40 | 8.68 | 7.95 |
| 028, 091 thru 094 | 13.14 | 12.37 | 10.82 | 10.05 | 9.28 | 8.50 |
| 095 | 12.29 | 11.57 | 10.12 | 9.40 | 8.68 | 7.95 |
| 098 | 13.14 | 12.37 | 10.82 | 10.05 | 9.28 | 8.50 |

# GENERAL ELECTRIC Film Type Capacitors

## LECTROFILM®-B TUBULAR CAPACITORS



Very small size, high reliability, wide temperature range (−55 to +125° C). Extended foil construction with excellent resistanc to humidity, vibration and shock. Wound with high-purity fo and closely controlled capacitor-grade polyester film dielectric these compact rolls are wrapped with tape and ends sealed wit epoxy resin. Lightweight, non-metallic case; welded lead construction (1⅝″ long minimum) for strong, positive-contact terminals. Withstand voltage of 250% of rated DC voltage applie for 1 second without momentary or intermittent arcing, breakdown, etc. **Tolerance:** ±10%; ±5% available on request.

### 80 VOLTS DC AT 85° C (40 V AT 125° C)

| GE No. | Cap., µF | Size, Inches Dia. x L. | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| **AE12R102K** | .0010 | .153 x .406 | $0.261 | $0.191 | $0.148 | $0.113 | $0.104 |
| **AE12R122K** | .0012 | .153 x .406 | .261 | .191 | .148 | .113 | .104 |
| **AE12R152K** | .0015 | .153 x .406 | .261 | .191 | .148 | .113 | .104 |
| **AE12R182K** | .0018 | .153 x .406 | .375 | .275 | .213 | .163 | .15 |
| **AE12R222K** | .0022 | .153 x .406 | .375 | .275 | .213 | .163 | .15 |
| **AE12R272K** | .0027 | .153 x .406 | .375 | .275 | .213 | .163 | .15 |
| **AE12R332K** | .0033 | .153 x .406 | .375 | .275 | .213 | .163 | .15 |
| **AE12R392K** | .0039 | .153 x .406 | .375 | .275 | .213 | .163 | .15 |
| **AE12R472K** | .0047 | .153 x .406 | .375 | .275 | .213 | .163 | .15 |
| **AE13R562K** | .0056 | .185 x .450 | .375 | .275 | .213 | .163 | .15 |
| **AE13R682K** | .0068 | .185 x .450 | .375 | .275 | .213 | .163 | .15 |
| **AE13R822K** | .0082 | .185 x .450 | .375 | .275 | .213 | .163 | .15 |
| **AE13R103K** | .010 | .185 x .450 | .354 | .26 | .201 | .153 | .142 |
| **AE15R123K** | .012 | .185 x .530 | .378 | .277 | .214 | .164 | .151 |
| **AE15R153K** | .015 | .185 x .530 | .405 | .297 | .23 | .176 | .162 |
| **AE15R183K** | .018 | .185 x .530 | .411 | .301 | .233 | .178 | .164 |
| **AE15R223K** | .022 | .185 x .530 | .417 | .306 | .236 | .181 | .167 |
| **AE15R273K** | .027 | .229 x .530 | .423 | .31 | .24 | .183 | .169 |
| **AE15R333K** | .033 | .229 x .530 | .429 | .315 | .243 | .186 | .172 |
| **AE17R393K** | .039 | .229 x .594 | .438 | .321 | .248 | .19 | .175 |
| **AE17R473K** | .047 | .229 x .594 | .45 | .33 | .255 | .195 | .18 |
| **AE17R563K** | .056 | .250 x .594 | .465 | .341 | .264 | .202 | .186 |
| **AE17R683K** | .068 | .250 x .594 | .486 | .356 | .275 | .211 | .194 |
| **AE17R823K** | .082 | .315 x .594 | .507 | .372 | .287 | .22 | .203 |
| **AE17R104K** | .10 | .315 x .594 | .519 | .381 | .294 | .225 | .208 |
| **AE22R124K** | .12 | .315 x .719 | .615 | .451 | .349 | .267 | .246 |
| **AE22R154K** | .15 | .315 x .719 | .657 | .482 | .372 | .285 | .263 |
| **AE22R184K** | .18 | .343 x .719 | .726 | .532 | .411 | .315 | .29 |
| **AE22R224K** | .22 | .343 x .719 | .798 | .585 | .452 | .346 | .319 |
| **AE28R274K** | .27 | .343 x .969 | .852 | .625 | .483 | .369 | .341 |
| **AE29R334K** | .33 | .343 x .969 | .90 | .66 | .51 | .39 | .36 |
| **AE36R394K** | .39 | .343 x 1.22 | .954 | .70 | .541 | .413 | .382 |
| **AE36R474K** | .47 | .343 x 1.22 | 1.005 | .737 | .57 | .436 | .402 |

### 200 VOLTS DC AT 85° C (100 V AT 125° C)

| GE No. | Cap., µF | Size, Inches Dia. x L. | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| **AE12C102K** | .0010 | .153 x .406 | $0.261 | $0.191 | $0.148 | $0.113 | $0.104 |
| **AE12C122K** | .0012 | .153 x .406 | .261 | .191 | .148 | .113 | .104 |
| **AE12C152K** | .0015 | .153 x .406 | .261 | .191 | .148 | .113 | .104 |
| **AE12C182K** | .0018 | .185 x .406 | .261 | .191 | .148 | .113 | .104 |
| **AE12C222K** | .0022 | .185 x .406 | .261 | .191 | .148 | .113 | .104 |
| **AE12C272K** | .0027 | .185 x .406 | .261 | .191 | .148 | .113 | .104 |
| **AE12C332K** | .0033 | .185 x .406 | .261 | .191 | .148 | .113 | .104 |
| **AE13C392K** | .0039 | .185 x .450 | .264 | .194 | .15 | .114 | .106 |
| **AE13C472K** | .0047 | .185 x .450 | .267 | .196 | .151 | .116 | .107 |
| **AE13C562K** | .0056 | .185 x .450 | .27 | .198 | .153 | .117 | .108 |
| **AE13C682K** | .0068 | .185 x .450 | .273 | .20 | .155 | .118 | .109 |
| **AE13C822K** | .0082 | .185 x .450 | .285 | .209 | .162 | .124 | .114 |
| **AE13C103K** | .010 | .185 x .450 | .291 | .213 | .165 | .126 | .116 |
| **AE14C123K** | .012 | .229 x .530 | .297 | .218 | .168 | .129 | .119 |
| **AE14C153K** | .015 | .229 x .530 | .30 | .22 | .17 | .13 | .12 |
| **AE17C183K** | .018 | .229 x .594 | .306 | .224 | .173 | .133 | .122 |
| **AE17C223K** | .022 | .229 x .594 | .312 | .229 | .177 | .135 | .125 |
| **AE17C273K** | .027 | .250 x .594 | .33 | .242 | .187 | .143 | .132 |
| **AE17C333K** | .033 | .250 x .594 | .348 | .255 | .197 | .151 | .139 |
| **AE17C393K** | .039 | .315 x .594 | .363 | .266 | .206 | .157 | .145 |
| **AE17C473K** | .047 | .315 x .594 | .381 | .279 | .216 | .165 | .152 |
| **AE22C563K** | .056 | .315 x .719 | .402 | .295 | .228 | .174 | .161 |
| **AE22C683K** | .068 | .315 x .719 | .423 | .31 | .24 | .183 | .169 |
| **AE22C823K** | .082 | .328 x .719 | .444 | .326 | .252 | .192 | .178 |
| **AE22C104K** | .10 | .328 x .719 | .465 | .341 | .264 | .202 | .186 |
| **AE28C124K** | .12 | .343 x .969 | .486 | .356 | .275 | .211 | .194 |
| **AE28C154K** | .15 | .343 x .969 | .555 | .407 | .315 | .241 | .222 |
| **AE36C184K** | .18 | .343 x 1.22 | .588 | .431 | .333 | .255 | .235 |
| **AE36C224K** | .22 | .343 x 1.22 | .624 | .458 | .354 | .27 | .25 |

## TYPE AF LECTROFILM®-B DIPPED CAPACITORS

Designed for PC board use in test, measurement, control, communication and other electronic equipment. Extended foil construction employs high purity aluminum foil windings with capacitor-grade polyester film dielectric; tinned, copper-clad steel leads dipped in flame-retardant PVC compound for humidity resistance. High insulation resistance: After 2 minutes at rated DC voltage (or 500 VDC, whichever is less) at 85° C insulation resistance is 1500 megohm-microfarads minimum. Operating temperature, −55° C to +85° C. Can withstand a life test of 250 hours at 85° C with 150% of rated DC voltage applied. **Size:** 0.032″ dia., #20 AWG copper clad tinned leads, 1.273″ lg. min.: AF11, .700″ lg. and AF12, .800″ lg. with leads spaced .375″; AF13, 1.250″ lg. with leads spaced .719″. **Tolerance:** ±10%; ±5% and ±20% available on request.

### 100 WVDC AT 85° C

| GE No. | Cap., µF | Size, Inches H. x Th. | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-499* |
|---|---|---|---|---|---|---|
| **AF11B102KD** | .001 | .350 x .250 | $0.144 | $0.101 | $0.079 | $0.063 |
| **AF11B122KD** | .0012 | .350 x .250 | .144 | .101 | .079 | .063 |
| **AF11B152KD** | .0015 | .350 x .250 | .144 | .101 | .079 | .063 |
| **AF11B182KD** | .0018 | .350 x .250 | .144 | .101 | .079 | .063 |
| **AF11B222KD** | .0022 | .350 x .250 | .144 | .101 | .079 | .063 |
| **AF11B272KD** | .0027 | .350 x .250 | .144 | .101 | .079 | .063 |
| **AF11B332KD** | .0033 | .350 x .250 | .144 | .101 | .079 | .063 |
| **AF11B392KD** | .0039 | .350 x .250 | .147 | .103 | .081 | .064 |
| **AF11B472KD** | .0047 | .350 x .250 | .157 | .11 | .086 | .069 |
| **AF11B562KD** | .0056 | .350 x .250 | .161 | .113 | .088 | .07 |
| **AF11B682KD** | .0068 | .350 x .250 | .164 | .115 | .09 | .072 |
| **AF11B822KD** | .0082 | .350 x .250 | .171 | .12 | .093 | .074 |
| **AF11B103KD** | .01 | .350 x .250 | .171 | .12 | .093 | .074 |
| **AF11B123KD** | .012 | .350 x .250 | .181 | .127 | .099 | .079 |
| **AF11B153KD** | .015 | .350 x .250 | .181 | .127 | .099 | .079 |
| **AF11B183KD** | .018 | .350 x .250 | .188 | .132 | .102 | .082 |
| **AF11B223KD** | .022 | .350 x .250 | .188 | .132 | .102 | .082 |
| **AF11B273KD** | .027 | .370 x .270 | .194 | .136 | .106 | .085 |
| **AF11B333KD** | .033 | .370 x .270 | .194 | .136 | .106 | .085 |
| **AF11B393KD** | .039 | .420 x .300 | .204 | .143 | .112 | .089 |
| **AF11B473KD** | .047 | .420 x .300 | .204 | .143 | .112 | .089 |
| **AF11B563KD** | .056 | .490 x .340 | .221 | .155 | .121 | .096 |
| **AF11B683KD** | .068 | .490 x .340 | .221 | .155 | .121 | .096 |
| **AF11B823KD** | .082 | .550 x .400 | .224 | .157 | .123 | .098 |
| **AF11B104KD** | .10 | .550 x .400 | .228 | .16 | .124 | .099 |
| **AF12B124KD** | .12 | .570 x .370 | .258 | .181 | .141 | .112 |
| **AF12B154KD** | .15 | .620 x .400 | .281 | .197 | .154 | .123 |
| **AF12B184KD** | .18 | .660 x .430 | .305 | .214 | .167 | .133 |
| **AF12B224KD** | .22 | .700 x .460 | .328 | .23 | .179 | .143 |
| **AF12B274KD** | .27 | .740 x .490 | .379 | .266 | .207 | .165 |
| **AF12B334KD** | .33 | .770 x .520 | .409 | .287 | .223 | .178 |
| **AF12B394KD** | .39 | .810 x .550 | .469 | .329 | .256 | .204 |
| **AF12B474KD** | .47 | .860 x .600 | .496 | .348 | .271 | .216 |
| **AF13B564KD** | .56 | .880 x .550 | .546 | .383 | .298 | .238 |
| **AF13B684KD** | .68 | .900 x .580 | .67 | .47 | .366 | .292 |
| **AF13B105KD** | 1.0 | .980 x .720 | .811 | .569 | .443 | .353 |

### 400 WVDC AT 85° C

| | | | | | | |
|---|---|---|---|---|---|---|
| **AF12E472KD** | .0047 | .550 x .250 | $0.154 | $0.108 | $0.084 | $0.067 |
| **AF12E103KD** | .01 | .580 x .250 | .161 | .113 | .088 | .07 |
| **AF12E473KD** | .047 | .650 x .410 | .194 | .136 | .106 | .085 |
| **AF12E104KD** | .1 | .840 x .520 | .241 | .169 | .132 | .105 |
| **AF13E224KD** | .22 | .890 x .560 | .496 | .348 | .271 | .216 |

### 200 WVDC AT 85° C

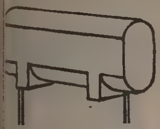
| GE No. | Cap., µF | Size, Inches H. x Th. | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-499* |
|---|---|---|---|---|---|---|
| **AF12C102KD** | .001 | .550 x .250 | $0.144 | $0.101 | $0.079 | $0.063 |
| **AF12C122KD** | .0012 | .550 x .250 | .144 | .101 | .079 | .063 |
| **AF12C152KD** | .0015 | .550 x .250 | .144 | .101 | .079 | .063 |
| **AF12C182KD** | .0018 | .550 x .250 | .144 | .101 | .079 | .063 |
| **AF12C222KD** | .0022 | .550 x .250 | .144 | .101 | .079 | .063 |
| **AF12C272KD** | .0027 | .550 x .250 | .144 | .101 | .079 | .063 |
| **AF12C332KD** | .0033 | .550 x .250 | .144 | .101 | .079 | .063 |
| **AF12C392KD** | .0039 | .550 x .250 | .147 | .103 | .081 | .064 |
| **AF12C472KD** | .0047 | .550 x .250 | .147 | .103 | .081 | .064 |
| **AF12C562KD** | .0056 | .580 x .250 | .147 | .103 | .081 | .064 |
| **AF12C103KD** | .01 | .580 x .250 | .157 | .11 | .086 | .069 |
| **AF12C123KD** | .012 | .580 x .250 | .157 | .11 | .086 | .069 |
| **AF12C153KD** | .015 | .580 x .250 | .157 | .11 | .086 | .069 |
| **AF12C223KD** | .022 | .580 x .250 | .164 | .115 | .09 | .072 |
| **AF12C273KD** | .027 | .610 x .280 | .181 | .127 | .099 | .079 |
| **AF12C333KD** | .033 | .610 x .280 | .181 | .127 | .099 | .079 |
| **AF12C393KD** | .039 | .610 x .280 | .188 | .132 | .102 | .082 |
| **AF12C473KD** | .047 | .610 x .280 | .188 | .132 | .102 | .082 |
| **AF12C563KD** | .056 | .640 x .310 | .194 | .136 | .106 | .085 |
| **AF12C683KD** | .068 | .640 x .310 | .194 | .136 | .106 | .085 |
| **AF12C104KD** | .1 | .710 x .370 | .201 | .141 | .11 | .088 |
| **AF12C124KD** | .12 | .720 x .390 | .235 | .165 | .128 | .102 |
| **AF12C154KD** | .15 | .740 x .410 | .258 | .181 | .141 | .112 |
| **AF12C184KD** | .18 | .750 x .460 | .278 | .195 | .152 | .121 |
| **AF12C224KD** | .22 | .770 x .480 | .302 | .212 | .165 | .131 |
| **AF13C274KD** | .27 | .690 x .390 | .325 | .228 | .178 | .142 |
| **AF13C334KD** | .33 | .710 x .410 | .345 | .242 | .188 | .15 |
| **AF13C394KD** | .39 | .770 x .450 | .372 | .261 | .203 | .162 |
| **AF13C474KD** | .47 | .830 x .500 | .365 | .256 | .199 | .159 |
| **AF13C564KD** | .56 | .990 x .670 | .546 | .383 | .298 | .238 |
| **AF13C684KD** | .68 | 1.14 x .840 | .697 | .489 | .381 | .304 |

### 600 WVDC AT 85° C

| | | | | | | |
|---|---|---|---|---|---|---|
| **AF12F102KD** | .001 | .550 x .250 | $0.144 | $0.101 | $0.079 | $0.063 |
| **AF12F222KD** | .0022 | .550 x .250 | .157 | .11 | .086 | .069 |
| **AF12F332KD** | .0033 | .550 x .250 | .161 | .113 | .088 | .07 |
| **AF12F472KD** | .0047 | .580 x .250 | .171 | .12 | .093 | .074 |
| **AF12F562KD** | .0056 | .580 x .250 | .188 | .132 | .102 | .082 |
| **AF12F682KD** | .0068 | .580 x .250 | .188 | .132 | .102 | .082 |
| **AF12F103KD** | .01 | .640 x .310 | .208 | .146 | .113 | .091 |
| **AF12F473KD** | .047 | .830 x .500 | .482 | .338 | .264 | .21 |
| **AF13F104KD** | .1 | .910 x .560 | .68 | .477 | .371 | .29 |

**★LARGER QUANTITY PRICES AVAILABLE ON REQUEST**

# GENERAL ELECTRIC "BLACK HAWK" FILM CAPACITORS



Ideal for printed circuit board applications in test and measurement, control, communications and consumer products. Has rugged epoxy molded case with mounting feet and radial leads, 1½" long minimum. **Temperature Range:** −55° C to +125° C, with proper derating above 85° C. **Tolerance:** ±10%.

## *CASE SIZES

| Code * | Max. Size, Inches Lgth. | Ht. | Thick. | Code * | Max. Size, Inches Lgth. | Ht. | Thick. |
|---|---|---|---|---|---|---|---|
| A | .500 | .471 | .234 | D | .800 | .531 | .291 |
| B | .800 | .411 | .178 | E | 1.130 | .569 | .328 |
| C | .800 | .475 | .244 | F | 1.130 | .732 | .480 |

| GE No. | Cap., μF | WV DC | Size * | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| F1R5A102 | .0010 | 50 | A | $0.174 | $0.128 | $0.099 | $0.075 | $0.07 |
| F1R5A122 | .0012 | 50 | A | .174 | .128 | .099 | .075 | .07 |
| F1R5A152 | .0015 | 50 | A | .174 | .128 | .099 | .075 | .07 |
| F1R5A182 | .0018 | 50 | A | .174 | .128 | .099 | .075 | .07 |
| F1R5A222 | .0022 | 50 | A | .174 | .128 | .099 | .075 | .07 |
| F1R5A272 | .0027 | 50 | A | .174 | .128 | .099 | .075 | .07 |
| F1R5A332 | .0033 | 50 | A | .174 | .128 | .099 | .075 | .07 |
| F1R5A392 | .0039 | 50 | A | .174 | .128 | .099 | .075 | .07 |
| F1R5A472 | .0047 | 50 | A | .174 | .128 | .099 | .075 | .07 |
| F1R5A562 | .0056 | 50 | A | .174 | .128 | .099 | .075 | .07 |
| F1R5A682 | .0068 | 50 | A | .174 | .128 | .099 | .075 | .07 |
| F1R5A822 | .0082 | 50 | A | .174 | .128 | .099 | .075 | .07 |
| F1R5A103 | .010 | 50 | A | .174 | .128 | .099 | .075 | .07 |
| F1R5A123 | .012 | 50 | A | .174 | .128 | .099 | .075 | .07 |
| F1R5A153 | .015 | 50 | A | .174 | .128 | .099 | .075 | .07 |
| F1R5A183 | .018 | 50 | A | .174 | .128 | .099 | .075 | .07 |
| F1R5A223 | .022 | 50 | A | .174 | .128 | .099 | .075 | .07 |
| F1R5A273 | .027 | 50 | A | .174 | .128 | .099 | .075 | .07 |
| F1R5A333 | .033 | 50 | A | .186 | .136 | .105 | .081 | .074 |
| F1R5A393 | .039 | 50 | A | .186 | .136 | .105 | .081 | .074 |
| F1R5A473 | .047 | 50 | A | .189 | .139 | .107 | .082 | .076 |
| F1R5A563 | .056 | 50 | A | .189 | .139 | .107 | .082 | .076 |
| F2R5A683 | .068 | 50 | B | .207 | .152 | .117 | .09 | .083 |
| F2R5A823 | .082 | 50 | B | .222 | .163 | .126 | .096 | .089 |
| F2R5A104 | .10 | 50 | B | .234 | .172 | .133 | .101 | .094 |
| F2R5A124 | .12 | 50 | B | .297 | .218 | .168 | .129 | .119 |
| F3R5A154 | .15 | 50 | C | .309 | .227 | .175 | .134 | .124 |
| F3R5A184 | .18 | 50 | C | .333 | .244 | .189 | .144 | .133 |
| F4R5A224 | .22 | 50 | D | .351 | .257 | .199 | .152 | .14 |
| F4R5A274 | .27 | 50 | D | .453 | .332 | .257 | .196 | .181 |
| F4R5A334 | .33 | 50 | D | .468 | .343 | .265 | .203 | .187 |
| F6R5A394 | .39 | 50 | E | .528 | .387 | .299 | .229 | .211 |
| F6R5A474 | .47 | 50 | E | .549 | .403 | .311 | .238 | .22 |
| F6R5A564 | .56 | 50 | E | .714 | .524 | .405 | .309 | .286 |
| F6R5A684 | .68 | 50 | E | .759 | .557 | .43 | .329 | .304 |
| F7R5A824 | .82 | 50 | F | 1.017 | .746 | .576 | .441 | .407 |
| F7R5A105 | 1.00 | 50 | F | 1.056 | .774 | .598 | .458 | .422 |
| 5F1R1A102 | .0010 | 100 | A | .174 | .128 | .099 | .075 | .07 |
| 5F1R1A122 | .0012 | 100 | A | .174 | .128 | .099 | .075 | .07 |
| 5F1R1A152 | .0015 | 100 | A | .174 | .128 | .099 | .075 | .07 |
| 5F1R1A182 | .0018 | 100 | A | .174 | .128 | .099 | .075 | .07 |
| 5F1R1A222 | .0022 | 100 | A | .174 | .128 | .099 | .075 | .07 |
| 5F1R1A272 | .0027 | 100 | A | .174 | .128 | .099 | .075 | .07 |
| 5F1R1A332 | .0033 | 100 | A | .174 | .128 | .099 | .075 | .07 |
| 5F1R1A392 | .0039 | 100 | A | .174 | .128 | .099 | .075 | .07 |
| 5F1R1A472 | .0047 | 100 | A | .174 | .128 | .099 | .075 | .07 |
| 5F1R1A562 | .0056 | 100 | A | .174 | .128 | .099 | .075 | .07 |
| 5F1R1A682 | .0068 | 100 | A | .174 | .128 | .099 | .075 | .07 |
| 5F1R1A822 | .0082 | 100 | A | .177 | .13 | .10 | .077 | .071 |
| 5F1R1A103 | .010 | 100 | A | .177 | .13 | .10 | .077 | .071 |
| 5F1R1A123 | .012 | 100 | A | .186 | .136 | .105 | .081 | .074 |
| 5F1R1A153 | .015 | 100 | A | .186 | .136 | .105 | .081 | .074 |
| 5F1R1A183 | .018 | 100 | A | .189 | .139 | .107 | .082 | .076 |
| 5F1R1A223 | .022 | 100 | A | .189 | .139 | .107 | .082 | .076 |
| 5F1R1A273 | .027 | 100 | A | .195 | .143 | .111 | .085 | .078 |
| 5F2R1A333 | .033 | 100 | B | .195 | .143 | .111 | .085 | .078 |
| 5F2R1A393 | .039 | 100 | B | .204 | .15 | .116 | .088 | .082 |
| 5F2R1A473 | .047 | 100 | B | .204 | .15 | .116 | .088 | .082 |
| 5F3R1A563 | .056 | 100 | C | .216 | .158 | .122 | .094 | .086 |
| 5F3R1A683 | .068 | 100 | C | .219 | .161 | .124 | .095 | .088 |
| 5F3R1A823 | .082 | 100 | C | .231 | .169 | .131 | .10 | .092 |
| 5F3R1A104 | .10 | 100 | C | .234 | .172 | .133 | .101 | .094 |
| 5F4R1A124 | .12 | 100 | D | .297 | .218 | .168 | .129 | .119 |
| 5F4R1A154 | .15 | 100 | D | .309 | .227 | .175 | .134 | .124 |
| 5F6R1A184 | .18 | 100 | E | .333 | .244 | .189 | .144 | .133 |
| 5F6R1A224 | .22 | 100 | E | .351 | .257 | .199 | .152 | .14 |
| 5F6R1A274 | .27 | 100 | E | .453 | .332 | .257 | .196 | .181 |
| 5F6R1A334 | .33 | 100 | E | .468 | .343 | .265 | .203 | .187 |
| 5F7R1A394 | .39 | 100 | F | .528 | .387 | .299 | .229 | .211 |
| 5F7R1A474 | .47 | 100 | F | .549 | .403 | .311 | .238 | .22 |
| 5F7R1A564 | .56 | 100 | F | .648 | .475 | .367 | .281 | .259 |
| 5F7R1A684 | .68 | 100 | F | .672 | .493 | .381 | .291 | .269 |
| 5F1R2A102 | .0010 | 200 | A | .174 | .128 | .099 | .075 | .07 |
| 5F1R2A122 | .0012 | 200 | A | .174 | .128 | .099 | .075 | .07 |
| 5F1R2A152 | .0015 | 200 | A | .174 | .128 | .099 | .075 | .07 |
| 5F1R2A182 | .0018 | 200 | A | .174 | .128 | .099 | .075 | .07 |
| 5F1R2A222 | .0022 | 200 | A | .174 | .128 | .099 | .075 | .07 |
| 5F1R2A272 | .0027 | 200 | A | .174 | .128 | .099 | .075 | .07 |
| 5F1R2A332 | .0033 | 200 | A | .174 | .128 | .099 | .075 | .07 |
| 5F1R2A392 | .0039 | 200 | A | .174 | .128 | .099 | .075 | .07 |
| 5F1R2A472 | .0047 | 200 | A | .174 | .128 | .099 | .075 | .07 |
| 75F1R2A562 | .0056 | 200 | A | $0.174 | $0.128 | $0.099 | $0.075 | $0.07 |
| 75F1R2A682 | .0068 | 200 | A | .174 | .128 | .099 | .075 | .07 |
| 75F1R2A822 | .0082 | 200 | A | .177 | .13 | .10 | .077 | .071 |
| 75F1R2A103 | .010 | 200 | A | .177 | .13 | .10 | .077 | .071 |
| 75F1R2A123 | .012 | 200 | A | .186 | .136 | .105 | .081 | .074 |
| 75F1R2A153 | .015 | 200 | A | .186 | .136 | .105 | .081 | .074 |
| 75F1R2A183 | .018 | 200 | A | .189 | .139 | .107 | .082 | .076 |
| 75F1R2A223 | .022 | 200 | A | .189 | .139 | .107 | .082 | .076 |
| 75F1R2A273 | .027 | 200 | A | .195 | .143 | .111 | .085 | .078 |
| 75F2R2A333 | .033 | 200 | B | .195 | .143 | .111 | .085 | .078 |
| 75F2R2A393 | .039 | 200 | B | .204 | .15 | .116 | .088 | .082 |
| 75F2R2A473 | .047 | 200 | B | .204 | .15 | .116 | .088 | .082 |
| 75F3R2A563 | .056 | 200 | C | .216 | .158 | .122 | .094 | .086 |
| 75F3R2A683 | .068 | 200 | C | .219 | .161 | .124 | .095 | .088 |
| 75F3R2A823 | .082 | 200 | C | .231 | .169 | .131 | .10 | .092 |
| 75F3R2A104 | .10 | 200 | C | .234 | .172 | .133 | .101 | .094 |
| 75F4R2A124 | .12 | 200 | D | .297 | .218 | .168 | .129 | .119 |
| 75F4R2A154 | .15 | 200 | D | .309 | .227 | .175 | .134 | .124 |
| 75F6R2A184 | .18 | 200 | E | .333 | .244 | .189 | .144 | .133 |
| 75F6R2A224 | .22 | 200 | E | .351 | .257 | .199 | .152 | .14 |
| 75F6R2A274 | .27 | 200 | E | .453 | .332 | .257 | .196 | .181 |
| 75F6R2A334 | .33 | 200 | E | .468 | .343 | .265 | .203 | .187 |
| 75F7R2A394 | .39 | 200 | F | .528 | .387 | .299 | .229 | .211 |
| 75F7R2A474 | .47 | 200 | F | .549 | .403 | .311 | .238 | .22 |
| 75F7R2A564 | .56 | 200 | F | .648 | .475 | .367 | .281 | .259 |
| 75F7R2A684 | .68 | 200 | F | .672 | .493 | .381 | .291 | .269 |
| 75F1R4A102 | .0010 | 400 | A | .174 | .128 | .099 | .075 | .07 |
| 75F1R4A122 | .0012 | 400 | A | .174 | .128 | .099 | .075 | .07 |
| 75F1R4A152 | .0015 | 400 | A | .174 | .128 | .099 | .075 | .07 |
| 75F1R4A182 | .0018 | 400 | A | .174 | .128 | .099 | .075 | .07 |
| 75F1R4A222 | .0022 | 400 | A | .174 | .128 | .099 | .075 | .07 |
| 75F1R4A272 | .0027 | 400 | A | .177 | .13 | .10 | .077 | .071 |
| 75F1R4A332 | .0033 | 400 | A | .177 | .13 | .10 | .077 | .071 |
| 75F1R4A392 | .0039 | 400 | A | .186 | .136 | .105 | .081 | .074 |
| 75F1R4A472 | .0047 | 400 | A | .186 | .136 | .105 | .081 | .074 |
| 75F1R4A562 | .0056 | 400 | A | .189 | .139 | .107 | .082 | .076 |
| 75F1R4A682 | .0068 | 400 | A | .189 | .139 | .107 | .082 | .076 |
| 75F1R4A822 | .0082 | 400 | A | .195 | .143 | .111 | .085 | .078 |
| 75F2R4A103 | .010 | 400 | B | .195 | .143 | .111 | .085 | .078 |
| 75F2R4A123 | .012 | 400 | B | .204 | .15 | .116 | .088 | .082 |
| 75F2R4A153 | .015 | 400 | B | .204 | .15 | .116 | .088 | .082 |
| 75F3R4A183 | .018 | 400 | C | .216 | .158 | .122 | .094 | .086 |
| 75F3R4A223 | .022 | 400 | C | .219 | .161 | .124 | .095 | .088 |
| 75F3R4A273 | .027 | 400 | C | .231 | .169 | .131 | .10 | .092 |
| 75F4R4A333 | .033 | 400 | D | .255 | .187 | .145 | .111 | .102 |
| 75F4R4A393 | .039 | 400 | D | .297 | .218 | .168 | .129 | .119 |
| 75F4R4A473 | .047 | 400 | D | .309 | .227 | .175 | .134 | .124 |
| 75F6R4A563 | .056 | 400 | E | .333 | .244 | .189 | .144 | .133 |
| 75F6R4A683 | .068 | 400 | E | .354 | .26 | .201 | .153 | .142 |
| 75F6R4A823 | .082 | 400 | E | .447 | .328 | .253 | .194 | .179 |
| 75F6R4A104 | .10 | 400 | E | .48 | .352 | .272 | .208 | .192 |
| 75F7R4A124 | .12 | 400 | F | .528 | .387 | .299 | .229 | .211 |
| 75F7R4A154 | .15 | 400 | F | .561 | .411 | .318 | .243 | .224 |
| 75F7R4A184 | .18 | 400 | F | .645 | .473 | .366 | .28 | .258 |
| 75F7R4A224 | .22 | 400 | F | .678 | .497 | .384 | .294 | .271 |
| 75F1R6A102 | .0010 | 600 | A | .174 | .128 | .099 | .075 | .07 |
| 75F1R6A122 | .0012 | 600 | A | .177 | .13 | .10 | .077 | .071 |
| 75F1R6A152 | .0015 | 600 | A | .177 | .13 | .10 | .077 | .071 |
| 75F1R6A182 | .0018 | 600 | A | .186 | .136 | .105 | .081 | .074 |
| 75F1R6A222 | .0022 | 600 | A | .186 | .136 | .105 | .081 | .074 |
| 75F1R6A272 | .0027 | 600 | A | .189 | .139 | .107 | .082 | .076 |
| 75F1R6A332 | .0033 | 600 | A | .189 | .139 | .107 | .082 | .076 |
| 75F1R6A392 | .0039 | 600 | A | .195 | .143 | .111 | .085 | .078 |
| 75F2R6A472 | .0047 | 600 | B | .195 | .143 | .111 | .085 | .078 |
| 75F2R6A562 | .0056 | 600 | B | .204 | .15 | .116 | .088 | .082 |
| 75F2R6A682 | .0068 | 600 | B | .204 | .15 | .116 | .088 | .082 |
| 75F3R6A822 | .0082 | 600 | C | .216 | .158 | .122 | .094 | .086 |
| 75F3R6A103 | .010 | 600 | C | .219 | .161 | .124 | .095 | .088 |
| 75F3R6A123 | .012 | 600 | C | .231 | .169 | .131 | .10 | .092 |
| 75F4R6A153 | .015 | 600 | D | .255 | .187 | .145 | .111 | .102 |
| 75F4R6A183 | .018 | 600 | D | .297 | .218 | .168 | .129 | .119 |
| 75F4R6A223 | .022 | 600 | D | .309 | .227 | .175 | .134 | .124 |
| 75F6R6A273 | .027 | 600 | E | .333 | .244 | .189 | .144 | .133 |
| 75F6R6A333 | .033 | 600 | E | .354 | .26 | .201 | .153 | .142 |
| 75F6R6A393 | .039 | 600 | E | .462 | .339 | .262 | .20 | .185 |
| 75F6R6A473 | .047 | 600 | E | .48 | .352 | .272 | .208 | .192 |
| 75F7R6A563 | .056 | 600 | F | .528 | .387 | .299 | .229 | .211 |
| 75F7R6A683 | .068 | 600 | F | .561 | .411 | .318 | .243 | .224 |
| 75F7R6A823 | .082 | 600 | F | .645 | .473 | .366 | .28 | .258 |
| 75F7R6A104 | .10 | 600 | F | .678 | .497 | .384 | .294 | .271 |

**LARGER QUANTITY PRICES AVAILABLE ON REQUEST**

**"BLACK HAWK" FILM CAPACITORS ARE ALSO AVAILABLE WITH TOLERANCE**

**OF ±20% OR ±5%. WRITE FOR COMPLETE PRICE INFORMATION**

# GENERAL ELECTRIC Computer Grade Capacitors

## SERIES 88F EXTENDED CAPABILITY COMPUTER GRADE CAPACITORS

Similar in appearance to standard Series 86F computer grade capacitors, but offering higher ripple current capability and lower equivalent series resistance. Screw-type terminal inserts. Sealed by rubber gasket recessed in molded phenolic cover; PVC insulation. Provides 1500 hour life at 85° C. Temp. range, −40° to +85° C. Available in 21 case sizes. Additional 100 WVDC and 150 WVDC values available on request.

| GE No.† | Cap., µF | WV DC | Size * | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
| 88F100 | 6000 | 5 | BA | $ 3.29 | $ 2.56 | $ 1.90 | $1.46 | $1.31 |
| 88F101 | 12000 | 5 | BC | 3.85 | 2.99 | 2.22 | 1.71 | 1.54 |
| 88F102 | 13000 | 5 | BA | 3.96 | 3.08 | 2.29 | 1.76 | 1.58 |
| 88F103 | 18000 | 5 | BE | 4.43 | 3.45 | 2.56 | 1.97 | 1.77 |
| 88F104 | 20000 | 5 | BF | 4.61 | 3.59 | 2.67 | 2.05 | 1.85 |
| 88F105 | 24000 | 5 | BG | 5.00 | 3.89 | 2.89 | 2.22 | 2.00 |
| 88F106 | 27000 | 5 | BH | 5.29 | 4.11 | 3.06 | 2.35 | 2.12 |
| 88F107 | 41000 | 5 | EE | 6.64 | 5.16 | 3.84 | 2.95 | 2.66 |
| 88F108 | 46000 | 5 | FC | 7.11 | 5.53 | 4.11 | 3.16 | 2.84 |
| 88F109 | 48000 | 5 | EF | 7.31 | 5.69 | 4.23 | 3.25 | 2.93 |
| 88F110 | 54000 | 5 | EG | 7.90 | 6.14 | 4.56 | 3.51 | 3.16 |
| 88F111 | 61000 | 5 | EH | 8.55 | 6.65 | 4.94 | 3.80 | 3.42 |
| 88F112 | 70000 | 5 | FE | 9.43 | 7.33 | 5.45 | 4.19 | 3.77 |
| 88F113 | 82000 | 5 | FF | 10.58 | 8.23 | 6.11 | 4.70 | 4.23 |
| 88F114 | 93000 | 5 | FG | 11.63 | 9.05 | 6.72 | 5.17 | 4.65 |
| 88F115 | 100000 | 5 | FH | 12.31 | 9.57 | 7.11 | 5.47 | 4.92 |
| 88F116 | 120000 | 5 | GF | 14.22 | 11.06 | 8.22 | 6.32 | 5.69 |
| 88F117 | 140000 | 5 | GG | 16.16 | 12.57 | 9.33 | 7.18 | 6.46 |
| 88F118 | 150000 | 5 | GH | 17.12 | 13.32 | 9.89 | 7.61 | 6.85 |
| 88F119 | 4200 | 10 | BA | 3.29 | 2.56 | 1.90 | 1.46 | 1.31 |
| 88F120 | 8400 | 10 | BC | 3.85 | 2.99 | 2.22 | 1.71 | 1.54 |
| 88F121 | 9500 | 10 | EA | 4.01 | 3.12 | 2.31 | 1.78 | 1.60 |
| 88F122 | 12000 | 10 | BE | 4.37 | 3.40 | 2.52 | 1.94 | 1.75 |
| 88F123 | 14000 | 10 | BF | 4.64 | 3.61 | 2.68 | 2.06 | 1.85 |
| 88F124 | 17000 | 10 | BG | 5.04 | 3.92 | 2.91 | 2.24 | 2.02 |
| 88F125 | 19000 | 10 | BH | 5.31 | 4.13 | 3.07 | 2.36 | 2.12 |
| 88F126 | 28000 | 10 | EE | 6.57 | 5.11 | 3.80 | 2.92 | 2.63 |
| 88F127 | 32000 | 10 | FC | 7.11 | 5.53 | 4.11 | 3.16 | 2.84 |
| 88F128 | 33000 | 10 | EF | 7.25 | 5.64 | 4.19 | 3.22 | 2.90 |
| 88F129 | 38000 | 10 | EG | 7.94 | 6.18 | 4.59 | 3.53 | 3.18 |
| 88F130 | 42000 | 10 | EH | 8.48 | 6.60 | 4.90 | 3.77 | 3.39 |
| 88F131 | 48000 | 10 | FE | 9.32 | 7.25 | 5.38 | 4.14 | 3.73 |
| 88F132 | 57000 | 10 | FF | 10.55 | 8.21 | 6.10 | 4.69 | 4.22 |
| 88F133 | 65000 | 10 | FG | 11.66 | 9.07 | 6.73 | 5.18 | 4.66 |
| 88F134 | 72000 | 10 | GE | 12.62 | 9.82 | 7.29 | 5.61 | 5.05 |
| 88F135 | 73000 | 10 | FH | 12.76 | 9.92 | 7.37 | 5.67 | 5.10 |
| 88F136 | 84000 | 10 | GF | 14.29 | 11.11 | 8.26 | 6.35 | 5.72 |
| 88F137 | 96000 | 10 | GG | 15.93 | 12.39 | 9.20 | 7.08 | 6.37 |
| 88F138 | 100000 | 10 | GH | 16.49 | 12.83 | 9.53 | 7.33 | 6.60 |
| 88F139 | 3200 | 15 | BA | 3.26 | 2.54 | 1.89 | 1.45 | 1.31 |
| 88F140 | 6400 | 15 | BC | 3.80 | 2.96 | 2.20 | 1.69 | 1.52 |
| 88F141 | 7200 | 15 | EA | 3.96 | 3.08 | 2.29 | 1.76 | 1.58 |
| 88F142 | 9600 | 15 | BE | 4.37 | 3.40 | 2.52 | 1.94 | 1.75 |
| 88F143 | 11000 | 15 | BF | 4.61 | 3.59 | 2.67 | 2.05 | 1.85 |
| 88F144 | 13000 | 15 | BG | 4.95 | 3.85 | 2.86 | 2.20 | 1.98 |
| 88F145 | 14000 | 15 | BH | 5.13 | 3.99 | 2.96 | 2.28 | 2.05 |
| 88F146 | 21000 | 15 | EE | 6.35 | 4.94 | 3.67 | 2.82 | 2.54 |
| 88F147 | 25000 | 15 | EF | 7.04 | 5.48 | 4.07 | 3.13 | 2.82 |
| 88F148 | 28000 | 15 | EG | 7.56 | 5.88 | 4.37 | 3.36 | 3.02 |
| 88F149 | 32000 | 15 | EH | 8.26 | 6.42 | 4.77 | 3.67 | 3.30 |
| 88F150 | 37000 | 15 | FE | 9.14 | 7.11 | 5.28 | 4.06 | 3.65 |
| 88F151 | 43000 | 15 | FF | 10.17 | 7.91 | 5.88 | 4.52 | 4.07 |
| 88F152 | 50000 | 15 | FG | 11.41 | 8.87 | 6.59 | 5.07 | 4.56 |
| 88F153 | 55000 | 15 | FH | 12.26 | 9.54 | 7.09 | 5.45 | 4.91 |
| 88F154 | 64000 | 15 | GF | 13.84 | 10.76 | 8.00 | 6.15 | 5.54 |
| 88F155 | 73000 | 15 | GG | 15.39 | 11.97 | 8.89 | 6.84 | 6.16 |
| 88F156 | 82000 | 15 | GH | 16.97 | 13.20 | 9.80 | 7.54 | 6.79 |
| 88F157 | 2300 | 20 | BA | 3.29 | 2.56 | 1.90 | 1.46 | 1.31 |
| 88F158 | 4600 | 20 | BC | 3.89 | 3.03 | 2.25 | 1.73 | 1.56 |
| 88F159 | 5100 | 20 | EA | 4.03 | 3.13 | 2.33 | 1.79 | 1.61 |
| 88F160 | 6800 | 20 | BE | 4.46 | 3.47 | 2.57 | 1.98 | 1.78 |
| 88F161 | 8000 | 20 | BF | 4.77 | 3.71 | 2.76 | 2.12 | 1.91 |
| 88F162 | 9100 | 20 | BG | 5.06 | 3.94 | 2.93 | 2.25 | 2.03 |
| 88F163 | 10000 | 20 | BH | 5.29 | 4.11 | 3.06 | 2.35 | 2.12 |
| 88F164 | 15000 | 20 | EE | 6.59 | 5.13 | 3.81 | 2.93 | 2.64 |
| 88F165 | 17000 | 20 | FC | 7.11 | 5.53 | 4.11 | 3.16 | 2.84 |
| 88F166 | 18000 | 20 | EF | 7.36 | 5.72 | 4.25 | 3.27 | 2.94 |
| 88F167 | 20000 | 20 | EG | 7.88 | 6.13 | 4.55 | 3.50 | 3.15 |
| 88F168 | 23000 | 20 | EH | 8.66 | 6.74 | 5.01 | 3.85 | 3.47 |
| 88F169 | 26000 | 20 | FE | 9.43 | 7.33 | 5.45 | 4.19 | 3.77 |
| 88F170 | 30000 | 20 | FF | 10.46 | 8.14 | 6.05 | 4.65 | 4.19 |
| 88F171 | 35000 | 20 | FG | 11.77 | 9.15 | 6.80 | 5.23 | 4.71 |
| 88F172 | 39000 | 20 | GE | 12.80 | 9.96 | 7.40 | 5.69 | 5.12 |
| 88F173 | 40000 | 20 | FH | 13.05 | 10.15 | 7.54 | 5.80 | 5.22 |
| 88F174 | 45000 | 20 | GF | 14.36 | 11.17 | 8.29 | 6.38 | 5.74 |
| 88F175 | 52000 | 20 | GG | 16.16 | 12.57 | 9.33 | 7.18 | 6.46 |
| 88F176 | 58000 | 20 | GH | 17.71 | 13.77 | 10.23 | 7.87 | 7.08 |
| 88F177 | 1700 | 25 | BA | 3.24 | 2.52 | 1.87 | 1.44 | 1.30 |
| 88F178 | 3400 | 25 | BC | 3.78 | 2.94 | 2.18 | 1.68 | 1.51 |
| 88F179 | 3900 | 25 | EA | 3.94 | 3.06 | 2.28 | 1.75 | 1.58 |
| 88F180 | 5100 | 25 | BE | 4.32 | 3.36 | 2.50 | 1.92 | 1.73 |
| 88F181 | 6000 | 25 | BF | 4.61 | 3.59 | 2.67 | 2.05 | 1.85 |
| 88F182 | 7000 | 25 | BG | 4.93 | 3.83 | 2.85 | 2.19 | 1.97 |
| 88F183 | 7700 | 25 | BH | 5.15 | 4.01 | 2.98 | 2.29 | 2.06 |
| 88F184 | 11000 | 25 | EE | 6.19 | 4.81 | 3.58 | 2.75 | 2.48 |
| 88F185 | 13000 | 25 | EF | 6.82 | 5.30 | 3.94 | 3.03 | 2.73 |
| 88F186 | 15000 | 25 | EG | 7.47 | 5.81 | 4.32 | 3.32 | 2.99 |
| 88F187 | 17000 | 25 | EH | 8.10 | 6.30 | 4.68 | 3.60 | 3.24 |
| 88F188 | 20000 | 25 | FE | 9.05 | 7.04 | 5.23 | 4.02 | 3.62 |
| 88F189 | 23000 | 25 | FF | 9.99 | 7.77 | 5.77 | 4.44 | 4.00 |
| 88F190 | 26000 | 25 | FG | 10.96 | 8.52 | 6.33 | 4.87 | 4.38 |
| 88F191 | 29000 | 25 | GE | 11.90 | 9.26 | 6.88 | 5.29 | 4.76 |
| 88F192 | 30000 | 25 | FH | 12.22 | 9.50 | 7.06 | 5.43 | 4.89 |
| 88F193 | 34000 | 25 | GF | 13.48 | 10.48 | 7.79 | 5.99 | 5.39 |
| 88F194 | 39000 | 25 | GG | $15.08 | $11.73 | $8.71 | $6.70 | $6.03 |
| 88F195 | 44000 | 25 | GH | 16.65 | 12.95 | 9.62 | 7.40 | 6.66 |
| 88F196 | 1500 | 30 | BA | 3.26 | 2.54 | 1.89 | 1.45 | 1.31 |
| 88F197 | 3000 | 30 | BC | 3.83 | 2.98 | 2.21 | 1.70 | 1.53 |
| 88F198 | 3400 | 30 | EA | 3.98 | 3.10 | 2.30 | 1.77 | 1.59 |
| 88F199 | 4600 | 30 | BE | 4.43 | 3.45 | 2.56 | 1.97 | 1.77 |
| 88F200 | 5400 | 30 | BF | 4.73 | 3.68 | 2.73 | 2.10 | 1.89 |
| 88F201 | 6100 | 30 | BG | 5.00 | 3.89 | 2.89 | 2.22 | 2.00 |
| 88F202 | 6900 | 30 | BH | 5.29 | 4.11 | 3.06 | 2.35 | 2.12 |
| 88F203 | 10000 | 30 | EE | 6.46 | 5.02 | 3.73 | 2.87 | 2.58 |
| 88F204 | 11000 | 30 | FC | 6.84 | 5.32 | 3.95 | 3.04 | 2.74 |
| 88F205 | 12000 | 30 | EF | 7.20 | 5.60 | 4.16 | 3.20 | 2.88 |
| 88F206 | 13000 | 30 | EG | 7.58 | 5.90 | 4.38 | 3.37 | 3.03 |
| 88F207 | 15000 | 30 | EH | 8.35 | 6.49 | 4.82 | 3.71 | 3.34 |
| 88F208 | 17000 | 30 | FE | 9.09 | 7.07 | 5.25 | 4.04 | 3.64 |
| 88F209 | 20000 | 30 | FF | 10.22 | 7.95 | 5.90 | 4.54 | 4.09 |
| 88F210 | 23000 | 30 | FG | 11.34 | 8.82 | 6.55 | 5.04 | 4.54 |
| 88F211 | 26000 | 30 | FH | 12.47 | 9.70 | 7.20 | 5.54 | 4.99 |
| 88F212 | 30000 | 30 | GF | 13.97 | 10.87 | 8.07 | 6.21 | 5.59 |
| 88F213 | 34000 | 30 | GG | 15.48 | 12.04 | 8.94 | 6.88 | 6.19 |
| 88F214 | 39000 | 30 | GH | 17.35 | 13.49 | 10.02 | 7.71 | 6.94 |
| 88F215 | 1000 | 40 | BA | 3.26 | 2.54 | 1.89 | 1.45 | 1.31 |
| 88F216 | 2100 | 40 | BC | 3.87 | 3.01 | 2.24 | 1.72 | 1.55 |
| 88F217 | 2400 | 40 | EA | 4.03 | 3.13 | 2.33 | 1.79 | 1.61 |
| 88F218 | 3200 | 40 | BE | 4.48 | 3.48 | 2.59 | 1.99 | 1.79 |
| 88F219 | 3800 | 40 | BF | 4.82 | 3.75 | 2.78 | 2.14 | 1.93 |
| 88F220 | 4300 | 40 | BG | 5.09 | 3.96 | 2.94 | 2.26 | 2.03 |
| 88F221 | 4900 | 40 | BH | 5.42 | 4.22 | 3.13 | 2.41 | 2.17 |
| 88F222 | 7300 | 40 | EE | 6.75 | 5.25 | 3.90 | 3.00 | 2.70 |
| 88F223 | 8400 | 40 | FC | 7.36 | 5.72 | 4.25 | 3.27 | 2.94 |
| 88F224 | 8600 | 40 | EF | 7.47 | 5.81 | 4.32 | 3.32 | 2.99 |
| 88F225 | 9800 | 40 | EG | 8.15 | 6.34 | 4.71 | 3.62 | 3.26 |
| 88F226 | 11000 | 40 | EH | 8.82 | 6.86 | 5.10 | 3.92 | 3.53 |
| 88F227 | 12000 | 40 | FE | 9.36 | 7.28 | 5.41 | 4.16 | 3.74 |
| 88F228 | 14000 | 40 | FF | 10.49 | 8.16 | 6.06 | 4.66 | 4.19 |
| 88F229 | 17000 | 40 | FG | 12.15 | 9.45 | 7.02 | 5.40 | 4.86 |
| 88F230 | 18000 | 40 | GE | 12.71 | 9.89 | 7.35 | 5.65 | 5.09 |
| 88F231 | 19000 | 40 | FH | 13.25 | 10.31 | 7.66 | 5.89 | 5.30 |
| 88F232 | 21000 | 40 | GF | 14.38 | 11.18 | 8.31 | 6.39 | 5.75 |
| 88F233 | 25000 | 40 | GG | 16.61 | 12.92 | 9.59 | 7.38 | 6.64 |
| 88F234 | 28000 | 40 | GH | 18.27 | 14.21 | 10.56 | 8.12 | 7.31 |
| 88F235 | 860 | 50 | BA | 3.29 | 2.56 | 1.90 | 1.46 | 1.31 |
| 88F236 | 1700 | 50 | BC | 3.87 | 3.01 | 2.24 | 1.72 | 1.55 |
| 88F237 | 1900 | 50 | EA | 4.01 | 3.12 | 2.31 | 1.78 | 1.60 |
| 88F238 | 2600 | 50 | BE | 4.50 | 3.50 | 2.60 | 2.00 | 1.80 |
| 88F239 | 3000 | 50 | BF | 4.77 | 3.71 | 2.76 | 2.12 | 1.91 |
| 88F240 | 3400 | 50 | BG | 5.04 | 3.92 | 2.91 | 2.24 | 2.02 |
| 88F241 | 3900 | 50 | BH | 5.40 | 4.20 | 3.12 | 2.40 | 2.16 |
| 88F242 | 5800 | 50 | EE | 6.71 | 5.22 | 3.87 | 2.98 | 2.68 |
| 88F243 | 6600 | 50 | FC | 7.27 | 5.65 | 4.20 | 3.23 | 2.91 |
| 88F244 | 6800 | 50 | EF | 7.40 | 5.76 | 4.28 | 3.29 | 2.96 |
| 88F245 | 7800 | 50 | EG | 8.08 | 6.28 | 4.67 | 3.59 | 3.23 |
| 88F246 | 8700 | 50 | EH | 8.71 | 6.77 | 5.03 | 3.87 | 3.48 |
| 88F247 | 10000 | 50 | FE | 9.61 | 7.47 | 5.55 | 4.27 | 3.84 |
| 88F248 | 11000 | 50 | FF | 10.31 | 8.02 | 5.95 | 4.58 | 4.12 |
| 88F249 | 13000 | 50 | FG | 11.68 | 9.08 | 6.75 | 5.19 | 4.67 |
| 88F250 | 14000 | 50 | GE | 12.38 | 9.63 | 7.15 | 5.50 | 4.95 |
| 88F251 | 15000 | 50 | FH | 13.07 | 10.17 | 7.55 | 5.81 | 5.23 |
| 88F252 | 17000 | 50 | GF | 14.45 | 11.24 | 8.35 | 6.42 | 5.78 |
| 88F253 | 19000 | 50 | GG | 15.82 | 12.30 | 9.14 | 7.03 | 6.33 |
| 88F254 | 22000 | 50 | GH | 17.89 | 13.91 | 10.34 | 7.95 | 7.16 |
| 88F255 | 350 | 75 | BA | 3.53 | 2.75 | 2.04 | 1.57 | 1.41 |
| 88F256 | 700 | 75 | BC | 4.07 | 3.17 | 2.35 | 1.81 | 1.63 |
| 88F257 | 800 | 75 | EA | 4.21 | 3.27 | 2.43 | 1.87 | 1.68 |
| 88F258 | 1100 | 75 | BE | 4.68 | 3.64 | 2.70 | 2.08 | 1.87 |
| 88F259 | 1300 | 75 | BF | 4.97 | 3.87 | 2.87 | 2.21 | 1.99 |
| 88F260 | 1400 | 75 | BG | 5.13 | 3.99 | 2.96 | 2.28 | 2.05 |
| 88F261 | 1600 | 75 | BH | 5.45 | 4.24 | 3.15 | 2.42 | 2.18 |
| 88F262 | 2500 | 75 | EE | 6.82 | 5.30 | 3.94 | 3.03 | 2.73 |
| 88F263 | 2800 | 75 | FC | 7.27 | 5.65 | 4.20 | 3.23 | 2.91 |
| 88F264 | 2900 | 75 | EF | 7.43 | 5.78 | 4.29 | 3.30 | 2.97 |
| 88F265 | 3300 | 75 | EG | 8.03 | 6.25 | 4.64 | 3.57 | 3.21 |
| 88F266 | 3700 | 75 | EH | 8.66 | 6.74 | 5.01 | 3.85 | 3.47 |
| 88F267 | 4300 | 75 | FE | 9.56 | 7.44 | 5.53 | 4.25 | 3.83 |
| 88F268 | 5000 | 75 | FF | 10.64 | 8.28 | 6.15 | 4.73 | 4.26 |
| 88F269 | 5600 | 75 | FG | 11.57 | 9.00 | 6.68 | 5.14 | 4.63 |
| 88F270 | 6300 | 75 | FH | 12.62 | 9.82 | 7.29 | 5.61 | 5.05 |
| 88F271 | 6600 | 75 | GE | 13.10 | 10.19 | 7.57 | 5.82 | 5.24 |
| 88F272 | 7700 | 75 | GF | 14.78 | 11.50 | 8.54 | 6.57 | 5.91 |
| 88F273 | 8300 | 75 | GG | 15.68 | 12.20 | 9.06 | 6.97 | 6.27 |
| 88F274 | 9400 | 75 | GH | 17.37 | 13.51 | 10.04 | 7.72 | 6.95 |
| 88F275 | 250 | 100 | BA | 3.51 | 2.73 | 2.03 | 1.56 | 1.40 |
| 88F276 | 500 | 100 | BC | 4.05 | 3.15 | 2.34 | 1.80 | 1.62 |
| 88F277 | 600 | 100 | EA | 4.25 | 3.31 | 2.46 | 1.89 | 1.70 |
| 88F278 | 800 | 100 | BE | 4.68 | 3.64 | 2.70 | 2.08 | 1.87 |
| 88F279 | 900 | 100 | BF | 4.88 | 3.80 | 2.82 | 2.17 | 1.95 |
| 88F280 | 1000 | 100 | BG | 5.09 | 3.96 | 2.94 | 2.26 | 2.03 |
| 88F281 | 1100 | 100 | BH | 5.31 | 4.13 | 3.07 | 2.36 | 2.12 |
| 88F282 | 1200 | 100 | EC | 5.51 | 4.29 | 3.19 | 2.45 | 2.21 |
| 88F283 | 1800 | 100 | EE | 6.77 | 5.27 | 3.91 | 3.01 | 2.71 |
| 88F284 | 2000 | 100 | FC | 7.20 | 5.60 | 4.16 | 3.20 | 2.88 |

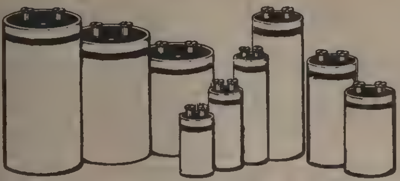
### *CASE SIZES—SERIES 88F

| Code * | Size, Inches Dia. x L. | Code * | Size, Inches Dia. x L. | Code * | Size, Inches Dia. x L. |
|---|---|---|---|---|---|
| BA | 1.385 x 2.140 | EC | 2.010 x 3.140 | FF | 2.510 x 4.640 |
| BC | 1.385 x 3.140 | EE | 2.010 x 4.140 | FG | 2.510 x 5.140 |
| BE | 1.385 x 4.140 | EF | 2.010 x 4.640 | FH | 2.510 x 5.640 |
| BF | 1.385 x 4.640 | EG | 2.010 x 5.140 | GE | 3.010 x 4.140 |
| BG | 1.385 x 5.140 | EH | 2.010 x 5.640 | GF | 3.010 x 4.640 |
| BH | 1.385 x 5.640 | FC | 2.510 x 3.140 | GG | 3.010 x 5.140 |
| EA | 2.010 x 2.140 | FE | 2.510 x 4.140 | GH | 3.010 x 5.640 |

†Add suffix **AMA** to all GE numbers.

# GENERAL ELECTRIC Tantalum Capacitors

## SERIES 86F500 HIGH CAPACITANCE COMPUTER GRADE CAPACITORS



ilar in construction and performance to standard Series 86F mputer grade capacitors, but with even higher capacitance ues (up to 540,000 μF at 5 WVDC). Temperature range, 40° to +65° C; to 85° C with proper derating. Offer high ripple rent capability, low equivalent series resistance and long life. se insulation is standard PVC; screw-type terminal inserts.

Sealed by rubber gasket recessed in molded phenolic cover. Suffix **M** designates units with polymeric insulating sleeve. For units with sleeve and bracket, change suffix M to **L** (e.g., 86F501**L**). And, add to net **8c** each for size codes A, B and C; **10c** for code D; **12c** for code E; **16c** for code F; **20c** for codes G, H and J.

### *COMPUTER GRADE CASE SIZES

Sizes are given with insulated case.

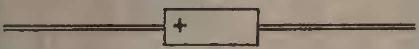
| Code | Size, Inches Dia. x Lgth. | Code | Size, Inches Dia. x Lgth. |
|---|---|---|---|
| A | 1.385 x 2.140 | F | 2.510 x 4.140 |
| B | 1.385 x 3.140 | G | 3.010 x 4.140 |
| C | 1.385 x 4.140 | H | 3.010 x 5.640 |
| D | 1.760 x 4.140 | J | 3.010 x 8.640 |
| E | 2.010 x 4.140 | | |

| GE No. | Cap., μF | WV DC | Size * | Net Each, Lots of 1-9 | 10-14 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|---|---|
| F501M | 13000 | 5 | A | $ 3.71 | $ 2.89 | $ 2.15 | $ 1.65 | $ 1.49 |
| F502M | 27000 | 5 | B | 4.84 | 3.76 | 2.80 | 2.15 | 1.94 |
| F503M | 40000 | 5 | C | 5.87 | 4.57 | 3.39 | 2.61 | 2.35 |
| F504M | 64000 | 5 | D | 7.83 | 6.09 | 4.52 | 3.48 | 3.13 |
| F505M | 90000 | 5 | E | 9.92 | 7.72 | 5.73 | 4.41 | 3.97 |
| F506M | 150000 | 5 | F | 14.78 | 11.50 | 8.54 | 6.57 | 5.91 |
| F507M | 220000 | 5 | G | 20.45 | 15.91 | 11.82 | 9.09 | 8.18 |
| F508M | 332000 | 5 | H | 29.54 | 22.98 | 17.07 | 13.13 | 11.82 |
| F509M | 540000 | 5 | J | 46.37 | 36.07 | 26.79 | 20.61 | 18.55 |
| F510M | 9000 | 10 | A | 3.60 | 2.80 | 2.08 | 1.60 | 1.44 |
| F511M | 18000 | 10 | B | 4.61 | 3.59 | 2.67 | 2.05 | 1.85 |
| F512M | 27000 | 10 | C | 5.60 | 4.36 | 3.24 | 2.49 | 2.24 |
| F513M | 43000 | 10 | D | 7.38 | 5.74 | 4.26 | 3.28 | 2.95 |
| F514M | 59000 | 10 | E | 9.14 | 7.11 | 5.28 | 4.06 | 3.65 |
| F515M | 100000 | 10 | F | 13.70 | 10.66 | 7.92 | 6.09 | 5.48 |
| F516M | 150000 | 10 | G | 19.26 | 14.98 | 11.13 | 8.56 | 7.70 |
| F517M | 225000 | 10 | H | 27.59 | 21.46 | 15.94 | 12.26 | 11.03 |
| F518M | 370000 | 10 | J | 43.67 | 33.97 | 25.23 | 19.41 | 17.47 |
| F519M | 7500 | 15 | A | 3.60 | 2.80 | 2.08 | 1.60 | 1.44 |
| F520M | 15000 | 15 | B | 4.66 | 3.62 | 2.69 | 2.07 | 1.86 |
| F521M | 23000 | 15 | C | 5.78 | 4.50 | 3.34 | 2.57 | 2.31 |
| F522M | 36000 | 15 | D | 7.63 | 5.93 | 4.41 | 3.39 | 3.05 |
| F523M | 50000 | 15 | E | 9.61 | 7.47 | 5.55 | 4.27 | 3.84 |
| F524M | 83000 | 15 | F | 14.29 | 11.11 | 8.26 | 6.35 | 5.72 |
| F525M | 120000 | 15 | G | 19.53 | 15.19 | 11.28 | 8.68 | 7.81 |
| F526M | 185000 | 15 | H | 28.73 | 22.35 | 16.60 | 12.77 | 11.49 |
| F527M | 300000 | 15 | J | 45.02 | 35.02 | 26.01 | 20.01 | 18.01 |
| F528M | 5800 | 20 | A | 3.65 | 2.84 | 2.11 | 1.62 | 1.46 |
| F529M | 11700 | 20 | B | 4.77 | 3.71 | 2.76 | 2.12 | 1.91 |
| F530M | 17600 | 20 | C | 5.92 | 4.60 | 3.42 | 2.63 | 2.37 |
| F531M | 27000 | 20 | D | 7.70 | 5.99 | 4.45 | 3.42 | 3.08 |
| F532M | 38000 | 20 | E | 9.81 | 7.63 | 5.67 | 4.36 | 3.92 |
| F533M | 64000 | 20 | F | 14.76 | 11.48 | 8.53 | 6.56 | 5.90 |
| F534M | 95000 | 20 | G | 20.72 | 16.12 | 11.97 | 9.21 | 8.29 |
| F535M | 140000 | 20 | H | 29.32 | 22.80 | 16.94 | 13.03 | 11.73 |
| F536M | 230000 | 20 | J | 46.55 | 36.21 | 26.90 | 20.69 | 18.62 |
| F537M | 4500 | 25 | A | 3.65 | 2.84 | 2.11 | 1.62 | 1.46 |
| F538M | 9000 | 25 | B | 4.70 | 3.66 | 2.72 | 2.09 | 1.88 |
| F539M | 13500 | 25 | C | 5.78 | 4.50 | 3.34 | 2.57 | 2.31 |
| F540M | 22000 | 25 | D | 7.83 | 6.09 | 4.52 | 3.48 | 3.13 |
| F541M | 30000 | 25 | E | 9.74 | 7.58 | 5.63 | 4.33 | 3.90 |
| F542M | 50000 | 25 | F | 14.54 | 11.31 | 8.40 | 6.46 | 5.81 |
| F543M | 75000 | 25 | G | 20.50 | 15.94 | 11.84 | 9.11 | 8.20 |
| F544M | 110000 | 25 | H | 28.87 | 22.45 | 16.68 | 12.83 | 11.55 |
| F545M | 180000 | 25 | J | 45.63 | 35.49 | 26.36 | 20.28 | 18.25 |

| GE No. | Cap., μF | WV DC | Size * | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|---|---|
| 86F546M | 4000 | 30 | A | $ 3.65 | $ 2.84 | $ 2.11 | $ 1.62 | $ 1.46 |
| 86F547M | 8000 | 30 | B | 4.77 | 3.71 | 2.76 | 2.12 | 1.91 |
| 86F548M | 12000 | 30 | C | 5.87 | 4.57 | 3.39 | 2.61 | 2.35 |
| 86F549M | 19000 | 30 | D | 7.88 | 6.13 | 4.55 | 3.50 | 3.15 |
| 86F550M | 26000 | 30 | E | 9.83 | 7.65 | 5.68 | 4.37 | 3.93 |
| 86F551M | 44000 | 30 | F | 14.85 | 11.55 | 8.58 | 6.60 | 5.94 |
| 86F552M | 65000 | 30 | G | 20.77 | 16.15 | 12.00 | 9.23 | 8.31 |
| 86F553M | 100000 | 30 | H | 30.58 | 23.78 | 17.67 | 13.59 | 12.23 |
| 86F554M | 160000 | 30 | J | 47.41 | 36.87 | 27.39 | 21.07 | 18.96 |
| 86F555M | 2900 | 40 | A | 3.94 | 3.06 | 2.28 | 1.75 | 1.58 |
| 86F556M | 5800 | 40 | B | 4.91 | 3.82 | 2.83 | 2.18 | 1.96 |
| 86F557M | 8700 | 40 | C | 5.85 | 4.55 | 3.38 | 2.60 | 2.34 |
| 86F558M | 14000 | 40 | D | 7.61 | 5.92 | 4.39 | 3.38 | 3.04 |
| 86F559M | 19000 | 40 | E | 9.27 | 7.21 | 5.36 | 4.12 | 3.71 |
| 86F560M | 32000 | 40 | F | 13.57 | 10.55 | 7.84 | 6.03 | 5.43 |
| 86F561M | 48000 | 40 | G | 18.83 | 14.65 | 10.88 | 8.37 | 7.53 |
| 86F562M | 71000 | 40 | H | 26.42 | 20.55 | 15.26 | 11.74 | 10.57 |
| 86F563M | 115000 | 40 | J | 40.93 | 31.83 | 23.65 | 18.19 | 16.37 |
| 86F564M | 2400 | 50 | A | 3.80 | 2.96 | 2.20 | 1.69 | 1.52 |
| 86F565M | 4900 | 50 | B | 5.06 | 3.94 | 2.93 | 2.25 | 2.03 |
| 86F566M | 7300 | 50 | C | 6.26 | 4.87 | 3.61 | 2.78 | 2.50 |
| 86F567M | 11000 | 50 | D | 8.12 | 6.32 | 4.69 | 3.61 | 3.25 |
| 86F568M | 16000 | 50 | E | 10.64 | 8.28 | 6.15 | 4.73 | 4.26 |
| 86F569M | 26000 | 50 | F | 15.64 | 12.16 | 9.04 | 6.95 | 6.26 |
| 86F570M | 40000 | 50 | G | 22.66 | 17.62 | 13.09 | 10.07 | 9.06 |
| 86F572M | 97000 | 50 | J | 51.23 | 39.85 | 29.60 | 22.77 | 20.49 |
| 86F573M | 1400 | 75 | A | 3.87 | 3.01 | 2.24 | 1.72 | 1.55 |
| 86F574M | 2900 | 75 | B | 4.97 | 3.87 | 2.87 | 2.21 | 1.99 |
| 86F575M | 4400 | 75 | C | 6.08 | 4.73 | 3.51 | 2.70 | 2.43 |
| 86F576M | 7300 | 75 | D | 8.21 | 6.39 | 4.75 | 3.65 | 3.29 |
| 86F577M | 10000 | 75 | E | 10.22 | 7.95 | 5.90 | 4.54 | 4.09 |
| 86F578M | 16800 | 75 | F | 15.21 | 11.83 | 8.79 | 6.76 | 6.08 |
| 86F579M | 24000 | 75 | G | 20.50 | 15.94 | 11.84 | 9.11 | 8.20 |
| 86F580M | 36000 | 75 | H | 29.34 | 22.82 | 16.95 | 13.04 | 11.74 |
| 86F581M | 58000 | 75 | J | 45.54 | 35.42 | 26.31 | 20.24 | 18.22 |
| 86F582M | 850 | 100 | A | 3.80 | 2.96 | 2.20 | 1.69 | 1.52 |
| 86F583M | 1700 | 100 | B | 5.09 | 3.96 | 2.94 | 2.26 | 2.03 |
| 86F584M | 2600 | 100 | C | 6.41 | 4.99 | 3.71 | 2.85 | 2.57 |
| 86F585M | 4200 | 100 | D | 8.82 | 6.86 | 5.10 | 3.92 | 3.53 |
| 86F586M | 5800 | 100 | E | 11.21 | 8.72 | 6.47 | 4.98 | 4.48 |
| 86F587M | 9800 | 100 | F | 17.17 | 13.35 | 9.92 | 7.63 | 6.87 |
| 86F588M | 14000 | 100 | G | 23.47 | 18.25 | 13.56 | 10.43 | 9.39 |
| 86F589M | 21000 | 100 | H | 33.91 | 26.37 | 19.59 | 15.07 | 13.56 |
| 86F590M | 34000 | 100 | J | 53.35 | 41.49 | 30.82 | 23.71 | 21.34 |

*See preceding page (Series 86F) for case sizes.

## SUBMINIATURE TUBULAR TANTALUM WET-SLUG CAPACITORS



aximum volumetric efficiency in a subminiature package. Ideal r filtering, energy storage, bypass and coupling applications here space is at a premium. Provide excellent parameter characteristics over a temperature range of −55° to +85° C. Withand environmental requirements of MIL-C-3965. Fully insulated sign. Low, stable leakage current. Suitably sintered anode is ctrolytically formed to a proper voltage, positioned on supports thin a specially treated silver case, and gelled electrolyte is ded. Unit is then sealed using roll crimp around a Teflon†/astomer bushing. Solder-coated lead is welded to the tantalum ed-thru lead; capacitor is wrapped with insulating tape, with oxy end-fill to cover the tantalum-to-nickel lead weld. **Tolerce:** ±20%.

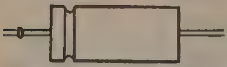
egistered DuPont trademark.

### *CASE SIZES

| ode * | Size, Inches Dia. x Lgth. | Lead Lgth. | Code * | Size, Inches Dia. x Lgth. | Lead Lgth. |
|---|---|---|---|---|---|
| A | .115 x .312 | 2″ | C | .145 x .600 | 2″ |
| B | .115 x .403 | 2″ | D | .225 x .778 | 2″ |

| GE No. | Cap., μF | WV DC | Case Size * | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| 69F954 | 22 | 6 | A | $2.01 | $1.47 | $1.14 | $0.87 | $0.74 |
| 69F902 | 50 | 6 | B | 2.10 | 1.54 | 1.19 | .91 | .77 |
| 69F915 | 180 | 6 | C | 3.09 | 2.27 | 1.75 | 1.34 | 1.13 |
| 69F934 | 450 | 6 | D | 3.90 | 2.86 | 2.21 | 1.69 | 1.43 |
| 69F955 | 15 | 10 | A | 2.01 | 1.47 | 1.14 | .87 | .74 |
| 69F909 | 33 | 10 | B | 2.10 | 1.54 | 1.19 | .91 | .77 |
| 69F914 | 120 | 10 | C | 3.09 | 2.27 | 1.75 | 1.34 | 1.13 |
| 69F933 | 300 | 10 | D | 3.90 | 2.86 | 2.21 | 1.69 | 1.43 |
| 69F956 | 10 | 15 | A | 2.01 | 1.47 | 1.14 | .87 | .74 |
| 69F906 | 22 | 15 | B | 2.10 | 1.54 | 1.19 | .91 | .77 |
| 69F913 | 80 | 15 | C | 3.09 | 2.27 | 1.75 | 1.34 | 1.13 |
| 69F932 | 200 | 15 | D | 3.90 | 2.86 | 2.21 | 1.69 | 1.43 |
| 69F957 | 6.8 | 20 | A | 2.01 | 1.47 | 1.14 | .87 | .74 |
| 69F907 | 15 | 20 | B | 2.10 | 1.54 | 1.19 | .91 | .77 |
| 69F912 | 60 | 20 | C | 3.09 | 2.27 | 1.75 | 1.34 | 1.13 |
| 69F937 | 180 | 20 | D | 3.90 | 2.86 | 2.21 | 1.69 | 1.43 |
| 69F951 | 6 | 30 | A | 2.01 | 1.47 | 1.14 | .87 | .74 |
| 69F901 | 10 | 30 | B | 2.10 | 1.54 | 1.19 | .91 | .77 |
| 69F911 | 45 | 30 | C | 3.09 | 2.27 | 1.75 | 1.34 | 1.13 |
| 69F931 | 120 | 30 | D | 3.90 | 2.86 | 2.21 | 1.69 | 1.43 |
| 69F950 | 4 | 50 | A | 2.01 | 1.47 | 1.14 | .87 | .74 |
| 69F900 | 6.8 | 50 | B | 2.10 | 1.54 | 1.19 | .91 | .77 |
| 69F910 | 30 | 50 | C | 3.09 | 2.27 | 1.75 | 1.34 | 1.13 |
| 69F930 | 78 | 50 | D | 3.90 | 2.86 | 2.21 | 1.69 | 1.43 |
| 69F960 | 3.3 | 60 | A | 2.01 | 1.47 | 1.14 | .87 | .74 |
| 69F908 | 6 | 60 | B | 2.10 | 1.54 | 1.19 | .91 | .77 |
| 69F920 | 22 | 60 | C | 3.09 | 2.27 | 1.75 | 1.34 | 1.13 |
| 69F941 | 60 | 60 | D | 3.90 | 2.86 | 2.21 | 1.69 | 1.43 |

# GENERAL ELECTRIC Tantalum Capacitors



## TANTALUM WET-SLUG CAPACITORS

Tantalum wet-slug capacitors offer highest voltage x microfarad ratings ever in MIL case sizes; two to three times higher than Std. MIL ratings. Special Teflon*/elastomer double O-ring seal provides excellent thermocycle capability and long life. Broad dual-rated temperature range (−55° to +85°/125° C). Low leakage current makes these capacitors ideal for timing and other critical circuit applications. Thixotropic gelled electrolyte assures electrical stability throughout extreme temperature ranges. Capable of withstanding environmental tests of MIL-C-3965 and MIL-C-39006. Ideal for filtering, energy storage, bypass and coupling in applications where reliability and small size are essential. **Note:** Prices shown are for capacitors with insulated case; for uninsulated units, change suffix G8 to **G3** or G7 to **G2** (e.g., 69F2101G3 for ±10% tolerance) and deduct **4c** from net price shown.

*Registered DuPont trademark.

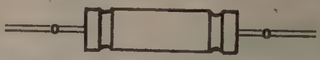
### TOLERANCE +20, −15%

| GE No. | Cap., µF | VDC 85° C | VDC 125° C | * | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|---|
| 69F2101G7 | 220 | 6 | 4 | 1 | $ 2.50 | $1.84 | $1.43 | $1.11 | $0.94 |
| 69F2201G7 | 820 | 6 | 4 | 2 | 3.55 | 2.61 | 2.03 | 1.56 | 1.33 |
| 69F2301G7 | 1500 | 6 | 4 | 3 | 6.07 | 4.46 | 3.46 | 2.65 | 2.25 |
| 69F2402G7 | 1800 | 6 | 4 | 4 | 12.34 | 9.06 | 7.01 | 5.37 | 4.55 |
| 69F2108G7 | 180 | 8 | 5 | 1 | 2.50 | 1.84 | 1.43 | 1.11 | .94 |
| 69F2208G7 | 620 | 8 | 5 | 2 | 3.55 | 2.61 | 2.03 | 1.56 | 1.33 |
| 69F2308G7 | 1200 | 8 | 5 | 3 | 6.07 | 4.46 | 3.46 | 2.65 | 2.25 |
| 69F2408G7 | 1600 | 8 | 5 | 4 | 12.34 | 9.06 | 7.01 | 5.37 | 4.55 |
| 69F2114G7 | 150 | 10 | 7 | 1 | 2.50 | 1.84 | 1.43 | 1.11 | .94 |
| 69F2214G7 | 510 | 10 | 7 | 2 | 3.55 | 2.61 | 2.03 | 1.56 | 1.33 |
| 69F2314G7 | 1000 | 10 | 7 | 3 | 6.07 | 4.46 | 3.46 | 2.65 | 2.25 |
| 69F2414G7 | 1300 | 10 | 7 | 4 | 12.34 | 9.06 | 7.01 | 5.37 | 4.55 |
| 69F2121G7 | 100 | 15 | 10 | 1 | 2.50 | 1.84 | 1.43 | 1.11 | .94 |
| 69F2221G7 | 360 | 15 | 10 | 2 | 3.55 | 2.61 | 2.03 | 1.56 | 1.33 |
| 69F2321G7 | 750 | 15 | 10 | 3 | 6.07 | 4.46 | 3.46 | 2.65 | 2.25 |
| 69F2421G7 | 1100 | 15 | 10 | 4 | 12.34 | 9.06 | 7.01 | 5.37 | 4.55 |
| 69F2136G7 | 68 | 25 | 15 | 1 | 2.50 | 1.84 | 1.43 | 1.11 | .94 |
| 69F2236G7 | 220 | 25 | 15 | 2 | 3.55 | 2.61 | 2.03 | 1.56 | 1.33 |
| 69F2336G7 | 510 | 25 | 15 | 3 | 6.07 | 4.46 | 3.46 | 2.65 | 2.25 |
| 69F2436G7 | 750 | 25 | 15 | 4 | 12.34 | 9.06 | 7.01 | 5.37 | 4.55 |
| 69F2141G7 | 56 | 30 | 20 | 1 | 2.50 | 1.84 | 1.43 | 1.11 | .94 |
| 69F2241G7 | 200 | 30 | 20 | 2 | 3.55 | 2.61 | 2.03 | 1.56 | 1.33 |
| 69F2341G7 | 430 | 30 | 20 | 3 | 6.07 | 4.46 | 3.46 | 2.65 | 2.25 |
| 69F2441G7 | 620 | 30 | 20 | 4 | 12.34 | 9.06 | 7.01 | 5.37 | 4.55 |
| 69F2161G7 | 33 | 50 | 30 | 1 | 2.50 | 1.84 | 1.43 | 1.11 | .94 |
| 69F2261G7 | 120 | 50 | 30 | 2 | 3.55 | 2.61 | 2.03 | 1.56 | 1.33 |
| 69F2361G7 | 270 | 50 | 30 | 3 | 6.07 | 4.46 | 3.46 | 2.65 | 2.25 |
| 69F2461G7 | 360 | 50 | 30 | 4 | 12.34 | 9.06 | 7.01 | 5.37 | 4.55 |
| 69F2171G7 | 27 | 60 | 40 | 1 | 2.50 | 1.84 | 1.43 | 1.11 | .94 |
| 69F2271G7 | 100 | 60 | 40 | 2 | 3.55 | 2.61 | 2.03 | 1.56 | 1.33 |
| 69F2371G7 | 220 | 60 | 40 | 3 | 6.07 | 4.46 | 3.46 | 2.65 | 2.25 |
| 69F2471G7 | 300 | 60 | 40 | 4 | 12.34 | 9.06 | 7.01 | 5.37 | 4.55 |
| 69F2186G7 | 22 | 75 | 50 | 1 | 2.50 | 1.84 | 1.43 | 1.11 | .94 |
| 69F2286G7 | 82 | 75 | 50 | 2 | 3.55 | 2.61 | 2.03 | 1.56 | 1.33 |
| 69F2386G7 | 180 | 75 | 50 | 3 | 6.07 | 4.46 | 3.46 | 2.65 | 2.25 |
| 69F2486G7 | 240 | 75 | 50 | 4 | 12.34 | 9.06 | 7.01 | 5.37 | 4.55 |
| **TOLERANCE ±10%** | | | | | | | | | |
| 69F2101G8 | 220 | 6 | 4 | 1 | $ 2.74 | $2.02 | $1.57 | $1.21 | $1.03 |
| 69F2201G8 | 820 | 6 | 4 | 2 | 3.91 | 2.88 | 2.23 | 1.72 | 1.46 |
| 69F2301G8 | 1500 | 6 | 4 | 3 | 6.67 | 4.90 | 3.80 | 2.91 | 2.47 |
| 69F2402G8 | 1800 | 6 | 4 | 4 | 13.57 | 9.96 | 7.71 | 5.90 | 5.00 |
| 69F2108G8 | 180 | 8 | 5 | 1 | 2.74 | 2.02 | 1.57 | 1.21 | 1.03 |
| 69F2208G8 | 620 | 8 | 5 | 2 | 3.91 | 2.88 | 2.23 | 1.72 | 1.46 |
| 69F2308G8 | 1200 | 8 | 5 | 3 | 6.67 | 4.90 | 3.80 | 2.91 | 2.47 |
| 69F2408G8 | 1600 | 8 | 5 | 4 | 13.57 | 9.96 | 7.71 | 5.90 | 5.00 |
| 69F2114G8 | 150 | 10 | 7 | 1 | 2.74 | 2.02 | 1.57 | 1.21 | 1.03 |
| 69F2214G8 | 510 | 10 | 7 | 2 | 3.91 | 2.88 | 2.23 | 1.72 | 1.46 |
| 69F2314G8 | 1000 | 10 | 7 | 3 | 6.67 | 4.90 | 3.80 | 2.91 | 2.47 |
| 69F2414G8 | 1300 | 10 | 7 | 4 | 13.57 | 9.96 | 7.71 | 5.90 | 5.00 |
| 69F2121G8 | 100 | 15 | 10 | 1 | 2.74 | 2.02 | 1.57 | 1.21 | 1.03 |
| 69F2221G8 | 360 | 15 | 10 | 2 | 3.91 | 2.88 | 2.23 | 1.72 | 1.46 |
| 69F2321G8 | 750 | 15 | 10 | 3 | 6.67 | 4.90 | 3.80 | 2.91 | 2.47 |
| 69F2421G8 | 1100 | 15 | 10 | 4 | 13.57 | 9.96 | 7.71 | 5.90 | 5.00 |
| 69F2136G8 | 68 | 25 | 15 | 1 | 2.74 | 2.02 | 1.57 | 1.21 | 1.03 |
| 69F2236G8 | 220 | 25 | 15 | 2 | 3.91 | 2.88 | 2.23 | 1.72 | 1.46 |
| 69F2336G8 | 510 | 25 | 15 | 3 | 6.67 | 4.90 | 3.80 | 2.91 | 2.47 |
| 69F2436G8 | 750 | 25 | 15 | 4 | 13.57 | 9.96 | 7.71 | 5.90 | 5.00 |
| 69F2141G8 | 56 | 30 | 20 | 1 | 2.74 | 2.02 | 1.57 | 1.21 | 1.03 |
| 69F2241G8 | 200 | 30 | 20 | 2 | 3.91 | 2.88 | 2.23 | 1.72 | 1.46 |
| 69F2341G8 | 430 | 30 | 20 | 3 | 6.67 | 4.90 | 3.80 | 2.91 | 2.47 |
| 69F2441G8 | 620 | 30 | 20 | 4 | 13.57 | 9.96 | 7.71 | 5.90 | 5.00 |
| 69F2161G8 | 33 | 50 | 30 | 1 | 2.74 | 2.02 | 1.57 | 1.21 | 1.03 |
| 69F2261G8 | 120 | 50 | 30 | 2 | 3.91 | 2.88 | 2.23 | 1.72 | 1.46 |
| 69F2361G8 | 270 | 50 | 30 | 3 | 6.67 | 4.90 | 3.80 | 2.91 | 2.47 |
| 69F2461G8 | 360 | 50 | 30 | 4 | 13.57 | 9.96 | 7.71 | 5.90 | 5.00 |
| 69F2171G8 | 27 | 60 | 40 | 1 | 2.74 | 2.02 | 1.57 | 1.21 | 1.03 |
| 69F2271G8 | 100 | 60 | 40 | 2 | 3.91 | 2.88 | 2.23 | 1.72 | 1.46 |
| 69F2371G8 | 220 | 60 | 40 | 3 | 6.67 | 4.90 | 3.80 | 2.91 | 2.47 |
| 69F2471G8 | 300 | 60 | 40 | 4 | 13.57 | 9.96 | 7.71 | 5.90 | 5.00 |
| 69F2186G8 | 22 | 75 | 50 | 1 | 2.74 | 2.02 | 1.57 | 1.21 | 1.03 |
| 69F2286G8 | 82 | 75 | 50 | 2 | 3.91 | 2.88 | 2.23 | 1.72 | 1.46 |
| 69F2386G8 | 180 | 75 | 50 | 3 | 6.67 | 4.90 | 3.80 | 2.91 | 2.47 |
| 69F2486G8 | 240 | 75 | 50 | 4 | 13.57 | 9.96 | 7.71 | 5.90 | 5.00 |

### *CASE SIZES

| Code * | Insulated Size, Inches Dia. x L. | Uninsulated Size, Inches Dia. x L. | Lead Lgth. | Approx. Weight, Grams |
|---|---|---|---|---|
| 1 | 13/64 x 35/64 | 3/16 x 29/64 | 1½″ | 1.6 |
| 2 | 19/64 x 47/64 | 9/32 x 41/64 | 2¼″ | 4.6 |
| 3 | 25/64 x 55/64 | 3/8 x 49/64 | 2¼″ | 8.8 |
| 4 | 25/64 x 1 9/64 | 3/8 x 1 1/16 | 2¼″ | 12.7 |

## TANTALUM-FOIL TUBULAR CAPACITORS



Low leakage current decreases with time; ideal for transistorized circuits. Also available with true hermetic tantalum-to-glass seal write for information. Prices shown are for uninsulated units. For insulation, add **4c** to price and add suffix **G2** for 125° C units; for 85° C insulated units under 200 volts, add suffix **G4.**

### CASE SIZES

| Code * | Size, In. Dia. x L. | Code * | Size, In. Dia. x L. | Code * | Size, In. Dia. x L. |
|---|---|---|---|---|---|
| A | 3/16 x 1 1/16 | C | 3/8 x 1 7/16 | E | 3/8 x 2¾ |
| B | 9/32 x 7/8 | D | 3/8 x 2⅛ | F | 15/32 x 2¾ |

### NON-POLAR, PLAIN FOIL (−55° TO +85° C)

| GE No. | Cap., µF | WV DC | Size * | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| 29F528 | 10 | 3.75 | A | $ 1.98 | $ 1.45 | $ 1.12 | $ 0.86 | $ 0.73 |
| 29F529 | 45 | 3.75 | B | 2.67 | 1.96 | 1.51 | 1.16 | .98 |
| 29F538 | 25 | 6 | B | 2.67 | 1.96 | 1.51 | 1.16 | .98 |
| 29F547 | 4 | 10 | A | 1.98 | 1.45 | 1.12 | .86 | .73 |
| 29F548 | 16 | 10 | B | 2.67 | 1.96 | 1.51 | 1.16 | .98 |
| 29F549 | 55 | 10 | C | 4.71 | 3.45 | 2.67 | 2.04 | 1.73 |
| 29F557 | 2.5 | 15 | A | 1.98 | 1.45 | 1.12 | .86 | .73 |
| 29F558 | 10 | 15 | B | 2.67 | 1.96 | 1.51 | 1.16 | .98 |
| 29F560 | 70 | 15 | D | 7.08 | 5.19 | 4.01 | 3.07 | 2.60 |
| 29F565 | 1.5 | 25 | A | 1.98 | 1.45 | 1.12 | .86 | .73 |
| 29F566 | 6 | 25 | B | 2.67 | 1.96 | 1.51 | 1.16 | .98 |
| 29F623 | 5.5 | 30 | B | 2.67 | 1.96 | 1.51 | 1.16 | .98 |
| 29F2229 | 2 | 250 | C | 14.91 | 10.93 | 8.45 | 6.46 | 5.47 |
| **NON-POLAR, ETCHED FOIL (−55° TO +85° C)** | | | | | | | | |
| 29F510 | 10 | 15 | A | $ 1.98 | $1.45 | $1.12 | $0.86 | $0.73 |
| 29F511 | 40 | 15 | B | 2.94 | 2.16 | 1.67 | 1.27 | 1.08 |
| 29F489 | 5 | 25 | A | 1.98 | 1.45 | 1.12 | .86 | .73 |
| 29F490 | 20 | 25 | B | 2.94 | 2.16 | 1.67 | 1.27 | 1.08 |
| 29F491 | 70 | 25 | C | 5.19 | 3.81 | 2.94 | 2.25 | 1.90 |
| 29F612 | 200 | 25 | E | 10.26 | 7.52 | 5.81 | 4.45 | 3.76 |
| 29F631 | 4.5 | 30 | A | 1.98 | 1.45 | 1.12 | .86 | .73 |
| 29F632 | 18 | 30 | B | 2.94 | 2.16 | 1.67 | 1.27 | 1.08 |
| 29F633 | 60 | 30 | C | 5.19 | 3.81 | 2.94 | 2.25 | 1.90 |
| 29F493 | 2.5 | 50 | A | 1.98 | 1.45 | 1.12 | .86 | .73 |
| 29F494 | 10 | 50 | B | 2.94 | 2.16 | 1.67 | 1.27 | 1.08 |
| 29F495 | 30 | 50 | C | 5.19 | 3.81 | 2.94 | 2.25 | 1.90 |
| 29F496 | 60 | 50 | D | 8.13 | 5.96 | 4.61 | 3.52 | 2.98 |
| 29F503 | 1.5 | 75 | A | 1.98 | 1.45 | 1.12 | .86 | .73 |
| 29F504 | 6 | 75 | B | 2.94 | 2.16 | 1.67 | 1.27 | 1.08 |
| 29F519 | 1 | 100 | A | 1.98 | 1.45 | 1.12 | .86 | .73 |
| 29F520 | 4 | 100 | B | 2.94 | 2.16 | 1.67 | 1.27 | 1.08 |
| 29F524 | 0.5 | 150 | A | 1.98 | 1.45 | 1.12 | .86 | .73 |
| 29F470 | 2 | 150 | B | 2.94 | 2.16 | 1.67 | 1.27 | 1.08 |
| 29F525 | 6 | 150 | C | 5.19 | 3.81 | 2.94 | 2.25 | 1.90 |
| **NON-POLAR, PLAIN FOIL (−55° TO +125° C)** | | | | | | | | |
| 29F1631 | 2.5 | 10 | A | $ 2.19 | $ 1.61 | $1.24 | $0.95 | $0.80 |
| 29F1632 | 10 | 10 | B | 2.94 | 2.16 | 1.67 | 1.27 | 1.08 |
| 29F1633 | 35 | 10 | C | 5.19 | 3.81 | 2.94 | 2.25 | 1.90 |
| 29F1530 | 1.5 | 15 | A | 2.19 | 1.61 | 1.24 | .95 | .80 |
| 29F1649 | 6 | 15 | B | 2.94 | 2.16 | 1.67 | 1.27 | 1.08 |
| 29F1650 | 20 | 15 | C | 5.19 | 3.81 | 2.94 | 2.25 | 1.90 |
| 29F1661 | 0.8 | 30 | A | 2.19 | 1.61 | 1.24 | .95 | .80 |
| 29F1662 | 3 | 30 | B | 2.94 | 2.16 | 1.67 | 1.27 | 1.08 |
| 29F1663 | 10 | 30 | C | 5.19 | 3.81 | 2.94 | 2.25 | 1.90 |
| 29F1664 | 20 | 30 | D | 7.80 | 5.72 | 4.42 | 3.38 | 2.86 |
| 29F1570 | 0.5 | 50 | A | 2.19 | 1.61 | 1.24 | .95 | .80 |
| 29F1673 | 2 | 50 | B | 2.94 | 2.16 | 1.67 | 1.27 | 1.08 |
| 29F1590 | 0.4 | 65 | A | 2.19 | 1.61 | 1.24 | .95 | .80 |
| 29F1682 | 1.5 | 65 | B | 2.94 | 2.16 | 1.67 | 1.27 | 1.08 |
| 29F1592 | 5 | 65 | C | 5.19 | 3.81 | 2.94 | 2.25 | 1.90 |
| 29F1610 | 0.25 | 100 | A | 2.19 | 1.61 | 1.24 | .95 | .80 |
| 29F1620 | 1 | 100 | B | 2.94 | 2.16 | 1.67 | 1.27 | 1.08 |
| 29F1614 | 10 | 100 | E | 9.81 | 7.19 | 5.56 | 4.25 | 3.60 |
| 29F1695 | 0.15 | 150 | A | 2.19 | 1.61 | 1.24 | .95 | .80 |
| 29F2136 | 0.5 | 200 | B | 10.38 | 7.61 | 5.88 | 4.50 | 3.81 |
| 29F2137 | 1.5 | 200 | C | 14.91 | 10.93 | 8.45 | 6.46 | 5.47 |
| 29F2167 | 1.2 | 250 | C | 14.91 | 10.93 | 8.45 | 6.46 | 5.47 |
| **NON-POLAR, ETCHED FOIL (−55° TO +125° C)** | | | | | | | | |
| 29F1635 | 10 | 10 | A | $ 2.19 | $1.61 | $1.24 | $0.95 | $0.80 |
| 29F1636 | 40 | 10 | B | 3.24 | 2.38 | 1.84 | 1.40 | 1.19 |
| 29F1653 | 5 | 15 | A | 2.19 | 1.61 | 1.24 | .95 | .80 |
| 29F1654 | 20 | 15 | B | 3.24 | 2.38 | 1.84 | 1.40 | 1.19 |
| 29F1655 | 70 | 15 | C | 5.70 | 4.18 | 3.23 | 2.47 | 2.09 |
| 29F1555 | 2.5 | 30 | A | 2.19 | 1.61 | 1.24 | .95 | .80 |
| 29F1556 | 10 | 30 | B | 3.24 | 2.38 | 1.84 | 1.40 | 1.19 |
| 29F1666 | 30 | 30 | C | 5.70 | 4.18 | 3.23 | 2.47 | 2.09 |
| 29F1575 | 1.5 | 50 | A | 2.19 | 1.61 | 1.24 | .95 | .80 |
| 29F1576 | 6 | 50 | B | 3.24 | 2.38 | 1.84 | 1.40 | 1.19 |
| 29F1676 | 15 | 50 | C | 5.70 | 4.18 | 3.23 | 2.47 | 2.09 |
| 29F1579 | 50 | 50 | E | 11.28 | 8.27 | 6.39 | 4.89 | 4.14 |
| 29F2325 | 1 | 60 | A | 2.19 | 1.61 | 1.24 | .95 | .80 |
| 29F2326 | 4 | 60 | B | 3.24 | 2.38 | 1.84 | 1.40 | 1.19 |
| 29F2328 | 25 | 60 | D | 8.94 | 6.56 | 5.07 | 3.87 | 3.28 |
| 29F1595 | 1 | 65 | A | 2.19 | 1.61 | 1.24 | .95 | .80 |
| 29F1596 | 4 | 65 | B | 3.24 | 2.38 | 1.84 | 1.40 | 1.19 |
| 29F1615 | 0.5 | 100 | A | 2.19 | 1.61 | 1.24 | .95 | .80 |
| 29F1616 | 2 | 100 | B | 3.24 | 2.38 | 1.84 | 1.40 | 1.19 |

## MINIATURE METALLIZED POLYESTER CAPACITORS

ypes LUMZ and LMZP non-polar, non-inductive capacitors are ghest grade non-hermetic metallized polyester capacitors in- nded for use in the most stringent industrial applications. To sure reliability, they are tested 100% for capacity, insulation sistance, power factor and dielectric strength at 150% of rated ltage. Unlike some inexpensive capacitors they can be used in plications down to micro-volt range. Impregnated with a styrene monomer to provide added moisture resistance and stability. Leads are of tinned copper for easy soldering and are a minimum of 1" long. **Temperature Range:** −40° C to +85° C without voltage derating and to +125° C with 50% derating. **Minimum Insulation Resistance:** 25,000 megohms-μF at 25° C. **Power Factor:** 1% maximum at 1 KHz. **Standard Capacity Tolerance:** ±10%; closer tolerance on request.

### TYPE LUMZ CAPACITORS

ith axial leads, two layers of polyester outer wrap and special gh temperature epoxy end seals.

#### 100 WVDC

| Industrial Condenser Number | Cap., μF | Size, Inches | | | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|---|
| | | L | H | T | 1-24 | 25-49 | 50-99 | 100-249 |
| UMZ47 | 0.47 | 0.750 | 0.453 | .281 | $0.72 | $0.60 | $0.48 | $0.34 |
| UMZ50 | 0.50 | 0.750 | 0.453 | .281 | .76 | .63 | .51 | .36 |
| UMZ60 | 0.60 | 0.750 | 0.500 | .328 | .78 | .65 | .52 | .36 |
| UMZ68 | 0.68 | 0.750 | 0.515 | .328 | .79 | .66 | .53 | .37 |
| UMZ80 | 0.80 | 0.750 | 0.531 | .359 | .87 | .72 | .58 | .41 |
| UMZ100 | 1.0 | 0.953 | 0.515 | .296 | .94 | .79 | .63 | .44 |
| UMZ125 | 1.25 | 0.953 | 0.578 | .343 | 1.07 | .89 | .72 | .50 |
| UMZ150 | 1.5 | 0.953 | 0.609 | .375 | 1.25 | 1.04 | .83 | .58 |
| UMZ200 | 2.0 | 1.265 | 0.578 | .343 | 1.52 | 1.27 | 1.01 | .71 |
| UMZ220 | 2.2 | 1.265 | 0.593 | .359 | 1.58 | 1.32 | 1.06 | .74 |
| UMZ300 | 3.0 | 1.265 | 0.656 | .343 | 2.08 | 1.73 | 1.39 | .97 |
| LUMZ330 | 3.3 | 1.265 | 0.671 | .359 | 2.27 | 1.89 | 1.52 | 1.06 |
| LUMZ400 | 4.0 | 1.265 | 0.718 | .390 | 2.73 | 2.28 | 1.82 | 1.28 |
| LUMZ470 | 4.7 | 1.656 | 0.750 | .406 | 3.20 | 2.66 | 2.13 | 1.49 |
| LUMZ500 | 5.0 | 1.656 | 0.765 | .421 | 3.58 | 2.98 | 2.39 | 1.67 |
| LUMZ600 | 6.0 | 1.656 | 0.843 | .468 | 3.88 | 3.23 | 2.59 | 1.81 |
| LUMZ680 | 6.8 | 1.656 | 0.859 | .484 | 4.30 | 3.58 | 2.87 | 2.01 |
| LUMZ800 | 8.0 | 1.656 | 0.937 | .515 | 4.58 | 3.82 | 3.06 | 2.14 |
| LUMZ1000 | 10.0 | 1.656 | 1.031 | .593 | 5.37 | 4.47 | 3.58 | 2.51 |

#### 200 WVDC

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| LUMZ10 | 0.10 | 0.625 | 0.437 | .250 | $0.32 | $0.27 | $0.22 | $0.15 |
| LUMZ12.5 | 0.125 | 0.625 | 0.453 | .265 | .33 | .28 | .22 | .16 |
| LUMZ15 | 0.15 | 0.625 | 0.453 | .281 | .35 | .30 | .24 | .17 |
| LUMZ20 | 0.20 | 0.750 | 0.437 | .203 | .39 | .32 | .26 | .18 |
| LUMZ22 | 0.22 | 0.750 | 0.453 | .218 | .39 | .33 | .26 | .19 |
| LUMZ25 | 0.25 | 0.750 | 0.468 | .234 | .42 | .35 | .28 | .20 |
| LUMZ30 | 0.30 | 0.953 | 0.500 | .203 | .45 | .38 | .30 | .21 |
| LUMZ33 | 0.33 | 0.953 | 0.515 | .218 | .46 | .38 | .31 | .22 |
| LUMZ47 | 0.47 | 0.953 | 0.578 | .250 | .53 | .44 | .36 | .25 |
| LUMZ50 | 0.50 | 0.953 | 0.578 | .265 | .55 | .46 | .37 | .26 |
| LUMZ60 | 0.60 | 0.953 | 0.593 | .296 | .57 | .47 | .38 | .27 |
| LUMZ68 | 0.68 | 0.953 | 0.609 | .312 | .58 | .49 | .39 | .27 |
| LUMZ80 | 0.80 | 0.953 | 0.640 | .343 | .71 | .59 | .48 | .33 |
| LUMZ100 | 1.0 | 1.265 | 0.609 | .296 | .76 | .63 | .51 | .36 |
| LUMZ125 | 1.25 | 1.265 | 0.718 | .312 | .91 | .76 | .61 | .43 |
| LUMZ150 | 1.5 | 1.265 | 0.750 | .359 | 1.01 | .84 | .67 | .47 |
| LUMZ200 | 2.0 | 1.265 | 0.890 | .500 | 1.23 | 1.03 | .82 | .58 |
| LUMZ220 | 2.2 | 1.265 | 0.906 | .515 | 1.29 | 1.07 | .86 | .60 |
| LUMZ300 | 3.0 | 1.656 | 0.890 | .406 | 1.69 | 1.41 | 1.13 | .79 |
| LUMZ330 | 3.3 | 1.656 | 0.906 | .437 | 1.86 | 1.55 | 1.24 | .87 |
| LUMZ400 | 4.0 | 1.656 | 0.953 | .484 | 2.29 | 1.91 | 1.53 | 1.07 |
| LUMZ470 | 4.7 | 1.656 | 0.984 | .531 | 2.58 | 2.15 | 1.72 | 1.20 |
| LUMZ500 | 5.0 | 1.656 | 1.015 | .562 | 2.88 | 2.40 | 1.92 | 1.35 |
| LUMZ600 | 6.0 | 1.656 | 1.093 | .656 | 3.13 | 2.61 | 2.09 | 1.46 |
| LUMZ680 | 6.8 | 1.656 | 1.140 | .703 | 3.49 | 2.91 | 2.33 | 1.63 |
| LUMZ800 | 8.0 | 2.046 | 1.109 | .671 | 3.76 | 3.14 | 2.51 | 1.76 |
| LUMZ1000 | 10.0 | 2.046 | 1.218 | .703 | 4.41 | 3.68 | 2.94 | 2.06 |

Type LUMZ

Type LMZP

### TYPE LMZP CAPACITORS

Radial leads for printed circuit mounting and has four individual epoxy coats, each of which are fully cured before next coat is applied.

#### 100 WVDC

| Industrial Condenser Number | Cap., μF | Size, Inches | | | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|---|
| | | L | H | T | 1-24 | 25-49 | 50-99 | 100-249 |
| 1LMZP47 | 0.47 | 0.718 | 0.640 | .390 | $0.72 | $0.60 | $0.48 | $0.37 |
| 1LMZP50 | 0.50 | 0.718 | 0.640 | .390 | .76 | .63 | .51 | .36 |
| 1LMZP60 | 0.60 | 0.718 | 0.671 | .437 | .78 | .65 | .52 | .36 |
| 1LMZP68 | 0.68 | 0.718 | 0.671 | .437 | .80 | .66 | .53 | .37 |
| 1LMZP80 | 0.80 | 0.906 | 0.718 | .468 | .91 | .76 | .61 | .43 |
| 1LMZP100 | 1.0 | 0.906 | 0.718 | .468 | .96 | .80 | .64 | .45 |
| 1LMZP125 | 1.25 | 0.906 | 0.750 | .515 | 1.15 | .96 | .77 | .54 |
| 1LMZP150 | 1.5 | 0.906 | 0.750 | .515 | 1.27 | 1.06 | .85 | .60 |
| 1LMZP200 | 2.0 | 1.26 | 0.875 | .593 | 1.54 | 1.28 | 1.03 | .72 |
| 1LMZP220 | 2.2 | 1.26 | 0.875 | .593 | 1.60 | 1.34 | 1.07 | .75 |
| 1LMZP300 | 3.0 | 1.26 | 0.953 | .640 | 2.10 | 1.75 | 1.40 | .98 |
| 1LMZP330 | 3.3 | 1.26 | 0.953 | .640 | 2.29 | 1.91 | 1.53 | 1.07 |
| 1LMZP400 | 4.0 | 1.26 | 1.031 | .671 | 2.75 | 2.29 | 1.83 | 1.28 |
| 1LMZP500 | 5.0 | 1.26 | 1.156 | .734 | 3.60 | 3.00 | 2.40 | 1.68 |
| 1LMZP560 | 5.6 | 1.26 | 1.203 | .781 | 3.65 | 3.04 | 2.44 | 1.71 |

#### 200 WVDC

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2LMZP10 | 0.10 | 0.593 | 0.562 | .390 | $0.33 | $0.27 | $0.22 | $0.15 |
| 2LMZP12.5 | 0.125 | 0.593 | 0.640 | .437 | .34 | .29 | .23 | .16 |
| 2LMZP15 | 0.15 | 0.593 | 0.640 | .437 | .36 | .30 | .24 | .17 |
| 2LMZP20 | 0.20 | 0.718 | 0.640 | .437 | .39 | .32 | .26 | .18 |
| 2LMZP22 | 0.22 | 0.718 | 0.640 | .437 | .40 | .33 | .27 | .19 |
| 2LMZP25 | 0.25 | 0.906 | 0.718 | .468 | .43 | .36 | .29 | .20 |
| 2LMZP30 | 0.30 | 0.906 | 0.718 | .468 | .46 | .38 | .31 | .22 |
| 2LMZP33 | 0.33 | 0.906 | 0.718 | .468 | .47 | .39 | .31 | .22 |
| 2LMZP47 | 0.47 | 0.906 | 0.718 | .515 | .54 | .45 | .36 | .25 |
| 2LMZP50 | 0.50 | 0.906 | 0.750 | .562 | .56 | .47 | .38 | .27 |
| 2LMZP60 | 0.60 | 0.906 | 0.796 | .562 | .58 | .49 | .39 | .27 |
| 2LMZP68 | 0.68 | 0.906 | 0.796 | .562 | .59 | .50 | .40 | .28 |
| 2LMZP80 | 0.80 | 1.26 | 0.875 | .562 | .70 | .58 | .47 | .33 |
| 2LMZP100 | 1.0 | 1.26 | 0.875 | .562 | .78 | .65 | .52 | .37 |
| 2LMZP125 | 1.25 | 1.26 | 0.953 | .593 | .96 | .80 | .64 | .45 |
| 2LMZP150 | 1.5 | 1.26 | 0.953 | .593 | 1.04 | .86 | .69 | .49 |
| 2LMZP200 | 2.0 | 1.26 | 1.06 | .640 | 1.25 | 1.05 | .84 | .59 |
| 2LMZP220 | 2.2 | 1.26 | 1.06 | .640 | 1.31 | 1.09 | .87 | .61 |

## MULTIFILM CAPACITORS

Type LALZ

rimary advantages of these Multifilm non-polar, non-inductive apacitors are small size, rugged construction and low price while aintaining the properties required for high quality industrial pplications. The dielectric consists of multiple layers of plastic enerated by the application of successive coatings of lacquer hich contribute to the increased reliability of these capacitors. oatings are applied to a substrate and each one is polymerized efore the application of the next. This type of construction nables the fabrication of a reliable, inexpensive film that is ubstantially thinner than conventional dielectrics. Subsequent etallizing of the film and removal of the substrate results in a nique dielectric system and very small size. Capacitors windings re molded in high temperature polypropylene which adds to the tability and moisture resistance of these units. **Temperature ange:** −40° C to +85° C without voltage derating. **Voltage ating:** In addition to their DC rating they can be used in AC pplications up to 35 volts and 120 Hz. **Minimum Insulation esistance:** 250 megohms-μF for 1 μF and above; 750 megohms r below 1 μF. **Standard Capacity Tolerance:** 1 μF and above, 10%; below 1 μF, ±20%; ±5% tolerance on request.

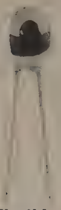
### TYPE LALZ CAPACITORS

#### 50 WVDC

| Industrial Condenser Number | Cap., μF | Size, Inches | | | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|
| | | L | H | T | 1-49 | 50-99 | 100-249 |
| 05LALZ20 | 0.20 | 0.546 | .390 | .171 | $0.35 | $0.24 | $0.17 |
| 05LALZ22 | 0.22 | 0.546 | .390 | .171 | .36 | .24 | .17 |
| 05LALZ25 | 0.25 | 0.546 | .390 | .171 | .38 | .26 | .18 |
| 05LALZ30 | 0.30 | 0.546 | .546 | .203 | .41 | .27 | .19 |
| 05LALZ33 | 0.33 | 0.546 | .546 | .203 | .42 | .28 | .20 |
| 05LALZ47 | 0.47 | 0.546 | .546 | .203 | .49 | .33 | .23 |
| 05LALZ50 | 0.50 | 0.546 | .546 | .203 | .52 | .35 | .24 |
| 05LALZ56 | 0.56 | 0.546 | .546 | .203 | .55 | .37 | .26 |
| 05LALZ68 | 0.68 | 0.765 | .625 | .281 | .59 | .39 | .28 |
| 05LALZ82 | 0.82 | 0.765 | .625 | .281 | .65 | .43 | .30 |
| 05LALZ100 | 1.0 | 0.765 | .625 | .281 | .69 | .46 | .32 |
| 05LALZ120 | 1.2 | 0.765 | .750 | .281 | .70 | .47 | .33 |
| 05LALZ150 | 1.5 | 0.953 | .750 | .312 | .87 | .58 | .41 |
| 05LALZ200 | 2.0 | 0.953 | .750 | .312 | .99 | .66 | .46 |
| 05LALZ220 | 2.2 | 0.953 | .750 | .312 | 1.01 | .68 | .47 |
| 05LALZ270 | 2.7 | 1.187 | .828 | .312 | 1.29 | .86 | .60 |
| 05LALZ300 | 3.0 | 1.187 | .828 | .312 | 1.32 | .88 | .62 |
| 05LALZ330 | 3.3 | 1.187 | .828 | .312 | 1.34 | .89 | .63 |
| 05LALZ350 | 3.5 | 1.187 | .859 | .359 | 1.39 | .93 | .65 |
| 05LALZ380 | 3.8 | 1.187 | .859 | .359 | 1.57 | 1.05 | .74 |
| 05LALZ400 | 4.0 | 1.187 | .859 | .359 | 1.63 | 1.09 | .76 |
| 05LALZ470 | 4.7 | 1.218 | .906 | .390 | 1.87 | 1.25 | .88 |
| 05LALZ500 | 5.0 | 1.218 | .906 | .390 | 1.94 | 1.30 | .91 |
| 05LALZ560 | 5.6 | 1.218 | .906 | .390 | 2.21 | 1.48 | 1.04 |
| 05LALZ600 | 6.0 | 1.218 | .906 | .390 | 2.34 | 1.56 | 1.09 |
| 05LALZ680 | 6.8 | 1.218 | .906 | .390 | 2.57 | 1.71 | 1.20 |
| 05LALZ700 | 7.0 | 1.218 | .906 | .390 | 2.62 | 1.75 | 1.22 |

# ITT SEMICONDUCTORS Capacitors

## TYPE TAG MINIATURE TANTALUM CAPACITORS



**Flexible**

**Preformed Leads**

Resin-dipped, solid polar electrolytic tantalum capacitors for commercial applications: Telecommunications, radio and television, sound systems, test equipment, industrial and commercial controls. Rugged construction allows installation in moderate environments experiencing moderate shock and vibration; can be mounted in any position. Available with rugged preformed leads (0.2″ or 0.25″) or flexible leads. Anode is a porous body of sintered tantalum powder on which is formed a dielectric layer of tantalum pentoxide. The thickness of this layer, which covers the total surface of the anode, is adjusted during manufacture to provide the correct voltage rating. Manganese dioxide, a solid semiconducting electrolyte, is deposited in the pores of the anode to form the negative electrode. The extremely stable oxide layer allows only a very small leakage current even after long storage; the solid electrolyte guarantees very stable electrical performance over wide temperature ranges and long time periods. Type TAG capacitors are self-healing, accomplished by a minute burn-out of the cathode layer around the leak, limited by the resistance of the electrical circuit (minimum of 3 ohms/volt).

### SPECIFICATIONS

**Capacitance:** 0.1 to 100 μF. **Tolerance:** +50%, −20% standard; ±20% or ±10% available at extra cost. **DC Voltage:** 3 to 35 volts. **Temperature Range:** Continuous operation, −55° to +85° C. **Surge Voltage:** 1.15 times rated voltage (5 times per hour for one-minute periods). **Reverse Voltage:** Not to exceed 0.3 volt for units rated less than 6 volts; 0.5 volt for units rated 6 volts or higher. **Dissipation Factor:** Less than 10% at 120 Hz and 25° C. **Impedance:** Nominally less than other electrolytic types (see ratings in table). **Leakage Current:** Does not exceed 0.05 times capacitance (μF) times rated voltage (volts), or 2 μA, whichever is greater (measured through 1000 ohm resistor with rated voltage applied for 3 minutes at 25° C). At 85° C, typical leakage current is less than 10 times the value at 25° C. **Current Limiting in Circuit:** Minimum resistance of 3 ohms/volt is recommended for the circuit to prevent burnout of the cathode layer. **Humidity:** Tested after exposure to 95% maximum humidity at 40° C for 21 days with no voltage applied. **Shock and Vibration:** Withstands 30g shock and vibration of 15g from 0–2000 Hz. **Lead Strength:** Withstands a pull of 1 pound for 10 seconds; tolerate two 90° bends without failure. **Mounting and Soldering:** Can be dip-soldered with maximum bath temperature of 250° C. Soldering time should not exceed 3 seconds; case should not be dipped to closer than ¼″ of the bath surface.

### †CASE SIZES

| Case Code | Dia., In. | Length, Inches Flexible Lead | Length, Inches Preformed Lead‡ | Wt., Oz. |
|---|---|---|---|---|
| 1 | 0.138 | 0.236 | 0.374 | .005 |
| 2 | 0.158 | 0.256 | 0.394 | .007 |
| 3 | 0.158 | 0.276 | 0.414 | .009 |
| 4 | 0.177 | 0.276 | 0.414 | .011 |
| 5 | 0.177 | 0.295 | 0.433 | .012 |
| 6 | 0.216 | 0.335 | 0.473 | .014 |
| 7 | 0.236 | 0.335 | 0.473 | .016 |

‡On special order (see below).

### VARIATIONS AVAILABLE

**Tolerance:** For ±20% tolerance, change suffix in ITT No. from -50/20 to **-20** and add **1c** to price; for ±10% tolerance, change suffix to **-10** and add **3c** to price. **Leads:** For 0.25″ preformed leads, change prefix TAG 20- to **TAG 25-** and add **0.5c** to price. For flexible leads, change prefix to **TAG 00-**; same price. **Leakage:** For .02 $C_N$ x $V_N$ or 1 μA, add **1.5c** to price. **Coding:** Plain stamping on request; same price.

### STANDARD RATINGS AND PRICES

Standard units have +50%, −20% tolerance; 0.2″ preformed leads; leakage of .05 $C_N$ x $V_N$ or 2 μA. Special variations available, as indicated at left.

| ITT Number | Cap., μF | DC Volts | Case Code † | Imped., Ohms* Nominal | Imped., Ohms* Maximum | Net Each, Lots of 1-99 | Net Each, Lots of 100-999 | Net Each, Lots of 1000-4999 |
|---|---|---|---|---|---|---|---|---|
| **TAG 20-0.1/35-50/20** | 0.1 | 35 | 1 | 165 | 310 | **$0.23** | **$0.15** | **$0.11** |
| **TAG 20-0.15/35-50/20** | 0.15 | 35 | 1 | 110 | 200 | **.23** | **.15** | **.11** |
| **TAG 20-0.22/35-50/20** | 0.22 | 35 | 1 | 75 | 150 | **.23** | **.15** | **.11** |
| **TAG 20-0.33/35-50/20** | 0.33 | 35 | 1 | 51 | 105 | **.23** | **.15** | **.11** |
| **TAG 20-0.47/35-50/20** | 0.47 | 35 | 1 | 37 | 68 | **.23** | **.15** | **.11** |
| **TAG 20-0.68/35-50/20** | 0.68 | 35 | 1 | 27 | 53 | **.23** | **.15** | **.11** |
| **TAG 20-1.0/35-50/20** | 1.0 | 35 | 2 | 18 | 34 | **.24** | **.16** | **.115** |
| **TAG 20-1.5/35-50/20** | 1.5 | 35 | 2 | 13 | 25 | **.24** | **.16** | **.115** |
| **TAG 20-2.2/35-50/20** | 2.2 | 35 | 3 | 9 | 17 | **.26** | **.17** | **.12** |
| **TAG 20-3.3/35-50/20** | 3.3 | 35 | 4 | 6 | 12 | **.27** | **.18** | **.125** |
| **TAG 20-4.7/35-50/20** | 4.7 | 35 | 6 | 4 | 8 | **.30** | **.20** | **.135** |
| **TAG 20-6.8/35-50/20** | 6.8 | 35 | 7 | 3 | 6 | **.33** | **.22** | **.14** |
| **TAG 20-10.0/35-50/20** | 10.0 | 35 | 7 | 2.5 | 5.5 | **.33** | **.22** | **.14** |
| **TAG 20-1.0/25-50/20** | 1.0 | 25 | 1 | 19 | 42 | **.23** | **.15** | **.11** |
| **TAG 20-1.5/25-50/20** | 1.5 | 25 | 2 | 13 | 25 | **.24** | **.16** | **.115** |
| **TAG 20-2.2/25-50/20** | 2.2 | 25 | 2 | 9 | 17 | **.24** | **.16** | **.115** |
| **TAG 20-3.3/25-50/20** | 3.3 | 25 | 3 | 6.5 | 14.5 | **.26** | **.17** | **.12** |
| **TAG 20-4.7/25-50/20** | 4.7 | 25 | 4 | 4.5 | 10 | **.27** | **.18** | **.125** |
| **TAG 20-6.8/25-50/20** | 6.8 | 25 | 6 | 3 | 6 | **.30** | **.20** | **.135** |
| **TAG 20-10.0/25-50/20** | 10.0 | 25 | 7 | 2 | 5 | **.33** | **.22** | **.14** |
| **TAG 20-1.5/20-50/20** | 1.5 | 20 | 1 | 14 | 29 | **.23** | **.15** | **.11** |
| **TAG 20-2.2/20-50/20** | 2.2 | 20 | 2 | 9 | 17 | **.24** | **.16** | **.115** |
| **TAG 20-3.3/20-50/20** | 3.3 | 20 | 2 | 6.5 | 14.5 | **.24** | **.16** | **.115** |
| **TAG 20-4.7/20-50/20** | 4.7 | 20 | 3 | 5 | 12 | **.26** | **.17** | **.12** |
| **TAG 20-6.8/20-50/20** | 6.8 | 20 | 4 | 3.5 | 7.5 | **.27** | **.18** | **.125** |
| **TAG 20-10.0/20-50/20** | 10.0 | 20 | 6 | 2 | 5 | **.30** | **.20** | **.135** |
| **TAG 20-15.0/20-50/20** | 15.0 | 20 | 7 | 1.5 | 4 | **.33** | **.22** | **.14** |
| **TAG 20-2.2/16-50/20** | 2.2 | 16 | 1 | 10 | 25 | **.23** | **.15** | **.11** |
| **TAG 20-3.3/16-50/20** | 3.3 | 16 | 2 | 6.5 | 14.5 | **.24** | **.16** | **.115** |
| **TAG 20-4.7/16-50/20** | 4.7 | 16 | 3 | 5 | 12 | **.26** | **.17** | **.12** |
| **TAG 20-6.8/16-50/20** | 6.8 | 16 | 4 | 3.5 | 7.5 | **.27** | **.18** | **.125** |
| **TAG 20-10.0/16-50/20** | 10.0 | 16 | 5 | 2.5 | 6.5 | **.28** | **.19** | **.13** |
| **TAG 20-15.0/16-50/20** | 15.0 | 16 | 7 | 1.5 | 4 | **.33** | **.22** | **.14** |
| **TAG 20-22.0/16-50/20** | 22.0 | 16 | 7 | 1 | 3.5 | **.33** | **.22** | **.14** |
| **TAG 20-3.3/10-50/20** | 3.3 | 10 | 1 | 8 | 22 | **.23** | **.15** | **.11** |
| **TAG 20-4.7/10-50/20** | 4.7 | 10 | 2 | 5 | 12 | **.24** | **.16** | **.115** |
| **TAG 20-6.8/10-50/20** | 6.8 | 10 | 3 | 4 | 10.5 | **.26** | **.17** | **.12** |
| **TAG 20-10.0/10-50/20** | 10.0 | 10 | 3 | 3 | 9.5 | **.26** | **.17** | **.12** |
| **TAG 20-15.0/10-50/20** | 15.0 | 10 | 5 | 1.8 | 5.5 | **.28** | **.19** | **.13** |
| **TAG 20-22.0/10-50/20** | 22.0 | 10 | 6 | 1 | 3.5 | **.30** | **.20** | **.135** |
| **TAG 20-33.0/10-50/20** | 33.0 | 10 | 7 | 0.8 | 3.5 | **.33** | **.22** | **.14** |
| **TAG 20-4.7/6.3-50/20** | 4.7 | 6.3 | 1 | 5.6 | 19 | **.23** | **.15** | **.11** |
| **TAG 20-6.8/6.3-50/20** | 6.8 | 6.3 | 2 | 4 | 10.5 | **.24** | **.16** | **.115** |
| **TAG 20-10.0/6.3-50/20** | 10.0 | 6.3 | 2 | 3 | 9.5 | **.24** | **.16** | **.115** |
| **TAG 20-15.0/6.3-50/20** | 15.0 | 6.3 | 3 | 2 | 8.5 | **.26** | **.17** | **.12** |
| **TAG 20-22.0/6.3-50/20** | 22.0 | 6.3 | 4 | 1.5 | 5 | **.27** | **.18** | **.125** |
| **TAG 20-33.0/6.3-50/20** | 33.0 | 6.3 | 6 | 0.8 | 3.5 | **.30** | **.20** | **.135** |
| **TAG 20-47.0/6.3-50/20** | 47.0 | 6.3 | 7 | 0.6 | 3 | **.33** | **.22** | **.14** |
| **TAG 20-6.8/3-50/20** | 6.8 | 3 | 1 | 5.5 | 17 | **.23** | **.15** | **.11** |
| **TAG 20-10.0/3-50/20** | 10.0 | 3 | 1 | 4.5 | 15.5 | **.23** | **.15** | **.11** |
| **TAG 20-15.0/3-50/20** | 15.0 | 3 | 2 | 2 | 8.5 | **.24** | **.16** | **.115** |
| **TAG 20-22.0/3-50/20** | 22.0 | 3 | 2 | 1.8 | 7.5 | **.24** | **.16** | **.115** |
| **TAG 20-33.0/3-50/20** | 33.0 | 3 | 3 | 1.2 | 7 | **.26** | **.17** | **.12** |
| **TAG 20-47.0/3-50/20** | 47.0 | 3 | 4 | 0.9 | 4.2 | **.27** | **.18** | **.125** |
| **TAG 20-68.0/3-50/20** | 68.0 | 3 | 6 | 0.7 | 3.5 | **.30** | **.20** | **.135** |
| **TAG 20-100.0/3-50/20** | 100.0 | 3 | 7 | 0.5 | 3 | **.33** | **.22** | **.14** |

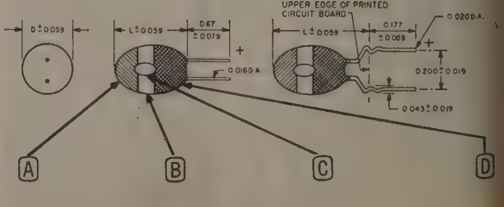
*Measured at 10 kHz and 25° C.

### COLOR CODING

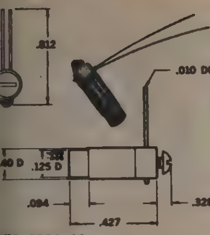
Examples: Brown cap, green ring, black dot and black lower body indicates type TAG 20-**15.0/10**-50/20 (15 μF, 10 volts). Red cap, red ring, gray dot and pink lower body indicates type TAG 20-**0.22/35**-50/20 (0.22 μF, 35 volts).

| Color | Capacitance Coding per IEC (MF) Ⓐ Cap is 1st No. | Ⓑ Ring is 2nd No. | Ⓒ Dot is Multiplier* | DC Voltage Coding Ⓓ Lower Body Color | Rated DC Volts |
|---|---|---|---|---|---|
| Black | ....... | 0 | x1 | White | 3 |
| Brown | 1 | 1 | x10 | Yellow | 6.3 |
| Red | 2 | 2 | .......... | Black | 10 |
| Orange | 3 | 3 | .......... | Green | 16 |
| Yellow | 4 | 4 | .......... | Blue | 20 |
| Green | 5 | 5 | .......... | Gray | 25 |
| Blue | 6 | 6 | .......... | Pink | 35 |
| Violet | 7 | 7 | .......... | | |
| Gray | 8 | 8 | x0.01 | | |
| White | 9 | 9 | x0.1 | | |

*Polarity is as indicated by color dot.



# Capacitors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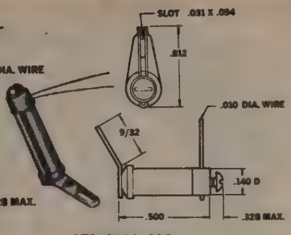
273-0001-001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9/32
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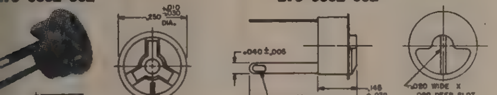
.500
.328 MAX.

273-0001-002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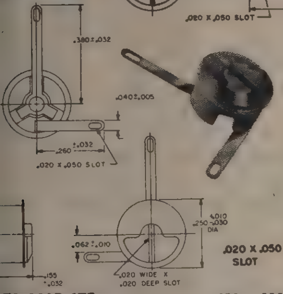
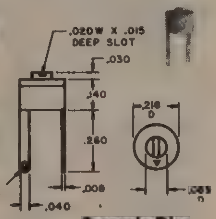
.040 ±.006
.020 X .050 SLOT
.400 ±.032
.146 ±.032
.020 WIDE X .020 DEEP SLOT

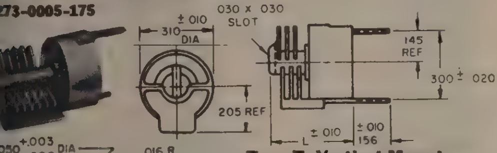
273-0005-005


.380 ±.032
.040 ±.005
.260 ±.032
.020 X .050 SLOT
.250 +.010 -.030 DIA
.062 ±.010
.155 ±.032
.020 WIDE X .020 DEEP SLOT

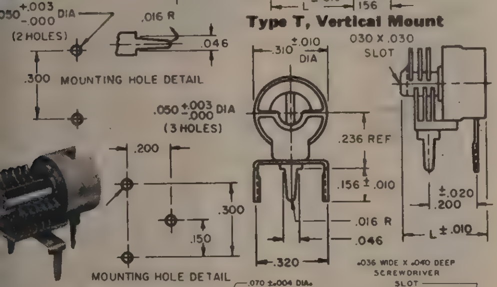
273-0005-175


.020W X .015 DEEP SLOT
.030
.140
.260
.008
.040
.020 X .050 SLOT
.218 D

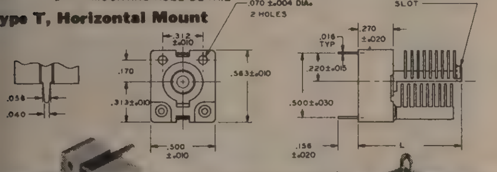
Ceramic Disc


± 010
310
DIA
030 X 030 SLOT
145 REF
300 ± 020
205 REF
L ± 010
± 010 156

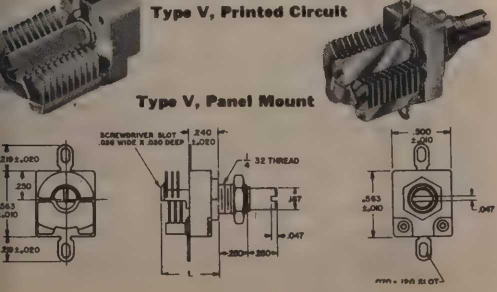
Type T, Vertical Mount


.050 +.003 -.000 DIA (2 HOLES)
.016 R
.046
.300
MOUNTING HOLE DETAIL
.050 +.003 -.000 DIA (3 HOLES)
.310 ±.010 DIA
030 X .030 SLOT
.236 REF
.156 ± .010
.016 R
.046
.320
±.020 .200
L ±.010
.200
.300
.150
MOUNTING HOLE DETAIL

Type T, Horizontal Mount


.070 ±.004 DIA. 2 HOLES
.312 ±.010
.170
.563±.010
.313±.010
.500 ±.010
.058
.040
.036 WIDE X .040 DEEP SCREWDRIVER SLOT
.270 ±.020
.016 TYP
.220±.015
.500±.030
.156 ±.020
L

Type V, Printed Circuit


Type V, Panel Mount
SCREWDRIVER SLOT .036 WIDE X .030 DEEP
.240 ±.020
1/4 32 THREAD
.219 ±.020
.250
.563 ±.010
.047
.250
.250
L
.500 ±.010
.563 ±.010
.047

## MINIATURE TEFLON® DIELECTRIC TRIMMER CAPACITORS

Ideally suited for VHF and UHF applications requiring low minimum capacity and delta C. Provide high resolution and electrical stability. Linear tuning; high Q, 2000 at 150 MHz typically; insulation resistance, $10^6$ megohms; temperature range, −55° C to +150° C. High resistance to shock and vibration. Gold metal parts and Teflon insulation. **Torque:** 0.2 to 3.0 oz.-in. **Voltage Breakdown:** 2,000 volts. **Adjustment:** 80 turns per inch.

®Registered DuPont trademark.

| Johnson No. | Mounting | Nom. pF max. | Cap per sec min. | Net Each |
|---|---|---|---|---|
| 273-0001-001 | PC | 1.5 | 0.25 | 60c |
| 273-0001-002 | Solder lug | 1.5 | 0.25 | 70c |

Subminiature trimmer capacitor for limited delta C applications. Thin Teflon dielectric provides superior electric characteristics Q, TC and VDC. High alumina stator, brass rotor, beryllium copper and brass terminals are silver plated and iridited. Q is typically 2500 at 1 MHz and 300 at 100 MHz. Insulation resistance 10,000 megohms min. after one minute at 100 VDC. Starting and running torque 0.4 to 1.5 oz.-in. **Working Voltage:** 100 VDC up to 85° C, 50 VDC up to 125° C. **Min. Breakdown Voltage:** 200 VDC at 25° C.

| Johnson No. | Mounting | Nom. Cap. Range pF | Net Each |
|---|---|---|---|
| 273-0005-005 | Printed Circuit | 1.1 to 3.5 | 80c |
| 273-0005-175 | Stripline | 1.1 to 3.5 | 85c |

## CERAMIC DISC TRIMMER CAPACITORS

Micro-miniature trimmer capacitor exhibits extreme stability and long life due to encapsulation of titinate rotor plate. High alumina stator for lower loss and higher strength. Precision lapping of bearing surfaces for smooth linear tuning. Designed to meet or exceed applicable portions of MIL-C-81. **Operating Range:** −55° C to +125° C. **Working Voltage:** 100 VDC up to 85° C, 50 VDC up to 125° C.

| Johnson No. | Nominal Cap. pF Min. | Nominal Cap. pF Max. | Min. DC Voltage Breakdown | Net Each |
|---|---|---|---|---|
| 274-0009-005 | 2.5 | 9.0 | 200 | $3.95 |
| 274-0020-005 | 3.5 | 20.0 | 200 | 3.95 |
| 274-0025-005 | 5.0 | 25.0 | 200 | 3.95 |

## AIR VARIABLE CAPACITORS

Sub-miniature air variable capacitors are available in a variety of sizes, mounting configurations and section types. Rotors and stators are precision machined from one piece of solid brass for outstanding stability, uniformity and freedom from moisture entrapment. Offer high Q, typically 2000 at 150 MHz; exceptionally low temperature coefficient: Type T plus 30 ± 15 ppm/° C; Type V plus 45 ± 15 ppm/° C. Silver-plated metal parts. Type T ceramic is 95% alumina grade L-624 or better; type V ceramic is steatite grade L-423 or better.

### TYPE "T" CAPACITORS

Designed to meet or exceed EIA-RS 2-4 and MILSTP. 202 C methods 204A and 201A. Offer excellent retrace characteristics. Can be supplied with tuning slot on both ends of rotor. High temperature versions available as specials. **Air Gap:** 0.008″. **Min. DC Voltage Breakdown:** 250 volts.

| Total Plates | Nominal Cap. pF | | Lgth. Inch | Mounting Style | | | |
|---|---|---|---|---|---|---|---|
| | | | | Vertical | | Horizontal | |
| | Min. | Max. | | Johnson No. 187- | Net Each | Johnson No. 187- | Net Each |
| 6 | 1.3 | 5.4 | 0.36 | 0103-005 | 66c | 0103-105 | 70c |
| 12 | 1.7 | 11.0 | 0.47 | 0106-005 | 70c | 0106-105 | 74c |
| 12 | 1.9 | 15.7 | 0.58 | 0109-005 | 78c | 0109-105 | 82c |

**Minimum of 4 plates to max. of 20 plates also available on special order.**

### TYPE "V" CAPACITORS

High capacity in small space. Exceptionally uniform delta C and voltage characteristics. High torque, 2.5 to 10 oz.-in. Slotted rotor or shaft extension for convenient adjustment. **Air Gap:** .010″. **Peak Voltage Breakdown:** 650 volts.

#### PRINTED CIRCUIT TYPES—SINGLE SECTION

| Johnson No. | Nominal Cap. pF per sec Max. | Nominal Cap. pF per sec Min. | Plates per Section | L ± 1/32″ | Net Each |
|---|---|---|---|---|---|
| 193-0004-005 | 13 | 1.4 | 8 | 37/64″ | $0.90 |
| 193-0006-005 | 20 | 1.7 | 12 | 1 1/16″ | .95 |
| 193-0008-005 | 27 | 2.0 | 16 | 25/32″ | 1.00 |
| 193-0010-005 | 34 | 2.2 | 20 | 57/64″ | 1.05 |

#### PANEL MOUNT TYPES—SINGLE SECTION

| Johnson No. | Nominal Cap. pF per sec Max. | Nominal Cap. pF per sec Min. | Plates per Section | L ± 1/32″ | Net Each |
|---|---|---|---|---|---|
| 193-0004-001 | 13 | 1.4 | 8 | 35/64″ | $1.10 |
| 193-0006-001 | 20 | 1.7 | 12 | 21/32″ | 1.15 |
| 193-0008-001 | 27 | 2.0 | 16 | 3/4″ | 1.20 |
| 193-0010-001 | 34 | 2.2 | 20 | 55/64″ | 1.25 |

**Capacitors with 0.016″ air gap available on special order.**

**TYPE U AIR VARIABLE CAPACITORS ALSO AVAILABLE.
WRITE FOR FULL INFORMATION AND PRICING.**

GENERAL INSTRUMENT

# Mica Capacitors

Miconics
Industries
Inc.

## MIL-C-5D DIPPED SILVER MICA CAPACITORS

Meet or exceed both MIL-C-5D military specifications and EIA specification RS-153. Solder-coated brass leads except Type RDM10, solder-coated copper-clad steel leads. **Tolerance:** ±5% except as indicated. **Temperature Range:** −55° C to +125° C; others available. **Vibration Frequency:** Withstands 10–2000 Hz. **Voltage:** 500 WVDC except as noted.

### CHARACTERISTIC DESIGNATIONS

| * | Capacitance Drift | TC, ppm/° C |
|---|---|---|
| C | ± (0.5% + 0.1 pF) | −200 to +200 |
| D | ± (0.3% + 0.1 pF) | −100 to +100 |
| E | ± (0.1% + 0.1 pF) | −20 to +100 |
| F | ± (0.05% + 0.1 pF) | 0 to +70 |

*Characteristic letter, given as first letter of part number suffix.

### TYPE RDM10—MIL TYPE CM04

**Max. Dimensions:** .390″ l. x .380″ w. x .220″ thick.

| Prefix RDM10- or CM04- | Cap., pF | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 | 1000 Up |
|---|---|---|---|---|---|---|
| CD010D03† | 1 | $0.19 | $0.14 | $0.10 | $0.091 | $0.073 |
| CD020D03†‡ | 2 | .19 | .14 | .10 | .091 | .073 |
| CD030D03†‡ | 3 | .19 | .14 | .10 | .091 | .073 |
| CD050D03† | 5 | .19 | .14 | .10 | .091 | .073 |
| CD100D03†§ | 10 | .23 | .17 | .12 | .11 | .088 |
| CD120J03§ | 12 | .23 | .17 | .12 | .11 | .088 |
| CD150J03§ | 15 | .23 | .17 | .12 | .11 | .088 |
| CD180J03§ | 18 | .23 | .17 | .12 | .11 | .088 |
| ED200J03§ | 20 | .23 | .17 | .12 | .11 | .088 |
| ED220J03§ | 22 | .23 | .17 | .12 | .11 | .088 |
| ED240J03§ | 24 | .23 | .17 | .12 | .11 | .088 |
| ED270J03# | 27 | .23 | .17 | .12 | .11 | .088 |
| ED300J03# | 30 | .23 | .17 | .12 | .11 | .088 |
| ED330J03# | 33 | .23 | .17 | .12 | .11 | .088 |
| ED360J03# | 36 | .23 | .17 | .12 | .11 | .088 |
| ED390J03# | 39 | .23 | .17 | .12 | .11 | .088 |
| ED430J03# | 43 | .23 | .17 | .12 | .11 | .088 |
| ED470J03# | 47 | .23 | .17 | .12 | .11 | .088 |
| ED500J03•‡ | 50 | .23 | .17 | .12 | .109 | .088 |
| ED510J03• | 51 | .23 | .17 | .12 | .11 | .088 |
| ED560J03• | 56 | .23 | .17 | .12 | .11 | .088 |
| ED620J03• | 62 | .23 | .17 | .12 | .11 | .088 |
| ED680J03• | 68 | .23 | .17 | .12 | .11 | .088 |
| ED750J03• | 75 | .23 | .17 | .12 | .11 | .088 |
| ED820J03• | 82 | .23 | .17 | .12 | .11 | .088 |
| FD910J03• | 91 | .23 | .17 | .12 | .11 | .088 |
| FD101J03• | 100 | .23 | .17 | .12 | .11 | .088 |
| FD111J03• | 110 | .23 | .17 | .12 | .11 | .088 |
| FD121J03• | 120 | .24 | .18 | .13 | .116 | .093 |
| FD131J03• | 130 | .24 | .18 | .13 | .116 | .093 |
| FD151J03• | 150 | .28 | .22 | .16 | .139 | .111 |
| FD161J03• | 160 | .35 | .26 | .19 | .17 | .136 |
| FD181J03• | 180 | .35 | .26 | .19 | .17 | .136 |
| FD201J03• | 200 | .37 | .28 | .20 | .178 | .142 |
| FD221J03• | 220 | .37 | .28 | .20 | .178 | .142 |
| FD241J03• | 240 | .37 | .28 | .20 | .178 | .142 |
| FD251J03•‡ | 250 | .37 | .28 | .20 | .178 | .142 |
| FC271J03•▲ | 270 | .37 | .28 | .20 | .178 | .142 |
| FC301J03•▲ | 300 | .41 | .31 | .22 | .199 | .159 |
| FA331J03•■ | 330 | .41 | .31 | .22 | .199 | .159 |
| FA361J03•■ | 360 | .41 | .31 | .22 | .199 | .159 |
| FA391J03•■ | 390 | .44 | .33 | .24 | .213 | .17 |

### TYPE RDM15—MIL TYPE CM05

**Max. Dimensions:** .490″ l. x .420″ w. x .240″ thick.

| Prefix RDM15- or CM05- | Cap., pF | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 | 1000 Up |
|---|---|---|---|---|---|---|
| CD010D03† | 1 | $0.19 | $0.15 | $0.11 | $0.095 | $0.076 |
| CD020D03†‡ | 2 | .19 | .15 | .11 | .095 | .076 |
| CD030D03†‡ | 3 | .19 | .15 | .11 | .095 | .076 |
| CD050D03† | 5 | .19 | .15 | .11 | .095 | .076 |
| CD060D03† | 6 | .19 | .15 | .11 | .095 | .076 |
| CD070D03† | 7 | .19 | .15 | .11 | .095 | .076 |
| CD080D03† | 8 | .19 | .15 | .11 | .095 | .076 |
| CD100D03§ | 10 | .17 | .13 | .10 | .086 | .069 |
| CD120J03§ | 12 | .17 | .13 | .10 | .086 | .069 |
| CD150J03§ | 15 | .17 | .13 | .10 | .086 | .069 |
| CD180J03§ | 18 | .17 | .13 | .10 | .086 | .069 |
| CD200J03§ | 20 | .17 | .13 | .10 | .086 | .069 |
| CD220J03§ | 22 | .17 | .13 | .10 | .086 | .069 |
| ED240J03§ | 24 | .17 | .13 | .10 | .086 | .069 |
| ED270J03# | 27 | .17 | .13 | .10 | .086 | .069 |
| ED300J03# | 30 | .17 | .13 | .10 | .086 | .069 |
| ED330J03# | 33 | .17 | .13 | .10 | .086 | .069 |
| ED360J03# | 36 | .17 | .13 | .10 | .086 | .069 |
| ED390J03# | 39 | .17 | .13 | .10 | .086 | .069 |
| ED430J03# | 43 | .17 | .13 | .10 | .086 | .069 |
| ED470J03# | 47 | .17 | .13 | .10 | .086 | .069 |
| ED500J03•‡ | 50 | .17 | .13 | .10 | .086 | .069 |
| ED510J03• | 51 | .17 | .13 | .10 | .086 | .069 |
| ED560J03• | 56 | .17 | .13 | .10 | .086 | .069 |
| ED620J03• | 62 | .17 | .13 | .10 | .086 | .069 |
| ED680J03• | 68 | .17 | .13 | .10 | .086 | .069 |
| ED750J03• | 75 | .17 | .13 | .10 | .086 | .069 |
| ED820J03• | 82 | .17 | .13 | .10 | .086 | .069 |
| FD910J03• | 91 | .17 | .13 | .10 | .086 | .069 |
| FD101J03• | 100 | .17 | .13 | .10 | .086 | .069 |

### TYPE RDM15—MIL TYPE CM05 (CONT'D)

| Prefix RDM15- or CM05- | Cap., pF | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 | 1000 Up |
|---|---|---|---|---|---|---|
| FD111J03• | 110 | $0.20 | $0.16 | $0.11 | $0.101 | $0.081 |
| FD121J03• | 120 | .20 | .16 | .11 | .101 | .081 |
| FD131J03• | 130 | .20 | .16 | .11 | .101 | .081 |
| FD151J03• | 150 | .20 | .16 | .11 | .101 | .081 |
| FD161J03• | 160 | .21 | .16 | .11 | .101 | .081 |
| FD181J03• | 180 | .21 | .16 | .11 | .101 | .081 |
| FD201J03• | 200 | .21 | .16 | .11 | .101 | .081 |
| FD221J03• | 220 | .21 | .16 | .12 | .102 | .082 |
| FD241J03• | 240 | .22 | .16 | .12 | .105 | .086 |
| FD251J03•‡ | 250 | .22 | .16 | .12 | .105 | .086 |
| FD271J03• | 270 | .25 | .18 | .14 | .12 | .096 |
| FD301J03• | 300 | .25 | .18 | .14 | .12 | .096 |
| FD331J03• | 330 | .26 | .18 | .14 | .124 | .099 |
| FD361J03• | 360 | .27 | .20 | .14 | .125 | .10 |
| FD391J03• | 390 | .27 | .20 | .14 | .128 | .10 |
| FD431J03•‡ | 430 | .29 | .20 | .16 | .134 | .112 |
| FD471J03•‡ | 470 | .31 | .23 | .17 | .151 | .121 |
| FD501J03•‡ | 500 | .34 | .25 | .19 | .156 | .132 |
| FD511J03•‡ | 510 | .34 | .25 | .19 | .156 | .132 |
| FC561J03•‡▲ | 560 | .36 | .27 | .19 | .17 | .136 |
| FC621J03•‡▲ | 620 | .38 | .29 | .20 | .183 | .146 |
| FC681J03•‡▲ | 680 | .42 | .31 | .22 | .20 | .16 |
| FC751J03•‡▲ | 750 | .44 | .33 | .24 | .211 | .169 |
| FC821J03•‡▲ | 820 | .48 | .36 | .26 | .23 | .184 |
| FA911J03•‡■ | 910 | .48 | .36 | .26 | .23 | .184 |
| FA102J03•‡■ | 1000 | .48 | .36 | .26 | .23 | .184 |

### TYPE RDM19—MIL TYPE CM06

**Max. Dimensions:** .710″ l. x .590″ w. x .370″ thick.

| | | | | | | |
|---|---|---|---|---|---|---|
| FD101J03•‡ | 100 | $0.27 | $0.18 | $0.14 | $0.11 | $0.09 |
| FD111J03•‡ | 110 | .27 | .18 | .14 | .11 | .09 |
| FD121J03•‡ | 120 | .27 | .18 | .14 | .11 | .09 |
| FD131J03•‡ | 130 | .27 | .18 | .14 | .11 | .09 |
| FD151J03•‡ | 150 | .27 | .18 | .14 | .11 | .09 |
| FD161J03•‡ | 160 | .27 | .18 | .14 | .11 | .09 |
| FD181J03•‡ | 180 | .27 | .18 | .14 | .11 | .09 |
| FD201J03•‡ | 200 | .27 | .18 | .14 | .11 | .09 |
| FD221J03•‡ | 220 | .27 | .18 | .14 | .11 | .09 |
| FD241J03•‡ | 240 | .27 | .18 | .14 | .11 | .09 |
| FD251J03•‡ | 250 | .27 | .18 | .14 | .11 | .09 |
| FD271J03•‡ | 270 | .27 | .18 | .14 | .11 | .09 |
| FD301J03•‡ | 300 | .27 | .18 | .14 | .11 | .09 |
| FD331J03•‡ | 330 | .27 | .18 | .14 | .11 | .09 |
| FD361J03•‡ | 360 | .27 | .18 | .14 | .11 | .09 |
| FD391J03•‡ | 390 | .27 | .18 | .14 | .11 | .09 |
| FD431J03• | 430 | .28 | .18 | .13 | .115 | .092 |
| FD471J03• | 470 | .31 | .20 | .14 | .128 | .102 |
| FD501J03•‡ | 500 | .31 | .20 | .14 | .128 | .102 |
| FD511J03• | 510 | .31 | .20 | .14 | .128 | .102 |
| FD561J03• | 560 | .31 | .20 | .14 | .128 | .102 |
| FD621J03• | 620 | .31 | .23 | .16 | .142 | .114 |
| FD681J03• | 680 | .31 | .23 | .16 | .142 | .114 |
| FD751J03• | 750 | .31 | .23 | .16 | .142 | .114 |
| FD821J03• | 820 | .39 | .26 | .18 | .164 | .131 |
| FD911J03• | 910 | .39 | .26 | .18 | .164 | .131 |
| FD102J03• | 1000 | .42 | .27 | .20 | .175 | .14 |
| FD112J03• | 1100 | .45 | .28 | .21 | .188 | .15 |
| FD122J03• | 1200 | .47 | .30 | .22 | .195 | .156 |
| FD132J03• | 1300 | .50 | .33 | .24 | .21 | .168 |
| FD152J03• | 1500 | .55 | .36 | .26 | .232 | .185 |
| FD162J03• | 1600 | .55 | .36 | .26 | .232 | .185 |
| FD182J03• | 1800 | .60 | .38 | .28 | .249 | .199 |
| FD202J03• | 2000 | .64 | .41 | .30 | .265 | .212 |
| FD222J03• | 2200 | .67 | .43 | .31 | .278 | .222 |
| FD242J03• | 2400 | .74 | .47 | .35 | .309 | .247 |
| FD252J03•‡ | 2500 | .85 | .54 | .40 | .354 | .283 |
| FD272J03• | 2700 | .85 | .54 | .40 | .354 | .283 |
| FD302J03• | 3000 | .91 | .58 | .43 | .378 | .302 |
| FD332J03• | 3300 | .97 | .63 | .46 | .404 | .323 |
| FD362J03• | 3600 | 1.05 | .67 | .49 | .438 | .35 |
| FD392J03• | 3900 | 1.05 | .67 | .49 | .438 | .35 |
| FD432J03• | 4300 | 1.19 | .77 | .56 | .497 | .398 |
| FD472J03• | 4700 | 1.26 | .82 | .59 | .526 | .421 |
| FD502J03•‡ | 5000 | 1.33 | .86 | .62 | .552 | .442 |
| FD512J03•‡ | 5100 | 1.33 | .86 | .62 | .552 | .442 |
| FC562J03•‡▲ | 5600 | 1.36 | .88 | .63 | .565 | .452 |
| FC622J03•‡▲ | 6200 | 1.42 | .92 | .66 | .59 | .472 |
| FA682J03•‡■ | 6800 | 1.30 | .84 | .61 | .54 | .432 |
| FA752J03•‡■ | 7500 | 1.42 | .92 | .66 | .59 | .472 |
| FA822J03•‡■ | 8200 | 1.54 | 1.00 | .72 | .643 | .514 |

### SYMBOL EXPLANATIONS

†Available in ± ½ pF tolerance only, unless otherwise designated. ‡Not available in MIL type in any tolerance. §Also available in non-MIL ±10% tolerance. #Also available in non-MIL ±10% and ±2% tolerances; available in MIL type ±2% tolerance, except for part numbers designated not available in MIL type. •Also available in non-MIL ±10%, ±2% and ±1% tolerances; available in MIL type ±2% and ±1% tolerances, except for part numbers designated not available in MIL type. ▲300 WVDC. ■100 WVDC.

**TYPE RDM5, 300 WVDC, NON-MIL VERSION ALSO AVAILABLE IN VALUES 1 pF THRU 200 pF. COMPLETE LISTING OF VALUES AND PRICES AVAILABLE ON REQUEST.**

# SILVER MICA AND ELECTROLYTIC CAPACITORS

Miconics
Industries
Inc.

## MIL-C-5D DIPPED SILVER MICA CAPACITORS (CONT'D)

### TYPE RDM20

**ax. Dimensions:** .790″ l. x .570″ w. x .340″ thick.

| Prefix RDM20- | Cap., pF | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 | 1000 Up |
|---|---|---|---|---|---|---|
| FD681J03•‡ | 680 | $0.31 | $0.23 | $0.16 | $0.142 | $0.114 |
| FD751J03•‡ | 750 | .31 | .23 | .16 | .142 | .114 |
| FD821J03•‡ | 820 | .39 | .26 | .18 | .164 | .131 |
| FD911J03•‡ | 910 | .39 | .26 | .18 | .164 | .131 |
| FD102J03•‡ | 1000 | .42 | .27 | .20 | .175 | .14 |
| FD112J03•‡ | 1100 | .45 | .28 | .21 | .188 | .15 |
| FD122J03•‡ | 1200 | .47 | .30 | .22 | .195 | .156 |
| FD132J03•‡ | 1300 | .50 | .33 | .24 | .21 | .168 |
| FD152J03•‡ | 1500 | .55 | .36 | .26 | .232 | .185 |
| FD182J03•‡ | 1800 | .60 | .38 | .28 | .249 | .199 |
| FD202J03•‡ | 2000 | .64 | .41 | .30 | .265 | .212 |
| FD222J03•‡ | 2200 | .67 | .43 | .31 | .278 | .222 |
| FD242J03•‡ | 2400 | .74 | .47 | .35 | .309 | .247 |
| FD252J03•‡ | 2500 | .85 | .54 | .40 | .354 | .283 |
| FD272J03•‡ | 2700 | .85 | .54 | .40 | .354 | .283 |
| FD302J03•‡ | 3000 | .91 | .58 | .43 | .378 | .302 |
| FD332J03•‡ | 3300 | .97 | .63 | .46 | .404 | .323 |
| FD362J03•‡ | 3600 | 1.05 | .67 | .49 | .438 | .35 |
| FD392J03•‡ | 3900 | 1.05 | .67 | .49 | .438 | .35 |
| FD432J03•‡ | 4300 | 1.19 | .77 | .56 | .497 | .398 |
| FD472J03•‡ | 4700 | 1.26 | .82 | .59 | .526 | .421 |
| FD502J03•‡ | 5000 | 1.33 | .86 | .62 | .552 | .442 |
| FD512J03•‡ | 5100 | 1.33 | .86 | .62 | .552 | .442 |
| FD562J03•‡ | 5600 | 1.36 | .88 | .63 | .565 | .452 |
| FC622J03•‡▲ | 6200 | 1.42 | .92 | .66 | .59 | .472 |
| FC682J03•‡▲ | 6800 | 1.30 | .84 | .61 | .54 | .432 |
| FA752J03•‡■ | 7500 | 1.42 | .92 | .66 | .59 | .472 |
| FA822J03•‡■ | 8200 | 1.54 | 1.00 | .72 | .643 | .514 |
| FA912J03•‡■ | 9100 | 1.53 | 1.02 | .77 | .64 | .51 |
| FA103J03•‡■ | 10000 | 1.62 | 1.08 | .81 | .68 | .54 |

### SYMBOL EXPLANATIONS

Not available in MIL type in any tolerance. •Also available in on-MIL ±10%, ±2% and ±1% tolerances; available in MIL pe ±2% and ±1% tolerances, except for part numbers desig-ated not available in MIL type. ▲300 WVDC. ■100 WVDC. Also available in non-MIL ±2% and ±1% tolerances; available MIL type ±2% and ±1% tolerances, except for part numbers esignated not available in MIL type.

### TYPE RDM30—MIL TYPE CM07

**Max. Dimensions:** .830″ l. x .920″ w. x .450″ thick.

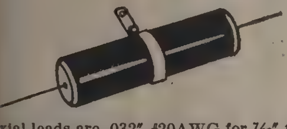
| Prefix RDM30- or CM07- | Cap., pF | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 | 1000 Up |
|---|---|---|---|---|---|---|
| FD512J03• | 5100 | $0.93 | $0.60 | $0.42 | $0.376 | $0.31 |
| FD562J03• | 5600 | 1.02 | .66 | .48 | .425 | .34 |
| FD622J03• | 6200 | 1.10 | .72 | .52 | .46 | .368 |
| FD682J03• | 6800 | 1.23 | .80 | .58 | .512 | .41 |
| FD752J03• | 7500 | 1.31 | .84 | .62 | .547 | .437 |
| FD822J03• | 8200 | 1.44 | .93 | .67 | .60 | .48 |
| FD912J03• | 9100 | 1.57 | 1.01 | .73 | .652 | .522 |
| FD103J03• | 10000 | 1.73 | 1.11 | .81 | .719 | .575 |
| FD113J03• | 11000 | 1.88 | 1.21 | .89 | .784 | .627 |
| FD123J03• | 12000 | 2.01 | 1.30 | .95 | .838 | .67 |
| FD133J03• | 13000 | 2.19 | 1.41 | 1.02 | .913 | .73 |
| FD153J03• | 15000 | 2.48 | 1.57 | 1.16 | 1.03 | .825 |
| FD163J03• | 16000 | 2.64 | 1.70 | 1.24 | 1.10 | .88 |
| FD183J03• | 18000 | 2.94 | 1.89 | 1.38 | 1.225 | .98 |
| FD203J03• | 20000 | 3.27 | 2.10 | 1.53 | 1.362 | 1.09 |

### TYPE RDM42—MIL TYPE CM08

**Max. Dimensions:** 1.480″ l. x .920″ w. x .470″ thick.

| Prefix RDM42- or CM08- | Cap., pF | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 | 1000 Up |
|---|---|---|---|---|---|---|
| FD223J03♦ | 22000 | $ 5.55 | $3.70 | $2.78 | $2.32 | $1.85 |
| FD243J03♦ | 24000 | 5.88 | 3.92 | 2.94 | 2.45 | 1.96 |
| FD253J03♦‡ | 25000 | 6.15 | 4.10 | 3.08 | 2.56 | 2.05 |
| FD273J03♦ | 27000 | 6.48 | 4.32 | 3.24 | 2.70 | 2.16 |
| FD303J03♦ | 30000 | 7.08 | 4.72 | 3.54 | 2.95 | 2.36 |
| FD333J03♦ | 33000 | 7.68 | 5.12 | 3.84 | 3.20 | 2.56 |
| FD363J03♦ | 36000 | 8.82 | 5.88 | 4.41 | 3.67 | 2.94 |
| FD393J03♦ | 39000 | 9.12 | 6.08 | 4.56 | 3.80 | 3.04 |
| FD433J03♦ | 43000 | 9.90 | 6.60 | 4.95 | 4.13 | 3.30 |
| FD473J03♦ | 47000 | 10.80 | 7.20 | 5.40 | 4.50 | 3.60 |
| FD503J03♦‡ | 50000 | 11.40 | 7.60 | 5.70 | 4.75 | 3.80 |
| FD513J03♦ | 51000 | 11.70 | 7.80 | 5.85 | 4.87 | 3.90 |
| FC563J03♦▲ | 56000 | 9.60 | 6.40 | 4.80 | 4.00 | 3.20 |
| FC623J03♦▲ | 62000 | 10.50 | 7.00 | 5.25 | 4.37 | 3.50 |

## TYPE 977 INDUSTRIAL ALUMINUM ELECTROYLTIC CAPACITORS



Feature all-welded construction, low leakage current, low dissipation factor, extended shelf life and 1.5-volt reverse voltage. Supplied with PVC insulating sleeve. xial leads are .032″ #20AWG for 7/16″ to 3/4″ cans, .040″ #18AWG r 7/8″ and larger dia. cans. **Temperature Range:** −20° C to 85° C. **Tolerance:** −10%, +100%, 3–50 WVDC; −10%, 75%, 51–350 WVDC; −10%, +50%, 351–450 WVDC.

| G.I. No. | Cap., μF | Size * | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-499 | 500-999 | 1000 Up |
|---|---|---|---|---|---|---|---|---|
| **6 WVDC** | | | | | | | | |
| 977-186 | 1000 | CC | $1.14 | $0.89 | $0.69 | $0.55 | $0.44 | $0.39 |
| 977-203 | 1500 | DC | 1.25 | .99 | .76 | .62 | .51 | .46 |
| 977-211 | 2000 | DD | 1.38 | 1.04 | .84 | .67 | .528 | .48 |
| 977-224 | 3000 | ED | 1.71 | 1.35 | 1.04 | .84 | .72 | .60 |
| **15 WVDC** | | | | | | | | |
| 977-162 | 500 | CC | $1.05 | $0.82 | $0.64 | $0.51 | $0.402 | $0.36 |
| 977-188 | 1000 | DC | 1.38 | 1.07 | .83 | .67 | .528 | .48 |
| 977-213 | 2000 | ED | 1.92 | 1.26 | .97 | .78 | .638 | .56 |
| 977-226 | 3000 | EF | 2.37 | 1.82 | 1.42 | 1.14 | .97 | .81 |
| **25 WVDC** | | | | | | | | |
| 977-139 | 250 | CB | $1.02 | $0.79 | $0.62 | $0.49 | $0.385 | $0.35 |
| 977-163 | 500 | DC | 1.38 | 1.07 | .83 | .67 | .528 | .47 |
| 977-189 | 1000 | EC | 2.37 | 1.82 | 1.42 | 1.14 | .886 | .81 |
| 977-214 | 2000 | EG | 2.91 | 2.25 | 1.76 | 1.41 | 1.12 | 1.00 |
| 977-227 | 3000 | FH | 3.00 | 2.47 | 1.93 | 1.54 | 1.32 | 1.10 |
| **50 WVDC** | | | | | | | | |
| 977-123 | 150 | CC | $0.93 | $0.66 | $0.51 | $0.41 | $0.325 | $0.29 |
| 977-141 | 250 | DC | 1.05 | .87 | .64 | .51 | .396 | .37 |
| 977-165 | 500 | ED | 1.44 | 1.11 | .86 | .69 | .55 | .49 |
| 977-191 | 1000 | FF | 2.52 | 1.93 | 1.49 | 1.20 | 1.03 | .85 |
| 977-208 | 1500 | FI | 3.00 | 2.26 | 1.76 | 1.41 | 1.26 | 1.01 |
| 977-216 | 2000 | FL | 3.48 | 2.60 | 2.02 | 1.61 | 1.38 | 1.15 |
| **150 WVDC** | | | | | | | | |
| 977-63 | 25 | CB | $0.75 | $0.53 | $0.41 | $0.33 | $0.253 | $0.23 |
| 977-72 | 30 | CB | .78 | .55 | .43 | .34 | .264 | .24 |
| 977-81 | 40 | CC | .81 | .58 | .45 | .36 | .286 | .26 |
| 977-90 | 50 | DB | .84 | .59 | .46 | .37 | .297 | .27 |
| 977-99 | 60 | DC | .90 | .63 | .49 | .39 | .314 | .28 |
| 977-264 | 80 | DC | .96 | .68 | .54 | .41 | .33 | .30 |
| 977-116 | 100 | DE | 1.05 | .74 | .58 | .46 | .363 | .33 |
| 977-126 | 150 | EE | 1.14 | .82 | .63 | .51 | .402 | .36 |
| 977-135 | 200 | EG | 1.32 | .98 | .77 | .62 | .462 | .44 |
| 977-144 | 250 | FF | 1.53 | 1.17 | .90 | .73 | .624 | .52 |
| 977-152 | 300 | FG | 1.77 | 1.35 | 1.04 | .84 | .713 | .60 |

| G.I. No. | Cap., μF | Size * | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-499 | 500-999 | 1000 Up |
|---|---|---|---|---|---|---|---|---|
| **250 WVDC** | | | | | | | | |
| 977-20 | 4 | BA | $0.60 | $0.47 | $0.37 | $0.30 | $0.231 | $0.21 |
| 977-38 | 8 | BB | .69 | .54 | .41 | .33 | .264 | .24 |
| 977-251 | 12 | BC | .75 | .57 | .44 | .36 | .272 | .25 |
| 977-252 | 16 | CB | .78 | .60 | .47 | .38 | .292 | .27 |
| 977-56 | 20 | CC | .81 | .64 | .49 | .40 | .314 | .28 |
| 977-74 | 30 | DC | .87 | .68 | .53 | .42 | .33 | .30 |
| 977-83 | 40 | DD | .93 | .73 | .57 | .46 | .363 | .33 |
| 977-92 | 50 | DE | 1.02 | .80 | .62 | .50 | .396 | .36 |
| 977-101 | 60 | ED | 1.08 | .84 | .65 | .52 | .413 | .37 |
| 977-118 | 100 | EF | 1.47 | .96 | .75 | .60 | .484 | .43 |
| **350 WVDC** | | | | | | | | |
| 977-27 | 4 | BB | $0.63 | $0.47 | $0.38 | $0.30 | $0.24 | $0.22 |
| 977-40 | 8 | CB | .72 | .55 | .43 | .34 | .264 | .24 |
| 977-46 | 10 | CB | .72 | .55 | .43 | .34 | .264 | .24 |
| 977-253 | 12 | CB | .78 | .60 | .47 | .38 | .292 | .27 |
| 977-254 | 16 | CC | .84 | .66 | .51 | .41 | .325 | .29 |
| 977-58 | 20 | DC | .87 | .68 | .52 | .42 | .33 | .30 |
| 977-76 | 30 | DD | .99 | .77 | .60 | .48 | .385 | .34 |
| 977-85 | 40 | ED | 1.05 | .81 | .62 | .51 | .396 | .36 |
| 977-103 | 60 | EF | 1.17 | .91 | .71 | .57 | .45 | .40 |
| 977-120 | 100 | FF | 1.53 | 1.11 | .86 | .69 | .55 | .49 |
| **450 WVDC** | | | | | | | | |
| 977-6 | 1 | AA | $0.66 | $0.51 | $0.39 | $0.32 | $0.242 | $0.23 |
| 977-12 | 2 | BA | .66 | .52 | .40 | .32 | .253 | .23 |
| 977-24 | 4 | CB | .69 | .53 | .42 | .34 | .264 | .24 |
| 977-42 | 8 | DB | .75 | .59 | .46 | .37 | .292 | .26 |
| 977-48 | 10 | DB | .78 | .62 | .47 | .38 | .297 | .26 |
| 977-255 | 12 | DC | .81 | .64 | .50 | .40 | .314 | .28 |
| 977-256 | 16 | DD | .84 | .65 | .53 | .42 | .33 | .30 |
| 977-60 | 20 | EG | .93 | .73 | .56 | .45 | .35 | .32 |
| 977-78 | 30 | EE | 1.02 | .80 | .62 | .50 | .391 | .35 |
| 977-87 | 40 | FE | 1.71 | 1.35 | 1.04 | .84 | .72 | .60 |
| 977-105 | 60 | FH | 2.25 | 1.71 | 1.35 | 1.04 | .84 | .72 |
| 977-257 | 80 | FI | 2.52 | 1.93 | 1.49 | 1.20 | 1.03 | .85 |
| 977-258 | 100 | FL | 3.00 | 2.26 | 1.76 | 1.41 | 1.26 | 1.01 |

### *TYPE 977 CASE SIZES

| Size | Dia. x L., In.† | Size | Dia. x L., In.† | Size | Dia. x L., In.† |
|---|---|---|---|---|---|
| AA | 7/16 x 1 1/8 | DC | 3/4 x 1 5/8 | EG | 7/8 x 2 5/8 |
| BA | 1/2 x 1 1/8 | DD | 3/4 x 1 7/8 | FE | 1 x 2 1/8 |
| BB | 1/2 x 1 3/8 | DE | 3/4 x 2 1/8 | FF | 1 x 2 3/8 |
| BC | 1/2 x 1 5/8 | EC | 7/8 x 1 5/8 | FG | 1 x 2 5/8 |
| CB | 5/8 x 1 3/8 | ED | 7/8 x 1 7/8 | FH | 1 x 2 7/8 |
| CC | 5/8 x 1 5/8 | EE | 7/8 x 2 1/8 | FI | 1 x 3 1/8 |
| DB | 3/4 x 1 3/8 | EF | 7/8 x 2 3/8 | FL | 1 x 3 7/8 |

†Add .008″ to dia. and length for PVC insulating sleeve.

# TYPE 974 SUBMINIATURE TUBULAR ELECTROLYTIC CAPACITORS

**Miconics Industries Inc.**

In aluminum case with insulating sleeve; tubular, all-welded construction. Have low DCL, DF and ESR; high C/V factor and surge rating; extended operating life. Supplied with axial wire leads and with case polarized at negative potential. Types for vertical mounting, and non-polar design also available. **Temp. Range:** −30° C to +85° C. **Tolerance:** 3–50 WVDC, −10% +75%; 51–150 WVDC, −10% +50%.

**3 WVDC**

| G.I. No. | Cap., µF | Net Each, Lots of 1–24 | 25–49 | 50–99 | 100–249 | 250–499 | 500–999 | 1000 Up |
|---|---|---|---|---|---|---|---|---|
| 974-31A | 1 | $0.53 | $0.39 | $0.31 | $0.24 | $0.21 | $0.171 | $0.151 |
| 974-32A | 2 | .53 | .39 | .31 | .24 | .21 | .171 | .151 |
| 974-33A | 3 | .53 | .39 | .31 | .24 | .21 | .171 | .151 |
| 974-34A | 4 | .53 | .39 | .31 | .24 | .21 | .171 | .151 |
| 974-35A | 5 | .53 | .39 | .31 | .24 | .21 | .171 | .151 |
| 974-36A | 6 | .53 | .39 | .31 | .24 | .21 | .171 | .151 |
| 974-37A | 8 | .53 | .39 | .31 | .24 | .21 | .171 | .151 |
| 974-38A | 10 | .55 | .41 | .32 | .25 | .22 | .18 | .158 |
| 974-39A | 15 | .55 | .41 | .32 | .25 | .22 | .18 | .158 |
| 974-40B | 20 | .55 | .41 | .32 | .25 | .22 | .18 | .158 |
| 974-41B | 25 | .55 | .41 | .32 | .25 | .22 | .18 | .158 |
| 974-42B | 30 | .58 | .43 | .33 | .26 | .23 | .188 | .166 |
| 974-43B | 35 | .58 | .43 | .33 | .26 | .23 | .188 | .166 |
| 974-44B | 40 | .58 | .43 | .33 | .26 | .23 | .188 | .166 |
| 974-45C | 50 | .60 | .45 | .35 | .27 | .24 | .196 | .173 |
| 974-46C | 60 | .60 | .45 | .35 | .27 | .24 | .196 | .173 |
| 974-47D | 75 | .63 | .47 | .36 | .29 | .25 | .204 | .18 |
| 974-48D | 90 | .63 | .47 | .36 | .29 | .25 | .204 | .18 |
| 974-49D | 100 | .63 | .47 | .36 | .29 | .25 | .204 | .18 |
| 974-50E | 125 | .63 | .47 | .36 | .29 | .25 | .204 | .18 |
| 974-51E | 140 | .63 | .47 | .36 | .29 | .25 | .204 | .18 |
| 974-52E | 150 | .66 | .48 | .38 | .30 | .26 | .212 | .187 |
| 974-53F | 175 | .66 | .48 | .38 | .30 | .26 | .212 | .187 |
| 974-29F | 200 | .68 | .50 | .39 | .31 | .27 | .22 | .194 |
| 974-55G | 250 | .68 | .50 | .39 | .31 | .27 | .22 | .194 |
| 974-56G | 300 | .68 | .50 | .39 | .31 | .27 | .22 | .194 |
| 974-19H | 400 | .68 | .50 | .39 | .31 | .27 | .22 | .194 |
| 974-134I | 500 | .78 | .58 | .45 | .35 | .31 | .253 | .223 |
| 974-135I | 600 | .83 | .61 | .48 | .38 | .33 | .269 | .238 |
| 974-136J | 800 | .83 | .61 | .48 | .38 | .33 | .269 | .238 |
| 974-181K | 1300 | .97 | .72 | .56 | .44 | .39 | .316 | .278 |
| 974-182L | 1800 | .97 | .72 | .56 | .44 | .39 | .316 | .278 |
| **6 WVDC** | | | | | | | | |
| 974-58A | 1 | $0.53 | $0.39 | $0.31 | $0.24 | $0.21 | $0.171 | $0.151 |
| 974-59A | 2 | .53 | .39 | .31 | .24 | .21 | .171 | .151 |
| 974-60A | 3 | .53 | .39 | .31 | .24 | .21 | .171 | .151 |
| 974-61A | 4 | .53 | .39 | .31 | .24 | .21 | .171 | .151 |
| 974-62A | 5 | .53 | .39 | .31 | .24 | .21 | .171 | .151 |
| 974-63A | 6 | .53 | .39 | .31 | .24 | .21 | .171 | .151 |
| 974-64A | 8 | .55 | .41 | .32 | .25 | .22 | .18 | .158 |
| 974-65A | 10 | .55 | .41 | .32 | .25 | .22 | .18 | .158 |
| 974-66B | 15 | .55 | .41 | .32 | .25 | .22 | .18 | .158 |
| 974-67B | 20 | .58 | .43 | .33 | .26 | .23 | .188 | .166 |
| 974-15B | 25 | .58 | .43 | .33 | .26 | .23 | .188 | .166 |
| 974-68B | 30 | .58 | .43 | .33 | .26 | .23 | .188 | .166 |
| 974-69C | 35 | .60 | .45 | .35 | .27 | .24 | .196 | .173 |
| 974-70C | 40 | .60 | .45 | .35 | .27 | .24 | .196 | .173 |
| 974-71C | 50 | .63 | .47 | .36 | .29 | .25 | .204 | .18 |
| 974-72D | 60 | .63 | .47 | .36 | .29 | .25 | .204 | .18 |
| 974-73D | 75 | .63 | .47 | .36 | .29 | .25 | .204 | .18 |
| 974-27E | 90 | .66 | .48 | .38 | .30 | .26 | .212 | .187 |
| 974-17E | 100 | .66 | .48 | .38 | .30 | .26 | .212 | .187 |
| 974-75E | 125 | .66 | .48 | .38 | .30 | .26 | .212 | .187 |
| 974-76F | 140 | .68 | .50 | .39 | .31 | .27 | .22 | .194 |
| 974-77F | 150 | .68 | .50 | .39 | .31 | .27 | .22 | .194 |
| 974-78F | 175 | .68 | .50 | .39 | .31 | .27 | .22 | .194 |
| 974-79G | 200 | .68 | .50 | .39 | .31 | .27 | .22 | .194 |
| 974-20G | 250 | .68 | .50 | .39 | .31 | .27 | .22 | .194 |
| 974-137H | 300 | .78 | .58 | .45 | .35 | .31 | .253 | .223 |
| 974-165I | 400 | .76 | .56 | .44 | .34 | .30 | .245 | .216 |
| 974-138I | 500 | .83 | .61 | .48 | .38 | .33 | .269 | .238 |
| 974-183K | 1000 | .90 | .67 | .52 | .41 | .36 | .292 | .258 |
| 974-184L | 1300 | .95 | .70 | .55 | .43 | .38 | .308 | .271 |
| **12 WVDC** | | | | | | | | |
| 974-81A | 1 | $0.53 | $0.39 | $0.31 | $0.24 | $0.21 | $0.171 | $0.151 |
| 974-82A | 2 | .53 | .39 | .31 | .24 | .21 | .171 | .151 |
| 974-83A | 3 | .53 | .39 | .31 | .24 | .21 | .171 | .151 |
| 974-84A | 4 | .53 | .39 | .31 | .24 | .21 | .171 | .151 |
| 974-85A | 5 | .53 | .39 | .31 | .24 | .21 | .171 | .151 |
| 974-86A | 6 | .50 | .37 | .29 | .23 | .20 | .163 | .144 |
| 974-87A | 8 | .55 | .41 | .32 | .25 | .22 | .18 | .158 |
| 974-2B | 10 | .55 | .41 | .32 | .25 | .22 | .18 | .158 |
| 974-88B | 15 | .53 | .39 | .31 | .24 | .21 | .171 | .151 |
| 974-89B | 20 | .58 | .43 | .33 | .26 | .23 | .188 | .166 |
| 974-6C | 25 | .55 | .41 | .32 | .25 | .22 | .18 | .158 |
| 974-90C | 30 | .60 | .45 | .35 | .27 | .24 | .196 | .173 |
| 974-91C | 35 | .60 | .45 | .35 | .27 | .24 | .196 | .173 |
| 974-26D | 40 | .58 | .43 | .33 | .26 | .23 | .188 | .166 |
| 974-8D | 50 | .63 | .47 | .36 | .29 | .25 | .204 | .18 |
| 974-92E | 60 | .60 | .45 | .35 | .27 | .24 | .196 | .173 |
| 974-93E | 75 | .66 | .48 | .38 | .30 | .26 | .212 | .187 |
| 974-94F | 90 | .66 | .48 | .38 | .30 | .26 | .212 | .187 |
| 974-10F | 100 | .63 | .47 | .36 | .29 | .25 | .204 | .18 |
| 974-95F | 125 | .68 | .50 | .39 | .31 | .27 | .22 | .194 |
| 974-96G | 140 | .68 | .50 | .39 | .31 | .27 | .22 | .194 |
| 974-28G | 150 | .66 | .48 | .38 | .30 | .26 | .212 | .187 |
| 974-97G | 175 | .71 | .52 | .41 | .32 | .28 | .228 | .202 |
| 974-11H | 200 | .68 | .50 | .39 | .31 | .27 | .22 | .194 |
| 974-170H | 250 | .78 | .58 | .45 | .35 | .31 | .253 | .223 |
| 974-139I | 300 | .76 | .56 | .44 | .34 | .30 | .245 | .216 |
| 974-140I | 400 | .83 | .61 | .48 | .38 | .33 | .269 | .238 |
| 974-177I | 500 | .86 | .63 | .49 | .39 | .34 | .278 | .245 |
| 974-186K | 600 | .90 | .67 | .52 | .41 | .36 | .292 | .258 |
| 974-187L | 1000 | .95 | .70 | .55 | .43 | .38 | .308 | .271 |

**15 WVDC**

| G.I. No. | Cap., µF | Net Each, Lots of 1–24 | 25–49 | 50–99 | 100–249 | 250–499 | 500–999 | 1000 Up |
|---|---|---|---|---|---|---|---|---|
| 974-98A | 1 | $0.53 | $0.39 | $0.31 | $0.24 | $0.21 | $0.171 | $0.151 |
| 974-99A | 2 | .53 | .39 | .31 | .24 | .21 | .171 | .151 |
| 974-100A | 3 | .53 | .39 | .31 | .24 | .21 | .171 | .151 |
| 974-101A | 4 | .53 | .39 | .31 | .24 | .21 | .171 | .151 |
| 974-9A | 5 | .50 | .37 | .29 | .23 | .20 | .163 | .144 |
| 974-102B | 6 | .55 | .41 | .32 | .25 | .22 | .18 | .158 |
| 974-103B | 8 | .55 | .41 | .32 | .25 | .22 | .18 | .158 |
| 974-3B | 10 | .53 | .39 | .31 | .24 | .21 | .171 | .151 |
| 974-104B | 15 | .58 | .43 | .33 | .26 | .23 | .188 | .166 |
| 974-25C | 20 | .55 | .41 | .32 | .25 | .22 | .18 | .158 |
| 974-5C | 25 | .60 | .45 | .35 | .27 | .24 | .196 | .173 |
| 974-105D | 30 | .58 | .43 | .33 | .26 | .23 | .188 | .166 |
| 974-106D | 35 | .63 | .47 | .36 | .29 | .25 | .204 | .18 |
| 974-107D | 40 | .63 | .47 | .36 | .29 | .25 | .204 | .18 |
| 974-16E | 50 | .60 | .45 | .35 | .27 | .24 | .196 | .173 |
| 974-108E | 60 | .66 | .48 | .38 | .30 | .26 | .212 | .187 |
| 974-109F | 75 | .63 | .47 | .36 | .29 | .25 | .204 | .18 |
| 974-110F | 90 | .68 | .50 | .39 | .31 | .27 | .22 | .194 |
| 974-4F | 100 | .66 | .48 | .38 | .30 | .26 | .212 | .187 |
| 974-21G | 125 | .71 | .52 | .41 | .32 | .28 | .228 | .202 |
| 974-111G | 140 | .71 | .52 | .41 | .32 | .28 | .228 | .202 |
| 974-30G | 150 | .68 | .50 | .39 | .31 | .27 | .22 | .194 |
| 974-172H | 175 | .78 | .58 | .45 | .35 | .31 | .253 | .223 |
| 974-141H | 200 | .76 | .56 | .44 | .34 | .30 | .245 | .216 |
| 974-166I | 250 | .86 | .63 | .49 | .39 | .34 | .277 | .245 |
| 974-142I | 300 | .83 | .61 | .48 | .38 | .33 | .269 | .238 |
| 974-171J | 350 | .90 | .67 | .52 | .41 | .36 | .292 | .258 |
| 974-176K | 500 | .95 | .70 | .55 | .43 | .38 | .308 | .271 |
| 974-188L | 800 | .97 | .72 | .56 | .44 | .39 | .316 | .278 |
| **25 WVDC** | | | | | | | | |
| 974-12A | 1 | $0.53 | $0.39 | $0.31 | $0.24 | $0.21 | $0.171 | $0.151 |
| 974-112A | 2 | .55 | .41 | .32 | .25 | .22 | .18 | .158 |
| 974-113A | 3 | .55 | .41 | .32 | .25 | .22 | .18 | .158 |
| 974-114B | 4 | .55 | .41 | .32 | .25 | .22 | .18 | .158 |
| 974-1B | 5 | .55 | .41 | .32 | .25 | .22 | .18 | .158 |
| 974-24B | 6 | .58 | .43 | .33 | .26 | .23 | .188 | .166 |
| 974-115B | 8 | .58 | .43 | .33 | .26 | .23 | .188 | .166 |
| 974-18B | 10 | .58 | .43 | .33 | .26 | .23 | .188 | .166 |
| 974-116C | 15 | .58 | .43 | .33 | .26 | .23 | .188 | .166 |
| 974-117D | 20 | .63 | .47 | .36 | .29 | .25 | .204 | .18 |
| 974-118D | 25 | .66 | .48 | .38 | .30 | .26 | .212 | .187 |
| 974-119E | 30 | .66 | .48 | .38 | .30 | .26 | .212 | .187 |
| 974-120E | 35 | .66 | .48 | .38 | .30 | .26 | .212 | .187 |
| 974-121E | 40 | .68 | .50 | .39 | .31 | .27 | .22 | .194 |
| 974-122F | 50 | .68 | .50 | .39 | .31 | .27 | .22 | .194 |
| 974-123F | 60 | .73 | .54 | .42 | .33 | .29 | .237 | .209 |
| 974-22G | 75 | .73 | .54 | .42 | .33 | .29 | .237 | .209 |
| 974-169G | 90 | .73 | .54 | .42 | .33 | .29 | .237 | .209 |
| 974-130G | 100 | .78 | .58 | .45 | .35 | .31 | .253 | .223 |
| 974-173H | 125 | .78 | .58 | .45 | .35 | .31 | .253 | .223 |
| 974-174I | 140 | .78 | .58 | .45 | .35 | .31 | .253 | .223 |
| 974-143I | 150 | .86 | .63 | .49 | .39 | .34 | .277 | .245 |
| 974-175I | 175 | .86 | .63 | .49 | .39 | .34 | .277 | .245 |
| 974-144I | 200 | .86 | .63 | .49 | .39 | .34 | .277 | .245 |
| 974-167J | 225 | .86 | .63 | .49 | .39 | .34 | .278 | .245 |
| 974-180J | 250 | .86 | .63 | .49 | .39 | .34 | .278 | .245 |
| 974-189K | 300 | .90 | .67 | .52 | .41 | .36 | .292 | .258 |
| 974-178L | 500 | .95 | .70 | .55 | .43 | .38 | .308 | .271 |
| **50 WVDC** | | | | | | | | |
| 974-13A | 1 | $0.55 | $0.41 | $0.32 | $0.25 | $0.22 | $0.18 | $0.158 |
| 974-7A | 2 | .55 | .41 | .32 | .25 | .22 | .18 | .158 |
| 974-124B | 3 | .58 | .43 | .33 | .26 | .23 | .188 | .166 |
| 974-14B | 4 | .58 | .43 | .33 | .26 | .23 | .188 | .166 |
| 974-125B | 5 | .58 | .43 | .33 | .26 | .23 | .188 | .166 |
| 974-126C | 6 | .58 | .43 | .33 | .26 | .23 | .188 | .166 |
| 974-127C | 8 | .58 | .43 | .33 | .26 | .23 | .188 | .166 |
| 974-128D | 10 | .63 | .47 | .36 | .29 | .25 | .204 | .18 |
| 974-129E | 15 | .63 | .47 | .36 | .29 | .25 | .204 | .18 |
| 974-54E | 20 | .63 | .47 | .36 | .29 | .25 | .204 | .18 |
| 974-57F | 25 | .68 | .50 | .39 | .31 | .27 | .22 | .194 |
| 974-74F | 30 | .68 | .50 | .39 | .31 | .27 | .22 | .194 |
| 974-80G | 35 | .73 | .54 | .42 | .33 | .29 | .237 | .209 |
| 974-23G | 40 | .73 | .54 | .42 | .33 | .29 | .237 | .209 |
| 974-131H | 50 | .78 | .58 | .45 | .35 | .31 | .253 | .223 |
| 974-168H | 60 | .78 | .58 | .45 | .35 | .31 | .253 | .223 |
| 974-132I | 75 | .86 | .63 | .49 | .39 | .34 | .277 | .245 |
| 974-170I | 90 | .86 | .63 | .49 | .39 | .34 | .277 | .245 |
| 974-133J | 100 | .86 | .63 | .49 | .39 | .34 | .277 | .245 |
| 974-185K | 150 | .86 | .63 | .49 | .39 | .34 | .277 | .245 |
| 974-190L | 175 | .90 | .67 | .52 | .41 | .36 | .292 | .258 |
| 974-191L | 200 | .95 | .70 | .55 | .43 | .38 | .308 | .271 |
| **100 WVDC** | | | | | | | | |
| 974-145B | 1 | $0.63 | $0.47 | $0.36 | $0.29 | $0.25 | $0.204 | $0.18 |
| 974-146B | 2 | .66 | .48 | .38 | .30 | .26 | .212 | .187 |
| 974-147C | 3 | .68 | .50 | .39 | .31 | .27 | .22 | .194 |
| 974-148C | 4 | .73 | .54 | .42 | .33 | .29 | .237 | .209 |
| 974-149D | 5 | .76 | .56 | .44 | .34 | .30 | .245 | .216 |
| 974-150E | 6 | .78 | .58 | .45 | .35 | .31 | .253 | .223 |
| 974-151E | 8 | .81 | .60 | .46 | .36 | .32 | .261 | .23 |
| 974-152E | 10 | .83 | .61 | .48 | .38 | .33 | .269 | .238 |
| 974-153G | 15 | .86 | .63 | .49 | .39 | .34 | .277 | .245 |
| 974-154G | 20 | .88 | .65 | .51 | .40 | .35 | .286 | .252 |
| 974-192H | 25 | .90 | .67 | .52 | .41 | .36 | .292 | .258 |
| 974-193I | 30 | .90 | .67 | .52 | .41 | .36 | .292 | .258 |
| 974-194I | 40 | .95 | .70 | .55 | .43 | .38 | .308 | .271 |
| 974-195J | 50 | .95 | .70 | .55 | .43 | .38 | .308 | .271 |
| 974-196K | 75 | .95 | .70 | .55 | .43 | .38 | .308 | .271 |
| 974-197L | 100 | .97 | .72 | .56 | .44 | .39 | .316 | .278 |

**Type 974 Case Sizes (Including Insulating Sleeve):** Dia. x L., In.: A, .193 x .568; B, .256 x .568; C, .256 x .693; D, .318 x .568; E, .318 x .693; F, .318 x .818; G, .381 x .818; H, .381 x .943; I, .381 x 1.256; J, .381 x 1.506; K, .443 x 1.506; L, .506 x 1.506.

# NYTRONICS, INC.
## ESSEX ELECTRONICS DIV.

# SUBMINIATURE CERAMIC CAPACITORS

### DECI-CAPS

ets requirements of MIL-C-11015C for moisture, vibration and ck resistance. Epoxy-molded monolithic construction offers power factor and high stability. High density cordwood kaging. **Operating Range:** −55° C to +125° C. **Capacitance nge:** 4.7–27,000 pF. **Tolerance:** ±10%. **Working Voltage:** -470 pF, 200 VDC; 560–27,000 pF, 100 VDC. **Insulation istance:** 20,000 megs min. **Dielectric Strength:** 500 VDC to pF; 250 VDC, 560–27,000 pF. **Life:** 1000 hours at 125° C ler twice rated voltage. **Size:** .250″ x .100″.

| tronics No. | Cap., pF | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| C-047 | 4.7 | $0.53 | $0.42 | $0.36 | $0.33 | $0.31 | $0.29 |
| C-056 | 5.6 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-068 | 6.8 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-082 | 8.2 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-100 | 10 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-120 | 12 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-150 | 15 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-180 | 18 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-220 | 22 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-270 | 27 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-330 | 33 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-390 | 39 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-470 | 47 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-560 | 56 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-680 | 68 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-820 | 82 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-101 | 100 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-121 | 120 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-151 | 150 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-181 | 180 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-221 | 220 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-271 | 270 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-331 | 330 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-391 | 390 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-471 | 470 | .53 | .42 | .36 | .33 | .31 | .29 |
| C-561 | 560 | .90 | .71 | .62 | .56 | .52 | .48 |
| C-681 | 680 | .90 | .71 | .62 | .56 | .52 | .48 |
| C-821 | 820 | .90 | .71 | .62 | .56 | .52 | .48 |
| C-102 | 1000 | 1.22 | .97 | .84 | .76 | .71 | .66 |
| C-122 | 1200 | 1.34 | 1.07 | .93 | .84 | .78 | .73 |
| C-152 | 1500 | 1.37 | 1.09 | .95 | .87 | .80 | .74 |
| C-182 | 1800 | 1.51 | 1.22 | 1.05 | .96 | .89 | .82 |
| C-222 | 2200 | 1.53 | 1.23 | 1.07 | .97 | .90 | .83 |
| C-272 | 2700 | 1.70 | 1.36 | 1.18 | 1.08 | 1.00 | .93 |
| C-332 | 3300 | 1.79 | 1.43 | 1.25 | 1.13 | 1.04 | .97 |
| C-392 | 3900 | 1.87 | 1.50 | 1.30 | 1.18 | 1.09 | 1.02 |
| C-472 | 4700 | 1.93 | 1.56 | 1.34 | 1.22 | 1.12 | 1.05 |
| C-562 | 5600 | 2.18 | 1.74 | 1.51 | 1.38 | 1.28 | 1.18 |
| C-682 | 6800 | 2.40 | 1.93 | 1.67 | 1.52 | 1.40 | 1.31 |
| C-822 | 8200 | 2.63 | 2.10 | 1.82 | 1.66 | 1.53 | 1.43 |
| C-103 | 10,000 | 2.89 | 2.32 | 2.01 | 1.83 | 1.69 | 1.58 |
| C-123 | 12,000 | 3.02 | 2.42 | 2.09 | 1.91 | 1.76 | 1.64 |
| C-153 | 15,000 | 3.30 | 2.64 | 2.29 | 2.08 | 1.93 | 1.79 |
| C-183 | 18,000 | 3.30 | 2.64 | 2.29 | 2.08 | 1.93 | 1.79 |
| C-223 | 22,000 | 3.35 | 2.69 | 2.33 | 2.12 | 1.96 | 1.82 |
| C-273 | 27,000 | 3.77 | 3.02 | 2.62 | 2.39 | 2.20 | 2.05 |

### HY-CAPS

eets requirements of MIL-C-11015 for moisture, vibration and ock resistance. Monolithic construction for coupling, bypass d filter circuits. **Operating Range:** −55° C to +125° C; less an ±15% capacitance change. **Capacitance Range:** .01–2.5 μF. **lerance:** ±20%. **Working Voltage:** 100 VDC. **Life:** 1000 hours 125° C under twice rated voltage.

| ytronics No.* | Cap., μF | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| A-103M | .01 | $ 1.43 | $ 1.14 | $ 1.00 | $ 0.91 | $ 0.84 | $ 0.78 |
| A-123M | .012 | 1.62 | 1.30 | 1.12 | 1.02 | .95 | .89 |
| A-153M | .015 | 1.78 | 1.42 | 1.24 | 1.12 | 1.04 | .98 |
| A-183M | .018 | 1.92 | 1.53 | 1.34 | 1.22 | 1.12 | 1.05 |
| A-223M | .022 | 2.16 | 1.73 | 1.50 | 1.37 | 1.27 | 1.18 |
| A-273M | .027 | 2.59 | 2.07 | 1.80 | 1.64 | 1.51 | 1.42 |
| A-333M | .033 | 2.91 | 2.33 | 2.03 | 1.84 | 1.71 | 1.60 |
| B-393M | .039 | 3.31 | 2.65 | 2.30 | 2.09 | 1.94 | 1.81 |
| B-473M | .047 | 3.49 | 2.79 | 2.43 | 2.20 | 2.04 | 1.91 |
| B-563M | .056 | 3.66 | 2.93 | 2.54 | 2.31 | 2.14 | 2.00 |
| B-683M | .068 | 4.03 | 3.21 | 2.70 | 2.54 | 2.36 | 2.20 |
| B-823M | .082 | 4.27 | 3.42 | 2.98 | 2.71 | 2.50 | 2.34 |
| B-104M | .10 | 4.51 | 3.61 | 3.13 | 2.85 | 2.64 | 2.47 |
| B-124M | .12 | 4.53 | 3.63 | 3.15 | 2.86 | 2.66 | 2.48 |
| C-154M | .15 | 4.62 | 3.70 | 3.21 | 2.93 | 2.71 | 2.53 |
| C-184M | .18 | 4.85 | 3.88 | 3.38 | 3.07 | 2.84 | 2.66 |
| C-224M | .22 | 5.09 | 4.07 | 3.54 | 3.21 | 2.98 | 2.78 |
| C-274M | .27 | 5.37 | 4.30 | 3.73 | 3.39 | 3.14 | 2.94 |
| C-334M | .33 | 6.09 | 4.54 | 3.94 | 3.59 | 3.33 | 3.11 |
| C-394M | .39 | 6.11 | 4.88 | 4.24 | 3.86 | 3.57 | 3.34 |
| C-474M | .47 | 6.59 | 5.27 | 4.58 | 4.17 | 3.86 | 3.61 |
| D-105M | 1.0 | 10.40 | 8.32 | 7.24 | 6.58 | 6.09 | 5.70 |
| E-155M | 1.5 | 13.29 | 10.63 | 9.25 | 8.40 | 7.79 | 7.27 |
| F-205M | 2.0 | 17.33 | 13.87 | 12.06 | 10.96 | 10.16 | 9.49 |
| G-255M | 2.5 | 21.38 | 17.11 | 14.87 | 13.52 | 12.52 | 11.70 |

hird letter of part number indicates case size.

### CASE SIZES FOR HY-CAPS

| Type | Maximum Size, Inches Width | Height | Thickness | Nom. Between Leads, In. |
|---|---|---|---|---|
| A | .225 | .175 | .11 | .2 |
| B | .325 | .31 | .15 | .3 |
| C | .67 | .355 | .15 | .625 |
| D | .8 | .55 | .225 | .625 |
| E | .8 | .55 | .25 | .625 |
| F | .8 | .55 | .3 | .625 |
| G | .8 | .55 | .375 | .625 |

**Deci-Cap**

**Hy-Cap**

**Nyt-Cap**

**Nyt-Chip**

### NYT-CAPS

Ultra-high stability; epoxy-molded monolithic construction. **Operating Range:** −55° C to +125° C. **Temperature Coefficient:** ±25 ppm/° C max. **Tolerance:** ±10%. **Working Voltage:** 200 VDC. **Dissipation:** Less than 0.001 at 25° C; 0.002 at 125° C; measured at 1 kHz. **Insulation Resistance:** 1000K megs min. at 25° C; 10 K megs min. at 125° C.

| Nytronics No. | Cap., pF | Case Size* | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| NC-047 | 4.7 | A | $1.45 | $1.17 | $1.01 | $0.93 | $0.85 | $0.79 |
| NC-056 | 5.6 | A | 1.45 | 1.17 | 1.01 | .93 | .85 | .79 |
| NC-068 | 6.8 | A | 1.45 | 1.17 | 1.01 | .93 | .85 | .79 |
| NC-082 | 8.2 | A | 1.45 | 1.17 | 1.01 | .93 | .85 | .79 |
| NC-100 | 10 | A | 1.45 | 1.17 | 1.01 | .93 | .85 | .79 |
| NC-120 | 12 | A | 1.45 | 1.17 | 1.01 | .93 | .85 | .79 |
| NC-150 | 15 | A | 1.45 | 1.17 | 1.01 | .93 | .85 | .79 |
| NC-180 | 18 | A | 1.45 | 1.17 | 1.01 | .93 | .85 | .79 |
| NC-220 | 22 | A | 1.45 | 1.17 | 1.01 | .93 | .85 | .79 |
| NC-270 | 27 | A | 1.45 | 1.17 | 1.01 | .93 | .85 | .79 |
| NC-330 | 33 | A | 1.45 | 1.17 | 1.01 | .93 | .85 | .79 |
| NC-390 | 39 | A | 1.45 | 1.17 | 1.01 | .93 | .85 | .79 |
| NC-470 | 47 | A | 1.45 | 1.17 | 1.01 | .93 | .85 | .79 |
| NC-560 | 56 | A | 1.45 | 1.17 | 1.01 | .93 | .85 | .79 |
| NC-680 | 68 | A | 1.45 | 1.17 | 1.01 | .93 | .85 | .79 |
| NC-820 | 82 | A | 1.45 | 1.17 | 1.01 | .93 | .85 | .79 |
| NC-101 | 100 | A | 1.53 | 1.24 | 1.07 | .97 | .90 | .83 |
| NC-121 | 120 | A | 1.53 | 1.24 | 1.07 | .97 | .90 | .83 |
| NC-151 | 150 | A | 1.53 | 1.24 | 1.07 | .97 | .90 | .83 |
| NC-181 | 180 | A | 1.53 | 1.24 | 1.07 | .97 | .90 | .83 |
| NC-221 | 220 | A | 1.53 | 1.24 | 1.07 | .97 | .90 | .83 |
| NC-271 | 270 | B | 2.51 | 2.02 | 1.75 | 1.59 | 1.47 | 1.37 |
| NC-331 | 330 | B | 2.51 | 2.02 | 1.75 | 1.59 | 1.47 | 1.37 |
| NC-391 | 390 | B | 2.51 | 2.02 | 1.75 | 1.59 | 1.47 | 1.37 |
| NC-471 | 470 | B | 2.51 | 2.02 | 1.75 | 1.59 | 1.47 | 1.37 |
| NC-561 | 560 | B | 3.45 | 2.76 | 2.39 | 2.18 | 2.01 | 1.87 |
| NC-681 | 680 | B | 3.45 | 2.76 | 2.39 | 2.18 | 2.01 | 1.87 |
| NC-821 | 820 | B | 3.45 | 2.76 | 2.39 | 2.18 | 2.01 | 1.87 |
| NC-102 | 1000 | B | 3.45 | 2.76 | 2.39 | 2.18 | 2.01 | 1.87 |
| NC-122 | 1200 | B | 4.33 | 3.47 | 3.01 | 2.74 | 2.53 | 2.36 |
| NC-152 | 1500 | B | 4.33 | 3.47 | 3.01 | 2.74 | 2.53 | 2.36 |
| NC-182 | 1800 | B | 4.33 | 3.47 | 3.01 | 2.74 | 2.53 | 2.36 |
| NC-222 | 2200 | B | 4.33 | 3.47 | 3.01 | 2.74 | 2.53 | 2.36 |
| NC-272 | 2700 | B | 4.33 | 3.47 | 3.01 | 2.74 | 2.53 | 2.36 |
| NC-332 | 3300 | B | 4.33 | 3.47 | 3.01 | 2.74 | 2.53 | 2.36 |
| NC-392 | 3900 | B | 4.33 | 3.47 | 3.01 | 2.74 | 2.53 | 2.36 |
| NC-472 | 4700 | B | 4.33 | 3.47 | 3.01 | 2.74 | 2.53 | 2.36 |

*A, 0.100″ dia. x 0.250″ lg.; B, 0.350″ w. x 0.250″ d. x 0.100″ h.

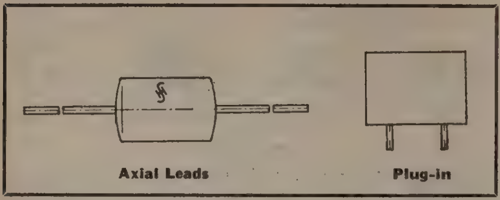
### NYT-CHIPS

Slug-form monolithic construction; ultra-high stability. **Operating Range:** −55° C to +125° C. **Temp. Coefficient:** ±25 ppm/° C max. **Tolerance:** ±10%. **Working Voltage:** 200 VDC. **Dissipation:** Less than 0.001 at 25° C; 0.002 at 125° C; measured at 1 kHz. **Insulation Resistance:** 1000K megs min. at 25° C; 10K megs at 125° C.

| Nytronics No. | Cap., pF | Case Size* | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| NCU-047 | 4.7 | A | $1.40 | $1.12 | $0.96 | $0.88 | $0.80 | $0.74 |
| NCU-056 | 5.6 | A | 1.40 | 1.12 | .96 | .88 | .80 | .74 |
| NCU-068 | 6.8 | A | 1.40 | 1.12 | .96 | .88 | .80 | .74 |
| NCU-082 | 8.2 | A | 1.40 | 1.12 | .96 | .88 | .80 | .74 |
| NCU-100 | 10 | A | 1.40 | 1.12 | .96 | .88 | .80 | .74 |
| NCU-120 | 12 | A | 1.40 | 1.12 | .96 | .88 | .80 | .74 |
| NCU-150 | 15 | A | 1.40 | 1.12 | .96 | .88 | .80 | .74 |
| NCU-180 | 18 | A | 1.40 | 1.12 | .96 | .88 | .80 | .74 |
| NCU-220 | 22 | A | 1.40 | 1.12 | .96 | .88 | .80 | .74 |
| NCU-270 | 27 | A | 1.40 | 1.12 | .96 | .88 | .80 | .74 |
| NCU-330 | 33 | A | 1.40 | 1.12 | .96 | .88 | .80 | .74 |
| NCU-390 | 39 | A | 1.40 | 1.12 | .96 | .88 | .80 | .74 |
| NCU-470 | 47 | A | 1.40 | 1.12 | .96 | .88 | .80 | .74 |
| NCU-560 | 56 | A | 1.40 | 1.12 | .96 | .88 | .80 | .74 |
| NCU-680 | 68 | A | 1.40 | 1.12 | .96 | .88 | .80 | .74 |
| NCU-820 | 82 | A | 1.40 | 1.12 | .96 | .88 | .80 | .74 |
| NCU-101 | 100 | A | 1.48 | 1.18 | 1.02 | .92 | .84 | .78 |
| NCU-121 | 120 | A | 1.48 | 1.18 | 1.02 | .92 | .84 | .78 |
| NCU-151 | 150 | A | 1.48 | 1.18 | 1.02 | .92 | .84 | .78 |
| NCU-181 | 180 | A | 1.48 | 1.18 | 1.02 | .92 | .84 | .78 |
| NCU-221 | 220 | A | 1.48 | 1.18 | 1.02 | .92 | .84 | .78 |
| NCU-271 | 270 | B | 2.46 | 1.97 | 1.70 | 1.53 | 1.42 | 1.32 |
| NCU-331 | 330 | B | 2.46 | 1.97 | 1.70 | 1.53 | 1.42 | 1.32 |
| NCU-391 | 390 | B | 2.46 | 1.97 | 1.70 | 1.53 | 1.42 | 1.32 |
| NCU-471 | 470 | B | 2.46 | 1.97 | 1.70 | 1.53 | 1.42 | 1.32 |
| NCU-561 | 560 | B | 3.40 | 2.71 | 2.34 | 2.13 | 1.96 | 1.82 |
| NCU-681 | 680 | B | 3.40 | 2.71 | 2.34 | 2.13 | 1.96 | 1.82 |
| NCU-821 | 820 | B | 3.40 | 2.71 | 2.34 | 2.13 | 1.96 | 1.82 |
| NCU-102 | 1000 | B | 3.40 | 2.71 | 2.34 | 2.13 | 1.96 | 1.82 |
| NCU-122 | 1200 | B | 4.27 | 3.42 | 2.96 | 2.69 | 2.48 | 2.31 |
| NCU-152 | 1500 | B | 4.27 | 3.42 | 2.96 | 2.69 | 2.48 | 2.31 |
| NCU-182 | 1800 | B | 4.27 | 1.42 | 2.96 | 2.69 | 2.48 | 2.31 |
| NCU-222 | 2200 | B | 4.27 | 3.42 | 2.96 | 2.69 | 2.48 | 2.31 |
| NCU-272 | 2700 | B | 4.27 | 3.42 | 2.96 | 2.69 | 2.48 | 2.31 |
| NCU-332 | 3300 | B | 4.27 | 3.42 | 2.96 | 2.69 | 2.48 | 2.31 |
| NCU-392 | 3900 | B | 4.27 | 3.42 | 2.96 | 2.69 | 2.48 | 2.31 |
| NCU-472 | 4700 | B | 4.27 | 3.42 | 2.96 | 2.69 | 2.48 | 2.31 |

*A, 0.170″ w. x 0.65″ d. x 0.70″ th.; B, 0.280″ w. x 0.195″ d. x 0.70″ th.

# SIEMENS CORPORATION TYPE MKH METALLIZED POLYESTER FOIL CAPACITORS



Metallized polyester foil capacitors are small in size with excellent characteristics for a wide variety of applications, especially in filters or for blocking and coupling. Metallized, self-healing polyester foil is joined at the face ends and the leads are soldered to the metallized low loss winding to ensure reliable contact. Can be used in high current pulse forming networks with minimum failure due to arc-over or direct shorts. Operating temperature, −40° to +100° C. Available in oval axial-lead style, or in rectangular plug-in type.

## TYPE B 32 231 WITH AXIAL LEADS

### 250 WVDC

| Siemens No. B 32 231- | Cap., μF | Size, Inches W. x D. x H. | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
| 0.047/10/250 | .047 | .56x.20x .34 | $0.45 | $0.35 | $0.26 | $0.22 | $0.17 |
| 0.068/10/250 | .068 | .56x.22x .36 | .45 | .35 | .26 | .22 | .17 |
| 0.1/10/250 | .1 | .56x.24x .36 | .45 | .35 | .26 | .22 | .17 |
| 0.12/10/250 | .12 | .75x.22x .36 | .45 | .35 | .26 | .22 | .17 |
| 0.15 10/250 | .15 | .75x.22x .36 | .45 | .35 | .26 | .22 | .17 |
| 0.18/10/250 | .18 | .75x.22x .36 | .45 | .36 | .27 | .24 | .18 |
| 0.22/10/250 | .22 | .75x.18x .42 | .47 | .38 | .27 | .24 | .19 |
| 0.27/10/250 | .27 | .75x.18x .54 | .48 | .39 | .30 | .24 | .19 |
| 0.33/10/250 | .33 | 1.05x.18x .42 | .54 | .43 | .33 | .27 | .22 |
| 0.39/10/250 | .39 | 1.05x.20x .44 | .55 | .44 | .33 | .28 | .22 |
| 0.47/10/250 | .47 | 1.05x.18x .54 | .58 | .47 | .35 | .29 | .23 |
| 0.56/10/250 | .56 | 1.05x.20x .56 | .59 | .47 | .36 | .30 | .24 |
| 0.68/10/250 | .68 | 1.05x.24x .67 | .61 | .48 | .36 | .30 | .24 |
| 0.82/10/250 | .82 | 1.05x.22x .71 | .67 | .53 | .40 | .33 | .27 |
| 1.0/10/250 | 1.0 | 1.05x.32x .67 | .73 | .58 | .44 | .36 | .29 |
| 1.2/10/250 | 1.2 | 1.15x.30x .77 | 1.03 | .82 | .62 | .52 | .41 |
| 1.5/10/250 | 1.5 | 1.15x.34x .81 | 1.27 | 1.02 | .76 | .64 | .52 |
| 1.8/10/250 | 1.8 | 1.15x.38x .85 | 1.33 | 1.07 | .80 | .67 | .53 |
| 2.2/10/250 | 2.2 | 1.15x.42x .89 | 1.55 | 1.23 | .93 | .77 | .62 |
| 2.7/10/250 | 2.7 | 1.15x.48x .95 | 1.83 | 1.46 | 1.10 | .88 | .73 |
| 3.3/10/250 | 3.3 | 1.15x.54x1.01 | 2.22 | 1.78 | 1.33 | 1.11 | .89 |
| 3.9/10/250 | 3.9 | 1.75x.44x1.03 | 2.45 | 1.96 | 1.48 | 1.23 | .98 |
| 4.7/10/250 | 4.7 | 1.75x.48x1.09 | 3.10 | 2.48 | 1.86 | 1.55 | 1.24 |
| 5.6/10/250 | 5.6 | 1.75x.54x1.15 | 3.47 | 2.77 | 1.98 | 1.73 | 1.38 |
| 6.8/10/250 | 6.8 | 1.75x.62x1.21 | 4.16 | 3.32 | 2.49 | 2.08 | 1.66 |
| 8.2/10/250 | 8.2 | 1.75x.67x1.28 | 4.90 | 3.92 | 2.94 | 2.45 | 2.06 |
| 10.0/10/250 | 10.0 | 1.75x.77x1.36 | 6.05 | 4.84 | 3.63 | 3.03 | 2.42 |

### 400 WVDC

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0.022/10/400 | .022 | .56x.20x .34 | $0.40 | $0.32 | $0.24 | $0.20 | $0.16 |
| 0.033/10/400 | .033 | .56x.20x .34 | .40 | .33 | .24 | .20 | .16 |
| 0.047/10/400 | .047 | .75x.16x .30 | .40 | .34 | .25 | .21 | .17 |
| 0.068/10/400 | .068 | .75x.20x .34 | .44 | .35 | .26 | .22 | .18 |
| 0.1/10/400 | .1 | .75x.24x .38 | .45 | .37 | .28 | .23 | .18 |
| 0.12/10/400 | .12 | .75x.24x .46 | .47 | .38 | .29 | .24 | .19 |
| 0.15/10/400 | .15 | 1.05x.20x .44 | .49 | .39 | .29 | .25 | .19 |
| 0.18/10/400 | .18 | 1.05x.24x .46 | .54 | .43 | .32 | .28 | .22 |
| 0.22/10/400 | .22 | 1.05x.26x .48 | .59 | .47 | .36 | .29 | .24 |
| 0.27/10/400 | .27 | 1.05x.24x .59 | .62 | .50 | .38 | .31 | .25 |
| 0.33/10/400 | .33 | 1.05x.28x .63 | .74 | .60 | .45 | .38 | .30 |
| 0.39/10/400 | .39 | 1.05x.32x .67 | .81 | .65 | .49 | .41 | .32 |
| 0.47/10/400 | .47 | 1.15x.28x .77 | .89 | .70 | .54 | .45 | .36 |
| 0.56/10/400 | .56 | 1.15x.32x .79 | .96 | .77 | .58 | .48 | .38 |
| 0.68/10/400 | .68 | 1.15x.40x .83 | 1.02 | .82 | .61 | .51 | .41 |
| 0.82/10/400 | .82 | 1.15x.42x .89 | 1.06 | .85 | .64 | .53 | .42 |
| 1.0/10/400 | 1.0 | 1.15x.48x .95 | 1.09 | .87 | .67 | .55 | .44 |
| 1.2/10/400 | 1.2 | 1.75x.40x .99 | 1.52 | 1.22 | .91 | .76 | .61 |
| 1.5/10/400 | 1.5 | 1.75x.44x1.03 | 1.56 | 1.25 | .93 | .78 | .62 |
| 1.8/10/400 | 1.8 | 1.75x.50x1.11 | 1.60 | 1.29 | .96 | .80 | .64 |
| 2.2/10/400 | 2.2 | 1.75x.56x1.17 | 2.06 | 1.65 | 1.23 | 1.03 | .82 |
| 2.7/10/400 | 2.7 | 1.75x.63x1.23 | 2.42 | 1.94 | 1.45 | 1.21 | .97 |
| 3.3/10/400 | 3.3 | 1.75x.77x1.28 | # | # | # | # | # |
| 3.9/10/400 | 3.9 | 1.75x.85x1.36 | # | # | # | # | # |
| 4.7/10/400 | 4.7 | 1.75x.91x1.54 | # | # | # | # | # |

### 630 WVDC

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0.01/10/630 | .01 | .56x.20x .32 | $0.44 | $0.36 | $0.27 | $0.22 | $0.18 |
| 0.015/10/630 | .015 | .56x.20x .34 | .47 | .37 | .28 | .23 | .19 |
| 0.022/10/630 | .022 | .56x.26x .40 | .48 | .37 | .28 | .24 | .19 |
| 0.033/10/630 | .033 | .75x.20x .34 | .49 | .39 | .29 | .24 | .20 |
| 0.047/10/630 | .047 | .75x.20x .44 | .51 | .40 | .30 | .25 | .20 |
| 0.068/10/630 | .068 | .75x.26x .61 | .53 | .42 | .32 | .26 | .21 |
| 0.1/10/630 | .1 | 1.05x.24x .59 | .54 | .43 | .32 | .27 | .21 |
| 0.12/10/630 | .12 | 1.05x.26x .61 | .55 | .44 | .33 | .28 | .22 |
| 0.15/10/630 | .15 | 1.05x.32x .65 | .64 | .51 | .38 | .32 | .25 |
| 0.18/10/630 | .18 | 1.05x.34x .69 | .69 | .55 | .41 | .34 | .28 |
| 0.22/10/630 | .22 | 1.05x.36x .83 | .73 | .58 | .44 | .36 | .29 |

#Price on request.

## SPECIFICATIONS

**Voltage Loading:** DC voltage may reach 1.25 times rated WVDC for up to 2000 hours of intermittent operation; 1.5 times rated WVDC in voltage peaks (milliseconds). **Capacitance Drift:** ±3% up to 85° C; +3%, −6% up to 100° C. **Operating Temperature:** −40° to +100° C. **Relative Humidity:** Type B 32 234, average annual relative humidity less than or equal to 75% with maximum of 95% during 30 days per annum, otherwise 85%; type B 32 231, average annual relative humidity less than or equal to 65% with maximum of 85% during 60 days per annum, otherwise 75%. **Insulation (Time Constant):** During operational life, the insulation may decrease for a short period to about 10% of value at time of delivery, especially when the capacitor is subjected to the maximum permissible humidity for a long period. **Dissipation Factor:** Tan $\delta$ value less than $10 \times 10^{-3}$ ($5 \times 10^{-3}$ average) at 1 kHz, less than $20 \times 10^{-3}$ ($15 \times 10^{-3}$ average) at 10 kHz, for capacitance values less than 3.9 μF. Tan $\delta$ value less than $12 \times 10^{-3}$ ($7 \times 10^{-3}$ average) at 1 kHz, less than $30 \times 10^{-3}$ ($18 \times 10^{-3}$ average) at 10 kHz, for capacitance values greater than 3.9 μF. Measured at +20° C. **Capacitance Tolerance:** ±10%. Available with ±20% tolerance on request.

## TYPE B 32 234 PLUG-IN

### 250 WVDC

| Siemens No. B 32 234- | Cap., μF | Size, Inches W. x D. x H. | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
| 0.033/10/250 | .033 | .51x.16x .38 | $0.28 | $0.23 | $0.16 | $0.14 | $0.12 |
| 0.047/10/250 | .047 | .51x.16x .38 | .28 | .23 | .16 | .14 | .12 |
| 0.068/ 0/250 | .068 | .51x.20x .42 | .29 | .24 | .17 | .15 | .13 |
| 0.1/10/250 | .1 | .71x.22x .44 | .29 | .24 | .17 | .15 | .13 |
| 0.12/10/250 | .12 | .71x.22x .44 | .30 | .25 | .18 | .15 | .14 |
| 0.15/10/250 | .15 | .71x.22x .44 | .30 | .26 | .18 | .16 | .14 |
| 0.18/10/250 | .18 | .71x.28x .51 | .31 | .27 | .19 | .16 | .15 |
| 0.22/10/250 | .22 | .71x.28x .51 | .32 | .28 | .20 | .17 | .15 |
| 0.27/10/250 | .27 | .71x.36x .58 | .36 | .30 | .22 | .18 | .16 |
| 0.33/10/250 | .33 | .71x.36x .58 | .39 | .32 | .23 | .20 | .17 |
| 0.39/10/250 | .39 | 1.07x.26x .59 | .43 | .35 | .26 | .22 | .19 |
| 0.47/10/250 | .47 | 1.07x.26x .59 | .48 | .39 | .29 | .24 | .20 |
| 0.56/10/250 | .56 | 1.07x.28x .65 | .58 | .47 | .32 | .27 | .23 |
| 0.68/10/250 | .68 | 1.07x.28x .65 | .67 | .54 | .41 | .35 | .29 |
| 0.82/10/250 | .82 | 1.07x.34x .73 | .73 | .60 | .46 | .39 | .32 |
| 1.0/10/250 | 1.0 | 1.07x.34x .73 | .80 | .65 | .50 | .42 | .35 |
| 1.5/10/250 | 1.5 | 1.26x.44x .79 | # | # | # | # | # |
| 2.2/10/250 | 2.2 | 1.26x.52x .89 | # | # | # | # | # |

### 400 WVDC

| Siemens No. B 32 234- | Cap., μF | Size, Inches W. x D. x H. | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
| 0.01/10/400 | .01 | .51x.16x .38 | $0.33 | $0.25 | $0.18 | $0.15 | $0.12 |
| 0.015/10/400 | .015 | .51x.16x .38 | .33 | .25 | .18 | .15 | .12 |
| 0.022/10/400 | .022 | .51x.16x .38 | .33 | .25 | .18 | .15 | .12 |
| 0.033/10/400 | .033 | .51x.20x .42 | .34 | .27 | .20 | .16 | .13 |
| 0.047/10/400 | .047 | .71x.22x .44 | .34 | .27 | .20 | .16 | .13 |
| 0.068/10/400 | .068 | .71x.22x .44 | .35 | .28 | .21 | .18 | .14 |
| 0.1/10/400 | .1 | .71x.28x .52 | .35 | .28 | .21 | .18 | .14 |
| 0.12/10/400 | .12 | .71x.28x .52 | .36 | .30 | .22 | .18 | .15 |
| 0.15/10/400 | .15 | .71x.28x .52 | .36 | .31 | .23 | .19 | .15 |
| 0.18/10/400 | .18 | 1.07x.26x .59 | .37 | .32 | .23 | .20 | .16 |
| 0.22/10/400 | .22 | 1.07x.26x .59 | .38 | .33 | .24 | .20 | .16 |
| 0.27/10/400 | .27 | 1.07x.26x .59 | .40 | .36 | .26 | .21 | .18 |
| 0.33/10/400 | .33 | 1.07x.28x .65 | .47 | .38 | .30 | .24 | .21 |
| 0.39/10/400 | .39 | 1.07x.34x .73 | .52 | .42 | .36 | .26 | .23 |
| 0.47/10/400 | .47 | 1.07x.34x .73 | .58 | .47 | .36 | .29 | .24 |
| 0.68/10/400 | .68 | 1.26x.44x .79 | .80 | .65 | .49 | .42 | .35 |
| 1.0/10/400 | 1.0 | 1.26x.52x .89 | .96 | .78 | .60 | .50 | .42 |

### 630 WVDC

| Siemens No. B 32 234- | Cap., μF | Size, Inches W. x D. x H. | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
| 0.01/10/630 | .01 | .51x.20x .42 | $0.40 | $0.32 | $0.24 | $0.20 | $0.16 |
| 0.015/10/630 | .015 | .51x.24x .46 | .42 | .33 | .25 | .21 | .17 |
| 0.022/10/630 | .022 | .51x.24x .46 | .43 | .33 | .25 | .22 | .18 |
| 0.033/10/630 | .033 | .71x.22x .44 | .44 | .35 | .26 | .22 | .18 |
| 0.047/10/630 | .047 | .71x.28x .52 | .46 | .36 | .27 | .23 | .19 |
| 0.068/10/630 | .068 | .71x.36x .58 | .48 | .38 | .29 | .24 | .19 |
| 0.1/10/630 | .1 | 1.07x.28x .65 | .49 | .39 | .29 | .24 | .20 |
| 0.12/10/630 | .12 | 1.07x.28x .65 | .50 | .40 | .30 | .25 | .21 |
| 0.15/10/630 | .15 | 1.07x.34x .73 | .58 | .46 | .34 | .29 | .22 |
| 0.18/10/630 | .18 | 1.07x.34x .73 | .62 | .49 | .37 | .31 | .25 |
| 0.22/10/630 | .22 | 1.07x.34x .73 | .66 | .52 | .40 | .33 | .26 |
| 0.33/10/630 | .33 | 1.26x.44x .79 | # | # | # | # | # |
| 0.47/10/630 | .47 | 1.26x.52x .89 | # | # | # | # | # |

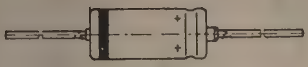
#Price on request.

**SPECIAL HIGH CAPACITANCE VALUES ARE AVAILABLE. WRITE FOR INFORMATION.**

**IEMENS**
**ORPORATION**

# ALUMINUM ELECTROLYTIC AND POLY-CARBONATE STACKED-FOIL CAPACITORS

## MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS



l welded electrolytic capacitors combine very small volume with tstanding electrical characteristics, specially suitable for tran-torized equipment. Offer long life at temperatures from −40° to 85° C, with excellent loss factor, leakage currents and impedance lues. All connections are welded to assure contact reliability; gative pole is connected to case. Axial leads, with etched foil odes in an insulated cylindrical aluminum case fitted with a bber seal at one end. **Loss Factor:** Approximate value of Tan δ .10 for 3 WVDC types, .08 for 6 WVDC, .06 for 10 to 35 WVDC, 3 for 70 WVDC, .02 for 100 WVDC (all at 50 Hz and +25° C). **akage Current:** $I_r$ (µA) = .02 x C (µF) x V (Volts) when storage thout voltage does not amount to more than four weeks, easured 5 minutes after application of rated voltage at 20° C. **ad Size:** 1.57″ long; #20 AWG except microminiature type 1313(*), #24. **Tolerance:** +50%, −10% except microminiature pe B41313(*), +100%, −10%.

### 3 WVDC

| Siemens Number | Cap., µF | Size, In. Dia. x L. | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
| 1313 10/3* | 10 | .15 x .48 | $0.64 | $0.44 | $0.29 | $0.19 | $0.13 |
| 1313 50/3* | 50 | .20 x .48 | .64 | .44 | .29 | .19 | .13 |
| 1283 250/3 | 250 | .28 x .83 | .64 | .44 | .29 | .19 | .13 |
| 1283 500/3 | 500 | .36 x .83 | .66 | .46 | .30 | .20 | .13 |
| 1283 1000/3 | 1000 | .42 x 1.03 | .72 | .50 | .33 | .22 | .14 |
| 1010 2500/3 | 2500 | .59 x 1.22 | .75 | .60 | .35 | .37 | .30 |
| 1010 5000/3 | 5000 | .75 x 1.22 | 1.02 | .82 | .61 | .51 | .41 |
| 1010 10000/3 | 10,000 | .83 x 1.62 | 1.23 | .98 | .74 | .62 | .49 |

### 6 WVDC

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1313 25/6* | 25 | .20 x .48 | $0.64 | $0.44 | $0.29 | $0.19 | $0.13 |
| 1313 50/6* | 50 | .25 x .48 | .69 | .48 | .31 | .21 | .14 |
| 1283 100/6 | 100 | .28 x .73 | .70 | .49 | .32 | .22 | .14 |
| 1283 250/6 | 250 | .36 x .73 | .71 | .50 | .32 | .22 | .14 |
| 1283 500/6 | 500 | .42 x .83 | .72 | .50 | .33 | .22 | .14 |
| 1010 1000/6 | 1000 | .51 x 1.03 | .77 | .53 | .40 | .33 | .26 |
| 1010 2500/6 | 2500 | .67 x 1.22 | 1.02 | .71 | .56 | .47 | .36 |
| 1010 5000/6 | 5000 | .83 x 1.62 | 1.32 | 1.07 | .83 | .71 | .58 |
| 41010 10000/6 | 10,000 | 1.03 x 1.81 | 1.83 | 1.46 | 1.10 | .92 | .73 |

### 10 WVDC

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 41313 5/10* | 5 | .15 x .48 | $0.64 | $0.44 | $0.29 | $0.19 | $0.13 |
| 41313 25/10* | 25 | .20 x .48 | .66 | .46 | .30 | .20 | .13 |
| 41313 50/10* | 50 | .25 x .48 | .69 | .48 | .31 | .21 | .14 |
| 41283 100/10 | 100 | .28 x .83 | .70 | .49 | .32 | .22 | .14 |
| 41283 250/10 | 250 | .36 x .83 | .72 | .50 | .33 | .22 | .14 |
| 41283 500/10 | 500 | .42 x 1.03 | .80 | .55 | .36 | .24 | .16 |
| 41010 1000/10 | 1000 | .51 x 1.22 | .98 | .64 | .45 | .34 | .27 |
| 41010 2500/10 | 2500 | .75 x 1.22 | 1.23 | .86 | .64 | .54 | .42 |
| 41010 5000/10 | 5000 | 1.03 x 1.81 | 1.51 | 1.21 | .91 | .76 | .60 |

### 15 WVDC

| Siemens Number | Cap., µF | Size, In. Dia. x L. | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
| B41313 5/15* | 5 | .15 x .48 | $0.64 | $0.44 | $0.29 | $0.19 | $0.13 |
| B41313 10/15* | 10 | .20 x .48 | .66 | .46 | .30 | .20 | .13 |
| B41313 25/15* | 25 | .25 x .48 | .66 | .46 | .30 | .20 | .13 |
| B41283 50/15 | 50 | .28 x .73 | .66 | .46 | .30 | .20 | .13 |
| B41283 100/15 | 100 | .36 x .73 | .69 | .48 | .31 | .21 | .14 |
| B41283 250/15 | 250 | .42 x .83 | .72 | .50 | .33 | .22 | .14 |
| B41010 500/15 | 500 | .51 x 1.03 | .77 | .53 | .40 | .33 | .26 |
| B41010 1000/15 | 1000 | .67 x 1.22 | .83 | .68 | .54 | .46 | .40 |
| B41010 2500/15 | 2500 | .83 x 1.62 | 1.30 | 1.04 | .78 | .65 | .52 |
| B41010 5000/15 | 5000 | 1.03 x 2.20 | 1.66 | 1.34 | 1.00 | .83 | .66 |

### 25 WVDC

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| B41313 2/25* | 2 | .15 x .48 | $0.64 | $0.44 | $0.29 | $0.19 | $0.13 |
| B41313 10/25* | 10 | .20 x .48 | .66 | .46 | .30 | .20 | .13 |
| B41283 50/25 | 50 | .28 x .83 | .70 | .48 | .32 | .21 | .14 |
| B41283 100/25 | 100 | .36 x .83 | .75 | .50 | .33 | .23 | .15 |
| B41283 250/25 | 250 | .42 x 1.03 | .80 | .55 | .36 | .24 | .16 |
| B41010 500/25 | 500 | .59 x 1.22 | .85 | .61 | .42 | .35 | .28 |
| B41010 1000/25 | 1000 | .75 x 1.22 | .99 | .81 | .63 | .55 | .46 |
| B41010 2500/25 | 2500 | 1.03 x 1.81 | 1.53 | 1.22 | .92 | .77 | .61 |

### 35 WVDC

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| B41313 1/35* | 1 | .15 x .48 | $0.64 | $0.44 | $0.29 | $0.19 | $0.13 |
| B41313 5/35* | 5 | .20 x .48 | .66 | .46 | .30 | .20 | .13 |
| B41313 10/35* | 10 | .25 x .48 | .67 | .47 | .30 | .20 | .14 |
| B41283 25/35 | 25 | .28 x .73 | .68 | .47 | .31 | .21 | .14 |
| B41283 50/35 | 50 | .36 x .73 | .69 | .48 | .31 | .21 | .14 |
| B41283 100/35 | 100 | .42 x .83 | .72 | .50 | .33 | .22 | .14 |
| B41010 250/35 | 250 | .51 x 1.22 | .78 | .54 | .41 | .34 | .27 |
| B41010 500/35 | 500 | .67 x 1.22 | .93 | .68 | .54 | .43 | .33 |
| B41010 1000/35 | 1000 | .83 x 1.62 | 1.30 | .98 | .76 | .65 | .54 |
| B41010 2500/35 | 2500 | 1.03 x 2.00 | 1.74 | 1.39 | 1.04 | .87 | .70 |

### 50 WVDC

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| B41313 .5/50* | 0.5 | .15 x .48 | $0.64 | $0.44 | $0.29 | $0.19 | $0.13 |
| B41283 25/50 | 25 | .36 x .73 | .64 | .44 | .29 | .19 | .13 |
| B41283 50/50 | 50 | .36 x .83 | .66 | .46 | .30 | .20 | .13 |
| B41283 100/50 | 100 | .42 x 1.03 | .80 | .55 | .36 | .24 | .16 |
| B41010 250/50 | 250 | .67 x 1.22 | .89 | .58 | .44 | .36 | .29 |
| B41010 500/50 | 500 | .75 x 1.22 | 1.00 | .81 | .63 | .45 | .36 |
| B41010 1000/50 | 1000 | 1.03 x 1.62 | 1.45 | 1.16 | .87 | .73 | .58 |

### 70 WVDC

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| B41313 .5/70* | 0.5 | .20 x .48 | $0.64 | $0.44 | $0.29 | $0.19 | $0.13 |
| B41313 1/70* | 1 | .20 x .48 | .64 | .44 | .29 | .19 | .13 |
| B41313 2/70* | 2 | .20 x .48 | .66 | .46 | .30 | .20 | .13 |
| B41313 5/70* | 5 | .25 x .48 | .67 | .47 | .30 | .20 | .13 |
| B41283 10/70 | 10 | .28 x .73 | .68 | .47 | .31 | .21 | .14 |
| B41283 25/70 | 25 | .36 x .83 | .69 | .48 | .31 | .21 | .14 |
| B41283 50/70 | 50 | .42 x .83 | .72 | .50 | .33 | .22 | .14 |
| B41010 100/70 | 100 | .51 x 1.22 | .78 | .54 | .41 | .34 | .27 |
| B41010 250/70 | 250 | .75 x 1.22 | .91 | .65 | .49 | .41 | .32 |
| B41010 500/70 | 500 | .83 x 1.62 | 1.25 | .98 | .76 | .65 | .54 |
| B41010 1000/70 | 1000 | 1.03 x 2.20 | 1.66 | 1.33 | 1.00 | .83 | .66 |

### 100 WVDC

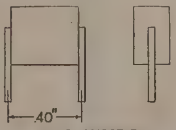
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| B41313 1/100* | 1 | .20 x .48 | $0.66 | $0.46 | $0.30 | $0.20 | $0.13 |
| B41313 2/100* | 2 | .25 x .48 | .69 | .48 | .31 | .21 | .14 |
| B41283 5/100 | 5 | .28 x .73 | .70 | .49 | .31 | .21 | .14 |
| B41283 10/100 | 10 | .36 x .73 | .71 | .49 | .32 | .21 | .14 |
| B41283 25/100 | 25 | .42 x .83 | .72 | .50 | .33 | .22 | .14 |
| B41010 50/100 | 50 | .51 x 1.03 | .78 | .53 | .40 | .33 | .26 |
| B41010 100/100 | 100 | .67 x 1.22 | .89 | .58 | .44 | .36 | .29 |
| B41010 250/100 | 250 | .83 x 1.62 | 1.00 | .81 | .63 | .55 | .46 |
| B41010 500/100 | 500 | 1.03 x 1.81 | 1.43 | 1.14 | .86 | .72 | .57 |

## TYPE MKM (B 32 541) STACKED-FOIL CAPACITORS

etallized polycarbonate capacitors with fixed 0.40″ lead spacing r PC mounting. Unique, stack foil construction holds volume to alf that of equivalent metallized film types; and, offers extremely w self-induction. **Temp. Range:** −40° C to +100° C operating. **apacitance Drift:** ±3% max. up to 85° C. **Dissipation:** Less than equal to 3 x $10^{-3}$ at 1 kHz. **AC Voltage:** 250 VDC units are pable of 100 VAC operation; 100 VDC units handle 75 VAC, 00 hours at 85° C. **Insulation Resistance:** Greater than 30,000 egohms for operating voltages less than 100 V; 75,000 megohms r 100 volts or over. **Tolerance:** ±5%. **Also Available:** Type 32 540 version with 0.30″ lead spacing.

### 100 WVDC

| Siemens No. 32 541- | Cap., µF | Size, Inches W. x D. x H. | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
| 18/5/100 | .18 | .45 x .14 x .30 | $0.45 | $0.31 | $0.23 | $0.16 | $0.12 |
| 22/5/100 | .22 | .45 x .14 x .37 | .47 | .33 | .23 | .16 | .12 |
| 27/5/100 | .27 | .45 x .14 x .45 | .52 | .37 | .26 | .18 | .14 |
| 33/5/100 | .33 | .45 x .16 x .45 | .55 | .39 | .28 | .19 | .14 |
| 39/5/100 | .39 | .45 x .18 x .45 | .60 | .42 | .30 | .21 | .16 |
| 47/5/100 | .47 | .45 x .21 x .45 | .73 | .51 | .37 | .26 | .19 |
| 56/5/100 | .56 | .45 x .26 x .45 | .80 | .56 | .40 | .28 | .21 |
| 68/5/100 | .68 | .45 x .28 x .45 | .96 | .67 | .48 | .35 | .25 |
| 82/5/100 | .82 | .45 x .33 x .45 | 1.20 | .82 | .62 | .51 | .41 |
| 00/5/100 | 1.0 | .45 x .39 x .45 | 1.50 | 1.10 | .80 | .65 | .52 |



### 250 WVDC

| Siemens No. B 32 541- | Cap., µF | Size, Inches W. x D. x H. | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
| 0.01/5/250 | .01 | .45 x .13 x .26 | $0.29 | $0.20 | $0.15 | $0.10 | $0.08 |
| 0.012/5/250 | .012 | .45 x .13 x .26 | .30 | .21 | .16 | .11 | .08 |
| 0.015/5/250 | .015 | .45 x .13 x .26 | .30 | .21 | .16 | .11 | .08 |
| 0.018/5/250 | .018 | .45 x .13 x .26 | .32 | .22 | .16 | .11 | .08 |
| 0.022/5/250 | .022 | .45 x .13 x .26 | .33 | .23 | .17 | .12 | .09 |
| 0.027/5/250 | .027 | .45 x .13 x .26 | .34 | .24 | .17 | .12 | .09 |
| 0.033/5/250 | .033 | .45 x .15 x .26 | .35 | .24 | .17 | .12 | .09 |
| 0.039/5/250 | .039 | .45 x .17 x .26 | .35 | .25 | .18 | .12 | .09 |
| 0.047/5/250 | .047 | .45 x .13 x .26 | .36 | .25 | .18 | .13 | .10 |
| 0.056/5/250 | .056 | .45 x .14 x .26 | .37 | .26 | .19 | .13 | .10 |
| 0.068/5/250 | .068 | .45 x .13 x .26 | .39 | .27 | .19 | .14 | .10 |
| 0.082/5/250 | .082 | .45 x .14 x .26 | .40 | .28 | .20 | .14 | .11 |
| 0.1/5/250 | .1 | .45 x .14 x .26 | .41 | .29 | .21 | .15 | .11 |
| 0.12/5/250 | .12 | .45 x .17 x .26 | .42 | .30 | .21 | .15 | .11 |
| 0.15/5/250 | .15 | .45 x .17 x .26 | .43 | .30 | .22 | .15 | .11 |
| 0.18/5/250 | .18 | .45 x .17 x .26 | .45 | .31 | .23 | .16 | .12 |
| 0.22/5/250 | .22 | .45 x .19 x .26 | .47 | .33 | .23 | .16 | .12 |

# *TRW* Mylar Capacitors

## TYPE 663UW TUBULAR MYLAR* CAPACITORS

Instrument quality capacitors for maximum space saving; tough, durable moisture-resistant plastic case. Conservatively rated for long life and reliable service. Can be produced to high reliability specs comparable to MIL-C-14157 and MIL-C-27287 except size and temp. on special order. Dense thermosetting epoxy endfill bonds securely to lead and case. **Insulation Resistance:** Greater than 70,000 megs-μF, 25° C, but need not exceed 140,000 megohms. **Temperature Range:** −55° C to +85° C; up to +125° C with 50% derating. **Humidity Resistance:** Will meet or exceed requirements of MIL-C-27287, para. 3.12. **Dielectric Strength:** Two times rated voltage. **Life:** 250 hours at 85° C and 125% of rated voltage. **Tolerance:** ±10%; also available in ±20%, ±5%, ±2% and ±1%.

### 100 AND 200 WVDC

| Cap., μF | Net Each, Lots of 1-24 | 25-49 | 50-99* |
|---|---|---|---|
| .001 | $0.68 | $0.41 | $0.29 |
| .0015 | .68 | .41 | .29 |
| .0022 | .68 | .41 | .29 |
| .0033 | .68 | .41 | .29 |
| .0047 | .73 | .44 | .32 |
| .0068 | .73 | .44 | .32 |
| .0082 | .77 | .46 | .34 |
| .01 | .77 | .46 | .34 |
| .015 | .77 | .46 | .34 |
| .022 | .77 | .46 | .34 |
| .033 | .81 | .48 | .35 |
| .047 | .81 | .48 | .35 |
| .068 | .81 | .48 | .35 |
| .082 | .86 | .52 | .37 |
| .1 | .86 | .52 | .37 |
| .15 | .90 | .54 | .40 |
| .22 | .96 | .56 | .41 |
| .27 | .96 | .56 | .41 |
| .33 | .99 | .59 | .44 |
| .47 | 1.09 | .65 | .47 |
| .68 | 1.19 | .70 | .51 |
| .82 | 1.22 | .74 | .53 |
| 1.0 | 1.32 | .79 | .57 |
| 2.0 | 1.73 | 1.03 | .75 |

### 400 WVDC

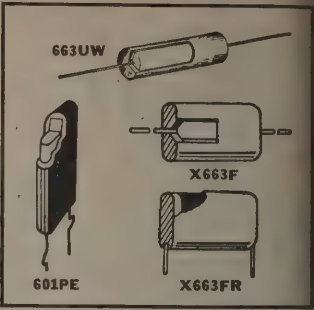
| Cap., μF | Net Each, Lots of 1-24 | 25-49 | 50-99* |
|---|---|---|---|
| .001 | $0.68 | $0.41 | $0.29 |
| .0015 | .68 | .41 | .29 |
| .0022 | .73 | .44 | .32 |
| .0033 | .73 | .44 | .32 |
| .0047 | .77 | .46 | .34 |
| .0068 | .77 | .46 | .34 |
| .0082 | .77 | .46 | .34 |
| .01 | .81 | .48 | .35 |
| .015 | .81 | .48 | .35 |
| .022 | .86 | .52 | .37 |
| .033 | .86 | .52 | .37 |
| .047 | .90 | .54 | .40 |
| .068 | .90 | .54 | .40 |
| .082 | .90 | .54 | .40 |
| .1 | .96 | .56 | .41 |
| .15 | .99 | .59 | .44 |
| .22 | 1.09 | .65 | .47 |
| .27 | 1.13 | .68 | .50 |
| .33 | 1.19 | .70 | .51 |
| .47 | 1.32 | .79 | .57 |
| .68 | 1.54 | .92 | .67 |
| .82 | 1.77 | 1.07 | .77 |
| 1.0 | 1.90 | 1.16 | .83 |
| 2.0 | 2.59 | 1.55 | 1.12 |

### 600 WVDC

| Cap., μF | Net Each, Lots of 1-24 | 25-49 | 50-99* |
|---|---|---|---|
| .001 | $0.73 | $0.44 | $0.32 |
| .0015 | .73 | .44 | .32 |
| .0022 | .73 | .44 | .32 |
| .0033 | .73 | .44 | .32 |
| .0047 | .77 | .46 | .34 |
| .0068 | .77 | .46 | .34 |
| .0082 | .81 | .48 | .35 |
| .01 | .81 | .48 | .35 |
| .015 | .81 | .48 | .35 |
| .022 | .86 | .52 | .37 |
| .033 | .90 | .54 | .40 |
| .047 | .96 | .56 | .41 |
| .068 | .99 | .59 | .44 |
| .082 | 1.05 | .63 | .45 |
| .1 | 1.09 | .65 | .47 |
| .15 | 1.19 | .70 | .51 |
| .22 | 1.28 | .76 | .56 |
| .27 | 1.36 | .81 | .59 |
| .33 | 1.50 | .89 | .65 |
| .47 | 1.73 | 1.03 | .75 |
| .68 | 2.00 | 1.20 | .87 |
| .82 | 2.12 | 1.29 | .94 |
| 1.0 | 2.26 | 1.42 | 1.03 |
| 2.0 | 4.49 | 2.70 | 1.95 |

### 1000 WVDC

| Cap., μF | Net Each, Lots of 1-24 | 25-49 | 50-99* |
|---|---|---|---|
| .001 | $0.73 | $0.44 | $0.32 |
| .0015 | .77 | .46 | .34 |
| .0022 | .77 | .46 | .34 |
| .0033 | .81 | .48 | .35 |
| .0047 | .81 | .48 | .35 |
| .0068 | .86 | .52 | .37 |
| .0082 | .86 | .52 | .37 |
| .01 | .96 | .56 | .41 |
| .015 | .99 | .59 | .44 |
| .022 | .99 | .59 | .44 |
| .033 | 1.05 | .63 | .45 |
| .047 | 1.19 | .70 | .51 |
| .068 | 1.22 | .74 | .53 |
| .082 | 1.32 | .78 | .57 |
| .1 | 1.32 | .78 | .57 |
| .15 | 1.54 | .92 | .66 |
| .22 | 1.82 | 1.09 | .78 |
| .27 | 1.95 | 1.18 | .85 |
| .33 | 2.08 | 1.24 | .90 |
| .47 | 2.54 | 1.53 | 1.11 |
| .68 | 2.63 | 1.58 | 1.16 |
| .82 | 2.81 | 1.69 | 1.22 |
| 1.0 | 3.00 | 1.79 | 1.31 |
| 2.0 | 5.71 | 3.43 | 2.48 |



## TYPE 601PE "SLIM-LINE" MYLAR CAPACITORS

Special shape and leads for maximum space saving and flexibility in transistor and printed circuit applications. Replaces ceramic discs where stability with temperature change is important. Features high insulation resistance. Available in units comparable to MIL-C-14157 and MIL-C-27287 specifications on special order. Dipped epoxy coating over extended foil (non-inductive) Mylar dielectric. **Insulation Resistance:** Greater than 50,000 megohms-μF at 100 VDC, 25° C for 2 minutes, max. **Temperature Range:** Up to 85° C; derate 50% at 125° C. **Temperature Cycling:** Min. insulation resis., 25,000 megohms after MIL-STD-202B, Method 102A, Condition D no voltage applied test, capacitance change less than 1%, same test. **Dissipation Factor:** Less than 1% at 1 kHz 25° C. **Dielectric Strength:** 100 VDC. **Tolerance:** Units shown ±10%. Available in ±20% and ±5%; prices on request.

### 50 WVDC

| Cap., μF | Net Each, Lots of 1-24 | 25-49 | 50-99* |
|---|---|---|---|
| .01 | $0.83 | $0.50 | $0.35 |
| .015 | .86 | .52 | .37 |
| .022 | .91 | .55 | .40 |
| .033 | .96 | .57 | .41 |
| .047 | 1.00 | .61 | .44 |
| .068 | 1.05 | .63 | .45 |
| .1 | 1.13 | .68 | .50 |
| .15 | 1.19 | .72 | .51 |
| .22 | 1.28 | .76 | .56 |
| .33 | 1.36 | .83 | .59 |

## TYPES X663F AND X663FR FLAT METALLIZED MYLAR CAPACITORS

Ultraminiature, lightweight design available with axial or radial leads to fit crowded chassis layouts. Thin, oval profile offers significant space saving. Feature high insulation resistance; self healing; long, stable life. **Insulation Resistance:** Better than 30,000 megohm-μF at 25° C, but need not exceed 30,000 megohms. **Dissipation Factor:** Less than 1.0% at 1000 ±20 Hz thru 1.0 μF at 25° C ±5° (.022 μF, 100 and 200 WVDC rated 1.5%); 1.5–50 μF at 60 ±6 Hz. **Temperature Range:** −55° C to +100° C; to +125° C with 50% derating. **Humidity Resistance:** Comply with test requirements of MIL-STD-202C, method 103B, condition A, para. 3.4. **Dielectric Strength:** Twice rated voltage for one minute. **Life:** 250 hours at +100° C and 125% of rated voltage. **Tolerance:** ±10%; also available in ±20%, ±5%, ±2% and ±1%; prices on request.

### AXIAL LEAD TYPE X663F

| Cap., μF | 100 or 200 WVDC, Net Each 1-24 | 25-49 | 50-99* | 400 WVDC, Net Each 1-24 | 25-49 | 50-99* | 600 WVDC, Net Each 1-24 | 25-49 | 50-99* |
|---|---|---|---|---|---|---|---|---|---|
| .01 | $1.55 | $0.94 | $0.67 | $1.93 | $1.16 | $0.84 | $2.37 | $1.42 | $1.03 |
| .022 | 1.44 | .87 | .64 | 1.73 | 1.03 | .75 | 2.16 | 1.29 | .94 |
| .033 | 1.35 | .81 | .58 | 1.58 | .95 | .68 | 1.95 | 1.17 | .85 |
| .047 | 1.24 | .75 | .54 | 1.51 | .90 | .65 | 1.82 | 1.09 | .79 |
| .068 | 1.24 | .75 | .54 | 1.43 | .86 | .63 | 1.75 | 1.05 | .76 |
| .1 | 1.13 | .68 | .48 | 1.29 | .77 | .56 | 1.50 | .89 | .65 |
| .22 | 1.30 | .78 | .55 | 1.63 | .98 | .70 | 1.93 | 1.16 | .84 |
| .33 | 1.58 | .95 | .68 | 1.90 | 1.14 | .83 | 2.45 | 1.46 | 1.07 |
| .47 | 1.78 | 1.07 | .78 | 2.27 | 1.36 | .98 | 2.82 | 1.68 | 1.22 |
| .68 | 1.98 | 1.19 | .86 | 2.56 | 1.54 | 1.11 | 3.44 | 2.07 | 1.50 |
| 1.0 | 2.23 | 1.33 | .97 | 3.08 | 1.85 | 1.34 | 4.27 | 2.55 | 1.85 |
| 1.5 | 2.50 | 1.50 | 1.09 | 3.81 | 2.29 | 1.65 | 5.53 | 3.32 | 2.41 |
| 2.0 | 2.77 | 1.66 | 1.20 | 4.58 | 2.75 | 1.99 | 7.17 | 4.30 | 3.11 |
| 3.0 | 3.31 | 1.98 | 1.44 | ........ | ........ | ........ | ........ | ........ | ........ |
| 4.0 | 4.13 | 2.49 | 1.79 | ........ | ........ | ........ | ........ | ........ | ........ |
| 5.0 | 4.68 | 2.81 | 2.04 | ........ | ........ | ........ | ........ | ........ | ........ |

### RADIAL LEAD TYPE X663FR

| Cap., μF | 100 or 200 WVDC, Net Each 1-24 | 25-49 | 50-99* | 400 WVDC, Net Each 1-24 | 25-49 | 50-99* | 600 WVDC, Net Each 1-24 | 25-49 | 50-99* |
|---|---|---|---|---|---|---|---|---|---|
| .01 | $2.20 | $1.33 | $0.98 | $2.77 | $1.66 | $1.20 | $ 3.41 | $2.05 | $1.47 |
| .022 | 2.08 | 1.24 | .91 | 2.50 | 1.47 | 1.08 | 3.09 | 1.86 | 1.34 |
| .033 | 1.93 | 1.16 | .86 | 2.27 | 1.36 | .99 | 2.79 | 1.67 | 1.21 |
| .047 | 1.77 | 1.06 | .78 | 2.17 | 1.30 | .94 | 2.62 | 1.57 | 1.13 |
| .068 | 1.74 | 1.05 | .77 | 2.06 | 1.24 | .90 | 2.52 | 1.51 | 1.10 |
| .1 | 1.64 | .98 | .72 | 1.85 | 1.11 | .81 | 2.16 | 1.30 | .94 |
| .22 | 1.85 | 1.11 | .81 | 2.34 | 1.41 | 1.01 | 2.76 | 1.66 | 1.20 |
| .33 | 2.24 | 1.34 | .99 | 2.74 | 1.65 | 1.19 | 3.52 | 2.10 | 1.53 |
| .47 | 2.57 | 1.54 | 1.13 | 3.26 | 1.96 | 1.42 | 4.04 | 2.42 | 1.76 |
| .68 | 2.84 | 1.71 | 1.25 | 3.67 | 2.21 | 1.60 | 4.96 | 2.98 | 2.16 |
| 1.0 | 3.17 | 1.90 | 1.39 | 4.44 | 2.66 | 1.93 | 6.14 | 3.67 | 2.66 |
| 1.5 | 3.59 | 2.16 | 1.57 | 5.48 | 3.29 | 2.39 | 7.95 | 4.79 | 3.47 |
| 2.0 | 3.98 | 2.39 | 1.73 | 6.58 | 3.96 | 2.86 | 10.31 | 6.18 | 4.48 |
| 3.0 | 4.75 | 2.86 | 2.09 | | | | | | |
| 4.0 | 5.91 | 3.53 | 2.59 | | | | | | |
| 5.0 | 6.69 | 4.03 | 2.95 | | | | | | |

*Reg. DuPont trademark.

★WRITE FOR PRICES ON LARGER QUANTITIES

# TRW Miniature Capacitors

## YPE X483 ULTRAMINIATURE ETALLIZED POLYCARBONATE DIELECTRIC CAPACITORS

ermetically sealed, metal enclosed units er outstanding electrical properties: High , low DF and dielectric absorption; plus cellent retrace, TC and stability. Prode environmental protection to meet or ceed requirements of MIL-C-18312 and IL-C-19978B. Ideal for transistor cirtry and where close initial tolerances are quired. Low dielectric absorption and cellent retrace make these suitable for mputer, timing, filter and other critical cuits which may operate to 125° C. High sulation resistance. Both leads insulated. **mperature Range:** −55° C to +125° C th full rated voltage. **Tolerance:** ±10%; her tolerances available on request. Also ailable in 100 V and 400 V on request.

| Cap. µF | * | 50 V, Net Each 1-24 | 25-49* | * | 200 V, Net Each 1-24 | 25-49* |
|---|---|---|---|---|---|---|
| .0010 | A | $4.05 | $2.43 | A | $4.05 | $2.43 |
| .0012 | A | 4.05 | 2.43 | A | 4.05 | 2.43 |
| .0015 | A | 4.08 | 2.45 | A | 4.08 | 2.45 |
| .0018 | A | 4.08 | 2.45 | A | 4.08 | 2.45 |
| .0022 | A | 4.13 | 2.48 | A | 4.13 | 2.48 |
| .0027 | A | 4.13 | 2.48 | A | 4.13 | 2.48 |
| .0033 | A | 4.17 | 2.50 | A | 4.17 | 2.50 |
| .0039 | A | 4.17 | 2.50 | A | 4.17 | 2.50 |
| .0047 | A | 4.21 | 2.53 | A | 4.21 | 2.53 |
| .0056 | A | 4.21 | 2.53 | A | 4.21 | 2.53 |
| .0068 | A | 4.25 | 2.55 | A | 4.25 | 2.55 |
| .0082 | A | 4.25 | 2.55 | A | 4.25 | 2.55 |
| .010 | A | 4.29 | 2.57 | B | 4.29 | 2.57 |
| .012 | A | 4.29 | 2.57 | B | 4.29 | 2.57 |
| .015 | A | 4.33 | 2.60 | B | 4.29 | 2.57 |
| .018 | A | 4.38 | 2.63 | C | 4.33 | 2.60 |
| .022 | A | 4.41 | 2.65 | C | 4.38 | 2.63 |
| .027 | A | 4.54 | 2.73 | D | 4.41 | 2.65 |
| .033 | A | 4.66 | 2.79 | D | 4.45 | 2.67 |
| .039 | A | 4.74 | 2.85 | O | 4.50 | 2.70 |
| .047 | A | 4.83 | 2.89 | O | 4.54 | 2.73 |
| .056 | A | 4.95 | 2.97 | E | 4.62 | 2.77 |
| .068 | B | 5.04 | 3.03 | E | 4.71 | 2.83 |
| .082 | B | 5.24 | 3.15 | P | 4.79 | 2.87 |
| .10 | B | 5.37 | 3.22 | P | 4.87 | 2.93 |
| .12 | B | 5.53 | 3.32 | F | 4.99 | 2.99 |
| .15 | C | 5.78 | 3.47 | F | 5.12 | 3.07 |
| .18 | C | 5.98 | 3.59 | Q | 5.28 | 3.17 |
| .22 | D | 6.19 | 3.72 | H | 5.49 | 3.29 |
| .27 | D | 6.48 | 3.88 | H | 5.70 | 3.42 |
| .33 | E | 6.72 | 4.04 | I | 5.90 | 3.54 |
| .39 | E | 7.02 | 4.21 | J | 6.06 | 3.64 |
| .47 | E | 7.26 | 4.36 | J | 6.23 | 3.74 |
| .56 | E | 7.59 | 4.55 | K | 6.48 | 3.88 |
| .68 | F | 7.76 | 4.65 | K | 6.72 | 4.04 |
| .82 | F | 8.25 | 4.95 | L | 6.97 | 4.18 |
| .00 | G | 8.70 | 5.23 | M | 7.26 | 4.36 |
| .25 | H | 9.00 | 5.40 | M | 7.68 | 4.61 |
| .50 | H | 9.28 | 5.57 | R | 7.88 | 4.73 |
| .00 | I | 9.90 | 5.94 | S | 8.54 | 5.13 |
| .00 | J | 11.06 | 6.63 | T | 9.69 | 5.82 |
| .00 | K | 12.00 | 7.21 | U | 10.73 | 6.44 |
| .00 | L | 13.12 | 7.88 | V | 11.97 | 7.18 |
| .00 | M | 16.13 | 9.68 | W | 15.06 | 9.03 |
| .00 | N | 17.82 | 10.69 | X | 16.92 | 10.15 |

### *CASE SIZES

| ase | Size, Inches Dia. x L. | Case | Size, Inches Dia. x L. |
|---|---|---|---|
| A | .175 x 9/16 | M | .562 x 1 5/16 |
| B | .175 x 5/8 | N | .670 x 1 5/16 |
| C | .195 x 5/8 | O | .235 x 11/16 |
| D | .235 x 5/8 | P | .312 x 11/16 |
| E | .312 x 5/8 | Q | .400 x 11/16 |
| F | .312 x 13/16 | R | .562 x 1 9/16 |
| G | .312 x 15/16 | S | .670 x 1 9/16 |
| H | .400 x 13/16 | T | .670 x 1 13/16 |
| I | .400 x 15/16 | U | .750 x 1 13/16 |
| J | .400 x 1 1/16 | V | .750 x 2 5/16 |
| K | .500 x 1 1/16 | W | 1.000 x 2 1/16 |
| L | .562 x 1 1/16 | X | 1.000 x 2 9/16 |

## YPE X440 PRINTED CIRCUIT ICROMINIATURE METALLIZED OLYCARBONATE CAPACITORS

ecifically designed for fitting components today's miniaturized designs. Metallized lycarbonate dielectric, non-inductive nding. Epoxy case with standoffs; radial ads 24 gauge tinned solid wire on 0.2″ nters. Life test and humidity resistance eet MIL-C-27287. **Voltage Rating:** 50 DC from −55° C to +125° C. **TC:** −150 m/° C. **Tolerance:** ±10%; other toleraces available. Maximum size, .290″ w. x 45″ d. x .320″ h.

### TYPE X440 (CONTINUED)

| Cap. µF | Net Each, Lots of 1-24 | 25-49 | 50-99* |
|---|---|---|---|
| .0010, .0012 | $2.43 | $1.46 | $1.06 |
| .0015, .0018 | 2.43 | 1.46 | 1.06 |
| .0022 | 2.43 | 1.46 | 1.06 |
| .0027 | 2.48 | 1.49 | 1.08 |
| .0033 | 2.48 | 1.49 | 1.08 |
| .0039 | 2.60 | 1.56 | 1.08 |
| .0047, .0056 | 2.60 | 1.56 | 1.08 |
| .0068, .0082 | 2.60 | 1.56 | 1.08 |
| .010 | 2.60 | 1.56 | 1.08 |
| .012 | 2.64 | 1.58 | 1.14 |
| .015, .018 | 2.68 | 1.61 | 1.17 |
| .022 | 2.68 | 1.61 | 1.17 |
| .027, .033 | 2.72 | 1.63 | 1.19 |
| .039 | 2.72 | 1.63 | 1.19 |
| .047 | 2.76 | 1.66 | 1.20 |
| .056 | 2.93 | 1.76 | 1.28 |
| .068, .082 | 2.97 | 1.78 | 1.29 |
| .100 | 3.17 | 1.90 | 1.38 |

## TYPE 608 "MICROLAR" FOIL-WOUND MICROMINIATURE CAPACITORS

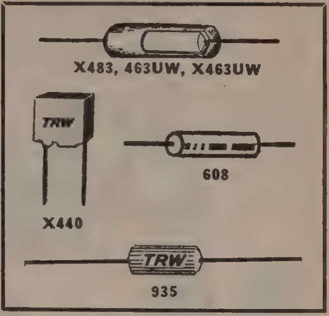
Ideal for use in potted or extremely precise assemblies; designed for use in "cordwood" packaging and other high density circuitry. **Tolerances:** ±10% standard; ±20%, ±5% and ±1% available on request. **Humidity Resistance:** Exceeds MIL-C-27287, paragraph 3.12. **Temperature Range:** −55° C to +85° C; to 125° C with 50% derating.

| Cap., µF | 100 WVDC, Net Each 1-24 | 25-49 | 50-99* |
|---|---|---|---|
| .001 | $1.52 | $1.11 | $0.83 |
| .0012 | 1.54 | 1.12 | .84 |
| .0015 | 1.54 | 1.12 | .84 |
| .0018 | 1.56 | 1.13 | .85 |
| .0022 | 1.56 | 1.13 | .85 |
| .0027 | 1.57 | 1.14 | .86 |
| .0033 | 1.57 | 1.14 | .86 |
| .0039 | 1.60 | 1.16 | .87 |
| .0047 | 1.60 | 1.16 | .87 |
| .0056 | 1.62 | 1.18 | .88 |
| .0068 | 1.62 | 1.18 | .88 |
| .0082 | 1.63 | 1.19 | .89 |
| .01 | 1.63 | 1.19 | .89 |
| .012 | 1.67 | 1.21 | .90 |
| .015 | 1.67 | 1.21 | .90 |
| .022 | 1.67 | 1.21 | .90 |
| .027 | 1.74 | 1.27 | .95 |
| .033 | 1.74 | 1.27 | .95 |
| .039 | 1.78 | 1.29 | .97 |
| .047 | 1.78 | 1.29 | .97 |
| .056 | 2.34 | 1.44 | 1.05 |
| .068 | 2.50 | 1.50 | 1.09 |
| .082 | 2.59 | 1.55 | 1.12 |
| .1 | 2.64 | 1.58 | 1.16 |

## TYPE 463UW SUBMINIATURE FOIL-WOUND POLYCARBONATE CAPACITORS

Well suited for computer and timing circuits at temperatures from −55° C to +125° C. **Life Test:** 250 hours at +125° C and 140% of rated voltage. **Dissipation Factor:** Less than 20% at 1 kHz 25° C. **Tolerances:** Units shown ±10%; ±20%, ±5% to ±1% available on request.

| Cap., µF | 50 WVDC, Net Each 1-24 | 25-49 | 50-99* |
|---|---|---|---|
| .01 | $0.78 | $0.47 | $0.34 |
| .012 | .78 | .47 | .34 |
| .015 | .83 | .50 | .36 |
| .018 | .87 | .52 | .37 |
| .022 | .87 | .52 | .37 |
| .027 | .95 | .57 | .42 |
| .033 | .95 | .57 | .42 |
| .039 | .95 | .57 | .42 |
| .047 | .99 | .59 | .43 |
| .056 | 1.03 | .62 | .45 |
| .068 | 1.11 | .67 | .48 |
| .082 | 1.20 | .72 | .52 |
| .1 | 1.24 | .75 | .54 |
| .12 | 1.32 | .79 | .57 |
| .15 | 1.41 | .85 | .61 |
| .18 | 1.41 | .86 | .61 |
| .22 | 1.49 | .89 | .65 |
| .27 | 1.49 | .89 | .65 |
| .33 | 1.57 | .95 | .68 |
| .39 | 1.65 | .99 | .72 |
| .47 | 1.77 | 1.07 | .77 |
| .56 | 1.98 | 1.19 | .86 |
| .68 | 2.02 | 1.21 | .88 |
| .82 | 2.10 | 1.27 | .91 |
| 1.0 | 2.27 | 1.36 | .99 |
| 1.25 | 2.43 | 1.46 | 1.06 |
| 1.50 | 2.76 | 1.66 | 1.20 |
| 1.80 | 3.14 | 1.88 | 1.36 |
| 2.00 | 3.30 | 1.98 | 1.43 |



## TYPE X463UW ULTRAMINIATURE METALLIZED POLYCARBONATE CAPACITORS

Small size, lightweight, low dielectric absorption and extremely high insulation resistance for use in portable and airborne equipment as well as in precision test equipment. **Insulation Resistance:** 6,000 megohms-µF, 85° C but need not exceed 50,000 megohms. **Tolerance:** ±10%.

| Cap., µF | 50 WVDC 1-24 | 25-49* | 200 WVDC 1-24 | 25-49* |
|---|---|---|---|---|
| .01 | $ 2.27 | $ 1.36 | $ 1.65 | $ 0.99 |
| .012 | 2.27 | 1.36 | 1.65 | .99 |
| .015 | 2.27 | 1.36 | 1.65 | .99 |
| .018 | 2.27 | 1.36 | 1.65 | .99 |
| .022 | 2.31 | 1.39 | 1.69 | 1.01 |
| .027 | 2.31 | 1.39 | 1.69 | 1.01 |
| .033 | 2.31 | 1.39 | 1.74 | 1.05 |
| .039 | 2.31 | 1.39 | 1.77 | 1.07 |
| .047 | 2.31 | 1.39 | 1.82 | 1.09 |
| .056 | 2.35 | 1.41 | 1.82 | 1.09 |
| .068 | 2.35 | 1.41 | 1.82 | 1.09 |
| .082 | 2.35 | 1.41 | 1.86 | 1.11 |
| .1 | 2.40 | 1.44 | 1.90 | 1.14 |
| .12 | 2.48 | 1.49 | 1.94 | 1.17 |
| .15 | 2.56 | 1.54 | 1.98 | 1.19 |
| .18 | 2.64 | 1.58 | 2.07 | 1.24 |
| .22 | 2.73 | 1.64 | 2.15 | 1.29 |
| .27 | 2.85 | 1.71 | 2.23 | 1.34 |
| .33 | 2.93 | 1.76 | 2.35 | 1.41 |
| .39 | 3.09 | 1.86 | 2.48 | 1.49 |
| .47 | 3.34 | 2.00 | 2.68 | 1.61 |
| .56 | 3.55 | 2.13 | 2.81 | 1.68 |
| .68 | 3.80 | 2.28 | 2.97 | 1.78 |
| .82 | 4.08 | 2.45 | 3.18 | 1.90 |
| 1.0 | 4.41 | 2.65 | 3.47 | 2.08 |
| 1.25 | 4.87 | 2.93 | 3.88 | 2.33 |
| 1.50 | 5.40 | 3.25 | 4.33 | 2.60 |
| 1.80 | 6.03 | 3.62 | 4.83 | 2.89 |
| 2.00 | 6.39 | 3.84 | 5.20 | 3.12 |
| 3.00 | 8.46 | 5.07 | 6.72 | 4.04 |
| 4.00 | 10.40 | 6.24 | 8.25 | 4.95 |
| 5.00 | 12.25 | 7.35 | 9.49 | 5.70 |
| 8.00 | 18.65 | 11.19 | 13.62 | 8.17 |
| 10.00 | 22.53 | 13.52 | 17.33 | 10.40 |

## TYPE 935 SUBMINIATURE SOLID TANTALUM PRECISION MOLDED CAPACITORS

Specially designed to offer the maximum microfarad volts per unit volume. Molded epoxy case affords excellent physical and environmental protection. Tinned nickel leads. **Temperature Range:** −55° C to +85° C; to 125° C with 1/3 derating. **Environmental Tests:** Meet or exceed requirements of MIL-C-39003 for shock, vibration, salt spray, moisture resistance, temperature and immersion cycling. **Tolerance:** ±10%; other tolerances available on request. **Size:** 0.218″ dia. x 0.531″ lg. except 0.1–4.7 µF, 0.175″ dia. x .360″ lg.

| Cap., µF | WVDC | Net Each, Lots of 100-499 | 500-999 | 1000-4999 |
|---|---|---|---|---|
| .1 | 50 | $0.35 | $0.29 | $0.24 |
| .47 | 50 | .35 | .29 | .24 |
| 1.0 | 35 | .29 | .24 | .20 |
| 2.2 | 20 | .29 | .24 | .20 |
| 4.7 | 20 | .29 | .24 | .20 |
| 6.8 | 20 | .35 | .29 | .24 |
| 10.0 | 20 | .35 | .29 | .24 |
| 15.0 | 15 | .35 | .29 | .24 |
| 22.0 | 15 | .36 | .30 | .25 |
| 33.0 | 10 | .38 | .21 | .26 |
| 47.0 | 6 | .40 | .32 | .27 |

★WRITE FOR PRICES ON LARGER QUANTITIES

CAMBRIDGE THERMIONIC CORPORATION
**CAMBION®**

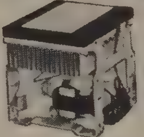
# THERMOELECTRICS— PANEL, CHASSIS HARDWARE

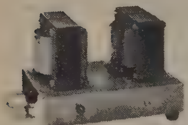
## THERMOELECTRICS

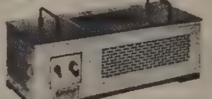
3951-1

3953-1

3955-1


3970-1


3971-1


7200-1

CAMBION TE components (modules) and 40-watt assemblies, listed below, may be operated by using the following **standard parts** to assemble a simple variable DC power supply: (1) autotransformer; (2) input transformer; (3) filter choke; (4) 2 silicon rectifiers; (5) rectifier heat sink. Operating instructions, power supply schematic and mounting recommendations are supplied with each component module and assembly.

### COMPONENTS

| Cambion Type No. | Description | Net Each |
|---|---|---|
| 3950-1 | 6.5 ampere module; 2.3 VDC; 6.8 watts with Ts at 27° C | $ 39.60 |
| 3951-1 | 6.5 ampere module; 5.7 VDC; 20 watts with Ts at 27° C | 52.80 |
| 3953-1 | 6.5 ampere annular ring; 5.7 VDC; 20 watts with Ts at 27° C | 52.80 |
| 3954-1 | 6.5 ampere module; 2.3 VDC; 9 watts with Ts at 27° C | 39.60 |
| 3955-1 | 5.2 ampere Cascade module; 5.7 VDC; 1 watt at 60° C$_A$T with atmospheric pressure, at Ts=27° C | 151.80 |
| 3958-1 | Ceramic high performance unit; 3.6 VDC at 9.0 amps; 19.5 watts pumping capacity with $T_s$ at 27° C | 60.00 |

### ASSEMBLIES

| Cambion Type No. | Description | Net Each |
|---|---|---|
| 3970-1 | 6.5 ampere assembly (two 3951's in series); 12 VDC; 40 watts with Ts at 35° C. With heat sink, bracket and fan assembly (115 V, 60 Hz AC) | $286.00 |
| 3971-1 | Fixed output, non-regulated DC power supply for 3970-1 assembly. Other power supplies available for all modules. | 81.80 |

### INSTRUMENTS

| Cambion Type No. | Description | Net Each |
|---|---|---|
| 7200-1 | Package cold plate unit for plug-in operation (110/120 VAC, 60 Hz at approx. 1 A). Cold plate temperatures to −15° C with $Q_c$ at 40 watts | $296.00 |
| 7210-1 | Variable controlled cold plate; cold plate temperatures adjustable to −10° C with $Q_c$ at 40 watts | 348.40 |
| 7220-1 | Proportionally controlled cold or warm plate. Set point range of 0° C to 40° C. $Q_c$=12 watts at cold plate temperature of 0° C | 522.80 |

## BATTERY HOLDERS

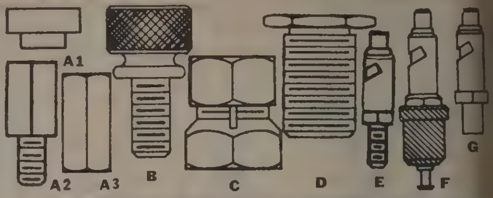
2880-01-02

2233-01-02

For mercury ("C" size) and zinc nickel-plated ("D" size) batteries. Snap-in holders with locking strap to hold mercury batteries under extreme vibration and shock. Body material phosphor bronze except type 2895-01-02, cold rolled steel.

| Cambion Type Number | Battery | | Net Each, Lots of | |
|---|---|---|---|---|
| | Type | Size, Inches Dia. x Lgth. | 10-99 | 100-499 |
| 2233-01-02 | Mercury | .620 x .650 | $0.49 | $0.42 |
| 2234-01-02 | Mercury | .655 x 1.305 | .62 | .53 |
| 2324-01-02 | Mercury | .655 x 3.218 | 1.30 | 1.11 |
| 2475-01-02 | Mercury | .655 x 1.960 | 1.05 | .90 |
| 2870-01-02 | Mercury | 1.190 x 2.375 | 1.65 | 1.41 |
| 2880-01-02 | Mercury | 1.016 x 1.969 | 1.45 | 1.24 |
| 2890-01-02 | Zinc Carb. | 1.344 x 2.406 | 1.65 | 1.41 |
| 2895-01-02 | Zinc Carb. | 1.344 x 2.406 | 1.15 | .98 |

## PANEL AND CHASSIS HARDWARE COMPONENTS



### MOUNTING STANDOFFS AND SPACERS (FIG. A)

Brass and aluminum swage mount (Fig. A1) or stud mount (Fig. A2) standoffs and spacers (Fig. A3). **1246/7408 Series**—Round; 6/32 tapped standoff section. **1247/7404 and 1249/7406 Series**—Round, thru hole. **1299/7422 Series**—Stud mount; hex, 6/32. **1300/7409 Series**—Round, 4/40 tapped standoff section. **2188/7410 Series**—Round; 2/56 tapped standoff section. **3923/7407 Series**—Round; 8/32 tapped standoff section. **3925/7411 Series**—Round; 8/32 tapped standoff section. **3927/7412 Series**—Hex; 4/40 tapped standoff section. **3928/7413 Series**—Hex; 6/32 tapped standoff section. **3934/7416 Series**—Spacer; hex; 4/40 tapped. **3935/7417 Series**—Spacer; hex; 6/32 tapped. This is a partial listing of more popular sizes. On all items, **for sizes not listed, order by part no. and specify above board height and/or board thickness desired.**

| Cambion Type No. | | Above Board Height, Inches | For Board Thickness, Inches | Net Each, Lots of* | | |
|---|---|---|---|---|---|---|
| Brass | Alum. | | | 100-499 | 500-999 | 1000-2499 |
| 1246-9* | 7408-9* | .125 | 1/16 | 15c | 13c | 12c |
| 1246-10* | 7408-10* | .188 | 1/16 | 15c | 13c | 12c |
| 1246-11* | 7408-11* | .250 | 1/16 | 15c | 13c | 12c |
| 1246-13* | 7408-13* | .500 | 1/16 | 15c | 13c | 12c |
| 1246-15* | 7408-15* | .750 | 1/16 | 15c | 13c | 12c |
| 1246-17* | 7408-17* | .125 | 3/32 | 15c | 13c | 12c |
| 1246-19* | 7408-19* | .250 | 3/32 | 15c | 13c | 12c |
| 1247-9* | 7404-9* | .125 | 1/16 | 15c | 13c | 12c |
| 1247-10* | 7404-10* | .188 | 1/16 | 15c | 13c | 12c |
| 1247-11* | 7404-11* | .250 | 1/16 | 15c | 13c | 12c |
| 1249-9* | 7406-9* | .125 | 1/16 | 15c | 13c | 12c |
| 1249-10* | 7406-10* | .188 | 1/16 | 15c | 13c | 12c |
| 1249-11* | 7406-11* | .250 | 1/16 | 15c | 13c | 12c |
| 1299-1 | 7422-1 | .375 | 6/32 stud mount | 12c | 11.5c | 10c |
| 1299-2 | 7422-2 | .500 | | 12c | 11.5c | 10c |
| 1300-9* | 7409-9* | .125 | 1/16 | 15c | 13c | 12c |
| 1300-10* | 7409-10* | .188 | 1/16 | 15c | 13c | 12c |
| 1300-11* | 7409-11* | .250 | 1/16 | 15c | 13c | 12c |
| 1300-12* | 7409-12* | .375 | 1/16 | 15c | 13c | 12c |
| 1300-13* | 7409-13* | .500 | 1/16 | 15c | 13c | 12c |
| 1300-17* | 7409-17* | .125 | 1/32 | 15c | 13c | 12c |
| 2188-1* | 7410-1* | .125 | 1/32 | 15c | 13c | 12c |
| 2188-9* | 7410-9* | .125 | 1/16 | 15c | 13c | 12c |
| 3923-9* | 7407-9* | .125 | 1/16 | 21c | 19c | 17c |
| 3923-11* | 7407-11* | .250 | 1/16 | 21c | 19c | 17c |
| 3925-9† | 7411-9† | .125 | 1/16 | 12c | 11.5c | 10c |
| 3925-11† | 7411-11† | .250 | 1/16 | 12c | 11.5c | 10c |
| 3927-9† | 7412-9† | .125 | 1/16 | 12c | 11.5c | 10c |
| 3927-11† | 7412-11† | .250 | 1/16 | 12c | 11.5c | 10c |
| 3928-9† | 7413-9† | .125 | 1/16 | 15c | 13c | 12c |
| 3928-11† | 7413-11† | .250 | 1/16 | 15c | 13c | 12c |
| 3934-4 | 7416-4 | .312 | Spacer; hex; 4-40 tapped | 15c | 13c | 12c |
| 3934-5 | 7416-5 | .375 | | 15c | 13c | 12c |
| 3934-6 | 7416-6 | .438 | | 15c | 13c | 12c |
| 3935-8 | 7417-8 | .625 | Spacer; hex; 6-32 tapped | 15c | 13c | 12c |
| 3935-10 | 7417-10 | .875 | | 15c | 13c | 12c |
| 3935-11 | 7417-11 | 1.000 | | 15c | 13c | 12c |

*These swage-type standoffs available for board thicknesses of 1/32", 1/16", 3/32", 1/8", 3/16" and 1/4" and above board heights of .125", .188", .250", .375", .500", .625", .750" and 1.000". †These swage-type standoffs supplied in same above board heights, but only for 1/16", 3/32" and 1/8" thick boards. *Minimum standard package is 100 pieces.

### GENERAL HARDWARE COMPONENTS

| Cambion Type Number | Fig. | Description | Dimensions, Inches | Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 10-99 | 100-499 | 500-999 |
| 1120-01-02* | B | Thumb screw | 6/32 thrd. | $0.42 | $0.38 | $0.28 |
| 1120-02-02* | B | | 8/32 thrd. | .42 | .38 | .28 |
| 1120-03-02* | B | | 10/32 thrd. | .42 | .38 | .28 |
| 1774-1-02 | C | Shaft lock | 1/4 dia. shaft | .42 | .38 | .28 |
| 2038-1-02 | C | | 1/4 dia. shaft | .41 | .36 | .27 |
| 2117-01-02 | D | Panel bushing | 1/8 board | .34 | .30 | .23 |
| 2117-02-02 | D | | 1/4 board | .34 | .30 | .23 |
| 2117-03-02 | D | | 3/8 board | .34 | .30 | .23 |
| 2146-01-02 | E | Component clip | .040 slot | .42 | .38 | .35 |
| 2247-02-08 | E | | .040 slot | .42 | .38 | .35 |
| 2247-03-08 | E | | .040 slot | .42 | .38 | .35 |
| 2329-01-02 | E | | .055 slot | .50 | .45 | .42 |
| 2330-02-08 | E | | .055 slot | .50 | .45 | .42 |
| 2330-04-08 | E | | .055 slot | .50 | .45 | .42 |
| 2339-01-02 | E | | .085 slot | .67 | .60 | .56 |
| 2405-01-08 | F | Component clip | .085 slot | 1.02 | .91 | .86 |
| 2422-01-08 | F | | .055 slot | .84 | .75 | .71 |
| 3084-02-08 | G | | .040 slot | .44 | .39 | .37 |
| 3085-02-08 | G | | .055 slot | .52 | .46 | .43 |

*Nickel finish; for black oxide finish, order by changing final suffix from **02** to **12**; (e.g., 1120-01-**12**).

CAMBRIDGE THERMIONIC CORPORATION

# CAMBION® COILS AND COIL FORMS

## CERAMIC, PHENOLIC, MOLDED AND SHIELDED ASSEMBLY COIL FORMS

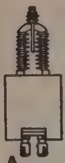
| nbion asic rt No. | Suffix* No. 1 | Suffix* No. 2 | Description | Fig. | Net Each, Lots of 5-9 | 10-99 | 100-499 | 500-999 | 1000-2499 |
|---|---|---|---|---|---|---|---|---|---|
| 150 | † | -1/5 | Shielded assembly | A | $1.80 | $1.55 | $1.44 | $1.28 | $1.08 |
| 155 | † | -1/5 | | A | 1.89 | 1.63 | 1.51 | 1.34 | 1.13 |
| 160 | † | -1/3 | | A | 1.60 | 1.38 | 1.28 | 1.14 | .96 |
| 165 | † | -1/5 | | A | 1.80 | 1.55 | 1.44 | 1.28 | 1.08 |
| 181 | † | -3/4 | | B | 2.12 | 1.82 | 1.70 | 1.51 | 1.27 |
| 187 | † | -3/4 | | B | 1.45 | 1.25 | 1.16 | 1.03 | .87 |
| 189 | † | -3/4 | | B | 2.43 | 2.09 | 1.94 | 1.73 | 1.46 |
| 531‡ | -1/7 | -1 | Ceramic coil form | C | .87 | .73 | .63 | .55 | .50 |
| 531‡ | -1/7 | -2/3 | | C | 1.10 | .92 | .79 | .69 | .63 |
| 531‡ | -1/7 | -4/5 | | C | .98 | .82 | .71 | .62 | .56 |
| 532 | -1/7 | -1 | | C | .82 | .69 | .59 | .52 | .47 |
| 532 | -1/7 | -2/3 | | C | 1.05 | .88 | .76 | .66 | .60 |
| 532 | -1/7 | -4/5 | | C | .93 | .78 | .67 | .59 | .53 |
| 534 | -1/7 | -1 | | C | 1.00 | .84 | .72 | .63 | .57 |
| 534 | -1/7 | -2/3 | | C | 1.33 | 1.12 | .96 | .84 | .76 |
| 534 | -1/7 | -4/5 | | C | 1.17 | .98 | .84 | .74 | .67 |
| 535‡ | -1/7 | -1 | | C | .91 | .76 | .66 | .57 | .52 |
| 535‡ | -1/7 | -2/3 | | C | 1.14 | .96 | .82 | .72 | .65 |
| 535‡ | -1/7 | -4/5 | | C | 1.02 | .86 | .73 | .64 | .58 |
| 536 | -1/7 | -1 | | C | .87 | .73 | .63 | .55 | .50 |
| 536 | -1/7 | -2/3 | | C | 1.10 | .92 | .79 | .69 | .63 |
| 536 | -1/7 | -4/5 | | C | .98 | .82 | .71 | .62 | .56 |
| 173‡ | -1/7 | -1/3 | Phenolic PC | D | .44 | .37 | .32 | .28 | .25 |
| 175‡ | -1/7 | -1/2 | Ceramic PC | D | .49 | .41 | .35 | .31 | .28 |
| 175‡ | -1/7 | -3/5 | | D | .51 | .43 | .37 | .32 | .29 |
| 270‡ | -1/7 | § | | E | .98 | .82 | .71 | .62 | .56 |
| 271‡ | -1/7 | § | | E | 1.12 | .94 | .81 | .71 | .64 |
| 770 | -1/7 | -1 | Ceramic Stud | F | 1.35 | 1.13 | .97 | .85 | .77 |
| 770 | -1/7 | -2/3 | | F | 1.59 | 1.34 | 1.14 | 1.00 | .91 |
| 770 | -1/7 | -4/5 | | F | 1.47 | 1.23 | 1.06 | .93 | .84 |
| 104‡ | -1/7 | § | Molded Diallyl | G | 1.37 | 1.15 | .99 | .86 | .78 |
| 602‡ | -1/7 | .... | 3623 w/ holl. pin | H | 1.37 | 1.15 | .99 | .86 | .78 |
| 603‡ | -1/7 | .... | 3624 w/ holl. pin | H | 1.39 | 1.17 | 1.00 | .88 | .79 |
| 609‡ | -1/7 | .... | Hor. PC polyest. .240″ winding | K | 1.39 | 1.17 | 1.00 | .88 | .79 |
| 613‡ | -1/7 | .... | 3602; no top flg. .335″ h. | I | 1.37 | 1.15 | .99 | .86 | .78 |
| 614‡ | -1/7 | .... | Same, .480″ h. | I | 1.39 | 1.17 | 1.00 | .88 | .79 |
| 618‡ | -1/7 | .... | 3613 w/ solid .025 pin | I | 1.37 | 1.15 | .99 | .86 | .78 |
| 619‡ | -1/7 | .... | 3614 w/ solid .025 pin | I | 1.39 | 1.17 | 1.00 | .88 | .79 |
| 623‡ | -1/7 | .... | Molded polypropylene | H | 1.37 | 1.15 | .99 | .86 | .78 |
| 624‡ | -1/7 | .... | | H | 1.39 | 1.17 | 1.00 | .88 | .79 |
| 651 | † | .... | PC shld. polypro. .325″ h. | J | 1.52 | 1.31 | 1.22 | 1.08 | .91 |
| 652 | † | .... | .480″ h. | J | 1.49 | 1.28 | 1.19 | 1.06 | .89 |
| 706‡ | -1/7 | .... | 3618 but polyest. | I | 1.00 | .84 | .72 | .63 | .57 |
| 707‡ | -1/7 | .... | 3619 but polyest. | I | 1.02 | .86 | .73 | .64 | .58 |
| 742 | † | .... | PC shld. polyest. .325″ h. | J | 1.26 | 1.08 | 1.01 | .89 | .76 |
| 743 | † | .... | .480″ h. | J | 1.28 | 1.10 | 1.02 | .91 | .77 |
| 744‡ | -1/7 | .... | 3609 w/ .340″ winding | K | 1.39 | 1.17 | 1.00 | .88 | .79 |
| 460 | -1/7 | ... | 5-pin 3624 | H | 1.42 | 1.19 | 1.02 | .89 | .81 |
| 461 | -1/7 | ... | 5-pin 3614 | I | 1.42 | 1.19 | 1.02 | .89 | .81 |
| 462 | † | ... | 5-pin shld. assy. w/ 4461 form | J | 1.72 | 1.48 | 1.38 | 1.22 | 1.03 |

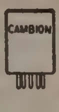
### *ORDERING INSTRUCTION CHART

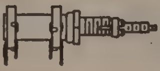
er by Basic Part No. followed by desired suffix no. 1 (for uency range) and suffix no. 2 (for terminal and collar or teral board type) selected from the following chart: 1531-3-2 for l form with 20–50 MHz slug and with 2 collars with 2 terals each.

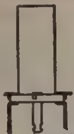
| SUFFIX NO. 1 h | | | SUFFIX NO. 2 | | |
|---|---|---|---|---|---|
| h | Slug Color | Frequency Range, MHz | Dash No. | Terminal-Collar Locations | Type Term. Bd. (Shielded Forms) |
| | Yellow | .2–1.5 | -1 | 2 ring terminals | 2 term. bd. |
| | Red | 1–20 | -2 | 2 collars—2 term. ea. | 3 term. bd. |
| | Green | 20–50 | -3 | 2 collars—1 term. ea. | 4 term. bd. |
| | White | 50–200 | -4 | 1 top collar—2 term. | 5 term. bd. |
| | Black | 100 and up | -5 | 1 bot. collar—2 term. | 6 term. bd. |
| | Purple | 2–50 | | | |
| | Blue | 40–300 | | | |

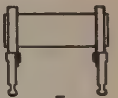
ffix No. 1: Dash numbers on these shielded forms available -1 thru -4, and -6 and -7. ‡These part numbers **available** **hout slug.** Specify by ordering with -0 for suffix 1. §No final x (Suffix No. 2) required on these types.

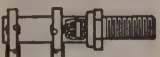


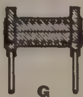


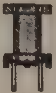


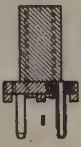


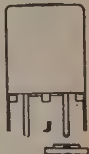


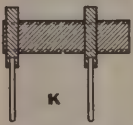


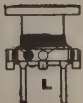


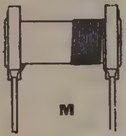


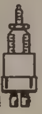


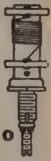












CAMBION supplies both variable and fixed inductance coils, wound on ceramic or molded forms, or supplied in electromagnetic and electrostatic shielded housings. This listing comprises the more popular items. Ask for complete catalog or for further information if you do not see what you want listed. Variable inductance ranges are supplied in standard EIA 10% overlapping incrementals, within overall ranges shown. Order by part and dash number or specify inductance range wanted if you do not know correct dash number.

## STANDARD COILS

| Cambion Part Number | Fig. | Inductance Range, μH Min. | Inductance Range, μH Max. | Net Each, Lots of 1-9 | 10-99 | 100-499 |
|---|---|---|---|---|---|---|
| 1505-1/-4* | N | .55 | 8.3 | $4.40 | $3.30 | $2.95 |
| 1505-5/-6* | N | 7.8 | 33.0 | 4.75 | 3.55 | 3.20 |
| 1505-7/-10* | N | 30.0 | 1000.0 | 4.30 | 3.25 | 2.88 |
| 1506-1/-2* | N | 1.0♯ | 4.7♯ | 4.75 | 3.55 | 3.28 |
| 1506-3/-5* | N | 4.5♯ | 40.0♯ | 5.20 | 3.90 | 3.50 |
| 1507-1/-7* | N | .11 | 8.1 | 4.30 | 3.25 | 2.88 |
| 2060-1/-2† | O | 2.0 | 7.0 | 1.99 | 1.49 | 1.33 |
| 2060-3/-4† | O | 6.5 | 18.0 | 2.17 | 1.63 | 1.45 |
| 2060-5† | O | 16.0 | 30.0 | 2.35 | 1.76 | 1.57 |
| 2060-6† | O | 28.0 | 63.0 | 2.54 | 1.91 | 1.70 |
| 2060-7† | O | 61.0 | 122.0 | 2.64 | 1.98 | 1.77 |
| 2060-8† | O | 120.0 | 243.0 | 2.89 | 2.17 | 1.94 |
| 2060-9/-10† | O | 238.0 | 800.0 | 3.10 | 2.33 | 2.08 |
| 3387-1/-34* | J | 1.27 | 39.5♯ | 3.75 | 2.81 | 2.51 |
| 3387-35/-37* | J | 47.0♯ | 120.0♯ | 4.35 | 3.25 | 2.91 |
| 3642-1/-32† | O | .090 | 45.5 | 3.00 | 2.25 | 2.01 |
| 3642-33/-41† | O | 39.0 | 255.0 | 3.05 | 2.29 | 2.04 |
| 3642-42/-49† | O | 224.0 | 1170.0 | 3.35 | 2.51 | 2.24 |
| 7105-1/-18‡ | L | .090 | 2.97 | 3.15 | 2.36 | 2.11 |
| 7105-19/-36‡ | L | 2.97 | 31.5 | 3.45 | 2.59 | 2.31 |
| 7105-37/-58‡ | L | 31.4 | 254.0 | 3.85 | 2.89 | 2.58 |
| 7105-59/-73‡ | L | 254.0 | 1050.0 | 4.25 | 3.20 | 2.85 |
| 7107-1/-25* | J | .090 | 11.0 | 2.27 | 1.70 | 1.52 |
| 7107-26/-49* | J | 12.0 | 1100.0 | 2.61 | 1.96 | 1.75 |
| 7120-1/-61§ | M | .095 | 11000.0 | 3.05 | 2.29 | 2.04 |

*Shielded. †Ceramic form. ‡Molded polypropylene/diallyl form. ♯mH. §Molded diallyl form.

## MICRO-MINIATURE INDUCTORS

Fixed and variable inductors designed for substrate compatibility. Epoxy encapsulated except 1072 and 1199 Series are shielded.

| Cambion Part Number | Illus. | Size, Inches | Min.-Max. Inductance Range, μH | Net Ea., Lots of 1-9 | 10-99 | 100-499 |
|---|---|---|---|---|---|---|
| 1050-1/-5<br>1050-6/-8<br>1050-9/-10 | | .080 dia. x .188 | 0.06–3.9<br>3.5–95.0<br>90.0–2000.0 | $2.64<br>3.00<br>3.50 | $1.98<br>2.25<br>2.63 | $1.77<br>2.01<br>2.35 |
| 1056-1/-13<br>1056-14/-25 | | .260 x .160 x .100 | .07–13.0<br>12.0–1300.0 | 6.85<br>10.20 | 5.15<br>7.65 | 4.16<br>6.85 |
| 1052-1/-8<br>1052-9/-10 | | .100 x .160 x .125* | 0.1–95.0<br>90.0–2000.0 | 4.95<br>5.40 | 3.70<br>4.05 | 3.30<br>3.60 |
| 1053-1/-32<br>1053-33/-44<br>1053-45/-49 | | .090 x .160 x .125* | 0.1–1000.0 fixed | 4.65<br>4.90<br>5.00 | 3.50<br>3.70<br>3.75 | 3.10<br>3.30<br>3.35 |
| 1054-1/-24<br>1054-25/-37<br>1054-38/-48<br>1054-49/-55 | | .075 dia. x .170 | 0.10–3300.0 fixed | 2.64<br>3.00<br>3.15<br>3.50 | 1.98<br>2.25<br>2.36<br>2.63 | 1.77<br>2.01<br>2.11<br>2.35 |
| 1072-1/-12<br>1072-13/-14<br>1072-45/-61 | | .125 x .155 x .125 | 0.1–10,000.0 fixed | 5.20<br>5.60<br>5.95 | 3.90<br>4.20<br>4.45 | 3.50<br>3.75<br>4.00 |
| 1199-1/-10<br>1199-11/-19<br>1199-20/-25 | | .344 x .344 x .270 | 0.8–3.9<br>3.9–120.0<br>120.0–1200.0 | 2.93<br>3.05<br>3.60 | 2.20<br>2.29<br>2.70 | 1.96<br>2.04<br>2.41 |

*1052-7/-10 and 1053-38/-49 size .125″ x .160″ x .125″.

**SEND FOR COMPLETE CAMBION CATALOG FOR FULL DATA ON ALL CAMBION PRODUCTS**

CAMBRIDGE THERMIONIC CORPORATION

# CAMBION®

# CHOKES—CAPACITORS
# TUNING SLUGS & CORES

## MS (MILITARY STANDARD) RF MOLDED CHOKES—QPL APPROVED

Molded epoxy, type LT4K chokes, conforming to MS spec indicated, per MIL-C-15305C. Tolerance (suffix -2, ±10%; suffix -3, ±20%) is as called out by MS spec. Popular ratings only listed. **All** MS nos. are available under each series. Order items not listed by applicable MS number. **Minimum standard package, 25 pieces.**

| Cambion Type Number | Military Standard Number | Inductance µH | Min. Q | Net Each, Lots of 25-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|
| 2950-14-2 | MS 91189-14 | 1.2 | 60 | 50c | 30c | 23c |
| 2950-17-2 | MS 91189-17 | 2.2 | 60 | 50c | 30c | 23c |
| 2950-29-2 | MS 91189-29 | 22.0 | 50 | 57c | 34c | 26c |
| 2950-33-2 | MS 91189-33 | 47.0 | 65 | 57c | 34c | 26c |
| 2950-37-2 | MS 91189-37 | 100.0 | 75 | 57c | 34c | 26c |
| 2950-38-2 | MS 91189-38 | 120.0 | 95 | 57c | 34c | 26c |
| 2960-21-3 | MS 75008-21 | .15 | 55 | 45c | 27c | 21c |
| 2960-22-3 | MS 75008-22 | .22 | 50 | 45c | 27c | 21c |
| 2960-24-3 | MS 75008-24 | .47 | 50 | 45c | 27c | 21c |
| 2960-26-2 | MS 75008-26 | .68 | 45 | 44c | 26c | 20c |
| 2960-28-2 | MS 75008-28 | 1.00 | 40 | 44c | 26c | 20c |
| 2960-32-2 | MS 75008-32 | 2.20 | 30 | 44c | 26c | 20c |
| 2960-34-2 | MS 75008-34 | 3.30 | 30 | 44c | 26c | 20c |
| 2960-36-2 | MS 75008-36 | 4.70 | 30 | 44c | 26c | 20c |
| 2960-37-2 | MS 75008-37 | 5.60 | 30 | 44c | 26c | 20c |
| 2960-38-2 | MS 75008-38 | 6.8 | 30 | 44c | 26c | 20c |
| 2960-40-2 | MS 75008-40 | 10.0 | 30 | 44c | 26c | 20c |
| 2960-41-2 | MS 75008-41 | 12.0 | 50 | 44c | 26c | 20c |
| 2960-44-2 | MS 75008-44 | 22.0 | 60 | 44c | 26c | 20c |
| 3640-1-3 | MS 18130-1 | .15 | 50 | 41c | 24c | 18c |
| 3640-5-3 | MS 18130-2 | .22 | 50 | 41c | 24c | 18c |
| 3640-9-3 | MS 18130-3 | .33 | 45 | 41c | 24c | 18c |
| 3640-13-3 | MS 18130-4 | .47 | 45 | 41c | 24c | 18c |
| 3640-21-2 | MS 18130-8 | 1.00 | 50 | 44c | 26c | 20c |
| 3640-23-2 | MS 18130-9 | 1.20 | 33 | 44c | 26c | 20c |
| 3640-25-2 | MS 18130-10 | 1.50 | 33 | 44c | 26c | 20c |
| 3640-27-2 | MS 18130-11 | 1.80 | 33 | 44c | 26c | 20c |
| 3640-29-2 | MS 18130-12 | 2.20 | 33 | 44c | 26c | 20c |
| 3640-31-2 | MS 18130-13 | 2.70 | 33 | 44c | 26c | 20c |
| 3640-33-2 | MS 18130-14 | 3.30 | 33 | 44c | 26c | 20c |
| 3640-35-2 | MS 18130-15 | 3.90 | 33 | 44c | 26c | 20c |
| 3640-39-2 | MS 18130-17 | 5.60 | 45 | 44c | 26c | 20c |
| 3640-45-2 | MS 18130-20 | 10.0 | 55 | 44c | 26c | 20c |
| 3640-47-2 | MS 18130-21 | 12.0 | 65 | 44c | 26c | 20c |
| 3640-53-2 | MS 18130-24 | 22.0 | 75 | 44c | 26c | 20c |
| 3640-57-2 | MS 18130-26 | 33.0 | 65 | 50c | 30c | 23c |
| 3710-3-2 | MS 75052-3 | 68.0 | 70 | 47c | 28c | 21c |
| 3710-5-2 | MS 75052-5 | 100.0 | 65 | 62c | 37c | 28c |
| 3711-2-2 | MS 75053-2 | 220.0 | 80 | 66c | 39c | 30c |
| 3712-1-2 | MS 75054-1 | 470.0 | 80 | 66c | 39c | 30c |
| 3712-4-2 | MS 75054-4 | 820.0 | 75 | 70c | 42c | 32c |
| 3712-5-2 | MS 75054-5 | 1000.0 | 70 | 70c | 42c | 32c |

## OTHER CHOKES

Order by CAMBION or MS Part and Dash No. If correct dash no. not known, state inductance rating desired. **Minimum standard package, 25 pieces.**

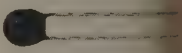
| Cambion Part Number | Fig. | Size, Inches | Description | Min.-Max. Inductance Range, µH | Net Each, Lots of 25-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| 3115-1/-2 | A | .188 dia. x .625 | VHF encapsulated | .09–.40 | $0.43 | $0.38 | $0.36 |
| 3115-3/-4 | A | | | .62–.80 | .59 | .52 | .49 |
| 3201-1/-12 | B | .180 dia. x .395 | MS 75087-1/-12* | .10–.82 | .81 | .72 | .68 |
| 3201-13/-26 | B | | MS 75088-1/-14* | 1.0–12.0 | .81 | .72 | .68 |
| 3201-27/-37 | B | | MS 75089-1/-11* | 15.0–100.0 | .81 | .72 | .68 |
| 3201-38/-65 | B | | MS 75089-12/-39* | 120.0–22,000.0 | 1.56 | 1.39 | 1.31 |
| 3201-66/-73 | B | | MS 75089-40/-47* | 27,000.0–100,000.0 | 1.85 | 1.65 | 1.56 |
| 3399-1/-13 | C | .095 dia. x .250 | MS 75083-1/-13† | .10–1.0 | .66 | .39 | .30 |
| 3399-14/-30 | C | | MS 75084-1/-17† | 1.2–27.0 | 1.17 | .70 | .53 |
| 3399-31/-40 | C | | MS 75085-1/-10† | 33.0–180.0 | 1.33 | .80 | .61 |
| 3399-41/-49 | C | | MS 75085-11/-49† | 220.0–1000.0 | 1.43 | .86 | .65 |
| 3628-1/-21 | § | .155 dia. x .375 | MS 95038-1/-21† | 36.0–240.0 | .96 | .58 | .44 |
| 3635-1/-13 | D | .375 dia. x .375 | Encapsulated/ shielded | 1.0–10.0 | 1.03 | .92 | .86 |
| 3635-14/-35 | D | | | 12.0–680.0 | 1.19 | 1.07 | 1.00 |
| 3635-36/-48 | D | | | 820.0–8.2‡ | 1.36 | 1.21 | 1.14 |
| 3635-49/-61 | D | | | 10.0‡–100.0‡ | 1.52 | 1.35 | 1.27 |
| 7108-1/-25 | E | .125 x .228 x .365 | Molded | .10–10.0 | .80 | .71 | .67 |
| 7108-26/-30 | E | | | 12.0–27.0 | 1.09 | .97 | .91 |
| 7108-31/-49 | E | | | 33.0–1000.0 | 1.31 | 1.17 | 1.10 |

*Conform to electrical parameters of MS specification indicated. CAMBION mechanical design provides slightly larger case (dia.) to provide more reliable unit. †Conform to MS specification indicated and to MIL-C-15305. Qualification in process. ‡mH. §Similar to MS Series 3640, above.

A

B

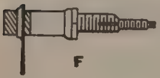
C



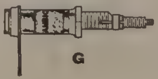
D

E

## FIXED AND VARIABLE CAPACITORS



F



G

H

J

Fixed and variable; feed thru and standoff types in both glass and ceramic.

| Cambion Type Number | Fig. | Description | Capacitance pF | Net Each, Lots of 1-9 | 10-99 | 100-499 |
|---|---|---|---|---|---|---|
| 1869-1 | F | Variable, glass | .85–7.0 | $3.15 | $2.36 | $2.11 |
| 2068-01† | G | Variable, ceramic | .5–4.5 | 1.86 | 1.40 | 1.25 |
| 2069-01‡ | G | Variable, ceramic | .5–4.5 | 1.86 | 1.40 | 1.25 |
| 2098-01* | G | Variable, ceramic | 1.0–8.0 | 1.91 | 1.43 | 1.28 |
| 3251-25-1 | H | Fixed, ceramic, standoff | 100 | 1.17 | .88 | .78 |
| 3252-37-2 | H | Fixed, ceramic, standoff | 1000 | 1.11 | .83 | .74 |
| 3252-39-2 | H | Fixed, ceramic, standoff | 1500 | 1.11 | .83 | .74 |
| 3265-37-2 | J | Fixed, ceramic, feed thru | 1000 | 1.69 | 1.27 | 1.13 |

Formerly Cambion Type No.: *CS6-6; †CST-6; ‡PCST-6.

## TUNING SLUGS, CORES AND TUNING TOOLS

| Cambion Type Number | Fig. | Material | Color | Frequency MHz | Net Each, Lots of 25-99 | 100-499 | 500-999 | 1000-2499 |
|---|---|---|---|---|---|---|---|---|
| 2018-02-06 | K | Brass | ........ | 100.0 up | $0.24 | $0.21 | $0.18 | $0.17 |
| 2250-01-06 | L | Brass | ........ | 100.0 up | .23 | .19 | .17 | .15 |
| 2250-02-06 | L | Brass | ........ | 100.0 up | .23 | .19 | .17 | .15 |
| 3225-02-21 | M | Powdered iron | Red | 1.0– 20.0 | .05 | .045 | .04 | .035 |
| 3225-03-21 | M | Powdered iron | Green | 20.0– 50.0 | .05 | .045 | .04 | .035 |
| 3225-04-21 | M | Powdered iron | White | 50.0–200.0 | .05 | .045 | .04 | .035 |
| 3226-02-21 | N | Powdered iron | Red | 1.0– 20.0 | .05 | .045 | .04 | .035 |
| 3226-03-21 | N | Powdered iron | Green | 20.0– 50.0 | .05 | .045 | .04 | .035 |
| 3226-04-21 | N | Powdered iron | White | 50.0–200.0 | .05 | .045 | .04 | .035 |
| 3227-02-21 | O | Powdered iron | Red | 1.0– 20.0 | .085 | .07 | .065 | .055 |
| 3227-03-21 | O | Powdered iron | Green | 20.0– 50.0 | .085 | .07 | .065 | .055 |
| 3227-04-21 | O | Powdered iron | White | 50.0–200.0 | .085 | .07 | .065 | .055 |
| 2063-02-07 | P | Powdered iron | Red | 1.0– 20.0 | .19 | .17 | .14 | .13 |
| 2063-05-07 | P | Powdered iron | Red | 1.0– 20.0 | .19 | .17 | .14 | .13 |
| 2063-07-07 | P | Powdered iron | White | 50.0–200.0 | .19 | .17 | .14 | .13 |
| 2063-08-07 | P | Powdered iron | Red | 1.0– 20.0 | .19 | .17 | .14 | .13 |
| 2063-15-07 | P | Powdered iron | Green | 20.0– 50.0 | .19 | .17 | .14 | .13 |
| 2063-19-07 | P | Powdered iron | Red | 1.0– 20.0 | .19 | .17 | .14 | .13 |

K

L

M

N

O

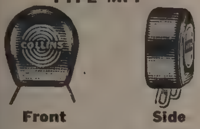
P

Tuning tools with paper phenolic handle.

| Cambion Type No. | Tip | Overall Length | Net Each |
|---|---|---|---|
| 1971-1 | Brass | 4⅜″ | $0.85 |
| 2033-1 | Brass | 4″ | .85 |
| 2230-1 | Nylon | 4³⁄₁₆″ | 1.10 |
| 2375-1 | Brass | 4″ | .85 |

# Molded Toroids, Inductors

**TYPE MPF**



**TYPE HSA**

**TYPE HSD**

**TYPE PCT**

**Collins molded toroids are built per MIL-T-27B, Grade 5, ss R. All hermetically sealed, metal-clad types are built per L-T-27B, Grade 4, Class R. Inductance tolerance ±1% unless erwise noted.**

## CORE TYPE 050 SUBMINIATURE TOROIDS

### MOLDED PLASTIC TYPE MPF

lded in hi-temp resin with tinned brass terminals .170″ long, ced 60° apart. Normally used for frequencies up to 30 kHz. mp. range, −55° C to +105° C. Mounts by 3-48 tapped screw e in center. **Size:** 0.688″ w. x 0.738″ h. x 0.375″ thick.

| Collins Number | Ind., mH at 1 V rms | $R_{DC}$, Ω* | Collins Number | Ind., mH at 1 V rms | $R_{DC}$, Ω* |
|---|---|---|---|---|---|
| PF-050-1B | 5† | 2.3 | MPF-050-20B | 150 | 78.0 |
| PF-050-2B | 6† | 3.1 | MPF-050-21B | 175 | 85.0 |
| PF-050-3B | 7.2† | 3.5 | MPF-050-22B | 200 | 115 |
| PF-050-4B | 8.6 | 4.2 | MPF-050-23B | 240 | 130 |
| PF-050-5B | 10 | 4.9 | MPF-050-24B | 300 | 150 |
| PF-050-6B | 12 | 5.4 | MPF-050-25B | 360 | 190 |
| PF-050-7B | 15 | 7.3 | MPF-050-26B | 430 | 210 |
| PF-050-8B | 17.5 | 8.5 | MPF-050-27B | 500 | 290 |
| PF-050-9B | 20 | 11.2 | MPF-050-28B | 600 | 320 |
| PF-050-10B | 24 | 13.1 | MPF-050-29B | 720 | 350 |
| PF-050-11B | 30 | 14.3 | MPF-050-30B | 860 | 380 |
| PF-050-12B | 36 | 18.0 | MPF-050-31B | 1000 | 520 |
| PF-050-13B | 43 | 22.0 | MPF-050-32B | 1200 | 580 |
| PF-050-14B | 50 | 25.0 | MPF-050-33B | 1500 | 780 |
| PF-050-15B | 60 | 33.0 | MPF-050-34B | 1750 | 880 |
| PF-050-16B | 72 | 35.0 | MPF-050-35B | 2000 | 1050 |
| PF-050-17B | 86 | 39.0 | MPF-050-36B | 2400 | 1230 |
| PF-050-18B | 100 | 49.0 | MPF-050-37B | 3000 | 1700 |
| PF-050-19B | 120 | 59.0 | | | |

## CORE TYPES 051 AND 054 TOROIDS

ysically identical to Type 050 toroids, but with different perme- ility core. Provides high Q and inductance.

### CORE TYPE 051 (Frequencies to 100 kHz)

| | | | | | |
|---|---|---|---|---|---|
| PF-051-1B | 1‡ | 1.2 | MPF-051-19B | 24 | 24 |
| PF-051-2B | 1.2† | 1.3 | MPF-051-20B | 30 | 32 |
| PF-051-3B | 1.5† | 1.8 | MPF-051-21B | 36 | 34 |
| PF-051-4B | 1.75† | 2.0 | MPF-051-22B | 43 | 47 |
| PF-051-5B | 2.0† | 2.1 | MPF-051-23B | 50 | 51 |
| PF-051-6B | 2.4† | 2.9 | MPF-051-24B | 60 | 73 |
| PF-051-7B | 3.0† | 3.2 | MPF-051-25B | 72 | 79 |
| PF-051-8B | 3.6† | 4.6 | MPF-051-26B | 86 | 86 |
| PF-051-9B | 4.3 | 4.8 | MPF-051-27B | 100 | 115 |
| PF-051-10B | 5.0 | 5.3 | MPF-051-28B | 120 | 130 |
| PF-051-11B | 6.0 | 7.2 | MPF-051-29B | 150 | 180 |
| PF-051-12B | 7.2 | 8.1 | MPF-051-30B | 175 | 190 |
| PF-051-13B | 8.6 | 8.7 | MPF-051-31B | 200 | 210 |
| PF-051-14B | 10 | 12 | MPF-051-32B | 240 | 300 |
| PF-051-15B | 12 | 12.5 | MPF-051-33B | 300 | 330 |
| PF-051-16B | 15 | 14.0 | MPF-051-34B | 360 | 350 |
| PF-051-17B | 17.5 | 19.5 | MPF-051-35B | 430 | 470 |
| PF-051-18B | 20 | 22 | MPF-051-36B | 500 | 510 |

### CORE TYPE 054 (Frequencies to 5 MHz)

| | | | | | |
|---|---|---|---|---|---|
| PF-054-1B | 0.05‡ | 0.8 | MPF-054-17B | 0.86 | 7.1 |
| PF-054-2B | 0.06‡ | 0.9 | MPF-054-18B | 1.0 | 7.8 |
| PF-054-3B | 0.072‡ | 1.0 | MPF-054-19B | 1.2 | 8.2 |
| PF-054-4B | 0.086‡ | 1.05 | MPF-054-20B | 1.5 | 11.0 |
| PF-054-5B | 0.1‡ | 1.1 | MPF-054-21B | 1.75 | 11.7 |
| PF-054-6B | 0.12‡ | 1.25 | MPF-054-22B | 2.0 | 12.8 |
| PF-054-7B | 0.15‡ | 1.7 | MPF-054-23B | 2.4 | 14.0 |
| PF-054-8B | 0.175‡ | 2.0 | MPF-054-24B | 3.0 | 18.7 |
| PF-054-9B | 0.2† | 2.2 | MPF-054-25B | 3.6 | 20.6 |
| PF-054-10B | 0.24† | 2.4 | MPF-054-26B | 4.3 | 22.4 |
| PF-054-11B | 0.3† | 2.7 | MPF-054-27B | 5.0 | 30.0 |
| PF-054-12B | 0.36† | 2.9 | MPF-054-28B | 6.0 | 33.6 |
| PF-054-13B | 0.43† | 3.2 | MPF-054-29B | 7.2 | 37.6 |
| PF-054-14B | 0.5† | 4.4 | MPF-054-30B | 8.6 | 50.5 |
| PF-054-15B | 0.6† | 5.0 | MPF-054-31B | 10.0 | 54.5 |
| PF-054-16B | 0.72† | 5.4 | | | |

20% tol. †±1.5% tol. ‡±2.5% tol.

| For Collins Number | Net Each, Lots of | | | | |
|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
| PF-050-1B thru MPF-050-17B | $6.55 | $5.24 | $4.46 | $3.93 | $3.14 |
| PF-050-18B thru MPF-050-30B | 7.92 | 6.34 | 5.39 | 4.75 | 3.81 |
| PF-050-31B thru MPF-050-33B | 9.71 | 7.77 | 6.60 | 5.83 | 4.66 |
| PF-050-34B thru MPF-050-37B | 10.73 | 8.58 | 7.29 | 6.44 | 5.15 |
| PF-051-1B thru MPF-051-22B | 7.21 | 5.76 | 4.90 | 4.32 | 3.45 |
| PF-051-23B thru MPF-051-29B | 7.98 | 6.38 | 5.42 | 4.79 | 3.83 |
| PF-051-30B thru MPF-051-36B | 9.30 | 7.44 | 6.33 | 5.58 | 4.47 |
| PF-054-1B thru MPF-054-21B | 5.64 | 4.51 | 3.84 | 3.39 | 2.71 |
| PF-054-22B thru MPF-054-31B | 6.33 | 5.06 | 4.30 | 3.80 | 3.04 |

## HERMETICALLY SEALED TYPE HSA AND HSD

Sealed version of the Type MPF gives optimum case size for printed circuit applications. Compression glass header gives seal. For inductance value and $R_{DC}$ refer to corresponding MPF number. **HSD:** Mounting tab 3/32″ w. x 3/16″ long, leads spaced .150″ x 1 7/8″ long min.; size, 45/64″ O.D. x 7/16″ thick max. **HSA:** Leads spaced .484″ x 1.125″ long min.; size, .781″ sq. x .375″ thick max.

| For Collins Number | Net Each, Lots of | | | | |
|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
| HSA or HSD-050-1 thru -17 | $ 8.91 | $7.13 | $6.05 | $5.35 | $4.28 |
| HSA or HSD-050-18 thru -30 | 10.18 | 8.14 | 6.92 | 6.11 | 4.88 |
| HSA or HSD-050-31 thru -33 | 12.10 | 9.68 | 8.23 | 7.26 | 5.81 |
| HSA or HSD-050-34 thru -37 | 12.73 | 10.19 | 8.66 | 7.65 | 6.11 |
| HSA or HSD-051-1 thru -22 | 9.35 | 7.48 | 6.36 | 5.61 | 4.49 |
| HSA or HSD-051-23 thru -29 | 10.29 | 8.23 | 7.00 | 6.17 | 4.94 |
| HSA or HSD-051-30 thru -36 | 11.55 | 9.24 | 7.85 | 6.93 | 5.54 |
| HSA or HSD-054-1 thru -21 | 7.92 | 6.33 | 5.39 | 4.75 | 3.80 |
| HSA or HSD-054-22 thru -31 | 8.45 | 6.75 | 5.74 | 5.07 | 4.05 |

## NEW PRINTED CIRCUIT TOROIDS

### MOLDED EPOXY TYPE PCT

All Collins new printed circuit toroids are built per MIL-T-27B, Grade 5, Class S. Molded in high temp. epoxy resin—allowing operation at −55° C to +130° C temperatures. Leads spaced 0.1″ x 1.50″ long min. **Size:** 0.660″ O.D. x 0.390″ thick max. Mounting is accomplished by soldering directly into place, eliminating the requirement for mounting hardware. **Inductance Tol:** ±1% unless otherwise noted.

### TYPE PCT-050 (Frequencies to 30 kHz)

| Collins Number | Ind., mH at 1 V rms | $R_{DC}$ Ohms* | Collins Number | Ind., mH at 1 V rms | $R_{DC}$ Ohms* |
|---|---|---|---|---|---|
| PCT-050-1 | 5† | 2.3 | PCT-050-20 | 150 | 78.0 |
| PCT-050-2 | 6† | 3.1 | PCT-050-21 | 175 | 85.0 |
| PCT-050-3 | 7.2† | 3.5 | PCT-050-22 | 200 | 115 |
| PCT-050-4 | 8.6 | 4.2 | PCT-050-23 | 240 | 130 |
| PCT-050-5 | 10 | 4.9 | PCT-050-24 | 300 | 150 |
| PCT-050-6 | 12 | 5.4 | PCT-050-25 | 360 | 190 |
| PCT-050-7 | 15 | 7.3 | PCT-050-26 | 430 | 210 |
| PCT-050-8 | 17.5 | 8.5 | PCT-050-27 | 500 | 290 |
| PCT-050-9 | 20 | 11.2 | PCT-050-28 | 600 | 320 |
| PCT-050-10 | 24 | 13.1 | PCT-050-29 | 720 | 350 |
| PCT-050-11 | 30 | 14.3 | PCT-050-30 | 860 | 380 |
| PCT-050-12 | 36 | 18.0 | PCT-050-31 | 1000 | 520 |
| PCT-050-13 | 43 | 22.0 | PCT-050-32 | 1200 | 580 |
| PCT-050-14 | 50 | 25.0 | PCT-050-33 | 1500 | 780 |
| PCT-050-15 | 60 | 33.0 | PCT-050-34 | 1750 | 880 |
| PCT-050-16 | 72 | 35.0 | PCT-050-35 | 2000 | 1050 |
| PCT-050-17 | 86 | 39.0 | PCT-050-36 | 2400 | 1230 |
| PCT-050-18 | 100 | 49.0 | PCT-050-37 | 3000 | 1700 |
| PCT-050-19 | 120 | 59.0 | | | |

### TYPE PCT-051 (Frequencies to 100 kHz)

| | | | | | |
|---|---|---|---|---|---|
| PCT-051-1 | 1‡ | 1.2 | PCT-051-19 | 24 | 24 |
| PCT-051-2 | 1.2† | 1.3 | PCT-051-20 | 30 | 32 |
| PCT-051-3 | 1.5† | 1.8 | PCT-051-21 | 36 | 34 |
| PCT-051-4 | 1.75† | 2.0 | PCT-051-22 | 43 | 47 |
| PCT-051-5 | 2.0† | 2.1 | PCT-051-23 | 50 | 51 |
| PCT-051-6 | 2.4† | 2.9 | PCT-051-24 | 60 | 73 |
| PCT-051-7 | 3.0† | 3.2 | PCT-051-25 | 72 | 79 |
| PCT-051-8 | 3.6† | 4.6 | PCT-051-26 | 86 | 86 |
| PCT-051-9 | 4.3 | 4.8 | PCT-051-27 | 100 | 115 |
| PCT-051-10 | 5.0 | 5.3 | PCT-051-28 | 120 | 130 |
| PCT-051-11 | 6.0 | 7.2 | PCT-051-29 | 150 | 180 |
| PCT-051-12 | 7.2 | 8.1 | PCT-051-30 | 175 | 190 |
| PCT-051-13 | 8.6 | 8.7 | PCT-051-31 | 200 | 210 |
| PCT-051-14 | 10 | 12.0 | PCT-051-32 | 240 | 300 |
| PCT-051-15 | 12 | 12.5 | PCT-051-33 | 300 | 330 |
| PCT-051-16 | 15 | 14.0 | PCT-051-34 | 360 | 350 |
| PCT-051-17 | 17.5 | 19.5 | PCT-051-35 | 430 | 470 |
| PCT-051-18 | 20 | 22 | PCT-051-36 | 500 | 510 |

### TYPE PCT-054 (Frequencies to 5 MHz)

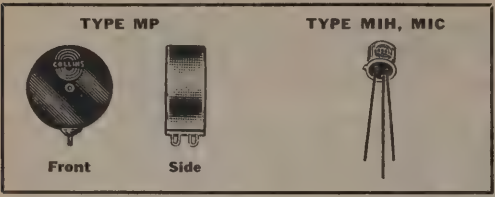
| | | | | | |
|---|---|---|---|---|---|
| PCT-054-1 | 0.05‡ | 0.8 | PCT-054-17 | 0.86 | 7.1 |
| PCT-054-2 | 0.06‡ | 0.9 | PCT-054-18 | 1.0 | 7.8 |
| PCT-054-3 | 0.072‡ | 1.0 | PCT-054-19 | 1.2 | 8.2 |
| PCT-054-4 | 0.086‡ | 1.05 | PCT-054-20 | 1.5 | 11.0 |
| PCT-054-5 | 0.1‡ | 1.1 | PCT-054-21 | 1.75 | 11.7 |
| PCT-054-6 | 0.12‡ | 1.25 | PCT-054-22 | 2.0 | 12.8 |
| PCT-054-7 | 0.15‡ | 1.7 | PCT-054-23 | 2.4 | 14.0 |
| PCT-054-8 | 0.175‡ | 2.0 | PCT-054-24 | 3.0 | 18.7 |
| PCT-054-9 | 0.2† | 2.2 | PCT-054-25 | 3.6 | 20.6 |
| PCT-054-10 | 0.24† | 2.4 | PCT-054-26 | 4.3 | 22.4 |
| PCT-054-11 | 0.3† | 2.7 | PCT-054-27 | 5.0 | 30.0 |
| PCT-054-12 | 0.36† | 2.9 | PCT-054-28 | 6.0 | 33.6 |
| PCT-054-13 | 0.43† | 3.2 | PCT-054-29 | 7.2 | 37.6 |
| PCT-054-14 | 0.5† | 4.4 | PCT-054-30 | 8.6 | 50.5 |
| PCT-054-15 | 0.6† | 5.0 | PCT-054-31 | 10.0 | 54.5 |
| PCT-054-16 | 0.72† | 5.4 | | | |

*±20% tol. †±1.5% tol. ‡±2.5% tol.

| For Collins Number | Net Each, Lots of | | | | |
|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
| PCT-050-1 thru PCT-050-17 | $ 6.22 | $4.91 | $4.13 | $3.60 | $2.81 |
| PCT-050-18 thru PCT-050-30 | 7.54 | 5.95 | 5.01 | 4.37 | 3.42 |
| PCT-050-31 thru PCT-050-33 | 9.27 | 7.33 | 6.16 | 5.39 | 4.22 |
| PCT-050-34 thru PCT-050-37 | 10.23 | 8.09 | 6.80 | 5.94 | 4.65 |
| PCT-051-1 thru PCT-051-22 | 6.88 | 5.43 | 4.57 | 3.99 | 3.12 |
| PCT-051-23 thru PCT-051-29 | 7.59 | 6.00 | 5.04 | 4.40 | 3.44 |
| PCT-051-30 thru PCT-051-36 | 8.86 | 7.00 | 5.89 | 5.14 | 4.03 |
| PCT-054-1 thru PCT-054-21 | 5.48 | 4.35 | 3.67 | 3.22 | 2.54 |
| PCT-054-22 thru PCT-054-31 | 6.11 | 4.84 | 4.08 | 3.58 | 2.82 |

**LARGER QUANTITY PRICES AVAILABLE ON REQUEST.**
**CUSTOM DESIGNS ALSO AVAILABLE**

# COLLINS Molded Toroids, Inductors



## CORE TYPE 206 TOROIDS

Molded Type MP hi-temp resin package features excellent Q characteristics compatible with size and weight requirements of portable and airborne equipment. Normally used in 1 kHz to 20 kHz range. Temp. range, −55° C to +105° C. Tinned brass terminals 3/16" long. Tapped center mounting takes 6-32 screw. **Size:** 1 1/16" O.D. x 1/2" thick. **Hermetically sealed (Type HS) toroids available on request.**

| Collins Number | Ind., mH at 1 V rms | $R_{DC}$, Ohms* | Collins Number | Ind., mH at 1 V rms | $R_{DC}$, Ohms* |
|---|---|---|---|---|---|
| MP-206-1B | 5† | 0.92 | MP-206-20B | 150 | 33 |
| MP-206-2B | 6† | 1.3 | MP-206-21B | 175 | 35.2 |
| MP-206-3B | 7.2† | 1.4 | MP-206-22B | 200 | 46 |
| MP-206-4B | 8.6† | 2.0 | MP-206-23B | 240 | 51 |
| MP-206-5B | 10† | 2.1 | MP-206-24B | 300 | 57 |
| MP-206-6B | 12.0 | 2.3 | MP-206-25B | 360 | 80 |
| MP-206-7B | 15.0 | 3.3 | MP-206-26B | 430 | 86 |
| MP-206-8B | 17.5 | 3.5 | MP-206-27B | 500 | 90 |
| MP-206-9B | 20 | 3.7 | MP-206-28B | 600 | 128 |
| MP-206-10B | 24 | 5.2 | MP-206-29B | 720 | 142 |
| MP-206-11B | 30 | 5.8 | MP-206-30B | 860 | 195 |
| MP-206-12B | 36 | 8.0 | MP-206-31B | 1000 | 213 |
| MP-206-13B | 43 | 9.0 | MP-206-32B | 1200 | 292 |
| MP-206-14B | 50 | 9.4 | MP-206-33B | 1500 | 326 |
| MP-206-15B | 60 | 13.0 | MP-206-34B | 1750 | 370 |
| MP-206-16B | 72 | 14.1 | MP-206-35B | 2000 | 475 |
| MP-206-17B | 86 | 19.5 | MP-206-36B | 2400 | 520 |
| MP-206-18B | 100 | 21 | MP-206-37B | 3000 | 750 |
| MP-206-19B | 120 | 23 | | | |

## CORE TYPE 930 TOROIDS

In molded hi-temp resin case Type MP. Provides higher Q, power level and stability with only slight increase in weight and volume. Most useful in 500 Hz to 10 kHz range. Mounts with center 6-32 tapped screw hole. Temp. range, −55° C to +105° C. Tinned brass terminals 7/32" long. **Size:** 1 5/16" O.D. x 23/32" thick. **Hermetically sealed (Type HS) toroids available on request.**

| | | | | | |
|---|---|---|---|---|---|
| MP-930-1B | 5‡ | 0.6 | MP-930-25B | 360 | 40.5 |
| MP-930-2B | 6‡ | 0.67 | MP-930-26B | 430 | 44.2 |
| MP-930-3B | 7.2† | 0.88 | MP-930-27B | 500 | 60.2 |
| MP-930-4B | 8.6† | 1.0 | MP-930-28B | 600 | 65.9 |
| MP-930-5B | 10† | 1.07 | MP-930-29B | 720 | 91 |
| MP-930-6B | 12† | 1.19 | MP-930-30B | 860 | 99.7 |
| MP-930-7B | 15† | 1.65 | MP-930-31B | 1000 | 107 |
| MP-930-8B | 17.5† | 1.79 | MP-930-32B | 1200 | 148 |
| MP-930-9B | 20† | 1.89 | MP-930-33B | 1500 | 185 |
| MP-930-10B | 24 | 2.62 | MP-930-34B | 1750 | 225 |
| MP-930-11B | 30 | 2.93 | MP-930-35B | 2000 | 240 |
| MP-930-12B | 36 | 4.07 | MP-930-36B | 2400 | 260 |
| MP-930-13B | 43 | 4.38 | MP-930-37B | 3000 | 372 |
| MP-930-14B | 50 | 6.0 | MP-930-38B | 3600 | 407 |
| MP-930-15B | 60 | 6.61 | MP-930-39B | 4300 | 562 |
| MP-930-16B | 72 | 7.2 | MP-930-40B | 5000 | 605 |
| MP-930-17B | 86 | 9.91 | MP-930-41B | 6000 | 664 |
| MP-930-18B | 100 | 10.6 | MP-930-42B | 7200 | 916 |
| MP-930-19B | 120 | 14.66 | MP-930-43B | 8600 | 1002 |
| MP-930-20B | 150 | 16.5 | MP-930-44B | 10000 | 1085 |
| MP-930-21B | 175 | 17.76 | MP-930-45B | 12000 | 1190 |
| MP-930-22B | 200 | 23.9 | MP-930-46B | 15000 | 1700 |
| MP-930-23B | 240 | 26.2 | MP-930-47B | 17500 | 1800 |
| MP-930-24B | 300 | 37 | | | |

*±20%. †±1.5%, ‡±2.5%, all others ±1.0%.

| For Collins Number | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|
| MP-206-1B thru MP-206-20B | $ 6.80 | $ 5.43 | $4.62 | $4.08 | $3.26 |
| MP-206-21B thru MP-206-30B | 7.54 | 6.03 | 5.13 | 4.52 | 3.62 |
| MP-206-31B thru MP-206-37B | 9.35 | 7.48 | 6.36 | 5.61 | 4.49 |
| MP-930-1B thru MP-930-27B | 6.49 | 5.19 | 4.41 | 3.89 | 3.11 |
| MP-930-28B thru MP-930-37B | 7.95 | 6.36 | 5.40 | 4.77 | 3.82 |
| MP-930-38B thru MP-930-43B | 10.29 | 8.24 | 6.99 | 6.17 | 4.94 |
| MP-930-44B thru MP-930-47B | 11.50 | 9.20 | 7.84 | 6.91 | 5.53 |

## CORE TYPE 395 TOROIDS

In molded hi-temp resin case Type MP. Provides higher Q, power level and stability with only slight increment in weight and volume. Normally used up to 50 kHz. Mounts with 6-32 center tapped screw hole. Temp. range, −55° C to +105° C. Tinned brass terminals 7/32" long. **Size:** 1 5/16" O.D. x 23/32" thick. **Hermetically sealed (Type HS) toroids available on request.**

| Collins Number | Ind., mH at 1 V rms | $R_{DC}$, Ohms* | Collins Number | Ind., mH at 1 V rms | $R_{DC}$, Ohms* |
|---|---|---|---|---|---|
| MP-395-1B | 5.0† | 1.0 | MP-395-15B | 60.0 | 15.0 |
| MP-395-2B | 6.0† | 1.5 | MP-395-16B | 72.0 | 16.5 |
| MP-395-3B | 7.2† | 1.6 | MP-395-17B | 86.0 | 18.0 |
| MP-395-4B | 8.6† | 1.8 | MP-395-18B | 100 | 24.0 |
| MP-395-5B | 10.0† | 2.3 | MP-395-19B | 120 | 26.5 |
| MP-395-6B | 12.0† | 2.5 | MP-395-20B | 150 | 38.0 |
| MP-395-7B | 15.0 | 2.8 | MP-395-21B | 175 | 41.0 |
| MP-395-8B | 17.5 | 4.0 | MP-395-22B | 200 | 44.0 |
| MP-395-9B | 20.0 | 4.3 | MP-395-23B | 240 | 60.0 |
| MP-395-10B | 24.0 | 5.9 | MP-395-24B | 300 | 67.0 |
| MP-395-11B | 30.0 | 6.6 | MP-395-25B | 360 | 92.0 |
| MP-395-12B | 36.0 | 7.3 | MP-395-26B | 430 | 102 |
| MP-395-13B | 43.0 | 10.0 | MP-395-27B | 500 | 110 |
| MP-395-14B | 50.0 | 11.0 | | | |

*±20%. †±1.5%, all others ±1.0%.

| For Collins Number | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|
| MP-395-1B thru MP-395-15B | $7.04 | $5.63 | $4.79 | $4.22 | $3.38 |
| MP-395-16B thru MP-395-27B | 7.76 | 6.20 | 5.27 | 4.65 | 3.72 |

## TYPE MIH MICRO INDUCTORS

Meet MIL-C-15305, Type LT7J. Hermetically sealed in nickel alloy TO-5 type cases. Permits machine insertion to printed circuit boards. High Q and miniature size for any use. Dielectric strength, 100 V rms. Insulation resistance 10,000 megs min. at 100 VDC. Temp. range, −55° C to +85° C, with inductance change ±2% over −20° C to +85° C range.

| Collins Number | Inductance µH | $R_{DC}$, Ohms* | Collins Number | Inductance mH | $R_{DC}$ Ohms* |
|---|---|---|---|---|---|
| MIH-1 | 1.0±20% | .10† | MIH-23 | .15±3% | 5.5 |
| MIH-2 | 1.5±20% | .10† | MIH-24 | .16±3% | 7.1 |
| MIH-3 | 2.2±20% | .15† | MIH-25 | .18±3% | 7.5 |
| MIH-4 | 3.3±20% | .35† | MIH-26 | .20±3% | 7.9 |
| MIH-5 | 4.7±20% | 2.00† | MIH-27 | .22±3% | 8.3 |
| MIH-6 | 6.8±20% | 2.00† | MIH-28 | .24±3% | 8.8 |
| MIH-7 | 10.0±10% | 2.00† | MIH-29 | .27±3% | 9.3 |
| MIH-8 | 12.0±10% | 2.00† | MIH-30 | .30±3% | 11.8 |
| MIH-9 | 15.0±10% | 2.00† | MIH-31 | .33±3% | 12.1 |
| MIH-10 | 18.0±10% | 2.00† | MIH-32 | .36±3% | 12.5 |
| MIH-11 | 22.0±10% | 2.00† | MIH-33 | .39±3% | 13.0 |
| MIH-12 | 27.0±10% | 2.00† | MIH-34 | .43±3% | 13.6 |
| MIH-13 | 33.0±10% | 2.05 | MIH-35 | .47±3% | 17.0 |
| MIH-14 | 39.0±5% | 2.20 | MIH-36 | .51±3% | 18.1 |
| MIH-15 | 47.0±5% | 2.35 | MIH-37 | .56±3% | 19.6 |
| MIH-16 | 56.0±5% | 2.45 | MIH-38 | .62±3% | 20.5 |
| MIH-17 | 68.0±5% | 2.75 | MIH-39 | .68±3% | 21.4 |
| MIH-18 | 82.0±5% | 3.70 | MIH-40 | .75±3% | 22.3 |
| MIH-19 | 100.0±5% | 4.20 | MIH-41 | .82±3% | 32.0 |
| MIH-20 | 110.0±5% | 5.00 | MIH-42 | .91±3% | 34.0 |
| MIH-21 | 120.0±5% | 5.15 | MIH-43 | 1.00±3% | 35.5 |
| MIH-22 | 130.0±5% | 5.30 | | | |

*±20%. †Maximum values.

## TYPE MIC MICRO INDUCTORS

Meet MIL-T-27B Grade 4, Class S. Hermetically sealed in standard transistor cases. Permits automatic machine insertion. Combines high Q (more than 30 at 20 kHz, 120 at 200 kHz) with small size for nearly any use. Dielectric strength, 100 V rms. Insulation resistance 10,000 megs min. at 100 VDC. Temp. range, −55° C to +130° C, with inductance change ±2% over −20° C to +85° C range. Inductance tolerance ±5%.

| Collins Number | Ind., mH at 1 V rms | $R_{DC}$, Ohms* | Collins Number | Ind., mH at 1 V rms | $R_{DC}$, Ohms* |
|---|---|---|---|---|---|
| MIC-1 | 1 | 2.8 | MIC-19 | 24 | 54 |
| MIC-2 | 1.2 | 3.0 | MIC-20 | 30 | 72 |
| MIC-3 | 1.5 | 4.0 | MIC-21 | 36 | 80 |
| MIC-4 | 1.75 | 4.4 | MIC-22 | 43 | 110 |
| MIC-5 | 2.0 | 4.8 | MIC-23 | 50 | 120 |
| MIC-6 | 2.4 | 6.6 | MIC-24 | 60 | 130 |
| MIC-7 | 3.0 | 7.4 | MIC-25 | 72 | 144 |
| MIC-8 | 3.6 | 8.2 | MIC-26 | 86 | 195 |
| MIC-9 | 4.3 | 11.4 | MIC-27 | 100 | 210 |
| MIC-10 | 5.0 | 12.3 | MIC-28 | 120 | 230 |
| MIC-11 | 6.0 | 16.7 | MIC-29 | 150 | 257 |
| MIC-12 | 7.2 | 18.2 | MIC-30 | 175 | 280 |
| MIC-13 | 8.6 | 20.0 | MIC-31 | 200 | 380 |
| MIC-14 | 10 | 27.0 | MIC-32 | 240 | 410 |
| MIC-15 | 12 | 29.0 | MIC-33 | 300 | 584 |
| MIC-16 | 15 | 32.6 | MIC-34 | 360 | 800 |
| MIC-17 | 17.5 | 46.0 | MIC-35 | 430 | 875 |
| MIC-18 | 20 | 50.0 | MIC-36 | 500 | 940 |

*±20% tol.

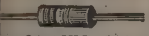
| For Collins Number | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|
| MIH-1 thru MIH-43 | $6.47 | $5.18 | $4.40 | $3.88 | $3.11 |
| MIC-1 thru MIC-36 | 6.47 | 5.18 | 4.40 | 3.88 | 3.11 |

**LARGER QUANTITY PRICES AVAILABLE ON REQUEST**

**CUSTOM DESIGNS ON TRANSFORMERS AND INDUCTORS ALSO AVAILABLE**

# J. W. Miller RF Chokes

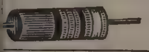
## SERIES 9230 MICRO-MINIATURES



Color coded per MIL-C-15305*. **Power Rating:** .17 watt max. at 90° C. **Inductance:** ±10%. **Size:** .095″ dia. x .250″ lg.;
s #24 AWG, 1½″ lg. Iron core except as noted.

| iller No. | Ind., µH | Min. Q at Freq., MHz | Min. Reson., MHz | Max. Res., Ohms | Max. mA‡ | Net Each |
|---|---|---|---|---|---|---|
| 0-94* | .10 | 40 at 25 | 690 | .07 | 1100 | $1.02 |
| 0-96* | .12 | 40 at 25 | 650 | .08 | 1100 | 1.02 |
| 0-00* | .15 | 38 at 25 | 600 | .10 | 1100 | 1.02 |
| 0-02* | .18 | 35 at 25 | 550 | .12 | 1010 | 1.02 |
| 0-04* | .22 | 33 at 25 | 510 | .14 | 935 | 1.02 |
| 0-06* | .27 | 33 at 25 | 430 | .16 | 875 | 1.02 |
| 0-08* | .33 | 30 at 25 | 410 | .20 | 780 | 1.02 |
| 0-10* | .39 | 30 at 25 | 380 | .30 | 640 | 1.02 |
| 0-12* | .47 | 30 at 25 | 340 | .35 | 590 | 1.02 |
| 0-14* | .56 | 30 at 25 | 300 | .50 | 495 | 1.02 |
| 0-16* | .68 | 28 at 25 | 275 | .60 | 450 | 1.02 |
| 0-18* | .82 | 28 at 25 | 250 | .85 | 380 | 1.02 |
| 0-20* | 1.0 | 25 at 25 | 230 | 1.00 | 350 | 1.02 |
| 0-22 | 1.2 | 25 at 7.9 | 150 | .18 | 825 | 1.08 |
| 0-24 | 1.5 | 28 at 7.9 | 140 | .22 | 745 | 1.08 |
| 0-26 | 1.8 | 30 at 7.9 | 125 | .30 | 640 | 1.08 |
| 0-28 | 2.2 | 30 at 7.9 | 115 | .40 | 550 | 1.08 |
| 0-30 | 2.7 | 37 at 7.9 | 100 | .50 | 495 | 1.08 |
| 0-32 | 3.3 | 45 at 7.9 | 90 | .85 | 380 | 1.08 |
| 0-34 | 3.9 | 45 at 7.9 | 82 | 1.00 | 350 | 1.08 |
| 0-36 | 4.7 | 45 at 7.9 | 75 | 1.20 | 320 | 1.08 |
| 0-38 | 5.6 | 50 at 7.9 | 68 | 1.80 | 260 | 1.23 |
| 0-40 | 6.8 | 50 at 7.9 | 60 | 2.00 | 245 | 1.23 |
| 0-42 | 8.2 | 55 at 7.9 | 55 | 2.70 | 210 | 1.23 |
| 0-44 | 10.0 | 55 at 7.9 | 50 | 3.70 | 180 | 1.23 |
| 0-46 | 12.0 | 45 at 2.5 | 40 | 2.70 | 210 | 1.32 |
| 0-48 | 15.0 | 45 at 2.5 | 35 | 2.80 | 205 | 1.32 |
| 0-50 | 18.0 | 50 at 2.5 | 32 | 3.10 | 195 | 1.32 |
| 0-52 | 22.0 | 50 at 2.5 | 25 | 3.30 | 190 | 1.32 |
| 0-54 | 27.0 | 50 at 2.5 | 22 | 3.50 | 185 | 1.32 |
| 0-56† | 33.0 | 45 at 2.5 | 24 | 3.40 | 187 | 1.41 |
| 0-58† | 39.0 | 45 at 2.5 | 22 | 3.60 | 180 | 1.65 |
| 0-60† | 47.0 | 45 at 2.5 | 20 | 4.50 | 165 | 1.65 |
| 0-62† | 56.0 | 45 at 2.5 | 18 | 5.70 | 145 | 1.65 |
| 0-64† | 68.0 | 50 at 2.5 | 15 | 6.70 | 135 | 1.65 |
| 0-66† | 82.0 | 50 at 2.5 | 14 | 7.30 | 130 | 1.65 |
| 0-68† | 100.0 | 50 at 2.5 | 13 | 8.00 | 125 | 1.65 |
| 0-70† | 120.0 | 30 at .79 | 12 | 13.00 | 97 | 2.25 |
| 0-72†• | 150.0 | 30 at .79 | 11 | 15.00 | 85 | 2.25 |
| 0-74†• | 180.0 | 30 at .79 | 10 | 17.00 | 79 | 2.25 |
| 0-76†• | 220.0 | 30 at .79 | 9 | 21.00 | 73 | 2.25 |
| 0-78†• | 270.0 | 30 at .79 | 8 | 25.00 | 65 | 2.25 |
| 0-80†• | 330.0 | 30 at .79 | 7 | 28.00 | 62 | 2.25 |
| 0-82†• | 390.0 | 30 at .79 | 6.5 | 35.00 | 55 | 2.25 |
| 0-84†• | 470.0 | 30 at .79 | 6 | 42.00 | 50 | 2.25 |
| 0-86†• | 560.0 | 30 at .79 | 5 | 46.00 | 48 | 2.25 |
| 0-88†• | 680.0 | 30 at .79 | 4.2 | 60.00 | 42 | 2.25 |
| 0-90†• | 820.0 | 30 at .79 | 3.8 | 65.00 | 40 | 2.25 |
| 0-92†• | 1000.0 | 30 at .79 | 3.4 | 72.00 | 38 | 2.25 |

## SERIES 9360 MOLDED RF CHOKES



Conform to MIL type LT8K*. **Inductance:** ±20%, 1.1–2.2 µH; ±10%, all others. **Size:** .300″ dia. x .968″ lg.; leads 1.4″ lg. Iron core except as noted.

| | | | | | | |
|---|---|---|---|---|---|---|
| 0-01* | 1.1 | 60 at 10.0 | 200 | .09 | 2800 | $1.26 |
| 0-02* | 2.2 | 65 at 10.0 | 165 | .20 | 1800 | 1.26 |
| 0-03* | 3.3 | 50 at 6.0 | 130 | .32 | 1500 | 1.26 |
| 0-04* | 4.7 | 45 at 5.0 | 100 | .60 | 1100 | 1.26 |
| 0-05* | 6.8 | 40 at 4.0 | 90 | 1.10 | 800 | 1.26 |
| 0-06* | 10.0 | 40 at 3.5 | 70 | 1.80 | 600 | 1.26 |
| 0-07* | 15.0 | 40 at 3.0 | 55 | 3.00 | 500 | 1.26 |
| 0-08 | 22.0 | 30 at 2.5 | 27 | .30 | 1500 | 1.35 |
| 0-09 | 33.0 | 45 at 2.0 | 21 | .60 | 1100 | 1.35 |
| 0-10 | 47.0 | 70 at 1.5 | 16 | 1.20 | 700 | 1.35 |
| 0-11 | 82.0 | 85 at 1.2 | 14 | 2.20 | 600 | 1.35 |
| 0-12 | 100 | 85 at 1.0 | 14 | 2.80 | 500 | 1.35 |
| 0-13 | 120 | 85 at 1.0 | 13 | 4.00 | 400 | 1.35 |

## PI-WOUND RF COILS

Single pi-wound on ferrite core; impregnated with fungus-resistant lacquer. **Inductance:**
%. **Size:** .187″ x ⅝″ form.

| | | | | | | |
|---|---|---|---|---|---|---|
| 104AF | 100 | 140 at .79 | 7.7 | 2.0 | 250 | $0.95 |
| 124AF | 120 | 140 at .79 | 7.0 | 2.2 | 250 | .95 |
| 154AF | 150 | 160 at .79 | 6.3 | 2.5 | 250 | .95 |
| 184AF | 180 | 160 at .79 | 6.0 | 2.9 | 250 | .95 |
| 224AF | 220 | 160 at .79 | 5.6 | 3.2 | 250 | .95 |
| 274AF | 270 | 160 at .79 | 5.1 | 3.6 | 250 | .95 |
| 334AF | 330 | 160 at .79 | 4.8 | 3.8 | 250 | .95 |
| 394AF | 390 | 160 at .79 | 4.4 | 4.2 | 225 | .95 |
| 474AF | 470 | 160 at .79 | 3.9 | 4.8 | 200 | .95 |
| 564AF | 560 | 160 at .79 | 3.6 | 5.3 | 200 | .95 |
| 684AF | 680 | 160 at .79 | 3.4 | 6.0 | 200 | 1.02 |
| 824AF | 820 | 150 at .79 | 3.1 | 6.8 | 200 | 1.02 |
| 103AF | 1.0 mH | 140 at .79 | 2.6 | 7.5 | 150 | 1.02 |
| 123AF | 1.2 mH | 140 at .25 | 2.2 | 7.8 | 150 | 1.02 |
| 153AF | 1.5 mH | 140 at .25 | 2.0 | 8.8 | 150 | 1.02 |
| 183AF | 1.8 mH | 140 at .25 | 1.8 | 11.0 | 150 | 1.02 |
| 223AF | 2.2 mH | 100 at .25 | 1.5 | 12.0 | 150 | 1.02 |
| 273AF | 2.7 mH | 100 at .25 | 1.4 | 13.5 | 125 | 1.02 |
| 333AF | 3.3 mH | 100 at .25 | 1.3 | 15.1 | 125 | 1.12 |
| 393AF | 3.9 mH | 95 at .25 | 1.2 | 18.0 | 125 | 1.12 |
| 473AF | 4.7 mH | 95 at .25 | 1.0 | 21.5 | 100 | 1.12 |
| 563AF | 5.6 mH | 95 at .25 | 1.0 | 25.0 | 80 | 1.27 |
| 683AF | 6.8 mH | 95 at .25 | .90 | 29.0 | 80 | 1.27 |
| 823AF | 8.2 mH | 70 at .25 | .91 | 30.0 | 80 | 1.34 |
| 102AF | 10.0 mH | 65 at .25 | .85 | 34.0 | 80 | 1.34 |

enolic core. †Ferrite core. ‡Based on temp. rise no more than
C at 90° C ambient; and, overload not above 1½ times
d current. #mH. §MHz. •Power: .15 W max. at 90° C.

## SERIES 9250 MOLDED RF CHOKES

Molded, electromagnetically shielded, RF coils conform to Grade 1, Class B, MIL-C-15305*. **Shielding:** Less than 2% cplg. **Induct.:** ±10%. **Size:** .157″ dia. x .395″ lg.

| Miller No. | Ind., µH | Min. Q at Freq. MHz | Min. Reson., MHz | Max. Res., Ohms | Max. mA‡ | Net Each |
|---|---|---|---|---|---|---|
| 9250-101 | .10 | 50 at 25 | 250 | .025 | 2900 | $1.68 |
| 9250-121 | .12 | 51 at 25 | 250 | .034 | 2800 | 1.68 |
| 9250-151 | .15 | 51 at 25 | 250 | .037 | 2750 | 1.68 |
| 9250-181 | .18 | 50 at 25 | 250 | .047 | 2200 | 1.68 |
| 9250-221 | .22 | 49 at 25 | 250 | .067 | 1700 | 1.68 |
| 9250-271 | .27 | 47 at 25 | 250 | .11 | 1500 | 1.68 |
| 9250-331 | .33 | 46 at 25 | 250 | .13 | 1300 | 1.68 |
| 9250-391 | .39 | 44 at 25 | 250 | .18 | 1100 | 1.68 |
| 9250-471 | .47 | 44 at 25 | 235 | .25 | 1000 | 1.68 |
| 9250-561 | .56 | 43 at 25 | 210 | .33 | 900 | 1.68 |
| 9250-681 | .68 | 42 at 25 | 190 | .45 | 750 | 1.68 |
| 9250-821 | .82 | 40 at 25 | 180 | .59 | 600 | 1.68 |
| 9250-102 | 1.00 | 47 at 25 | 140 | .07 | 1900 | 1.98 |
| 9250-122 | 1.20 | 46 at 7.9 | 130 | .093 | 1600 | 1.98 |
| 9250-152 | 1.50 | 45 at 7.9 | 115 | .12 | 1300 | 1.98 |
| 9250-182 | 1.80 | 43 at 7.9 | 105 | .14 | 1200 | 1.98 |
| 9250-222 | 2.20 | 45 at 7.9 | 100 | .19 | 1100 | 1.98 |
| 9250-272 | 2.70 | 46 at 7.9 | 92 | .28 | 950 | 1.98 |
| 9250-332 | 3.30 | 44 at 7.9 | 85 | .35 | 800 | 1.98 |
| 9250-392 | 3.90 | 44 at 7.9 | 75 | .40 | 750 | 1.98 |
| 9250-472 | 4.70 | 44 at 7.9 | 70 | .55 | 650 | 1.98 |
| 9250-562 | 5.60 | 47 at 7.9 | 65 | .72 | 550 | 1.98 |
| 9250-682 | 6.80 | 50 at 7.9 | 55 | 1.02 | 500 | 1.98 |
| 9250-822 | 8.20 | 50 at 7.9 | 50 | 1.32 | 475 | 1.98 |
| 9250-103 | 10.0 | 49 at 7.9 | 46 | 1.62 | 450 | 1.98 |
| 9250-123 | 12.0 | 55 at 2.5 | 44 | 2.00 | 400 | 1.98 |
| 9250-153 | 15.0 | 44 at 2.5 | 49 | .80 | 620 | 2.34 |
| 9250-183 | 18.0 | 45 at 2.5 | 45 | .89 | 610 | 2.34 |
| 9250-223 | 22.0 | 46 at 2.5 | 41 | .96 | 600 | 2.34 |
| 9250-273 | 27.0 | 49 at 2.5 | 38 | 1.19 | 500 | 2.34 |
| 9250-333 | 33.0 | 45 at 2.5 | 34 | 1.37 | 490 | 2.34 |
| 9250-393 | 39.0 | 53 at 2.5 | 29 | 1.93 | 410 | 2.34 |
| 9250-473 | 47.0 | 52 at 2.5 | 27 | 2.11 | 400 | 2.34 |
| 9250-563 | 56.0 | 49 at 2.5 | 25 | 2.23 | 380 | 2.34 |
| 9250-683 | 68.0 | 51 at 2.5 | 21 | 2.70 | 370 | 2.34 |
| 9250-823 | 82.0 | 45 at 2.5 | 10.5 | 2.44 | 360 | 2.82 |
| 9250-104 | 100.0 | 52 at 2.5 | 10 | 3.12 | 325 | 2.82 |
| 9250-124 | 120.0 | 57 at .79 | 9.7 | 3.60 | 290 | 2.82 |
| 9250-154 | 150.0 | 56 at .79 | 8.5 | 4.10 | 275 | 2.82 |
| 9250-184 | 180.0 | 60 at .79 | 8.0 | 4.40 | 260 | 2.82 |
| 9250-224 | 220.0 | 58 at .79 | 7.5 | 5.00 | 250 | 2.82 |
| 9250-274 | 270.0 | 60 at .79 | 7.0 | 5.80 | 240 | 2.82 |
| 9250-334 | 330.0 | 54 at .79 | 6.5 | 6.40 | 225 | 2.82 |
| 9250-394 | 390.0 | 67 at .79 | 6.2 | 7.40 | 200 | 2.82 |
| 9250-474 | 470.0 | 60 at .79 | 5.7 | 9.50 | 180 | 2.82 |
| 9250-564 | 560.0 | 60 at .79 | 4.7 | 10.5 | 174 | 2.82 |
| 9250-684 | 680.0 | 60 at .79 | 4.5 | 11.8 | 168 | 2.82 |
| 9250-824 | 820.0 | 57 at .79 | 4.2 | 13.0 | 152 | 2.82 |
| 9250-105 | 1 mH | 65 at .79 | 3.8 | 17.5 | 135 | 2.82 |
| 9250-125 | 1.2 mH | 45 at .25 | 1.5 | 22.1 | 115 | 3.00 |
| 9250-155 | 1.5 mH | 49 at .25 | 1.2 | 26.5 | 110 | 3.00 |
| 9250-185 | 1.8 mH | 47 at .25 | 1.0 | 29.9 | 105 | 3.00 |
| 9250-225 | 2.2 mH | 50 at .25 | .97 | 33.8 | 99 | 3.00 |
| 9250-275 | 2.7 mH | 47 at .25 | .92 | 47.3 | 83 | 3.00 |
| 9250-335 | 3.3 mH | 43 at .25 | .84 | 53.0 | 80 | 3.00 |
| 9250-395 | 3.9 mH | 43 at .25 | .80 | 73.8 | 67 | 3.00 |
| 9250-475 | 4.7 mH | 44 at .25 | .74 | 81.6 | 63 | 3.00 |
| 9250-565 | 5.6 mH | 45 at .25 | .73 | 98.9 | 56 | 3.00 |
| 9250-685 | 6.8 mH | 43 at .25 | .66 | 111.0 | 54 | 3.00 |
| 9250-825 | 8.2 mH | 42 at .25 | :54 | 119.0 | 52 | 3.00 |
| 9250-106 | 10.0 mH | 39 at .25 | .47 | 137.0 | 49 | 3.00 |

## ★CHOKE COLOR CODING

MIL identifier is wide silver band (or large dot on small units) at one end of coil. Three narrow bands (or small dots) follow: When first or second is gold, it indicates a decimal point for values less than 10 µH; other bands are significant figures. Above 10 µH, first two bands are significant; third band, multiplier. Fourth band of silver indicates ±10% tol.

| Significant Figure Identification | | | | | | Multiplier Band | |
|---|---|---|---|---|---|---|---|
| Color | Sig. No. | Color | Sig. No. | Color | Sig. No. | Color | Multiplier |
| Black | 0 | Yellow | 4 | Gray | 8 | Black | 1 |
| Brown | 1 | Green | 5 | White | 9 | Brown | 10 |
| Red | 2 | Blue | 6 | | | Red | 100 |
| Orange | 3 | Violet | 7 | | | Orange | 1000 |

## SHIELDED SUBMINIATURE RF COILS

Minimum 2:1 inductance range with small Q change. Adjustable from top or bottom. Cup core magnetic shielding; metal electrostatic shield. Printed circuit terminals on base and shield. **Size:** ½″ sq. x ⅝″ high.

| Miller No. | Inductance, µH | | | | Min. Q at Induct. | Max. Resis., Ohms | Max. mA | Net Each |
|---|---|---|---|---|---|---|---|---|
| | Min. | At kHz | Max. | At kHz | | | | |
| 9050 | 1.5 | 7.9§ | 3.0 | 7.9§ | 40–41 | .66 | 80 | $2.70 |
| 9051 | 3.0 | 7.9§ | 7.0 | 7.9§ | 46–45 | .85 | 125 | 2.70 |
| 9052 | 7.0 | 7.9§ | 14.0 | 2.5§ | 40–62 | 1.38 | 80 | 2.74 |
| 9053 | 14.0 | 2.5§ | 28.0 | 2.5§ | 48–66 | 2.10 | 80 | 2.74 |
| 9054 | 28.0 | 2.5§ | 60.0 | 2.5§ | 48–45 | 3.00 | 100 | 2.77 |
| 9055 | 16.0 | 2.5§ | 120. | 790.0 | 40–69 | 4.00 | 100 | 2.77 |
| 9056 | 120. | 790.0 | 280. | 790.0 | 52–68 | 5.75 | 80 | 2.77 |
| 9057 | 280. | 790.0 | 650. | 790.0 | 52–62 | 12.0 | 80 | 2.84 |
| 9058 | 650. | 790.0 | 1.3# | 250.0 | 36–68 | 15.0 | 100 | 2.84 |
| 9059 | 1.3# | 250.0 | 3.0# | 250.0 | 43–53 | 23.0 | 100 | 2.84 |
| 9060 | 3.0# | 250.0 | 10.0# | 79.0 | 32–32 | 76.0 | 30 | 3.13 |
| 9061 | 8.0# | 250.0 | 20.0# | 79.0 | 35–38 | 110.0 | 30 | 3.13 |
| 9062 | 15.0# | 79.0 | 40.0# | 79.0 | 25–40 | 150.0 | 30 | 3.13 |
| 9063 | 20.0# | 79.0 | 60.0# | 79.0 | 36–60 | 175.0 | 25 | 3.24 |

# J. W. Miller RF Chokes

## SUBMINIATURE RF CHOKES (FIG. A)

Versatile iron core RF chokes meet the industries' demand for high reliability, ultra-miniature components. Ideally suited to network and filter design, delay lines, and computer applications. Tolerance: 1 µH, ±20%; 1.1-15 µH, ±10%; over 15 µH, ±5%.

| Miller No. | Ind. | Minimum Q at Freq. | Net Each |
|---|---|---|---|
| 70F106AI | 1 µH | 41 at 2.5 MHz | $0.72 |
| 70F126AI | 1.2 µH | 45 at 7.9 MHz | .72 |
| 70F156AI | 1.5 µH | 42 at 7.9 MHz | .72 |
| 70F186AI | 1.8 µH | 31 at 7.9 MHz | .72 |
| 70F226AI | 2.2 µH | 43 at 7.9 MHz | .72 |
| 70F276AI | 2.7 µH | 34 at 7.9 MHz | .72 |
| 70F336AI | 3.3 µH | 40 at 7.9 MHz | .72 |
| 70F396AI | 3.9 µH | 35 at 7.9 MHz | .72 |
| 70F476AI | 4.7 µH | 43 at 7.9 MHz | .72 |
| 70F566AI | 5.6 µH | 41 at 7.9 MHz | .72 |
| 70F686AI | 6.8 µH | 40 at 7.9 MHz | .72 |
| 70F756AI | 7.5 µH | 32 at 7.9 MHz | .72 |
| 70F826AI | 8.2 µH | 37 at 7.9 MHz | .72 |
| 70F916AI | 9.1 µH | 41 at 7.9 MHz | .72 |
| 70F105AI | 10 µH | 36 at 7.9 MHz | .84 |
| 70F125AI | 12 µH | 52 at 2.5 MHz | .84 |
| 70F155AI | 15 µH | 52 at 2.5 MHz | .84 |
| 70F185AI | 18 µH | 52 at 2.5 MHz | .84 |
| 70F225AI | 22 µH | 51 at 2.5 MHz | .84 |
| 70F255AI | 25 µH | 48 at 2.5 MHz | .84 |
| 70F275AI | 27 µH | 49 at 2.5 MHz | .84 |
| 70F335AI | 33 µH | 50 at 2.5 MHz | .84 |
| 70F395AI | 39 µH | 48 at 2.5 MHz | .84 |
| 70F475AI | 47 µH | 44 at 2.5 MHz | .84 |
| 70F565AI | 56 µH | 45 at 2.5 MHz | .84 |
| 70F685AI | 68 µH | 42 at 2.5 MHz | .84 |
| 70F755AI | 75 µH | 38 at 2.5 MHz | .84 |
| 70F825AI | 82 µH | 41 at 2.5 MHz | .84 |
| 70F915AI | 91 µH | 41 at 2.5 MHz | .84 |
| 70F104AI | 100 µH | 25 at 2.5 MHz | .84 |
| 70F124AI | 120 µH | 40 at 790 kHz | .84 |
| 70F154AI | 150 µH | 47 at 790 kHz | .84 |
| 70F184AI | 180 µH | 48 at 790 kHz | .84 |
| 70F204AI | 200 µH | 47 at 790 kHz | .84 |
| 70F224AI | 220 µH | 46 at 790 kHz | .84 |
| 70F254AI | 250 µH | 49 at 790 kHz | .84 |
| 70F274AI | 270 µH | 46 at 790 kHz | .84 |
| 70F304AI | 300 µH | 46 at 790 kHz | .84 |
| 70F334AI | 330 µH | 41 at 790 kHz | .84 |
| 70F354AI | 350 µH | 46 at 790 kHz | .84 |
| 70F394AI | 390 µH | 45 at 780 kHz | .90 |
| 70F474AI | 470 µH | 35 at 790 kHz | .90 |
| 70F504AI | 500 µH | 49 at 790 kHz | .90 |
| 70F564AI | 560 µH | 41 at 790 kHz | .90 |
| 70F684AI | 680 µH | 37 at 790 kHz | .90 |
| 70F754AI | 750 µH | 30 at 790 kHz | .90 |
| 70F824AI | 820 µH | 33 at 790 kHz | .90 |
| 70F914AI | 910 µH | 32 at 790 kHz | .90 |
| 70F103AI | 1.00 mH | 30 at 790 kHz | .90 |
| 70F123AI | 1.20 mH | 34 at 250 kHz | .90 |
| 70F153AI | 1.50 mH | 40 at 250 kHz | .90 |
| 70F183AI | 1.80 mH | 40 at 250 kHz | .90 |
| 70F223AI | 2.20 mH | 40 at 250 kHz | .96 |
| 70F253AI | 2.50 mH | 48 at 250 kHz | .99 |
| 70F273AI | 2.70 mH | 50 at 250 kHz | .99 |
| 70F333AI | 3.30 mH | 52 at 250 kHz | .99 |
| 70F393AI | 3.90 mH | 53 at 250 kHz | .99 |
| 70F473AI | 4.70 mH | 49 at 250 kHz | .99 |
| 70F563AI | 5.60 mH | 53 at 250 kHz | .99 |
| 70F683AI | 6.80 mH | 51 at 250 kHz | .99 |
| 70F753AI | 7.50 mH | 49 at 250 kHz | .99 |
| 70F823AI | 8.20 mH | 48 at 250 kHz | 1.20 |
| 70F913AI | 9.10 mH | 52 at 250 kHz | 1.20 |
| 70F102AI | 10.0 mH | 41 at 250 kHz | 1.20 |
| 70F122AI | 12 mH | 46 at 79 kHz | 1.29 |
| 70F152AI | 15 mH | 50 at 79 kHz | 1.29 |
| 70F182AI | 18 mH | 49 at 79 kHz | 1.29 |
| 70F222AI | 22 mH | 50 at 79 kHz | 1.38 |

## CERAMIC CORE RF CHOKES

Wound on ¼" dia. form; impregnated with moisture- and fungus-resistant varnish. Low distributed capacity and accurate inductance values. Form size, ¼" dia. x 1½" lg. Tol., ±5%.

### MULTIPLE PI-WOUND (FIG. B)

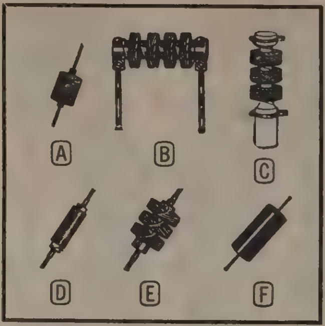
| Miller No. | mH | Max. Ohms | mA | Net Each |
|---|---|---|---|---|
| 4531-0 | 0.25 | 9.6 | 200 | $1.60 |
| 4531 | .5 | 14.4 | 200 | 1.60 |
| 4531-1 | 1 | 20.4 | 200 | 1.60 |
| 4532 | 1.5 | 25.2 | 200 | 1.64 |
| 4537 | 2.5 | 33.6 | 200 | 2.10 |
| 4538 | 5 | 50.4 | 125 | 2.36 |
| 4539 | 7.5 | 98.4 | 125 | 2.47 |
| 4540 | 10 | 114 | 125 | 2.63 |
| 4541 | 25 | 192 | 125 | 3.36 |

### SINGLE LAYER WOUND CHOKES

For UHF receivers and low-power transmitters. Tolerance, ±10%.

| | | | | |
|---|---|---|---|---|
| 4528-1 | 1*† | .036 | 300 | $1.13 |
| 4528 | 2.5* | .108 | 300 | 1.13 |
| 4529 | 5* | .300 | 300 | 1.13 |
| 4529-10 | 10* | 1.14 | 300 | 1.13 |

*Microhenries. †Tolerance, ±20%.



## CERAMIC FORM RF CHOKES (FIG. C)

High quality fixed coils wound on silicone impregnated steatite form. Coils are standoff type mounted by a single 6-32 screw. Primary application is in low power transmitters, etc., where relatively high current capacity and low distributed capacitance are important. Tolerance: ±5% at 1000 Hz. Form 11⁄16" dia. x 1 15⁄16" long.

| Miller No. | Ind., mH | Max. Ohms | Current mA | Net Each |
|---|---|---|---|---|
| 4552 | 0.25 | 9.6 | 150 | $2.40 |
| 4553 | 0.50 | 14.4 | 150 | 2.40 |
| 4554 | 1.0 | 20.4 | 150 | 2.58 |
| 4555 | 2.5 | 33.6 | 150 | 2.82 |
| 4556 | 5.0 | 54.0 | 150 | 2.88 |
| 4557 | 0.25 | 4.2 | 300 | 2.58 |
| 4558 | 0.50 | 6.6 | 300 | 2.58 |
| 4559 | 1.0 | 11.5 | 300 | 2.94 |
| 4560 | 2.5 | 20.4 | 300 | 3.30 |
| 4561 | 5.0 | 22.8 | 300 | 3.36 |

## AXIAL LEAD RF CHOKES

Cover 0.1 µH to 10 mH in 5 decades with 8 coils per decade; inductance increases in steps of approx. 50%. Wound on low loss molded phenolic or powdered iron core forms; impregnated with a moisture and fungus resistant varnish. Powdered iron used permits operation at all frequencies up into the UHF region. Phenolic form 5⁄16" dia. x ¾" lg. Iron core form 7⁄32" dia. x ⅞" lg. Leads 1½" lg. Tolerance: 0.10-1 µH, ±20%; 1.1-10 µH, ±10%; 10 µH and up, ±5%.

### PHENOLIC FORM—SINGLE WINDINGS (FIG. D)

| Miller No. | Ind., µH | Min. Q | Max. Ohms | Min. MHz | Net Each |
|---|---|---|---|---|---|
| 4580 | 0.10 | 68 | .017 | 500 | 66c |
| 4582 | 0.15 | 73 | .018 | 410 | 66c |
| 4584 | 0.22 | 77 | .020 | 340 | 66c |
| 4586 | 0.33 | 80 | .024 | 288 | 66c |
| 4588 | 0.47 | 90 | .034 | 243 | 66c |
| 4590 | 0.68 | 83 | .036 | 208 | 66c |
| 4592 | 0.75 | 81 | .040 | 204 | 66c |
| 4594 | 0.82 | 88 | .043 | 200 | 66c |
| 4602 | 1.00 | 60 | .050 | 190 | 66c |
| 4604 | 1.50 | 58 | .093 | 149 | 66c |
| 4606 | 2.40 | 56 | .190 | 120 | 66c |
| 4608 | 3.90 | 60 | .450 | 93 | 66c |
| 4609 | 5.50 | 57 | .670 | 80 | 66c |
| 4610 | 6.20 | 57 | .830 | 76 | 69c |
| 4611 | 8.20 | 57 | 1.20 | 65 | 69c |
| 4612 | 10.0 | 36 | 1.50 | 61 | 69c |

### IRON CORE FORM—SINGLE WINDINGS (FIG. D)

| | | | | | |
|---|---|---|---|---|---|
| 4622 | 10.0 | 69 | .11 | 40 | 75c |
| 4624 | 15.0 | 62 | .17 | 33 | 75c |
| 4626 | 24.0 | 65 | .34 | 25 | 78c |
| 4628 | 39.0 | 70 | .65 | 20 | 78c |
| 4629 | 55.0 | 72 | 1.0 | 17 | 84c |
| 4630 | 62.0 | 83 | 1.2 | 16 | 84c |
| 4631 | 82.0 | 85 | 1.9 | 13 | 84c |
| 4632 | 100 | 107 | 3.0 | 12 | 84c |

### PHENOLIC FORM—3-SECTION (FIG. E)

| Miller No. | Ind., mH | Min. Q | Max. Ohms | Min. MHz | Net Each |
|---|---|---|---|---|---|
| 4642 | 0.10 | 49 | 5.4 | 11 | 84c |
| 4644 | 0.15 | 53 | 6.5 | 8.8 | 84c |
| 4646 | 0.24 | 56 | 8.5 | 7.2 | 89c |
| 4648 | 0.39 | 57 | 11 | 5.6 | 95c |
| 4649 | 0.55 | 58 | 13 | 4.8 | 95c |
| 4650 | 0.62 | 59 | 15 | 4.5 | 95c |
| 4651 | 0.75 | 56 | 16 | 4.0 | 95c |
| 4652 | 1.00 | 59 | 19 | 3.7 | 95c |

## AXIAL LEAD CHOKES (CONT'D)

### IRON CORE—3-SECTION (FIG. E)

| Miller No. | Ind., mH | Min. Q | Max. Ohms | Min. MHz | Net Each |
|---|---|---|---|---|---|
| 4662 | 1.00 | 83 | 8.6 | 2.6 | $0.9 |
| 4664 | 1.50 | 82 | 11 | 2.1 | 1.0 |
| 4666 | 2.40 | 80 | 15 | 1.7 | 1.1 |
| 4668 | 3.90 | 73 | 20 | 1.4 | 1.2 |
| 4669 | 5.50 | 69 | 25 | 1.1 | 1.4 |
| 4670 | 6.20 | 89 | 37 | 1.0 | 1.4 |
| 4671 | 8.20 | 83 | 46 | .94 | 1.4 |
| 4672 | 10.0 | 68 | 50 | .82 | 1.7 |

### FERRITE CORE—3-SECTION (FIG. E)

High permeability, high inductance and low DC resistance with small size. Tol. ±5%. Core, ¼" dia. x ⅞" lg.; axial leads 1½" lg.

| | | | | | |
|---|---|---|---|---|---|
| 6302 | 2.5 | 106 | 9.0 | 1.3 | $1.24 |
| 6304 | 5.0 | 91 | 14 | 1.0 | 1.43 |
| 6306 | 10.0 | 108 | 31 | .71 | 1.59 |
| 6308 | 25.0 | 102 | 82 | .47 | 1.59 |
| 6310 | 50.0 | 113 | 127 | .33 | 1.91 |

## ENCAPSULATED RF AXIAL LEAD CHOKES (FIG. F)

Basically identical to units at left with equivalent number, these coils are encapsulated in epoxy resin and conform to MIL-C-15305. Max. form dimensions: .625" dia. x 1.125" lg. Min. lead length, 1". Tolerance: 0.10-1 µH, ±20%; 1.1-15 µH, ±10%; over 15 µH, ±5%.

### PHENOLIC FORM—SINGLE WINDINGS

| Miller No. | Ind., µH | Min. Q | Max. Ohms | Min. MHz | Net Each |
|---|---|---|---|---|---|
| 4580-E | 0.1 | 68* | .017 | 400 | $2.00 |
| 4582-E | 0.15 | 73* | .018 | 328 | 2.00 |
| 4584-E | 0.22 | 77* | .020 | 272 | 2.00 |
| 4586-E | 0.33 | 80* | .024 | 230 | 2.00 |
| 4588-E | 0.47 | 90* | .034 | 194 | 2.00 |
| 4590-E | 0.68 | 83* | .036 | 166 | 2.00 |
| 4592-E | 0.75 | 81* | .040 | 163 | 2.00 |
| 4594-E | 0.82 | 88* | .043 | 160 | 2.00 |
| 4602-E | 1.0 | 60† | .050 | 152 | 2.00 |
| 4604-E | 1.5 | 58† | .093 | 119 | 2.00 |
| 4606-E | 2.4 | 56† | .190 | 96 | 2.00 |
| 4608-E | 3.9 | 60† | .450 | 74 | 2.00 |
| 4609-E | 5.5 | 57† | .670 | 64 | 2.03 |
| 4610-E | 6.2 | 57† | .830 | 61 | 2.03 |
| 4611-E | 8.2 | 57† | 1.20 | 52 | 2.03 |
| 4612-E | 10.0 | 36‡ | 1.50 | 49 | 2.03 |

### IRON CORE FORM—SINGLE WINDINGS

| | | | | | |
|---|---|---|---|---|---|
| 4622-E | 10.0 | 69‡ | .110 | 32 | $2.07 |
| 4624-E | 15.0 | 62‡ | .170 | 26 | 2.07 |
| 4626-E | 24.0 | 65‡ | .340 | 20 | 2.07 |
| 4628-E | 39.0 | 70‡ | .650 | 16 | 2.07 |
| 4629-E | 55.0 | 72‡ | 1.00 | 13 | 2.07 |
| 4630-E | 62.0 | 83‡ | 1.20 | 12 | 2.07 |
| 4631-E | 82.0 | 85‡ | 1.90 | 10 | 2.07 |
| 4632-E | 100.0 | 107§ | 3.00 | 9.6 | 2.07 |

*At 25 MHz; †At 7.9 MHz; ‡At 2.5 MHz; §At .79 MHz.

### PHENOLIC FORM—3-SECTION

| Miller No. | Ind., mH | Min. Q | Max. Ohms | Min. MHz | Net Each |
|---|---|---|---|---|---|
| 4642-E | 0.10 | 49* | 5.40 | 8.8 | $2.17 |
| 4644-E | 0.15 | 53* | 6.50 | 7.0 | 2.17 |
| 4646-E | 0.24 | 56* | 8.50 | 5.7 | 2.17 |
| 4648-E | 0.39 | 57* | 11.0 | 4.5 | 2.35 |
| 4649-E | 0.55 | 58* | 13.0 | 3.8 | 2.80 |
| 4650-E | 0.62 | 59* | 15.0 | 3.6 | 2.80 |
| 4651-E | 0.75 | 56* | 16.0 | 3.2 | 2.80 |
| 4652-E | 1.0 | 59† | 19.0 | 2.9 | 2.80 |

### IRON CORE—3-SECTION

| | | | | | |
|---|---|---|---|---|---|
| 4662-E | 1.0 | 83† | 8.6 | 2.1 | $2.90 |
| 4664-E | 1.5 | 82† | 11.0 | 1.7 | 2.90 |
| 4666-E | 2.4 | 80† | 15.0 | 1.3 | 3.04 |
| 4668-E | 3.9 | 73† | 20.0 | 1.1 | 3.11 |
| 4669-E | 5.5 | 69† | 25.0 | .88 | 3.28 |
| 4670-E | 6.2 | 89† | 37.0 | .80 | 3.28 |
| 4671-E | 8.2 | 83† | 46.0 | .75 | 3.31 |
| 4672-E | 10.0 | 68‡ | 50.0 | .65 | 3.86 |

### FERRITE CORE—3-SECTION

| | | | | | |
|---|---|---|---|---|---|
| 6302-E | 2.5 | 106§ | 9.0 | 1.00 | $2.99 |
| 6304-E | 5.0 | 91§ | 14.0 | .80 | 3.15 |
| 6306-E | 10.0 | 108‡ | 31.0 | .57 | 3.31 |
| 6308-E | 25.0 | 102‡ | 82.0 | .37 | 3.56 |
| 6310-E | 50.0 | 113‡ | 127.0 | .26 | 3.79 |

*At .79 MHz; †At .25 MHz; ‡At 79 kHz; §At 250 kHz.

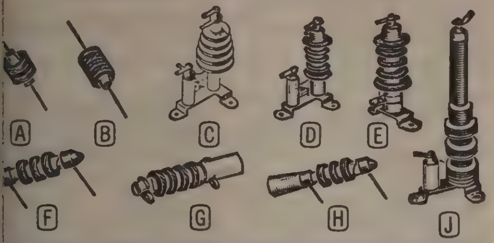
## HEAVY-DUTY HASH CHOKES

Size, 9⁄16" dia. x 1¼" lg. Tolerance, ±20%.

| No. | µH | Ohms | Amps | Net Ea. |
|---|---|---|---|---|
| 5218 | 3.35 | .010 | 13 | $1.85 |
| 5219 | 4.9 | .016 | 8 | 1.85 |
| 5220 | 8.8 | .021 | 5 | 1.85 |
| 5230 | 4.0 | .012 | 2 | 1.26 |
| 5240 | 40.0 | .082 | 2 | 1.32 |
| 5248 | 68.0 | .054 | 2 | 1.50 |
| 5250 | 100 | .216 | 2 | 1.50 |

# RF Chokes

## RECEIVER AND TRANSMITTER RF CHOKES



ries **R-33:** Medium current capacity; pie wound on molded enolic forms; ⅝" long with 1½" leads. **Series R-50:** Low current pacity; pie wound on molded phenolic forms; 1" long with 1½" ds. **Series R-60:** High current capacity; lateral layer wound on lded phenolic forms; 1⅛" long with 1½" leads. **Series R-100:** w current capacity; wound on ceramic forms with molded-lead ds and 2" tinned-copper pigtail leads; 2" long. **Series R-300:** me as R-100 but high current capacity; 2 1/16" long. **Series 100S:** Low current capacity; wound on ceramic forms with ver-plated spring clip terminals; 1 15/16" long. **Series R-300S:** me as R-100S but high current capacity. **Series R-100ST:** Low rent capacity; wound on ceramic forms with 3" tinned-copper tails and threaded studs at each end; 1⅞" long. **Series R-300ST:** me as R-100ST but high current capacity. **Series R-100U:** Low rent capacity; wound on ceramic forms with molded-lead ends, tinned-copper pigtail leads and a stand-off insulator; 2 11/16" g. **Series R-300U:** Same as R-100U but high current capacity.

| NRCI No. | Fig. | Ind. ±10% | Freq. MHz† | Cur. mA* | No. Pies | Coil Dia. | Net Ea. 1-99* |
|---|---|---|---|---|---|---|---|
| 3-1 | .... | 1 µH | 170.0 | 450 | .... | ...... | $0.48 |
| 3-11 | A | 11 µH | 32.0 | 350 | 2 | ¼" | .45 |
| 3-50 | A | 50 µH | 16.5 | 225 | 2 | 5/16" | .45 |
| 3-100 | A | 100 µH | 10.5 | 200 | 2 | 5/16" | .48 |
| 3-750 | A | 750 µH | 4.7 | 125 | 2 | 15/32" | .48 |
| 0-0.5 | B | 0.5 mH | 5.5 | 150 | 3 | 13/32" | .60 |
| 0-1 | B | 1.0 mH | 4.1 | 135 | 3 | 15/32" | .60 |
| 0-2.5 | B | 2.5 mH | 2.7 | 125 | 4 | ½" | .60 |
| 0-10‡ | B | 10.0 mH | 1.3 | 115 | 3 | 17/32" | .85 |
| 0-2 | B | 2.0 µH | 160.0 | 1500 | .... | 5/16" | .51 |
| 0-4 | B | 4.0 µH | 110.0 | 700 | .... | 5/16" | .51 |
| 00-2.5 | F | 2.5 mH | 2.4 | 115 | 4 | ½" | 1.00 |
| 00-5 | F | 5.0 mH | 2.8 | 70 | 5 | 15/32" | 1.55 |
| 00-10 | F | 10.0 mH | 2.2 | 60 | 5 | 9/16" | 1.80 |
| 00S-2.5 | G | 2.5 mH | 2.4 | 115 | 4 | ½" | 1.20 |
| 00S-5 | G | 5.0 mH | 2.8 | 70 | 5 | 15/32" | 1.55 |
| 00S-10 | G | 10.0 mH | 2.2 | 60 | 5 | 9/16" | 1.80 |
| 00ST-0.5 | ... | 0.5 mH | 5.0 | 125 | 4 | 13/32" | .75 |
| 00ST-2.5 | ... | 2.5 mH | 2.4 | 115 | 4 | ½" | .90 |
| 00ST-5 | ... | 5.0 mH | 2.8 | 70 | 5 | 15/32" | 1.20 |
| 00ST-10 | ... | 10.0 mH | 2.2 | 60 | 5 | 9/16" | 1.35 |
| 00U-2.5 | H | 2.5 mH | 2.4 | 115 | 4 | ½" | 1.00 |
| 00U-5 | H | 5.0 mH | 2.8 | 70 | 5 | 15/32" | 1.35 |
| 00U-10 | H | 10.0 mH | 2.2 | 60 | 5 | 9/16" | 1.80 |
| 00-0.5 | F | 5.0 mH | 5.0 | 400 | 3 | 15/32" | .80 |
| 00-1 | F | 1.0 mH | 3.6 | 400 | 3 | 17/32" | .80 |
| 00-2.5 | F | 2.5 mH | 2.2 | 375 | 3 | 11/16" | 1.00 |
| 00-5 | F | 5.0 mH | 1.8 | 325 | 3 | 25/32" | 1.15 |
| 00S-0.5 | G | 0.5 mH | 5.0 | 400 | 3 | 15/32" | 1.20 |
| 00S-1 | G | 1.0 mH | 3.6 | 400 | 3 | 17/32" | 1.35 |
| 00S-2.5 | G | 2.5 mH | 2.2 | 375 | 3 | 11/16" | 1.40 |
| 00S-5 | G | 5.0 mH | 1.8 | 325 | 3 | 25/32" | 1.65 |
| 00ST-0.5 | ... | 0.5 mH | 5.0 | 400 | 3 | 15/32" | .90 |
| 00ST-1 | ... | 1.0 mH | 3.6 | 400 | 3 | 17/32" | .90 |
| 00ST-2.5 | ... | 2.5 mH | 2.2 | 375 | 3 | 11/16" | 1.00 |
| 00ST-5 | ... | 5.0 mH | 1.8 | 325 | 3 | 25/32" | 1.20 |
| 00U-0.5 | H | 0.5 mH | 5.0 | 400 | 3 | 15/32" | 1.00 |
| 00U-1 | H | 1.0 mH | 3.6 | 400 | 3 | 17/32" | 1.10 |
| 00U-2.5 | H | 2.5 mH | 2.2 | 375 | 3 | 11/16" | 1.20 |
| 00U-5 | H | 5.0 mH | 1.8 | 325 | 3 | 25/32" | 1.35 |

ating for 20° C rise. †Self resonating; ±10%. ‡Wound on wdered-iron coil form.

pe **R-152:** For use in 2–4 MHz range, 80- and 160-meter bands, high-power transmitter stages. Pie wound on ceramic form. 3⅛" h. **Type R-154:** For use in 20-, 40- and 80-meter bands. Pie und on ceramic form. Has third mounting foot and an insulator at permits use of higher voltages by providing longer path to und. 3⅛" high. **Type R-154U:** Same as R-154 but without third unting foot and without small insulator. **Type R-175A:** Parallel-d series-feed in transmitters with plate supply up to 3000 V dulated or 4000 V unmodulated. High reactance throughout 10-, 15-, 20-, 40- and 80-meter bands. 6" high.

| RCI No. | Fig. | Ind. mH* | Freq. MHz | DC Ohms♯ | Cur. mA§ | No. Pies | Coil Dia. | Net Ea. 1-99* |
|---|---|---|---|---|---|---|---|---|
| 52 | C | 4.0 | 1.6† | 10 | 600 | 5 | 1¼" | $4.70 |
| 54 | D | 1.0 | 4.5† | 6 | 600 | 5 | 1¼" | 4.70 |
| 54U | E | 1.0 | 4.5† | 6 | 600 | 5 | 1¼" | 4.00 |
| 75A | J | 145‡ | 5.0† | 5 | 800 | 3 | 1 1/16" | 7.50 |

10%. †Self-resonating; ±10%. ♯Approximate resistance. ating for 20° C rise. ‡µH.

★LARGER QUANTITY PRICES
AVAILABLE ON REQUEST

## "N-CAP" ENCAPSULATED RF CHOKES

Reliable, encapsulated choke withstands extreme temperature, humidity, and impact shock without physical or electrical change. Provide maximum current carrying capacity for a given mold size at high ambient temperatures. Higher Q and self-resonant frequencies than previously available for same value and size. Exceed MIL-C-15305 requirements. Encapsulating compound is purest mica-filled epoxy resin available. Coil is wound with the finest copper wire to achieve desired inductance and maintain high ambient temperature resistance. Leads are firmly, positively welded to body; never notched or flattened during or after molding. **Size:** .375" lg. x .157" dia.; leads 1½" lg. **Inductance Tolerance:** ±20%, Nos. R1550-0 thru R1550-17; ±10%, all others.

| NRCI No. | Induct., µH | Min. Q at MHz | Self-Res. Freq. MHz | Max. DCR Ohms | Current, mA DC | Net Each 1-99* |
|---|---|---|---|---|---|---|
| R1550-0 | .10 | 55 at 25 | 400 | 0.02 | 3500 | 40c |
| R1550-3 | .15 | 50 at 25 | 400 | .025 | 3100 | 40c |
| R1550-5 | .22 | 50 at 25 | 400 | .03 | 2800 | 40c |
| R1550-7 | .33 | 45 at 25 | 400 | .06 | 2000 | 40c |
| R1550-9 | .47 | 50 at 25 | 310 | .076 | 1800 | 40c |
| R1550-11 | .68 | 50 at 25 | 260 | .12 | 1400 | 40c |
| R1550-13 | 1.0 | 50 at 25 | 210 | .22 | 1000 | 40c |
| R1550-15 | 1.5 | 40 at 7.9 | 165 | .33 | 850 | 40c |
| R1550-17 | 2.2 | 40 at 7.9 | 145 | .52 | 650 | 44c |
| R1550-19 | 3.3 | 40 at 7.9 | 120 | 1.1 | 450 | 44c |
| R1550-21 | 4.7 | 40 at 7.9 | 100 | 1.5 | 400 | 44c |
| R1550-23 | 6.8 | 50 at 7.9 | 55 | .40 | 800 | 44c |
| R1550-25 | 10.0 | 55 at 7.9 | 45 | .80 | 550 | 44c |
| R1550-27 | 15.0 | 70 at 2.5 | 40 | 1.2 | 450 | 44c |
| R1550-29 | 22.0 | 80 at 2.5 | 30 | 2.3 | 325 | 48c |
| R1550-31 | 33.0 | 75 at 2.5 | 19 | 2.7 | 300 | 48c |
| R1550-33 | 47.0 | 55 at 2.5 | 12 | 2.3 | 325 | 48c |
| R1550-35 | 68.0 | 40 at 2.5 | 10 | 2.4 | 320 | 48c |
| R1550-37 | 100 | 60 at .79 | 9 | 3.2 | 280 | 48c |
| R1550-38 | 120 | 63 at .79 | 8 | 4.0 | 310 | 66c |
| R1550-39 | 150 | 65 at .79 | 6.5 | 4.8 | 225 | 66c |
| R1550-41 | 220 | 70 at .79 | 5.5 | 7.2 | 175 | 66c |
| R1550-43 | 330 | 70 at .79 | 4.5 | 10.5 | 150 | 66c |

## FERRITE BEAD CHOKES

Present no more impedance than ordinary bus wire at power supply and audio frequencies. Substantially constant AC resistance and impedance from 10 to above 300 MHz; useful for isolating high frequency signals from low frequencies. Low effective inductance is completely overcome by the AC resistance, eliminating undesired resonant effects. Made of individual high quality ferrite beads; number varies depending upon characteristics required. Tinned wire leads are an integral part of the choke, yielding maximum lead strength. Completely epoxy encapsulated. Dia., .200", R45-1 to R45-12; others .313". Leads 1½", AWG-20, R45-1 to R45-12; others AWG-22.

| NRCI No. | AC Resis., Ohms† at 10 MHz | AC Resis., Ohms† at 100 MHz | AC Resis., Ohms† at 300 MHz | Imped., Ohms† at 10 MHz | Imped., Ohms† at 100 MHz | Imped., Ohms† at 300 MHz | Body Lgth., In. | Net Each 1-99* |
|---|---|---|---|---|---|---|---|---|
| R45-1 | 25 | 31 | 32 | 16 | 28 | 29 | 19/32 | $0.75 |
| R45-2 | 50 | 62 | 64 | 32 | 57 | 57 | 19/32 | .75 |
| R45-3 | 75 | 93 | 96 | 49 | 86 | 86 | 19/32 | .80 |
| R45-4 | 100 | 120 | 130 | 60 | 115 | 115 | 19/32 | .70 |
| R45-8 | 210 | 240 | 240 | 150 | 230 | 230 | 1 5/32 | 1.20 |
| R45-12 | 320 | 360 | 360 | 230 | 350 | 350 | 1 45/64 | 1.80 |
| R45-153 | 150 | 310 | 340 | 70 | 270 | 335 | ⅝ | 1.50 |
| R45-154 | 610 | 470 | 530 | 100 | 415 | 515 | ¾ | 1.35 |
| R45-253 | 350 | 630 | 500 | 110 | 600 | 670 | ⅝ | 1.50 |
| R45-254 | 1400 | 1000 | 850 | 230 | 900 | 560 | ¾ | 1.00 |

†Typical ratings.

## FERRITE CORE CHOKES

Relatively high "Q" values in small physical size; complete line includes 14 inductances from 150 µH to 10 mH in MIL-SPEC values. Temperature coefficient less than 550 ppm per degree C for small coils; less than 250 ppm per degree C for 1 mH and over. Axial leads facilitate mounting directly to terminals. Fungus-proof varnish impregnated per MIL-V-173A provides maximum protection against tropical conditions. For primary use in networks and filters from 50 kHz to 1500 kHz; can be used as resonant elements in IF or RF circuits. Size: ⅝" long; 9/16" max. dia. (7/32" min. dia.).

| NRCI No. | Inductance* | Nom. Q at kHz | Self-Res. Freq.* | DC Ohms† | DC Current♯ | Net Ea. 1-99* |
|---|---|---|---|---|---|---|
| R40-150 | 150 µH | 200/790 | 7.9 MHz | 2.1 | 250 | 72c |
| R40-220 | 220 µH | 200/790 | 7 MHz | 2.7 | 250 | 72c |
| R40-330 | 330 µH | 200/790 | 6 MHz | 3.5 | 250 | 72c |
| R40-470 | 470 µH | 200/790 | 4.9 MHz | 4.2 | 225 | 77c |
| R40-680 | 680 µH | 200/790 | 4.3 MHz | 5.3 | 200 | 77c |
| R40-820 | 820 µH | 200/790 | 3.9 MHz | 5.9 | 200 | 77c |
| R40-1 | 1 mH | 200/790 | 3.3 MHz | 7.2 | 175 | 82c |
| R40-1.5 | 1.5 mH | 160/250 | 2.5 MHz | 10.5 | 150 | 82c |
| R40-2.2 | 2.2 mH | 130/250 | 1.9 MHz | 11.7 | 150 | 82c |
| R40-3.3 | 3.3 mH | 120/250 | 1.6 MHz | 15.7 | 125 | 82c |
| R40-4.7 | 4.7 mH | 120/250 | 1.3 MHz | 20.5 | 100 | 82c |
| R40-6.8 | 6.8 mH | 120/250 | 1.1 MHz | 26 | 80 | 87c |
| R40-8.2 | 8.2 mH | 90/250 | 980 kHz | 28 | 80 | 87c |
| R40-10 | 10 mH | 80/250 | 850 kHz | 32 | 80 | 92c |

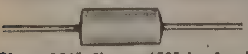
*±10%. †Approximate resistance. ♯Rating for 20° C rise mA.

# NYTRONICS, INC.
## ESSEX ELECTRONICS DIV.

# INDUCTORS:
# FIXED, SHIELDE

### WEE DUCTORS

Subminiature shielded inductor. Provides special merits in high density circuit applications. Has great inductance-to-size ratio. Conforms to MIL-C-15305C, Grade 1, Class B specifications. **Inductance Tol.:** ±10% (.1 to 22 μH), ±5% (27 to 1000 μH), ±10% (1200 to 56,000 μH), ±20% (68,000 to 180,000 μH).



**Size:** .164″ dia. x .450″ lg. **Leads:** #24 AWG, 1.3″ lg. **Operating Temp.:** −55° C to 125° C.

#### SPECIFICATIONS

| Nytronics No. | Ind., μH | Min. Q at Freq. | | Approx. | | Max. DC Ohms* | Max. Cur., mA† |
|---|---|---|---|---|---|---|---|
| | | Q | MHz | Reson., MHz | Cap., pF | | |
| WEE-0.10 | .10 | 63 | 25 | 500‡ | 0.67 | 0.020 | 4000 |
| WEE-0.12 | .12 | 61 | 25 | 500‡ | 0.67 | 0.029 | 3350 |
| WEE-0.15 | .15 | 59 | 25 | 500‡ | 0.67 | 0.032 | 3000 |
| WEE-0.18 | .18 | 57 | 25 | 458 | 0.67 | 0.040 | 2850 |
| WEE-0.22 | .22 | 56 | 25 | 414 | 0.67 | 0.045 | 2700 |
| WEE-0.27 | .27 | 50 | 25 | 373 | 0.67 | 0.08 | 2000 |
| WEE-0.33 | .33 | 48 | 25 | 337 | 0.67 | 0.09 | 1900 |
| WEE-0.39 | .39 | 48 | 25 | 310 | 0.67 | 0.16 | 1420 |
| WEE-0.47 | .47 | 48 | 25 | 283 | 0.67 | 0.17 | 1400 |
| WEE-0.56 | .56 | 45 | 25 | 258 | 0.67 | 0.36 | 960 |
| WEE-0.68 | .68 | 45 | 25 | 235 | 0.67 | 0.37 | 940 |
| WEE-0.82 | .82 | 41 | 25 | 214 | 0.67 | 0.46 | 870 |
| WEE-1.0 | 1.0 | 42 | 7.9 | 164 | 0.92 | 0.062 | 2300 |
| WEE-1.2 | 1.2 | 43 | 7.9 | 150 | 0.92 | 0.067 | 2200 |
| WEE-1.5 | 1.5 | 41 | 7.9 | 135 | 0.92 | 0.16 | 1420 |
| WEE-1.8 | 1.8 | 42 | 7.9 | 124 | 0.92 | 0.17 | 1370 |
| WEE-2.2 | 2.2 | 42 | 7.9 | 112 | 0.92 | 0.19 | 1300 |
| WEE-2.7 | 2.7 | 41 | 7.9 | 107 | 0.92 | 0.20 | 1270 |
| WEE-3.3 | 3.3 | 40 | 7.9 | 91.5 | 0.92 | 0.31 | 1030 |
| WEE-3.9 | 3.9 | 40 | 7.9 | 84.5 | 0.92 | 0.33 | 1000 |
| WEE-4.7 | 4.7 | 40 | 7.9 | 76.5 | 0.92 | 0.58 | 750 |
| WEE-5.6 | 5.6 | 40 | 7.9 | 69.5 | 0.92 | 0.64 | 710 |
| WEE-6.8 | 6.8 | 40 | 7.9 | 63.5 | 0.92 | 0.68 | 680 |
| WEE-8.2 | 8.2 | 45 | 7.9 | 57.5 | 0.92 | 1.3 | 500 |
| WEE-10 | 10 | 46 | 2.5 | 52.5 | 0.92 | 1.4 | 480 |
| WEE-12 | 12 | 47 | 2.5 | 47.5 | 0.92 | 1.5 | 460 |
| WEE-15 | 15 | 47 | 2.5 | 42.5 | 0.92 | 1.7 | 440 |
| WEE-18 | 18 | 45 | 2.5 | 53.5 | 0.49 | 0.88 | 610 |
| WEE-22 | 22 | 47 | 2.5 | 47.0 | 0.50 | 0.95 | 590 |
| WEE-27 | 27 | 42 | 2.5 | 44.0 | 0.48 | 1.15 | 530 |
| WEE-33 | 33 | 43 | 2.5 | 40.0 | 0.48 | 1.2 | 520 |
| WEE-39 | 39 | 45 | 2.5 | 36.5 | 0.48 | 1.6 | 450 |
| WEE-47 | 47 | 46 | 2.5 | 33.0 | 0.49 | 1.8 | 420 |
| WEE-56 | 56 | 40 | 2.5 | 30.0 | 0.49 | 2.2 | 390 |
| WEE-68 | 68 | 40 | 2.5 | 27.0 | 0.50 | 2.3 | 375 |
| WEE-82 | 82 | 42 | 2.5 | 17.5 | 1.0 | 2.4 | 360 |
| WEE-100 | 100 | 63 | .79 | 15.0 | 1.0 | 2.6 | 345 |
| WEE-120 | 120 | 62 | .79 | 14.0 | 1.0 | 2.9 | 330 |
| WEE-150 | 150 | 63 | .79 | 12.5 | 1.0 | 3.3 | 315 |
| WEE-180 | 180 | 60 | .79 | 11.5 | 1.0 | 3.6 | 300 |
| WEE-220 | 220 | 57 | .79 | 11.0 | 0.94 | 4.1 | 280 |
| WEE-270 | 270 | 52 | .79 | 10.0 | 0.92 | 4.8 | 260 |
| WEE-330 | 330 | 50 | .79 | 9.0 | 0.92 | 5.6 | 240 |
| WEE-390 | 390 | 43 | .79 | 8.5 | 0.87 | 6.2 | 230 |
| WEE-470 | 470 | 66 | .79 | 8.0 | 0.83 | 10.0 | 180 |
| WEE-560 | 560 | 64 | .79 | 7.5 | 0.82 | 11.5 | 170 |
| WEE-680 | 680 | 71 | .79 | 6.5 | 0.87 | 12.0 | 160 |
| WEE-820 | 820 | 67 | .79 | 6.0 | 0.87 | 13.8 | 150 |
| WEE-1000 | 1000 | 62 | .79 | 5.6 | 0.87 | 16.0 | 140 |
| WEE-1200 | 1200 | 52 | .250 | 1.490 | 9.0 | 18.2 | 135 |
| WEE-1500 | 1500 | 51 | .250 | 1.460 | 8.0 | 23.7 | 118 |
| WEE-1800 | 1800 | 51 | .250 | 1.420 | 6.5 | 30.2 | 105 |
| WEE-2200 | 2200 | 50 | .250 | 1.300 | 6.8 | 33.7 | 99 |
| WEE-2700 | 2700 | 51 | .250 | 1.180 | 6.8 | 43.1 | 87 |
| WEE-3300 | 3300 | 52 | .250 | 1.050 | 7.0 | 48.7 | 82 |
| WEE-3900 | 3900 | 48 | .250 | .960 | 7.0 | 62.7 | 72 |
| WEE-4700 | 4700 | 48 | .250 | .840 | 7.4 | 70.5 | 68 |
| WEE-5600 | 5600 | 48 | .250 | .810 | 6.8 | 104 | 56 |
| WEE-6800 | 6800 | 45 | .250 | .740 | 6.8 | 118 | 53 |
| WEE-8200 | 8200 | 38 | .250 | .580 | 9.2 | 146 | 47 |
| WEE-10,000 | 10,000 | 36 | .079 | .470 | 11.5 | 76.6 | 66 |
| WEE-12,000 | 12,000 | 36 | .079 | .370 | 15.0 | 109 | 55 |
| WEE-15,000 | 15,000 | 38 | .079 | .330 | 15.0 | 119 | 52 |
| WEE-18,000 | 18,000 | 38 | .079 | .305 | 15.0 | 138 | 49 |
| WEE-22,000 | 22,000 | 32 | .079 | .295 | 13.0 | 219 | 39 |
| WEE-27,000 | 27,000 | 32 | .079 | .270 | 13.0 | 259 | 35 |
| WEE-33,000 | 33,000 | 32 | .079 | .250 | 12.5 | 296 | 33 |
| WEE-39,000 | 39,000 | 30 | .079 | .215 | 14.0 | 395 | 29 |
| WEE-47,000 | 47,000 | 25 | .079 | .210 | 12.5 | 452 | 27 |
| WEE-56,000 | 56,000 | 25 | .079 | .195 | 12.0 | 499 | 26 |
| WEE-68,000 | 68,000 | 20 | .079 | .130 | 18.4 | 395 | 29 |
| WEE-82,000 | 82,000 | 20 | .079 | .125 | 16.5 | 452 | 27 |
| WEE-100,000 | 100,000 | 20 | .079 | .115 | 16.2 | 499 | 26 |
| WEE-120,000 | 120,000 | 20 | .070 | .105 | 16.8 | 540 | 23 |
| WEE-150,000 | 150,000 | 20 | .060 | .098 | 13.4 | 750 | 20 |
| WEE-180,000 | 180,000 | 20 | .050 | .094 | 13.4 | 880 | 18 |

*At 125° C. †Based on temp. rise not to exceed 40° C at 85° C ambient. ‡Greater than figure shown.

#### PRICES

| Nytronics No. | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|
| | 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
| WEE-0.10 to 0.82 | $0.79 | $0.64 | $0.56 | $0.50 | $0.46 | $0.43 |
| WEE-1.0 to 15 | .87 | .70 | .61 | .55 | .50 | .47 |
| WEE-18 to 1000 | 1.06 | .84 | .73 | .67 | .62 | .58 |
| WEE-1200 to 4700 | 1.19 | .96 | .82 | .75 | .70 | .65 |
| WEE-5600 to 56,000 | 1.42 | 1.13 | .99 | .90 | .83 | .77 |
| WEE-68,000 to 180,000 | 2.17 | 1.74 | 1.51 | 1.38 | 1.27 | 1.18 |

### MS90537 AND SUPER WEE DUCTORS

Meet MIL-C-15305C, Grade 1, Class B. Epoxy-molded envelope and shielding offers reliability, electrical performance and min. coupling in high density packaging. **Inductance Tol.:** ±10 **Size:** 0.157″ x 0.395″. **Leads:** #22 AWG, 1 7/16″ lg. **Operating Tem** −55° C to +125° C.

**MS90537 Series** has "T" design, eliminating fine wire conside tions.

#### SPECIFICATIONS

| Nytronics No. | | Min. Q at Freq. | | Min. Reson., MHz | Appr. Cap., pF‡ | Max. DC Ohms* | Ma Cu mA |
|---|---|---|---|---|---|---|---|
| MS Type | Wee-ductor§ | Q | MHz# | | | | |
| 90537-1 | SWD-0.10 | 50 | 25 | 500 | 0.67 | 0.025 | 290 |
| 90537-2 | SWD-0.12 | 51 | 25 | 450 | 0.67 | 0.034 | 280 |
| 90537-3 | SWD-0.15 | 51 | 25 | 400 | 0.67 | 0.037 | 275 |
| 90537-4 | SWD-0.18 | 50 | 25 | 375 | 0.67 | 0.047 | 220 |
| 90537-5 | SWD-0.22 | 49 | 25 | 330 | 0.67 | 0.067 | 170 |
| 90537-6 | SWD-0.27 | 47 | 25 | 290 | 0.67 | 0.11 | 150 |
| 90537-7 | SWD-0.33 | 46 | 25 | 280 | 0.67 | 0.13 | 130 |
| 90537-8 | SWD-0.39 | 44 | 25 | 255 | 0.67 | 0.18 | 110 |
| 90537-9 | SWD-0.47 | 44 | 25 | 235 | 0.67 | 0.25 | 100 |
| 90537-10 | SWD-0.56 | 43 | 25 | 210 | 0.67 | 0.33 | 90 |
| 90537-11 | SWD-0.68 | 42 | 25 | 190 | 0.67 | 0.45 | 75 |
| 90537-12 | SWD-0.82 | 40 | 25 | 180 | 0.67 | 0.59 | 60 |
| 90537-13 | SWD-1.0 | 47 | 25 | 140 | 0.84 | 0.070 | 190 |
| 90537-14 | SWD-1.2 | 46 | 7.9 | 130 | 0.83 | 0.093 | 160 |
| 90537-15 | SWD-1.5 | 45 | 7.9 | 115 | 0.83 | 0.12 | 130 |
| 90537-16 | SWD-1.8 | 43 | 7.9 | 105 | 0.83 | 0.14 | 120 |
| 90537-17 | SWD-2.2 | 45 | 7.9 | 100 | 0.73 | 0.19 | 110 |
| 90537-18 | SWD-2.7 | 46 | 7.9 | 92 | 0.73 | 0.28 | 95 |
| 90537-19 | SWD-3.3 | 44 | 7.9 | 85 | 0.76 | 0.35 | 80 |
| 90537-20 | SWD-3.9 | 44 | 7.9 | 75 | 0.73 | 0.40 | 75 |
| 90537-21 | SWD-4.7 | 44 | 7.9 | 70 | 0.73 | 0.55 | 65 |
| 90537-22 | SWD-5.6 | 47 | 7.9 | 65 | 0.73 | 0.72 | 55 |
| 90537-23 | SWD-6.8 | 50 | 7.9 | 55 | 0.78 | 1.02 | 50 |
| 90537-24 | SWD-8.2 | 50 | 7.9 | 50 | 0.78 | 1.32 | 47 |
| 90537-25 | SWD-10 | 49 | 7.9 | 46 | 0.84 | 1.62 | 45 |
| 90537-26 | SWD-12 | 55 | 2.5 | 44 | 0.73 | 2.00 | 40 |
| 90537-27 | SWD-15 | 44 | 2.5 | 49 | 0.48 | 0.80 | 62 |
| 90537-28 | SWD-18 | 45 | 2.5 | 45 | 0.48 | 0.89 | 61 |
| 90537-29 | SWD-22 | 46 | 2.5 | 41 | 0.48 | 0.96 | 60 |
| 90537-30 | SWD-27 | 49 | 2.5 | 38 | 0.48 | 1.19 | 50 |
| 90537-31 | SWD-33 | 45 | 2.5 | 34 | 0.48 | 1.37 | 49 |
| 90537-32 | SWD-39 | 53 | 2.5 | 29 | 0.48 | 1.93 | 41 |
| 90537-33 | SWD-47 | 52 | 2.5 | 27 | 0.48 | 2.11 | 40 |
| 90537-34 | SWD-56 | 49 | 2.5 | 25 | 0.48 | 2.23 | 38 |
| 90537-35 | SWD-68 | 51 | 2.5 | 21 | 0.50 | 2.70 | 37 |
| 90537-36 | SWD-82 | 45 | 2.5 | 10.5 | 1.70 | 2.44 | 36 |
| 90537-37 | SWD-100 | 52 | 2.5 | 10.0 | 1.70 | 3.12 | 32 |
| 90537-38 | SWD-120 | 57 | .79 | 9.7 | 1.40 | 3.60 | 29 |
| 90537-39 | SWD-150 | 56 | .79 | 8.5 | 1.50 | 4.10 | 27 |
| 90537-40 | SWD-180 | 60 | .79 | 8.0 | 1.40 | 4.40 | 26 |
| 90537-41 | SWD-220 | 58 | .79 | 7.5 | 1.30 | 5.00 | 25 |
| 90537-42 | SWD-270 | 60 | .79 | 7.0 | 1.30 | 5.80 | 24 |
| 90537-43 | SWD-330 | 54 | .79 | 6.5 | 1.10 | 6.40 | 22 |
| 90537-44 | SWD-390 | 67 | .79 | 6.2 | 1.00 | 7.40 | 20 |
| 90537-45 | SWD-470 | 60 | .79 | 5.7 | 1.00 | 9.50 | 18 |
| 90537-46 | SWD-560 | 60 | .79 | 4.7 | 1.30 | 10.5 | 17 |
| 90537-47 | SWD-680 | 60 | .79 | 4.5 | 1.10 | 11.8 | 16 |
| 90537-48 | SWD-820 | 57 | .79 | 4.2 | 1.10 | 13.0 | 15 |
| 90537-49 | SWD-1000 | 65 | .79 | 3.8 | 1.10 | 17.5 | 13 |
| 90537-50 | SWD-1200 | 45 | .25 | 1.5 | 6.20 | 22.1 | 11 |
| 90537-51 | SWD-1500 | 49 | .25 | 1.2 | 8.20 | 26.5 | 11 |
| 90537-52 | SWD-1800 | 47 | .25 | 1.0 | 8.70 | 29.9 | 10 |
| 90537-53 | SWD-2200 | 50 | .25 | 0.97 | 8.00 | 33.8 | 9 |
| 90537-54 | SWD-2700 | 47 | .25 | 0.92 | 7.00 | 47.3 | 8 |
| 90537-55 | SWD-3300 | 43 | .25 | 0.84 | 7.20 | 53.0 | 8 |
| 90537-56 | SWD-3900 | 43 | .25 | 0.80 | 6.50 | 73.8 | 6 |
| 90537-57 | SWD-4700 | 44 | .25 | 0.74 | 6.40 | 81.6 | 6 |
| 90537-58 | SWD-5600 | 45 | .25 | 0.73 | 5.50 | 98.9 | 5 |
| 90537-59 | SWD-6800 | 43 | .25 | 0.66 | 5.50 | 111.0 | 5 |
| 90537-60 | SWD-8200 | 42 | .25 | 0.54 | 6.70 | 119.0 | 5 |
| 90537-61 | SWD-10,000 | 39 | .25 | 0.47 | 7.30 | 137.0 | 4 |
| 90537-62 | SWD-12,000 | 31 | .079 | 0.33 | 12.0 | 143.0 | 4 |
| 90537-63 | SWD-15,000 | 31 | .079 | 0.29 | 12.7 | 157.0 | 4 |
| 90537-64 | SWD-18,000 | 31 | .079 | 0.28 | 11.2 | 175.0 | 4 |
| 90537-65 | SWD-22,000 | 27 | .079 | 0.25 | 11.6 | 274.0 | 3 |
| 90537-66 | SWD-27,000 | 27 | .079 | 0.21 | 12.9 | 308.0 | 3 |
| 90537-67 | SWD-33,000 | 27 | .079 | 0.19 | 13.3 | 343.0 | 3 |
| 90537-68 | SWD-39,000 | 27 | .079 | 0.17 | 14.1 | 376.0 | 2 |
| 90537-69 | SWD-47,000 | 23 | .079 | 0.16 | 13.5 | 473.0 | 2 |
| 90537-70 | SWD-56,000 | 23 | .079 | 0.14 | 13.2 | 512.0 | 2 |
| 90537-71 | SWD-68,000 | 23 | .079 | 0.13 | 13.2 | 580.0 | 2 |
| 90537-72 | SWD-82,000 | 21 | .079 | 0.12 | 12.9 | 618.0 | 2 |
| 90537-73 | SWD-100,000 | 18 | .079 | 0.11 | 12.2 | 678.0 | 2 |

*At 125° C. †Based on temp. rise not to exceed 35° C at 90° T ‡Applies to SWD only -100 thru -100,000. §Final suffix of SW types indicates inductance in μH. #Applies to SWD only thru -

#### PRICES FOR SERIES SWD

| Nytronics No. | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|
| | 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 50 99 |
| SWD-0.10 to -15 | $1.24 | $0.93 | $0.82 | $0.72 | $0.67 | $0. |
| SWD-18 to -8200 | 1.44 | 1.03 | .93 | .82 | .77 | . |
| SWD-10,000 to -100,000 | 1.55 | 1.34 | 1.24 | 1.18 | 1.08 | 1. |

#### PRICES FOR SERIES MS90537

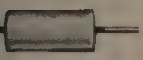
| | | | | | | |
|---|---|---|---|---|---|---|
| 90537-1 to -27 | $1.23 | $0.99 | $0.86 | $0.78 | $0.72 | $0. |
| 90537-28 to -60 | 1.46 | 1.17 | 1.02 | .92 | .85 | . |
| 90537-61 to -73 | 2.24 | 1.80 | 1.56 | 1.42 | 1.31 | 1. |

# NYTRONICS, INC.
## ESSEX ELECTRONICS DIV.

# INDUCTORS: FIXED, SHIELDED

E-WEE DUCTORS

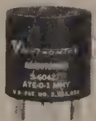
RFC-M INDUCTOR


FC-S INDUCTOR

RFC-L INDUCTOR

PEE-WEE DUCTOR

ATE-11


ATE-0

ATE-4

### WEE-WEE DUCTORS

iniature shielded inductor, permits high density applications. inductance-to-size ratio. Color-coded per MIL-C-15305C. **ctance Tolerance:** ±10%. **Power Rating:** I max. based on tt dissipation. **Operating Temperature:** −55° C to +125° C. 0.133″ dia. x 0.335″ lg. **Leads:** #24 AWG, 1.3″ lg.

#### SPECIFICATIONS

| ytronics No.* | Min. Q at Freq. |  | Approximate |  | Max. DC Ohms* | Max. Cur., mA |
|---|---|---|---|---|---|---|
|  | Q | MHz | Reson., MHz | Cap., pF |  |  |
| -WEE-0.10 | 42 | 25 | 500† | 0.67 | .112 | 1720 |
| -WEE-0.12 | 42 | 25 | 500† | 0.67 | .126 | 1630 |
| -WEE-0.15 | 42 | 25 | 500† | 0.67 | .138 | 1550 |
| -WEE-0.18 | 42 | 25 | 458 | 0.67 | .165 | 1420 |
| -WEE-0.22 | 42 | 25 | 414 | 0.67 | .198 | 1330 |
| -WEE-0.27 | 42 | 25 | 373 | 0.67 | .220 | 1230 |
| -WEE-0.33 | 42 | 25 | 360 | 0.66 | .258 | 1140 |
| -WEE-0.39 | 42 | 25 | 339 | 0.57 | .292 | 1060 |
| -WEE-0.47 | 41 | 25 | 309 | 0.57 | .360 | 960 |
| -WEE-0.56 | 39 | 25 | 295 | 0.52 | .397 | 915 |
| -WEE-0.68 | 36 | 25 | 270 | 0.52 | .472 | 840 |
| -WEE-0.82 | 35 | 25 | 250 | 0.52 | .638 | 720 |
| -WEE-1.0 | 42 | 25 | 170 | 0.87 | .208 | 1260 |
| -WEE-1.2 | 38 | 7.9 | 150 | 0.94 | .225 | 1210 |
| -WEE-1.5 | 38 | 7.9 | 139 | 0.87 | .265 | 1120 |
| -WEE-1.8 | 38 | 7.9 | 129 | 0.85 | .285 | 1080 |
| -WEE-2.2 | 36 | 7.9 | 118 | 0.83 | .330 | 1000 |
| -WEE-2.7 | 38 | 7.9 | 106 | 0.83 | .381 | 935 |
| -WEE-3.3 | 38 | 7.9 | 98 | 0.81 | .432 | 875 |
| -WEE-3.9 | 40 | 7.9 | 91 | 0.79 | .576 | 755 |
| -WEE-4.7 | 42 | 7.9 | 83 | 0.79 | .787 | 650 |
| -WEE-5.6 | 42 | 7.9 | 77 | 0.79 | 1.04 | 565 |
| -WEE-6.8 | 45 | 7.9 | 67 | 0.83 | 1.40 | 485 |
| -WEE-8.2 | 47 | 7.9 | 62 | 0.81 | 1.68 | 440 |
| -WEE-10 | 51 | 7.9 | 55 | 0.83 | 2.58 | 355 |
| -WEE-12 | 51 | 2.5 | 49 | 0.88 | 3.65 | 300 |
| -WEE-15 | 45 | 2.5 | 55 | 0.56 | .862 | 620 |
| -WEE-18 | 43 | 2.5 | 50 | 0.57 | 1.02 | 570 |
| -WEE-22 | 42 | 2.5 | 45 | 0.57 | 1.12 | 545 |
| -WEE-27 | 37 | 2.5 | 41 | 0.58 | 1.28 | 510 |
| -WEE-33 | 46 | 2.5 | 37 | 0.57 | 1.70 | 440 |
| -WEE-39 | 38 | 2.5 | 33 | 0.59 | 1.99 | 405 |
| -WEE-47 | 42 | 2.5 | 29 | 0.64 | 2.41 | 370 |
| -WEE-56 | 41 | 2.5 | 27 | 0.54 | 2.85 | 340 |
| -WEE-68 | 46 | 2.5 | 23 | 0.71 | 3.21 | 320 |
| -WEE-82 | 46 | 2.5 | 21 | 0.71 | 3.57 | 305 |
| -WEE-100 | 43 | 2.5 | 19 | 0.71 | 4.10 | 280 |
| -WEE-120 | 50 | 0.79 | 16 | 0.79 | 5.97 | 235 |
| -WEE-150 | 49 | 0.79 | 15 | 0.75 | 7.05 | 215 |
| -WEE-180 | 56 | 0.79 | 14 | 0.72 | 8.12 | 200 |
| -WEE-220 | 53 | 0.79 | 12 | 0.79 | 14.8 | 150 |
| -WEE-270 | 57 | 0.79 | 11.5 | 0.72 | 16.8 | 140 |
| -WEE-330 | 57 | 0.79 | 10.5 | 0.70 | 18.6 | 130 |
| -WEE-390 | 57 | 0.79 | 10.0 | 0.65 | 21.1 | 120 |
| -WEE-470 | 50 | 0.79 | 8.5 | 0.75 | 32.2 | 100 |
| -WEE-560 | 50 | 0.79 | 7.5 | 0.80 | 36.4 | 95 |
| -WEE-680 | 56 | 0.79 | 7.0 | 0.77 | 41.1 | 90 |
| -WEE-820 | 49 | 0.79 | 6.5 | 0.74 | 45.0 | 85 |
| -WEE-1000 | 49 | 0.79 | 6.0 | 0.74 | 52.0 | 80 |

25° C. †Greater than. *Suffix indicates inductance in μH WEE-WEE-**0.10** = 0.10 μH).

#### PRICES

| Nytronics No. | Net Each, Lots of |  |  |  |  |  |
|---|---|---|---|---|---|---|
|  | 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
| -WEE-0.1 to -0.82 | $1.55 | $1.24 | $1.13 | $1.03 | $0.93 | $0.82 |
| -WEE-1.0 to -12 | 1.65 | 1.34 | 1.24 | 1.13 | 1.03 | .93 |
| -WEE-15 to -1000 | 1.91 | 1.56 | 1.39 | 1.29 | 1.13 | 1.03 |

### SUPER WEE-WEE DUCTOR SERIES ALSO AVAILABLE

ielded miniature design provides greater inductance-to- e ratio in molded epoxy envelope. "T" lead construction values 15 to 10,000 μH for exceptional reliability. Meets IL-C-15305C, Grade 1, Class B specifications. **All values cked from 0.10 to 10,000 μH. Prices and Specifications request.**

### PEE-WEE DUCTORS
### ULTRA MINIATURE

Amazing Pee-Wee Ductors represent a 66% size reduction from the smallest magnetically-shielded, axial lead inductor series previously available anywhere. Furthermore, this size reduction was obtained with negligible loss of electrical performance by employing several unique concepts in RF coil design. **Inductance Tolerance:** ±10%. **Operating Temperature:** −20° C to +80° C. **Size:** .085″ dia. x .155″ lg. **Leads:** #26 AWG, 1.5″ lg.

#### SPECIFICATIONS

| Nytronics No.* | Min. Q at Freq. |  | Approx. Reson., MHz | Max. DC Ohms at 25° C | Max. Cur., mA |
|---|---|---|---|---|---|
|  | Q | MHz |  |  |  |
| PW-0.10 | 52 | 25 | 500 | .060 | 1500 |
| PW-0.12 | 52 | 25 | 480 | .070 | 1400 |
| PW-0.15 | 52 | 25 | 450 | .080 | 1300 |
| PW-0.18 | 55 | 25 | 430 | .090 | 1200 |
| PW-0.22 | 55 | 25 | 390 | .11 | 1100 |
| PW-0.27 | 55 | 25 | 340 | .12 | 1000 |
| PW-0.33 | 52 | 25 | 310 | .14 | 950 |
| PW-0.39 | 52 | 25 | 280 | .16 | 900 |
| PW-0.47 | 50 | 25 | 250 | .20 | 800 |
| PW-0.56 | 50 | 25 | 220 | .25 | 750 |
| PW-0.68 | 48 | 25 | 200 | .27 | 700 |
| PW-0.82 | 48 | 25 | 180 | .36 | 600 |
| PW-1.0 | 45 | 25 | 165 | .40 | 525 |
| PW-1.2 | 45 | 7.9 | 150 | .70 | 425 |
| PW-1.5 | 45 | 7.9 | 130 | .80 | 400 |
| PW-1.8 | 45 | 7.9 | 120 | .90 | 350 |
| PW-2.2 | 45 | 7.9 | 110 | 1.3 | 320 |
| PW-2.7 | 45 | 7.9 | 100 | 1.8 | 275 |
| PW-3.3 | 42 | 7.9 | 70 | 1.7 | 290 |
| PW-3.9 | 45 | 7.9 | 65 | 1.8 | 275 |
| PW-4.7 | 45 | 7.9 | 58 | 2.6 | 225 |
| PW-5.6 | 45 | 7.9 | 54 | 2.9 | 210 |
| PW-6.8 | 45 | 7.9 | 50 | 3.3 | 200 |
| PW-8.2 | 45 | 7.9 | 48 | 4.5 | 170 |
| PW-10 | 45 | 7.9 | 45 | 4.8 | 165 |
| PW-12 | 45 | 2.5 | 40 | 2.0 | 250 |
| PW-15 | 45 | 2.5 | 36 | 2.5 | 230 |
| PW-18 | 45 | 2.5 | 31 | 3.5 | 195 |
| PW-22 | 46 | 2.5 | 28 | 4.5 | 170 |
| PW-27 | 48 | 2.5 | 25 | 5.0 | 160 |
| PW-33 | 48 | 2.5 | 23 | 5.5 | 150 |
| PW-39 | 48 | 2.5 | 22 | 7.0 | 140 |
| PW-47 | 50 | 2.5 | 21 | 7.5 | 135 |
| PW-56 | 52 | 2.5 | 19 | 8.0 | 130 |
| PW-68 | 55 | 2.5 | 18 | 9.0 | 120 |
| PW-82 | 55 | 2.5 | 16 | 14 | 95 |
| PW-100 | 55 | 2.5 | 14 | 16 | 90 |
| PW-120 | 34 | .79 | 9.5 | 10 | 115 |
| PW-150 | 34 | .79 | 8.8 | 12 | 105 |
| PW-180 | 34 | .79 | 8.1 | 15 | 90 |
| PW-220 | 36 | .79 | 7.8 | 20 | 80 |
| PW-270 | 36 | .79 | 7.3 | 23 | 75 |
| PW-330 | 36 | .79 | 6.8 | 26 | 70 |
| PW-390 | 36 | .79 | 6.0 | 35 | 65 |
| PW-470 | 38 | .79 | 5.6 | 37 | 60 |
| PW-560 | 40 | .79 | 5.0 | 40 | 58 |
| PW-680 | 40 | .79 | 4.3 | 48 | 54 |
| PW-820 | 40 | .79 | 3.8 | 54 | 47 |
| PW-1000 | 40 | .79 | 3.5 | 65 | 43 |

*Suffix indicates inductance in μH (e.g., PW-**0.10** = 0.10 μH). **Note:** Additional inductance values from .025 μH up to 10,000 μH available on special order.

#### PRICES

| Nytronics No. | Net Each, Lots of |  |  |  |  |  |
|---|---|---|---|---|---|---|
|  | 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
| PW-0.10 to -1.0 | $3.57 | $2.38 | $1.70 | $1.31 | $1.09 | $0.99 |
| PW-1.2 to -4.7 | 3.93 | 2.62 | 1.87 | 1.44 | 1.20 | 1.09 |
| PW-5.6 to -10 | 4.10 | 2.73 | 1.95 | 1.50 | 1.25 | 1.13 |
| PW-12 to -27 | 4.43 | 2.95 | 2.11 | 1.62 | 1.35 | 1.23 |
| PW-33 to -100 | 4.82 | 3.21 | 2.29 | 1.76 | 1.47 | 1.34 |
| PW-120 to -1000 | 5.46 | 3.64 | 2.60 | 2.00 | 1.67 | 1.52 |

# NYTRONICS, INC.
## ESSEX ELECTRONICS DIV.

# INDUCTORS: FIXED, UNSHIELDED, VARIABLE

## NEW PEE-DEE DUCTORS

Microminiature, axial-lead RF inductors meet MIL-C-15305, Grade 2, Class 5 specifications. **Inductance Tolerance:** ±10%. **Operating Temperature:** −55° C to +125° C. **Size:** .075″ dia. x .140″ lg. **Leads:** #26 AWG, 1.5″ lg.

| Nytronics No. | Ind. μH | Min. Q at Freq. | | Min. Reson., MHz | Max. DC Ohms at 25° C | Max. Cur., mA* |
|---|---|---|---|---|---|---|
| | | Q | MHz | | | |
| **PD-0.10** | 0.10 | 42 | 25 | 500 | 0.2 | 600 |
| **PD-0.12** | 0.12 | 42 | 25 | 450 | 0.2 | 600 |
| **PD-0.15** | 0.15 | 42 | 25 | 400 | 0.25 | 575 |
| **PD-0.18** | 0.18 | 45 | 25 | 380 | 0.25 | 575 |
| **PD-0.22** | 0.22 | 45 | 25 | 360 | 0.30 | 565 |
| **PD-0.27** | 0.27 | 50 | 25 | 300 | 0.30 | 565 |
| **PD-0.33** | 0.33 | 45 | 25 | 280 | 0.35 | 560 |
| **PD-0.39** | 0.39 | 50 | 25 | 260 | 0.37 | 550 |
| **PD-0.47** | 0.47 | 50 | 25 | 250 | 0.39 | 535 |
| **PD-0.56** | 0.56 | 50 | 25 | 240 | 0.40 | 525 |
| **PD-0.68** | 0.68 | 50 | 25 | 220 | 0.45 | 500 |
| **PD-0.82** | 0.82 | 50 | 25 | 180 | 0.50 | 480 |
| **PD-1.0** | 1.0 | 50 | 25 | 170 | 0.60 | 450 |
| **PD-1.2** | 1.2 | 42 | 7.9 | 150 | 0.70 | 425 |
| **PD-1.5** | 1.5 | 45 | 7.9 | 130 | 0.80 | 400 |
| **PD-1.8** | 1.8 | 45 | 7.9 | 120 | 0.90 | 350 |
| **PD-2.2** | 2.2 | 45 | 7.9 | 110 | 1.3 | 320 |
| **PD-2.7** | 2.7 | 45 | 7.9 | 105 | 1.8 | 275 |
| **PD-3.3** | 3.3 | 35 | 7.9 | 100 | 1.1 | 340 |
| **PD-3.9** | 3.9 | 35 | 7.9 | 90 | 1.4 | 310 |
| **PD-4.7** | 4.7 | 35 | 7.9 | 85 | 1.6 | 290 |
| **PD-5.6** | 5.6 | 35 | 7.9 | 70 | 1.8 | 275 |
| **PD-6.8** | 6.8 | 40 | 7.9 | 65 | 2.0 | 250 |
| **PD-8.2** | 8.2 | 40 | 7.9 | 62 | 2.2 | 245 |
| **PD-10** | 10 | 45 | 7.9 | 60 | 3.0 | 210 |
| **PD-12** | 12 | 45 | 2.5 | 35 | 2.0 | 250 |
| **PD-15** | 15 | 45 | 2.5 | 30 | 2.2 | 245 |
| **PD-18** | 18 | 45 | 2.5 | 25 | 2.5 | 230 |
| **PD-22** | 22 | 45 | 2.5 | 23 | 2.7 | 220 |
| **PD-27** | 27 | 50 | 2.5 | 21 | 3.8 | 195 |
| **PD-33** | 33 | 50 | 2.5 | 20 | 4.5 | 170 |
| **PD-39** | 39 | 50 | 2.5 | 16 | 6.0 | 150 |
| **PD-47** | 47 | 50 | 2.5 | 14 | 6.5 | 145 |
| **PD-56** | 56 | 50 | 2.5 | 12 | 7.8 | 135 |
| **PD-68** | 68 | 55 | 2.5 | 10 | 8.6 | 130 |
| **PD-82** | 82 | 50 | 2.5 | 9.0 | 9.8 | 120 |
| **PD-100** | 100 | 55 | 2.5 | 8.0 | 11.5 | 110 |
| **PD-120** | 120 | 28 | .79 | 7.0 | 15.0 | 90 |
| **PD-150** | 150 | 28 | .79 | 6.0 | 16.5 | 88 |
| **PD-180** | 180 | 25 | .79 | 5.5 | 22 | 75 |
| **PD-220** | 220 | 24 | .79 | 5.2 | 31 | 62 |
| **PD-270** | 270 | 24 | .79 | 5.0 | 38 | 56 |
| **PD-330** | 330 | 24 | .79 | 4.8 | 42 | 53 |
| **PD-390** | 390 | 24 | .79 | 3.6 | 58 | 47 |
| **PD-470** | 470 | 24 | .79 | 3.4 | 60 | 45 |
| **PD-560** | 560 | 24 | .79 | 3.2 | 65 | 43 |
| **PD-680** | 680 | 22 | .79 | 3.0 | 90 | 36 |
| **PD-820** | 820 | 23 | .79 | 2.5 | 95 | 34 |
| **PD-1000** | 1000 | 21 | .79 | 2.0 | 130 | 30 |

## NEW ADJUSTOROID INDUCTORS

New development in the toroidal coil field; offers available toroid in one of three case sizes. Developed for PC and similar light weight applications. Meets MIL-C-15305A specifications. **Inductance Tuning Range:** ±5%. **Operating Temperature:** −55° C to +125° C. **Size:** ATE-11, ¾″ dia. x 1³⁄₁₆″ lg.; ATE-0, 1¹¹⁄₁₆″ dia. x 1″ lg.; ATE-4, 1⁵⁄₁₆″ dia. x 1³⁄₁₆″ lg. **Leads:** #20 TCW.

| | | | | | | |
|---|---|---|---|---|---|---|
| **ATE-11-0.010** | .010 | 75 | 15 | 350 | 6 | 55 |
| **ATE-11-0.012** | .012 | 75 | 15 | 300 | 8 | 51 |
| **ATE-11-0.015** | .015 | 75 | 15 | 250 | 9 | 45 |
| **ATE-11-0.018** | .018 | 75 | 15 | 250 | 10 | 41 |
| **ATE-11-0.022** | .022 | 75 | 15 | 200 | 13 | 37 |
| **ATE-11-0.027** | .027 | 75 | 15 | 200 | 14 | 34 |
| **ATE-11-0.033** | .033 | 70 | 15 | 150 | 20 | 30 |
| **ATE-11-0.039** | .039 | 70 | 15 | 150 | 22 | 28 |
| **ATE-11-0.047** | .047 | 70 | 15 | 150 | 29 | 25 |
| **ATE-11-0.056** | .056 | 70 | 15 | 100 | 32 | 23 |
| **ATE-11-0.068** | .068 | 65 | 10 | 100 | 35 | 21 |
| **ATE-11-0.082** | .082 | 65 | 10 | 100 | 48 | 19 |
| **ATE-11-0.100** | .100 | 60 | 10 | 95 | 53 | 17 |
| **ATE-11-0.120** | .120 | 60 | 10 | 90 | 58 | 16 |
| **ATE-11-0.150** | .150 | 55 | 10 | 80 | 85 | 14 |
| **ATE-11-0.180** | .180 | 55 | 10 | 70 | 92 | 13 |
| **ATE-0-0.220** | .220 | 95 | 7 | 45 | 55 | 21 |
| **ATE-0-0.270** | .270 | 95 | 7 | 40 | 76 | 19 |
| **ATE-0-0.330** | .330 | 95 | 7 | 35 | 83 | 17 |
| **ATE-0-0.390** | .390 | 90 | 6 | 35 | 111 | 16 |
| **ATE-0-0.470** | .470 | 90 | 6 | 30 | 122 | 14 |
| **ATE-0-0.560** | .560 | 90 | 6 | 25 | 181 | 12 |
| **ATE-0-0.680** | .680 | 85 | 6 | 20 | 185 | 12 |
| **ATE-0-0.820** | .820 | 85 | 6 | 20 | 202 | 11 |
| **ATE-0-1.00** | 1.00 | 85 | 5 | 20 | 291 | 10 |
| **ATE-0-1.20** | 1.20 | 80 | 5 | 20 | 320 | 9 |
| **ATE-0-1.50** | 1.50 | 80 | 5 | 15 | 358 | 8 |
| **ATE-4-1.80** | 1.80 | 100 | 4 | 13 | 198 | 14 |
| **ATE-4-2.20** | 2.20 | 90 | 3 | 12 | 220 | 13 |
| **ATE-4-2.70** | 2.70 | 90 | 3 | 11 | 300 | 11 |
| **ATE-4-3.30** | 3.30 | 90 | 3 | 9 | 331 | 10 |
| **ATE-4-3.90** | 3.90 | 80 | 2 | 8 | 455 | 9 |
| **ATE-4-4.70** | 4.70 | 80 | 2 | 7 | 500 | 8 |
| **ATE-4-5.60** | 5.60 | 80 | 2 | 7 | 545 | 8 |
| **ATE-4-6.80** | 6.80 | 60 | 1.5 | 6 | 785 | 7 |
| **ATE-4-8.20** | 8.20 | 60 | 1.5 | 5 | 862 | 6 |
| **ATE-4-10.0** | 10.0 | 40 | 1 | 5 | 1207 | 6 |
| **ATE-4-12.0** | 12.0 | 40 | 1 | 4 | 1323 | 5 |

*Based on temperature rise not to exceed 35° C at 90° C ambient.

**SEE ILLUSTRATIONS ON A PREVIOUS PAGE**

## RFC-S, -M, AND -L INDUCTORS

Molded non-shielded inductors. Provides exceptional reliability in critical circuitry applications. Meets requirements of MIL-C-15305C, Grade 1, Class B. **Inductance Tol.:** ±10% (0.1 to 22 μH), ±5% (27 to 10,000 μH). **Power Rating:** ⅓ watt dissipation for **S** and **M** series and ½ watt dissipation for **L** series. **Size: S** type—0.188″ dia. x 0.44″ lg. **M** type—0.25″ x 0.60″, **L** type—0.31″ x 0.90″. **Leads:** #22 AWG for **S**, #21 for **M** and **L**; 1.3″ lg. **Operating Temp.:** −55° C to +125° C.

| Nytronics No.• | Min. Q at Freq. | | Approximate | | Max. DC Ohms at 125° C | Max. Cur., mA |
|---|---|---|---|---|---|---|
| | Q | MHz | Reson., MHz | Cap., pF | | |
| **RFC-S-0.10** | 85 | 50 | 500* | 0.4 | .02 | 4000 |
| **RFC-S-0.12** | 85 | 50 | 500 | 0.4 | .025 | 3500 |
| **RFC-S-0.15** | 85 | 50 | 500* | 0.4 | .03 | 3000 |
| **RFC-S-0.18** | 75 | 50 | 500 | 0.4 | .03 | 3000 |
| **RFC-S-0.22** | 75 | 50 | 500 | 0.4 | .03 | 3000 |
| **RFC-S-0.27** | 70 | 45 | 470 | 0.4 | .04 | 2700 |
| **RFC-S-0.33** | 70 | 40 | 440 | 0.4 | .05 | 2500 |
| **RFC-S-0.39** | 65 | 40 | 400 | 0.4 | .08 | 2000 |
| **RFC-S-0.47** | 60 | 25 | 360 | 0.4 | .08 | 2000 |
| **RFC-S-0.56** | 55 | 25 | 330 | 0.4 | .10 | 1700 |
| **RFC-S-0.68** | 55 | 25 | 300 | 0.4 | .12 | 1500 |
| **RFC-S-0.82** | 50 | 25 | 275 | 0.4 | .18 | 1300 |
| **RFC-S-1.0** | 50 | 20 | 250 | 0.4 | .24 | 1100 |
| **RFC-S-1.2** | 45 | 20 | 220 | 0.4 | .35 | 1000 |
| **RFC-S-1.5** | 45 | 15 | 200 | 0.4 | .43 | 850 |
| **RFC-S-1.8** | 45 | 15 | 180 | 0.4 | .65 | 720 |
| **RFC-S-2.2** | 45 | 15 | 165 | 0.4 | .80 | 610 |
| **RFC-S-2.7** | 55 | 10 | 110 | 0.7 | .12 | 1600 |
| **RFC-S-3.3** | 55 | 10 | 100 | 0.7 | .15 | 1400 |
| **RFC-S-3.9** | 60 | 10 | 95 | 0.7 | .23 | 1200 |
| **RFC-S-4.7** | 70 | 7.9 | 90 | 0.7 | .30 | 1000 |
| **RFC-S-5.6** | 65 | 7.9 | 80 | 0.7 | .45 | 900 |
| **RFC-S-6.8** | 65 | 7.9 | 70 | 0.7 | .55 | 800 |
| **RFC-S-8.2** | 60 | 7.9 | 65 | 0.7 | .65 | 720 |
| **RFC-S-10** | 60 | 5 | 60 | 0.7 | .73 | 650 |
| **RFC-S-12** | 65 | 5 | 53 | 0.7 | 1.1 | 590 |
| **RFC-S-15** | 80 | 2.5 | 47 | 0.7 | 1.4 | 500 |
| **RFC-S-18** | 75 | 2.5 | 43 | 0.7 | 1.6 | 460 |
| **RFC-S-22** | 75 | 2.5 | 40 | 0.7 | 1.8 | 430 |
| **RFC-S-27** | 75 | 2.5 | 36 | 0.7 | 2.7 | 360 |
| **RFC-S-33** | 85 | 2.5 | 32 | 0.7 | 3.5 | 300 |
| **RFC-S-39** | 80 | 2.5 | 26 | 0.9 | 3.8 | 290 |
| **RFC-S-47** | 80 | 2.5 | 22 | 1.1 | 4.0 | 275 |
| **RFC-S-56** | 75 | 2.5 | 19 | 1.3 | 4.4 | 265 |
| **RFC-S-68** | 75 | 2.5 | 16 | 1.5 | 4.7 | 250 |
| **RFC-S-82** | 75 | 2.5 | 13 | 2.0 | 5.3 | 235 |
| **RFC-S-100** | 75 | 1.5 | 10 | 2.5 | 6.0 | 220 |
| **RFC-M-120** | 95 | 1.5 | 14 | 1.1 | 7.5 | 200 |
| **RFC-M-150** | 90 | 1.0 | 11 | 1.3 | 8 | 190 |
| **RFC-M-180** | 85 | 1.0 | 9 | 1.8 | 9 | 185 |
| **RFC-M-220** | 85 | 1.0 | 7 | 2.2 | 10 | 180 |
| **RFC-M-270** | 80 | 1.0 | 5.5 | 3.0 | 11 | 172 |
| **RFC-M-330** | 80 | .8 | 4.5 | 3.8 | 12 | 165 |
| **RFC-M-390** | 75 | .8 | 4.0 | 4.1 | 13 | 157 |
| **RFC-M-470** | 75 | .8 | 3.5 | 4.4 | 14 | 150 |
| **RFC-M-560** | 65 | .8 | 3.1 | 4.7 | 16 | 145 |
| **RFC-M-680** | 65 | .8 | 2.7 | 5.0 | 17 | 140 |
| **RFC-M-820** | 65 | .8 | 2.5 | 5.0 | 19 | 132 |
| **RFC-M-1000** | 70 | .5 | 2.3 | 5.0 | 21 | 125 |
| **RFC-L-1200** | 75 | .5 | 2.1 | 4.4 | 27 | 137 |
| **RFC-L-1500** | 75 | .4 | 1.9 | 4.5 | 29 | 130 |
| **RFC-L-1800** | 65 | .4 | 1.7 | 4.6 | 32 | 125 |
| **RFC-L-2200** | 65 | .25 | 1.5 | 4.7 | 35 | 120 |
| **RFC-L-2700** | 65 | .25 | 1.3 | 5.0 | 40 | 112 |
| **RFC-L-3300** | 65 | .25 | 1.2 | 5.3 | 45 | 105 |
| **RFC-L-3900** | 65 | .25 | 1.05 | 5.6 | 49 | 100 |
| **RFC-L-4700** | 65 | .25 | .95 | 6.2 | 53 | 95 |
| **RFC-L-5600** | 65 | .25 | .85 | 6.3 | 60 | 90 |
| **RFC-L-6800** | 65 | .25 | .75 | 6.3 | 67 | 85 |
| **RFC-L-8200** | 65 | .25 | .65 | 7.2 | 75 | 82 |
| **RFC-L-10,000** | 65 | .15 | .58 | 7.8 | 80 | 80 |

*Greater than. •Suffix indicates inductance in μH (e.g., RFC-S-**0.10** = 0.10 μH).

## PRICES

| Nytronics No. | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|
| | 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
| **PD-0.10 to -1.0** | $ 2.38 | $ 1.70 | $ 1.31 | $ 1.09 | $0.99 | $0.90 |
| **PD-1.2 to -4.7** | 2.62 | 1.87 | 1.44 | 1.20 | 1.09 | .99 |
| **PD-5.6 to -10** | 2.73 | 1.95 | 1.50 | 1.25 | 1.13 | 1.03 |
| **PD-12 to -27** | 2.95 | 2.11 | 1.62 | 1.35 | 1.23 | 1.12 |
| **PD-33 to -100** | 3.21 | 2.29 | 1.76 | 1.47 | 1.34 | 1.22 |
| **PD-120 to -1000** | 3.64 | 2.60 | 2.00 | 1.67 | 1.52 | 1.38 |
| **ATE-11-0.01 to -0.068** | 14.42 | 13.13 | 9.79 | 7.57 | 5.56 | 4.89 |
| **ATE-11-0.082 to -0.180** | 16.14 | 14.68 | 11.21 | 8.44 | 6.08 | 5.29 |
| **ATE-0-0.220 to -1.50** | 19.00 | 17.27 | 13.18 | 9.95 | 7.23 | 6.32 |
| **ATE-4-1.80 to -3.30** | 20.48 | 18.62 | 14.19 | 10.74 | 7.86 | 6.79 |
| **ATE-4-3.90 to -6.80** | 21.24 | 19.31 | 14.74 | 11.18 | 8.21 | 7.10 |
| **ATE-4-8.20 to -12.0** | 24.21 | 22.02 | 16.80 | 12.72 | 9.32 | 8.13 |
| **RFC-S-0.1 to -100** | 1.24 | .93 | .84 | .77 | .69 | .63 |
| **RFC-M-120 to -1000** | 1.24 | .93 | .84 | .77 | .69 | .63 |
| **RFC-L-1200 to -2200** | 1.24 | .93 | .84 | .77 | .69 | .63 |
| **RFC-L-2700 to -10,000** | 1.34 | .98 | .90 | .82 | .74 | .68 |

# NYTRONICS, INC.
ESSEX ELECTRONICS DIV.

# INDUCTORS: FIXED, UNSHIELDED, VARIABLE

## DECI-DUCTORS

The smallest RF inductor. It offers epoxy-molded reliability and uniformity. Meets specifi- ons of MIL-C-15305C, Grade 1, Class B. **Inductance Tol:** 0%. **Size:** 0.100" x 0.250". **Leads:** #24 AWG, 1.25" lg. **Operating** np.: −55° C to 125° C.

| tronics No. | Ind., µH | Min. Q at Freq. | | Min. Reson., MHz | Max. DC Ohms at 25° C | Max. Cur., mA* |
|---|---|---|---|---|---|---|
| | | Q | MHz | | | |
| D-0.10 | .10 | 40 | 25 | 690 | 0.07 | 2000 |
| D-0.12 | .12 | 40 | 25 | 650 | 0.08 | 1900 |
| D-0.15 | .15 | 38 | 25 | 600 | 0.09 | 1750 |
| D-0.18 | .18 | 38 | 25 | 550 | 0.10 | 1600 |
| D-0.22 | .22 | 35 | 25 | 510 | 0.11 | 1550 |
| D-0.27 | .27 | 35 | 25 | 470 | 0.15 | 1350 |
| D-0.33 | .33 | 32 | 25 | 410 | 0.21 | 1150 |
| D-0.39 | .39 | 32 | 25 | 370 | 0.29 | 970 |
| D-0.47 | .47 | 32 | 25 | 340 | 0.35 | 820 |
| D-0.56 | .56 | 32 | 25 | 310 | 0.48 | 700 |
| D-0.68 | .68 | 33 | 25 | 280 | 0.65 | 600 |
| D-0.82 | .82 | 30 | 25 | 255 | 0.82 | 500 |
| D-1.00 | 1.00 | 30 | 25 | 240 | 1.10 | 475 |
| D-1.20 | 1.20 | 30 | 7.9 | 155 | 0.16 | 1200 |
| D-1.50 | 1.50 | 32 | 7.9 | 140 | 0.20 | 1100 |
| D-1.80 | 1.80 | 35 | 7.9 | 130 | 0.32 | 900 |
| D-2.20 | 2.20 | 35 | 7.9 | 120 | 0.37 | 760 |
| D-2.70 | 2.70 | 37 | 7.9 | 105 | 0.49 | 700 |
| D-3.30 | 3.30 | 45 | 7.9 | 95 | 0.67 | 575 |
| D-3.90 | 3.90 | 45 | 7.9 | 87 | 0.95 | 500 |
| D-4.70 | 4.70 | 45 | 7.9 | 80 | 1.10 | 475 |
| D-5.60 | 5.60 | 52 | 7.9 | 75 | 1.60 | 380 |
| D-6.80 | 6.80 | 52 | 7.9 | 65 | 1.80 | 350 |
| D-8.20 | 8.20 | 60 | 7.9 | 62 | 2.40 | 300 |
| D-10.0 | 10.0 | 60 | 7.9 | 52 | 3.40 | 265 |
| D-12.0 | 12.0 | 45 | 2.5 | 42 | 2.40 | 300 |
| D-15.0 | 15.0 | 47 | 2.5 | 36 | 2.70 | 275 |
| D-18.0 | 18.0 | 50 | 2.5 | 32 | 3.00 | 260 |
| D-22.0 | 22.0 | 50 | 2.5 | 28 | 3.30 | 250 |
| D-27.0 | 27.0 | 50 | 2.5 | 25 | 3.80 | 240 |
| D-33.0 | 33.0 | 50 | 2.5 | 30 | 3.80 | 260 |
| D-39.0 | 39.0 | 50 | 2.5 | 26 | 4.10 | 240 |
| D-47.0 | 47.0 | 50 | 2.5 | 24 | 4.40 | 210 |
| D-56.0 | 56.0 | 50 | 2.5 | 22 | 5.70 | 205 |
| D-68.0 | 68.0 | 52 | 2.5 | 19 | 6.50 | 180 |
| D-82.0 | 82.0 | 52 | 2.5 | 17 | 7.30 | 175 |
| D-100 | 100 | 50 | 2.5 | 15 | 8.20 | 165 |
| D-120 | 120 | 28 | 0.79 | 14 | 14 | 110 |
| D-150 | 150 | 28 | 0.79 | 13 | 16 | 105 |
| D-180 | 180 | 28 | 0.79 | 12 | 18 | 100 |
| D-220 | 220 | 26 | 0.79 | 11 | 25 | 90 |
| D-270 | 270 | 26 | 0.79 | 10 | 33 | 75 |
| D-330 | 330 | 26 | 0.79 | 9.0 | 37 | 70 |
| D-390 | 390 | 25 | 0.79 | 8.0 | 51 | 60 |
| D-470 | 470 | 27 | 0.79 | 7.0 | 56 | 58 |
| D-560 | 560 | 27 | 0.79 | 6.5 | 61 | 55 |
| D-680 | 680 | 28 | 0.79 | 6.0 | 70 | 50 |
| D-820 | 820 | 28 | 0.79 | 5.5 | 91 | 45 |
| D-1000 | 1000 | 28 | 0.79 | 5.2 | 102 | 40 |

ased on 35° C rise in 90° C ambient.

## VARIABLE VIV-VIH DUCTORS

Miniature type, encapsulated in epoxy resin for reliability. Meets requirements of MIL-C-15305A, Grade 1, Class B. **Inductance Tuning Range:** ±10% (0.1 µH), ±15% (0.15 to 0.22 µH), ±20% (0.33 to 4700 µH). **Size:** 0.40" dia. x 0.50" lg. (vertical style); .40" dia. x .5" wide (horizontal style). **Leads:** #22 AWG. **Operating Temp.:** −55° C to +125° C.

| Nytronics No. | | Ind., µH | Min. Q at Freq. | | Approx. Reson., MHz | Max. DC Ohms at 25° C |
|---|---|---|---|---|---|---|
| Vert. Mtg. | Horiz. Mtg. | | Q | MHz | | |
| V-0.10 | VIH-0.10 | .10 | 85 | 25 | 500† | 0.02 |
| V-0.15 | VIH-0.15 | .15 | 100 | 25 | 500† | 0.035 |
| V-0.22 | VIH-0.22 | .22 | 100 | 25 | 500† | 0.04 |
| V-0.33 | VIH-0.33 | .33 | 100 | 25 | 334 | 0.04 |
| V-0.47 | VIH-0.47 | .47 | 100 | 25 | 285 | 0.05 |
| V-0.68 | VIH-0.68 | .68 | 100 | 25 | 237 | 0.07 |
| V-1.00 | VIH-1.00 | 1.00 | 90 | 25 | 205 | 0.13 |
| V-1.50 | VIH-1.50 | 1.50 | 70 | 7.9 | 168 | 0.24 |
| V-2.20 | VIH-2.20 | 2.20 | 73 | 7.9 | 135 | 0.30 |
| V-3.30 | VIH-3.30 | 3.30 | 80 | 7.9 | 112 | 0.45 |
| V-4.70 | VIH-4.70 | 4.70 | 75 | 7.9 | 100.0 | 0.80 |
| V-6.80 | VIH-6.80 | 6.80 | 80 | 7.9 | 80.0 | 1.1 |
| V-10.0 | VIH-10.0 | 10.0 | 82 | 7.9 | 67.0 | 1.9 |
| V-15.0 | VIH-15.0 | 15.0 | 65 | 2.5 | 54.2 | 3.2 |
| V-22.0 | VIH-22.0 | 22.0 | 55 | 2.5 | 17.5 | 3.4 |
| V-33.0 | VIH-33.0 | 33.0 | 54 | 2.5 | 15.0 | 3.6 |
| V-47.0 | VIH-47.0 | 47.0 | 51 | 2.5 | 13.2 | 4.5 |
| V-68.0 | VIH-68.0 | 68.0 | 55 | 2.5 | 12.0 | 5.5 |
| V-100 | VIH-100 | 100.0 | 50 | 2.5 | 10.5 | 6.7 |
| V-150 | VIH-150 | 150 | 50 | .79 | 3.0 | 11.0 |
| V-220 | VIH-220 | 220 | 50 | .79 | 2.70 | 13.0 |
| V-330 | VIH-330 | 330 | 48 | .79 | 2.24 | 16.0 |
| V-470 | VIH-470 | 470 | 45 | .79 | 1.90 | 18.0 |
| V-680 | VIH-680 | 680 | 42 | .79 | 1.70 | 21.0 |
| V-1000 | VIH-1000 | 1000 | 40 | .79 | 1.40 | 38.0 |
| V-1500 | VIH-1500 | 1500 | 40 | .25 | 1.14 | 54.0 |
| V-2200 | VIH-2200 | 2200 | 44 | .25 | 0.96 | 66.0 |
| V-3300 | VIH-3300 | 3300 | 46 | .25 | 0.86 | 85.0 |
| V-4700 | VIH-4700 | 4700 | 48 | .25 | 0.76 | 99.0 |

## WEE V-L DUCTORS

Subminiature shielded adjustable high Q value inductor. May be mounted vertically or horizontally. Meets MIL-C-15305C, Grade 1, Class B. **Inductance Tuning Range:** ±10%. **Working Voltage:** 300 VDC. **Size:** 0.30" dia. x 0.40" lg. **Leads:** #24 AWG. **Oper. Temp.:** −55° C to +125° C.

| Nytronics No. | Ind., µH | Nom. Q at Freq. | | Nom. Reson., MHz | Max. DC Ohms at 25° C | Max. Cur., mA* |
|---|---|---|---|---|---|---|
| | | Q | MHz | | | |
| WEE V-L 0.10‡ | .10 | 70 | 25 | 250† | .030 | 2500 |
| WEE V-L 0.12‡ | .12 | 70 | 25 | 250† | .030 | 2500 |
| WEE V-L 0.15 | .15 | 70 | 25 | 250† | .030 | 2500 |
| WEE V-L 0.18 | .18 | 70 | 25 | 250† | .030 | 2400 |
| WEE V-L 0.22 | .22 | 70 | 25 | 250† | .038 | 2300 |
| WEE V-L 0.27 | .27 | 80 | 25 | 250† | .040 | 2200 |
| WEE V-L 0.33 | .33 | 80 | 25 | 250† | .040 | 2200 |
| WEE V-L 0.39 | .39 | 80 | 25 | 250 | .045 | 2100 |
| WEE V-L 0.47 | .47 | 80 | 25 | 230 | .045 | 2100 |
| WEE V-L 0.56 | .56 | 80 | 25 | 220 | .050 | 2000 |
| WEE V-L 0.68 | .68 | 80 | 25 | 190 | .055 | 1900 |
| WEE V-L 0.82 | .82 | 85 | 25 | 180 | .060 | 1800 |
| WEE V-L 1.00 | 1.00 | 85 | 25 | 160 | .070 | 1700 |
| WEE V-L 1.2 | 1.2 | 90 | 7.9 | 170 | .085 | 1670 |
| WEE V-L 1.5 | 1.5 | 100 | 7.9 | 155 | .100 | 1540 |
| WEE V-L 1.8 | 1.8 | 115 | 7.9 | 135 | .110 | 1470 |
| WEE V-L 2.2 | 2.2 | 110 | 7.9 | 120 | .120 | 1410 |
| WEE V-L 2.7 | 2.7 | 110 | 7.9 | 104 | .125 | 1380 |
| WEE V-L 3.3 | 3.3 | 90 | 7.9 | 93.0 | .165 | 1200 |
| WEE V-L 3.9 | 3.9 | 90 | 7.9 | 87.0 | .180 | 1135 |
| WEE V-L 4.7 | 4.7 | 95 | 7.9 | 79.0 | .245 | 985 |
| WEE V-L 5.6 | 5.6 | 95 | 7.9 | 72.0 | .265 | 950 |
| WEE V-L 6.8 | 6.8 | 85 | 7.9 | 63.0 | .330 | 853 |
| WEE V-L 8.2 | 8.2 | 95 | 7.9 | 60.0 | .460 | 720 |
| WEE V-L 10 | 10 | 90 | 7.9 | 54.0 | .640 | 620 |
| WEE V-L 12 | 12 | 120 | 2.5 | 37.0 | .800 | 545 |
| WEE V-L 15 | 15 | 120 | 2.5 | 28.8 | .865 | 520 |
| WEE V-L 18 | 18 | 115 | 2.5 | 23.8 | .940 | 504 |
| WEE V-L 22 | 22 | 125 | 2.5 | 21.3 | 1.03 | 460 |
| WEE V-L 27 | 27 | 115 | 2.5 | 20.6 | 1.18 | 418 |
| WEE V-L 33 | 33 | 120 | 2.5 | 18.6 | 1.30 | 398 |
| WEE V-L 39 | 39 | 120 | 2.5 | 17.7 | 1.41 | 385 |
| WEE V-L 47 | 47 | 110 | 2.5 | 14.9 | 1.61 | 350 |
| WEE V-L 56 | 56 | 115 | 2.5 | 13.9 | 2.08 | 330 |
| WEE V-L 68 | 68 | 105 | 2.5 | 12.9 | 2.20 | 320 |
| WEE V-L 82 | 82 | 105 | 2.5 | 11.7 | 2.42 | 300 |
| WEE V-L 100 | 100 | 95 | 2.5 | 10.5 | 2.15 | 333 |
| WEE V-L 120 | 120 | 95 | 0.790 | 5.60 | 2.38 | 316 |
| WEE V-L 150 | 150 | 90 | 0.790 | 5.20 | 2.52 | 306 |
| WEE V-L 180 | 180 | 95 | 0.790 | 4.90 | 2.88 | 288 |
| WEE V-L 220 | 220 | 95 | 0.790 | 4.60 | 3.18 | 273 |
| WEE V-L 270 | 270 | 100 | 0.790 | 4.20 | 3.50 | 260 |
| WEE V-L 330 | 330 | 100 | 0.790 | 3.55 | 4.80 | 222 |
| WEE V-L 390 | 390 | 100 | 0.790 | 3.45 | 5.44 | 209 |
| WEE V-L 470 | 470 | 100 | 0.790 | 3.20 | 5.90 | 201 |
| WEE V-L 560 | 560 | 95 | 0.790 | 2.90 | 6.30 | 194 |
| WEE V-L 680 | 680 | 100 | 0.790 | 2.70 | 7.20 | 181 |
| WEE V-L 820 | 820 | 90 | 0.790 | 2.50 | 8.00 | 172 |
| WEE V-L 1000 | 1000 | 100 | 0.790 | 2.35 | 12.0 | 141 |
| WEE V-L 1200 | 1200 | 95 | 0.250 | 2.20 | 13.5 | 132 |
| WEE V-L 1500 | 1500 | 90 | 0.250 | 1.90 | 16.5 | 119 |
| WEE V-L 1800 | 1800 | 100 | 0.250 | 1.80 | 18.0 | 114 |
| WEE V-L 2200 | 2200 | 100 | 0.250 | 1.70 | 20.5 | 107 |
| WEE V-L 2700 | 2700 | 95 | 0.250 | 1.50 | 22.5 | 102 |
| WEE V-L 3300 | 3300 | 90 | 0.250 | 1.40 | 42.0 | 76 |
| WEE V-L 3900 | 3900 | 85 | 0.250 | 1.27 | 47.5 | 71 |
| WEE V-L 4700 | 4700 | 85 | 0.250 | 1.24 | 53.0 | 67 |
| WEE V-L 5600 | 5600 | 85 | 0.250 | 0.93 | 62.5 | 65 |
| WEE V-L 6800 | 6800 | 75 | 0.250 | 0.79 | 69.5 | 58 |
| WEE V-L 8200 | 8200 | 80 | 0.250 | 0.75 | 75.0 | 56 |
| WEE V-L 10,000 | 10,000 | 70 | 0.250 | 0.70 | 100.0 | 49 |
| WEE V-L 12,000 | 12,000 | 70 | 0.079 | .50 | 64 | 60 |
| WEE V-L 15,000 | 15,000 | 70 | 0.079 | .38 | 84 | 52 |
| WEE V-L 18,000 | 18,000 | 70 | 0.079 | .36 | 93 | 50 |
| WEE V-L 22,000 | 22,000 | 70 | 0.079 | .32 | 104 | 45 |
| WEE V-L 27,000 | 27,000 | 70 | 0.079 | .30 | 173 | 35 |
| WEE V-L 33,000 | 33,000 | 70 | 0.079 | .27 | 187 | 32 |
| WEE V-L 39,000 | 39,000 | 70 | 0.079 | .26 | 220 | 30 |
| WEE V-L 47,000 | 47,000 | 70 | 0.079 | .25 | 253 | 28 |
| WEE V-L 56,000 | 56,000 | 70 | 0.079 | .24 | 285 | 26 |
| WEE V-L 68,000 | 68,000 | 60 | 0.079 | .20 | 311 | 24 |
| WEE V-L 82,000 | 82,000 | 60 | 0.079 | .19 | 385 | 22 |
| WEE V-L 100,000 | 100,000 | 60 | 0.079 | .17 | 420 | 20 |

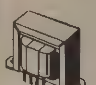
*Based on temp. rise not to exceed 35° C at 90° C ambient. †Greater than. ‡Tunable range, ±5%.

## PRICES

| Nytronics No. | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|
| | 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
| **DD-0.10 to -1.00** | $0.83 | $0.66 | $0.58 | $0.53 | $0.48 | $0.45 |
| **DD-1.20 to -27.0** | .91 | .72 | .63 | .58 | .53 | .49 |
| **DD-33.0 to -100** | .96 | .76 | .67 | .61 | .56 | .53 |
| **DD-120 to -1000** | 1.00 | .80 | .69 | .63 | .59 | .55 |
| **VIH-0.10 to -15.0** | 4.62 | 3.70 | 3.21 | 2.93 | 2.71 | 2.53 |
| **VIH-22.0 to -4700** | 4.85 | 3.88 | 3.38 | 3.07 | 2.84 | 2.66 |
| **VIV-0.10 to -15.0** | 3.35 | 2.68 | 2.33 | 2.12 | 1.96 | 1.83 |
| **VIV-22.0 to -4700** | 3.58 | 2.86 | 2.49 | 2.27 | 2.10 | 1.96 |
| **WEE V-L 0.10 to 1.0** | 5.87 | 4.70 | 4.08 | 3.71 | 3.43 | 3.19 |
| **WEE V-L 1.2 to 10,000** | 4.89 | 3.91 | 3.40 | 3.09 | 2.85 | 2.66 |
| **WEE V-L 12,000 to 100,000** | 6.98 | 5.59 | 4.85 | 4.42 | 4.08 | 3.80 |

| | |
|---|---|
| ACS-57 Horiz. mtg. clip for WEE V-L's; Net per 100.... | **$5.00** |
| ACS-57 Factory-installed, add to prices above.......... | **.20** |
| B-305 Alignment tool for VIV and VIH series; Net Each.. | **.50** |
| B-469 Alignment tool for WEE V-L's; Net Each........ | **.50** |

# Transformers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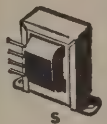
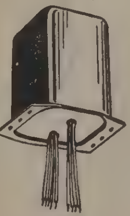

S

C


SC

NV

## SINGLE PLATE TO VOICE COIL AND/OR LINE

| Stancor No. | Impedance in Ohms |  | Audio Watts | Mtg. Type | Net Each, Quantities of |  |  |  |
|---|---|---|---|---|---|---|---|---|
|  | Primary | Secondary |  |  | 1-9 | 10-24 | 25-49 | 50-99 |
| A-8070 | 1000 | 4.0 | 4 | A | $ 2.79 | $2.51 | $2.26 | $2.09 |
| A-3332 | 2000 | 3.2 | 3 | A | 2.30 | 2.07 | 1.86 | 1.73 |
| A-3330 | 2000* | 3.5 | 5 | A | 3.00 | 2.70 | 2.43 | 2.25 |
| A-3876 | 2000 | 4.0 | 5 | A | 2.37 | 2.13 | 1.92 | 1.78 |
| A-3336 | 2500† | 3.5 | 5 | A | 3.38 | 3.04 | 2.74 | 2.54 |
| A-3328 | 4000 | 3.5 | 3 | A | 2.24 | 2.02 | 1.81 | 1.68 |
| A-3877 | 5000 | 4.0 | 5 | A | 2.37 | 2.13 | 1.92 | 1.78 |
| A-3309 | 5000 | 3–4 | 3 | A | 2.45 | 2.21 | 1.98 | 1.84 |
| A-8092 | 5000 | 3–4 | 8 | A | 3.32 | 2.99 | 2.69 | 2.49 |
| A-3337 | 5000 | 6–8 | 10 | S | 3.85 | 3.47 | 3.12 | 2.89 |
| A-3310 | 5000 | 500/15/8/4 | 20 | C | 10.91 | 9.82 | 8.84 | 8.18 |
| A-3878 | 7000 | 4.0 | 5 | A | 2.55 | 2.30 | 2.07 | 1.91 |
| A-2313 | 7000 | 8.0 | 10 | A | 3.87 | 3.48 | 3.13 | 2.90 |
| A-8114 | 7600 | 3.2 | 5 | A | 2.60 | 2.34 | 2.11 | 1.95 |
| A-3329 | 8000 | 3.5 | 3 | A | 2.24 | 2.02 | 1.81 | 1.68 |
| A-3879 | 10000 | 4.0 | 5 | A | 2.30 | 2.07 | 1.86 | 1.73 |
| A-3881 | 15000 | 4.0 | 5 | A | 2.63 | 2.37 | 2.13 | 1.97 |
| A-3250 | 20000/10000<br>5000 | 500/333/200<br>125/50 | 5 | A | 6.39 | 5.75 | 5.18 | 4.79 |
| A-3327 | 25000 | 4.0 | 5 | A | 2.60 | 2.34 | 2.11 | 1.95 |

*Has 4.5% primary tap. †Has 3% and 6% primary taps.

## PUSH-PULL PLATES TO VOICE COIL AND/OR LINE

| Stancor No. | Impedance in Ohms |  | Audio Watts | Mtg. Type | Net Each, Quantities of |  |  |  |
|---|---|---|---|---|---|---|---|---|
|  | Primary, CT | Secondary |  |  | 1-9 | 10-24 | 25-49 | 50-99 |
| A-3802 | 3800/3300 | 500/250/8/4 | 75 | C | $22.72 | $20.45 | $18.40 | $17.04 |
| A-3872 | 5000 | 15/8/4 | 18 | SC | 8.02 | 7.22 | 6.50 | 6.02 |
| A-3800 | 5000 | 500/250/15/8/4 | 30 | C | 10.00 | 9.00 | 8.10 | 7.50 |
| A-3801 | 6600 | 500/250/15/8/4 | 35 | C | 12.34 | 11.11 | 10.00 | 9.26 |
| A-3304 | 10000/7000 | 500/15/8/4 | 25 | C | 10.00 | 9.00 | 8.10 | 7.50 |
| A-3311 | 10000 | 500/15/8/4 | 25 | C | 10.30 | 9.27 | 8.34 | 7.73 |
| A-3831 | 10000 | 8/4/2 | 5 | A | 4.60 | 4.14 | 3.73 | 3.45 |
| A-8093 | 10000 | 3–4 | 10 | A | 3.05 | 2.75 | 2.47 | 2.29 |
| A-3335 | 10000 | 6–8/3.2–4 | 10 | S | 4.34 | 3.91 | 3.52 | 3.26 |
| PCO-150 | 10000* | 600/150/16/8/4 | 15 | SC | 25.30 | 22.77 | 20.49 | 18.98 |
| PSO-150 | 10000* | 600/150/16/8/4 | 15 | SC | 30.94 | 27.85 | 25.06 | 23.21 |
| A-3496 | 14000 | 4.0 | 5 | A | 2.80 | 2.52 | 2.27 | 2.10 |
| A-3250 | 20000 | 500/333/200/125/50 | 5 | A | 6.39 | 5.75 | 5.18 | 4.79 |
| A-3857 | 25000 | 4.0 | 5 | A | 3.52 | 3.17 | 2.85 | 2.64 |

*Has tertiary winding to provide 10% inverse feedback.

## HIGH FIDELITY OUTPUT TRANSFORMERS

Frequency response excellent, ± 1 dB, 20–20,000 Hz. Extremely low level of intermodulation distortion over entire range and at any power level. **Type "C"** upright shell mounting for all units. Shipping Weight, 6.5 lbs. Size: 3 7/16″ w. x 4¼″ d. x 4¼″ h.

| Stancor No. | Pri. Imp. Ohms | Sec. Imp. Ohms | Audio Watts | Max. Pri. mADC | Net Each, Quantities of |  |  |  |
|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  | 1-9 | 10-24 | 25-49 | 50-99 |
| A-8053 | 5000 CT | 16/8 | 50 | 150 | $15.00 | $13.50 | $12.15 | $11.25 |
| A-8056 | 6600 CT | 16/8 | 50 | 125 | 24.67 | 22.20 | 19.98 | 18.50 |
| A-8072 | 7600 CT* | 16/8/4 | 25 | 100 | 20.00 | 18.00 | 16.20 | 15.00 |

*Has screen grid taps on primary.

## UNIVERSAL SILICON OR SELENIUM RECTIFIER TRANSFORMERS

Primary 117 VAC, 50/60 Hz. Mounting type NV with solder lug termination. Also available up to 40 V in lower amperage range. Write for complete details.

| Stancor No. | Applied VAC Under Load | Max. DC Output |  |  |  | Filter Cap., µF | Net Each, Quantities of |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|
|  |  | Resistive or Induct. Load |  | Capacitive Load |  |  |  |  |  |  |
|  |  | Volts | Amps | Volts | Amps |  | 1-9 | 10-24 | 25-49 | 50-99 |
| RT-201* | 11.7–29.4 | 11.2 | 2.0 | 13.8 | 2.0 | 1000 | $ 7.80 | $ 7.02 | $ 6.32 | $ 5.85 |
| RT-201† | 11.1–28.5 | 23.0 | 1.25 | 30.0 | 1.25 | 5000 | 7.80 | 7.02 | 6.32 | 5.85 |
| RT-202* | 12.0–29.8 | 11.1 | 4.0 | 14.7 | 4.0 | 2000 | 10.00 | 9.00 | 8.10 | 7.50 |
| RT-202† | 12.0–29.8 | 24.3 | 2.0 | 33.0 | 2.0 | 1000 | 10.00 | 9.00 | 8.10 | 7.50 |
| RT-204* | 11.7–29.2 | 12.0 | 8.0 | 14.5 | 8.0 | 4000 | 14.60 | 13.14 | 11.83 | 10.95 |
| RT-204† | 11.6–29.2 | 24.0 | 4.0 | 32.4 | 4.0 | 2000 | 14.60 | 13.14 | 11.83 | 10.95 |
| RT-206* | 12.0–29.7 | 11.5 | 12.0 | 14.4 | 12.0 | 6000 | 21.49 | 19.34 | 17.41 | 16.12 |
| RT-206† | 12.0–29.7 | 24.0 | 6.0 | 32.0 | 6.0 | 3000 | 21.49 | 19.34 | 17.41 | 16.12 |
| RT-208* | 12.1–29.2 | 11.4 | 15.0 | 14.8 | 15.0 | 7500 | 30.97 | 27.87 | 25.09 | 23.23 |
| RT-208† | 12.1–29.2 | 23.7 | 8.0 | 32.5 | 8.0 | 4000 | 30.97 | 27.87 | 25.09 | 23.23 |
| RT-2012* | 12.2–29.0 | 11.4 | 22.5 | 14.3 | 22.5 | 12000 | 41.40 | 37.26 | 33.53 | 31.05 |
| RT-2012† | 12.2–29.0 | 23.5 | 12.0 | 33.0 | 12.0 | 6000 | 41.40 | 37.26 | 33.53 | 31.05 |
| RT-408† | 25.0–53.5 | 44.0 | 8.0 | 63.0 | 8.0 | 4000 | 63.50 | 57.15 | 51.44 | 47.63 |
| RT-4012† | 25.0–53.0 | 43.5 | 12.0 | 60.0 | 12.0 | 6000 | 99.00 | 89.10 | 80.19 | 74.25 |

*CT rectifier circuit. †Bridge rectifier circuit.

## FOR 100 WS PHOTOFLASH

Primary and secondary termination with leads. Primary 105/115/125 V, 60 Hz.

| Stancor No. | Plate Windings | Mtg. Style | Wt., Lbs. | Net Each, Quantities of |  |  |  |
|---|---|---|---|---|---|---|---|
|  |  |  |  | 1-9 | 10-24 | 25-49 | 50-99 |
| P-6425 | Charges 1050 µF to 450 VDC; ½-wave, 380 VAC plate | S | 1.4 | $5.52 | $4.97 | $4.47 | $4.14 |
| P-6426 | Trigger coil for P-6425; 1:35 ratio* | W | .2 | 1.82 | 1.64 | 1.47 | 1.37 |

*Write for Bulletin #470R for circuit details.

**ALL PRICES ARE FOR INDIVIDUALLY BOXED UNITS. CALL US FOR BULK-PACKED QUANTITY PRICES.**

# Transformers

## UNIVERSAL OUTPUT TRANSFORMERS

nination: Primary, leads except A-3849, A-3880, A-2855, A-3870; secondary, lugs except A-3890.

| Stancor No. | Impedance, Ohms | | Watts | Mtg. Style | Net Each, Quantities of | | | |
|---|---|---|---|---|---|---|---|---|
| | Primary | Sec. | | | 1-9 | 10-24 | 25-49 | 50-99 |
| A-3856*† | 4000–14000 | .05–122 | 4 | A | $4.25 | $3.83 | $3.44 | $3.19 |
| A-3823*† | 4000–14000 | .05–122 | 8 | A | 4.60 | 4.14 | 3.73 | 3.45 |
| A-3850*† | 4000–14000 | .05–122 | 8 | S | 5.00 | 4.50 | 4.05 | 3.75 |
| A-3825* | 1500–4500 | .3–4 | 8 | A | 4.25 | 3.83 | 3.44 | 3.19 |
| A-3824*† | 6000–10000 | .6–4 | 8 | A | 5.12 | 4.61 | 4.15 | 3.84 |
| A-3849* | 1500–10000 | .02–21 | 10 | A | 4.90 | 4.41 | 3.97 | 3.68 |
| A-3880† | 4000–14000 | .05–122 | 15 | A | 6.49 | 5.84 | 5.26 | 4.87 |
| A-3852† | 4000–14000 | .05–122 | 18 | S | 6.40 | 5.76 | 5.18 | 4.80 |
| A-3870† | 4000–14000 | .05–122 | 18 | A | 6.35 | 5.72 | 5.14 | 4.76 |
| A-3830† | 3000–10000 | .04–122 | 20 | S | 6.10 | 5.49 | 4.94 | 4.58 |

gle plate. †Push-pull plate.

## LINE TO VOICE COIL OUTPUT TRANSFORMERS

| ncor o. | Impedance, Ohms | | Power Steps in Watts | Mtg. Style | Size, Inches W. x D. x H. | Net Ea., Quantities of | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Primary | Sec. | | | | 1-9 | 10-24 | 25-49 | 50-99 |
| 104 | 3000/2000/1500/<br>1000/500 | 4/8/16 | 10 | S | 2⅞ x 1¾ x 2⅜ | $5.20 | $4.68 | $4.21 | $3.90 |
| 318 | 1500/1000/500 | 4/8/15 | 25 | S | 3⅝ x 2⅛ x 3⅛ | 6.76 | 6.08 | 5.48 | 5.07 |
| 383 | 500 | 4/6/8/15 | 25 | S | 2⅞ x 1¾ x 2⅜ | 4.69 | 4.22 | 3.80 | 3.52 |
| 101 | 500 | 3.2/6-8* | 5 | A | 2 7/16 x 1⅜ x 1⅜ | 2.90 | 2.61 | 2.35 | 2.18 |
| 947 | 2000/1500/1000/<br>500 | 3.2/6–8 | 8 | A | 2⅞ x 1⅝ x 1⅝ | 4.59 | 4.13 | 3.72 | 3.44 |
| 949 | 2000/1500/1000/<br>500 | 3.2/6–8 | 12 | S | 2⅞ x 1¾ x 2⅜ | 5.41 | 4.87 | 4.38 | 4.06 |
| 837 | 500 | .06–48 | 15 | S | 2⅞ x 2 x 2⅜ | 6.77 | 6.09 | 5.48 | 5.08 |

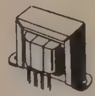
## 25-VOLT LINE TO VOICE COIL TRANSFORMERS

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 096 | 78/156/312/<br>625/1250 | 4/8/16 | 8/4/2/1/0.5 | S | 1⅝ x 2 7/16 x 2 | $5.80 | $5.22 | $4.70 | $4.35 |
| 097 | 39/78/156/<br>312/625/1250 | 4/8/16 | 16/8/4/2/1/0.5 | S | 2¼ x 3⅛ x 2¾ | 6.64 | 5.98 | 5.38 | 4.98 |
| 095 | 125/250/500/<br>1000/2000 | 4/8 | 5/2.5/1.25/.62/.31 | A | 2 7/16 x 1½ x 1⅜ | 4.15 | 3.74 | 3.36 | 3.11 |
| 099 | 312/625/1250 | 4/8 | 2/1/0.5 | A | 2⅛ x 1⅜ x 1¼ | 3.87 | 3.48 | 3.13 | 2.90 |
| 087* | 312/625/1250 | 8 | 2/1/0.5 | A | 2⅜ x 1⅜ x 1⅜ | 3.10 | 2.79 | 2.51 | 2.33 |
| 790 | 500/1000/2000 | 8 | 1.25/.62/.31 | A | 2 7/16 x 1½ x 1⅜ | 4.55 | 4.10 | 3.69 | 3.41 |
| 791 | 125/250/500 | 8 | 5/2.5/1.25 | A | 2 7/16 x 1½ x 1⅜ | 4.43 | 3.99 | 3.59 | 3.32 |
| 793 | 78/156/312/<br>625/1250 | 8 | 8/4/2/1/0.5 | S | 1⅝ x 2 7/16 x 2 | 5.42 | 4.88 | 4.39 | 4.07 |
| 795 | 39/78/156/<br>312/625/1250 | 8 | 16/8/4/2/1/0.5 | S | 2¼ x 3⅛ x 2¾ | 6.59 | 5.93 | 5.34 | 4.94 |
| 088* | 156/312/625/<br>1250/2500/5000 | 8 | 4/2/1/.5/.25/.12 | A | 2⅞ x 1⅝ x 1⅝ | 3.87 | 3.48 | 3.13 | 2.90 |
| 797 | 156/312/625/<br>1250/2500 | 8 | 4/2/1/.5/.25 | A | 2⅞ x 1⅝ x 1⅝ | 5.26 | 4.73 | 4.26 | 3.95 |
| 798 | 62.5/125/250 | 8 | 10/5/2.5 | A | 2¾ x 1⅜ x 1⅝ | 4.69 | 4.22 | 3.80 | 3.52 |
| 792 | 125/250/500/<br>1000/2000 | 4 | 5/2.5/1.25/.62/.31 | A | 2 7/16 x 1½ x 1⅜ | 5.22 | 4.70 | 4.23 | 3.92 |
| 794 | 78/156/312<br>625/1250 | 4 | 8/4/2/1/0.5 | S | 1⅝ x 2 7/16 x 2 | 5.45 | 4.91 | 4.41 | 4.09 |
| 796 | 39/78/156/<br>312/625/1250 | 4 | 16/8/4/2/1/0.5 | S | 2¼ x 3⅛ x 2¾ | 6.52 | 5.87 | 5.28 | 4.89 |

## 70.7-VOLT LINE TO VOICE COIL TRANSFORMERS

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 102 | 625/1250/2500/<br>5000/10,000 | 4/8/16 | 8/4/2/1/0.5 | S | 1⅝ x 2⅜ x 2 | $4.55 | $4.10 | $3.69 | $3.41 |
| 103 | 312/625/1250/<br>2500/5000/10,000 | 4/8/16 | 16/8/4/2/1/0.5 | S | 2¼ x 3⅛ x 2¾ | 7.19 | 6.47 | 5.82 | 5.39 |
| 105 | 1000/2000/4000/<br>8000/16,000 | 4/8 | 5/2.5/1.25/.62/.31 | A | 2 7/16 x 1½ x 1⅜ | 4.64 | 4.18 | 3.76 | 3.48 |
| 109 | 2500/5000/10,000 | 4/8 | 2/1/0.5 | A | 2⅛ x 1⅜ x 1¼ | 4.19 | 3.77 | 3.39 | 3.14 |
| 080 | 1000/1250/1667/<br>2500/5000 | 8/16 | 5/4/3/2/1 | A | 2 7/16 x 1½ x 1⅜ | 4.60 | 4.14 | 3.73 | 3.45 |
| 082 | 333/357/384/<br>417/455 | 8/16 | 15/14/13/12/11 | S | 2⅞ x 1¾ x 2⅜ | 5.69 | 5.12 | 4.61 | 4.27 |
| 081 | 500/555/625/<br>715/833 | 8/16 | 10/9/8/7/6 | S | 2 7/16 x 1⅝ x 2 | 5.44 | 4.90 | 4.41 | 4.08 |
| 083* | 2500/5000/10,000 | 8 | 2/1/0.5 | A | 2 7/16 x 1⅜ x 1⅜ | 3.03 | 2.73 | 2.45 | 2.27 |
| 781 | 1000/1250/1667/<br>2500/5000 | 8 | 5/4/3/2/1 | A | 2 7/16 x 1½ x 1⅜ | 5.29 | 4.76 | 4.28 | 3.97 |
| 782 | 333/357/384/<br>417/455 | 8 | 15/14/13/12/11 | S | 2⅞ x 1¾ x 2⅜ | 5.37 | 4.83 | 4.35 | 4.03 |
| 084* | 1250/2500/5000/<br>10,000/20,000/<br>40,000 | 8 | 4/2/1/.5/.25/.12 | A | 2⅞ x 1⅝ x 1⅝ | 4.02 | 3.62 | 3.26 | 3.02 |
| 783 | 1250/2500/5000/<br>10,000/20,000 | 8 | 4/2/1/.5/.25 | A | 2⅞ x 1⅝ x 1⅝ | 5.50 | 4.95 | 4.46 | 4.13 |
| 784 | 500/625/833 | 8 | 10/8/6 | S | 2 7/16 x 1⅝ x 2 | 4.85 | 4.37 | 3.93 | 3.64 |
| 785 | 625/1250/2500/<br>5000/10,000 | 8 | 8/4/2/1/0.5 | S | 1⅝ x 2⅜ x 2 | 5.71 | 5.14 | 4.63 | 4.28 |
| 787 | 4000/8000/16,000 | 8 | 1.25/.62/.31 | A | 2 7/16 x 1½ x 1⅜ | 4.69 | 4.22 | 3.80 | 3.52 |
| 789 | 1000/2000/4000 | 8 | 5/2.5/1.25 | A | 2 7/16 x 1½ x 1⅜ | 4.43 | 3.99 | 3.59 | 3.32 |
| 799 | 500/1000/2000 | 8 | 10/5/2.5 | A | 2¾ x 1⅜ x 1⅝ | 5.09 | 4.58 | 4.12 | 3.82 |
| 786 | 625/1250/2500/<br>5000/10,000 | 4 | 8/4/2/1/0.5 | S | 1⅝ x 2⅜ x 2 | 5.67 | 5.10 | 4.59 | 4.25 |
| 788 | 1000/2000/4000/<br>8000/16,000 | 4 | 5/2.5/1.25/.62/.31 | A | 2 7/16 x 1½ x 1⅜ | 5.29 | 4.76 | 4.28 | 3.97 |
| 076 | 250/500/1000/<br>2000 | 4/8/16 | 20/10/5/2.5 | S | 2⅞ x 1⅞ x 2⅜ | 6.00 | 5.40 | 4.86 | 4.50 |
| 077 | 208/416/833/<br>- 1666/3333 | 4/8/16 | 24/12/6/3/1.5 | S | 3 /8 x 2 x 2¾ | 6.16 | 5.54 | 4.99 | 4.62 |
| 078 | 167/250/500/<br>1000 | 4/8/16 | 30/20/10/5 | S | 2⅞ x 1¾ x 2⅜ | 5.50 | 4.95 | 4.46 | 4.13 |
| 079 | 100/125/200/<br>333 | 4/8/16 | 50/40/25/15 | S | 2⅞ x 2 x 2⅜ | 4.90 | 4.41 | 3.97 | 3.68 |

ith leads; all others, lugs.



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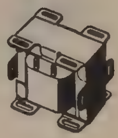

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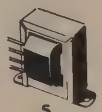

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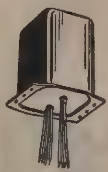

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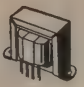
# Transformers

## SINGLE SECONDARY FILAMENT TRANSFORMERS

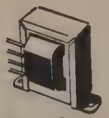
All primaries 50/60 Hz; secondary voltages ±3%. Insulation test voltage is twice allowable rms working
voltage plus 1000 volts.

| Stancor No. | Secondary V | | Secondary A | Insul. Test V rms | Pri. V | Termination Pri. | Termination Sec. | Mtg. | Dimensions W. x D. x H. | Net Each, Quantities of 1-9 | 10-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P-8628 | 2.5 | CT | 0.3 | 1500 | 117 | Leads | Leads | A | 2⅛ x1¼ x1 5/16 | $ 2.37 | $ 2.13 | $ 1.92 | $ 1.78 |
| P-8629 | 2.5 | CT | 1.0 | 1500 | 117 | Leads | Leads | A | 2⅜ x1⅜ x1⅜ | 2.30 | 2.07 | 1.86 | 1.73 |
| P-4026 | 2.5 | | 1.5 | 2500 | 117 | Leads | Leads | A | 2⅞ x1⅝ x1⅝ | 3.50 | 3.15 | 2.84 | 2.63 |
| P-6133* | 2.5 | CT | 5.0 | 7500 | 117 | Leads | Leads | S | 3⅛ x2¼ x2¾ | 5.90 | 5.31 | 4.78 | 4.43 |
| P-3024* | 2.5 | CT | 10.0 | 2500 | 117/107 | Leads | Leads | C | 2¾ x2½ x3⅛ | 7.10 | 6.39 | 5.75 | 5.33 |
| P-6454 | 2.5 | CT | 10.0 | 7500 | 117/107 | Leads | Leads | S | 3⅝ x2½ x3⅛ | 5.60 | 5.04 | 4.54 | 4.20 |
| P-3060 | 2.5 | CT | 10.0 | 10000 | 117 | Lugs | Lugs | NV | 2⅜ x2 13/16 x3 7/16 | 8.70 | 7.83 | 7.05 | 6.53 |
| P-3026* | 5.0 | CT | 3.0 | 2500 | 117/107 | Leads | Leads | C | 2⅝ x2½ x3⅛ | 7.14 | 6.43 | 5.78 | 5.36 |
| P-4088* | 5.0 | CT | 3.0 | 2500 | 117 | Lugs | Lugs | NV | 1⅝ x2½ x3⅛ | 5.90 | 5.31 | 4.78 | 4.43 |
| P-6467 | 5.0 | CT | 3.0 | 2500 | 117 | Leads | Leads | A | 3¼ x2⅛ x2 | 4.10 | 3.69 | 3.32 | 3.08 |
| P-6455 | 5.0 | CT | 6.0 | 2000 | 117/107 | Leads | Leads | S | 3⅛ x2⅛ x2¾ | 6.00 | 5.40 | 4.86 | 4.50 |
| P-3062* | 5.0 | CT | 6.0 | 2500 | 117 | Lugs | Lugs | NV | 2¼ x2½ x3⅛ | 6.35 | 5.72 | 5.14 | 4.76 |
| P-5000* | 5.0 | CT | 6.0 | 2500 | 117/107 | Leads | Leads | C | 3 x2½ x3⅛ | 8.79 | 7.91 | 7.12 | 6.59 |
| P-6135 | 5.0 | CT | 10.0 | 2500 | 117 | Leads | Leads | NV | 2¾ x2½ x3⅛ | 8.36 | 7.52 | 6.77 | 6.27 |
| P-6433* | 5.0 | CT | 15.0 | 2500 | 117 | Leads | Leads | NV | 2¾ x2½ x3⅛ | 10.16 | 9.14 | 8.23 | 7.62 |
| F-516 | 5.0 | CT | 20.0 | 2500 | 115/230 | Terms | Lugs<br>Terms | SC | 4 7/16 x3 11/16 x4 11/16 | 33.81 | 30.43 | 27.39 | 25.36 |
| P-6492 | 5.0 | CT | 30.0 | 2500 | 117 | Leads | Leads | C | 4 x3¾ x4 11/16 | 17.85 | 16.07 | 14.46 | 13.39 |
| P-6468* | 5.0 | CT | 30.0 | 2500 | 117/107 | Lugs | Lugs | C | 3⅞ x3 7/16 x4¼ | 19.42 | 17.48 | 15.73 | 14.57 |
| P-8385 | 6.3 | CT | 0.3 | 1500 | 117 | Leads | Leads | A | 2⅛ x1⅜ x1¼ | 2.95 | 2.66 | 2.39 | 2.21 |
| P-6465 | 6.3 | CT | 0.6 | 1500 | 117 | Leads | Leads | A | 2⅜ x1½ x1⅜ | 3.00 | 2.70 | 2.43 | 2.25 |
| P-8705 | 6.3 | CT | 0.6 | 1500 | 230 | Leads | Leads | A | 2⅜ x1⅜ x1½ | 3.10 | 2.79 | 2.51 | 2.33 |
| P-8389 | 6.3 | | 1.0 | 1500 | 117 | Leads | Leads | A | 2⅞ x1½ x1⅝ | 3.10 | 2.79 | 2.51 | 2.33 |
| P-6134 | 6.3 | CT | 1.2 | 3000 | 117 | Leads | Leads | A | 2⅞ x1⅞ x1⅝ | 3.14 | 2.83 | 2.54 | 2.36 |
| P-8190 | 6.3 | | 1.2 | 5000 | 117 | Leads | Leads | A | 3¼ x1⅞ x2 | 4.40 | 3.96 | 3.56 | 3.30 |
| P-8191 | 6.3 | | 1.2 | 5000 | 6.3 | Leads | Leads | A | 3¼ x2 x2 | 5.09 | 4.58 | 4.12 | 3.82 |
| F-615* | 6.3 | CT | 1.5 | 2500 | 115/230 | Lugs | Lugs | SC | 2 11/16 x2¼ x2 11/16 | 16.70 | 15.03 | 13.53 | 12.53 |
| F-63* | 6.3 | CT | 3.0 | 2500 | 115/230 | Lugs | Lugs | SC | 3 x2½ x3 1/16 | 18.00 | 16.20 | 14.58 | 13.50 |
| P-5014* | 6.3 | CT | 3.0 | 2500 | 117 | Lugs | Lugs | NV | 2 x2½ x3⅛ | 7.22 | 6.50 | 5.85 | 5.42 |
| P-6466 | 6.3 | CT | 3.0 | 2500 | 117 | Leads | Leads | A | 3¼ x2⅛ x2 | 4.40 | 3.96 | 3.56 | 3.30 |
| P-6462 | 6.3 | | 3.0 | 7000 | 117/107 | Leads | Leads | S | 3⅝ x2⅜ x3⅛ | 6.00 | 5.40 | 4.86 | 4.50 |
| P-4019* | 6.3 | CT | 4.0 | 2500 | 117/107 | Leads | Leads | C | 2¾ x2½ x3⅛ | 8.00 | 7.20 | 6.48 | 6.00 |
| P-3064* | 6.3 | CT | 6.0 | 2500 | 117 | Lugs | Lugs | NV | 2⅜ x2½ x3⅛ | 7.80 | 7.02 | 6.32 | 5.85 |
| P-4089 | 6.3 | CT | 6.0 | 2500 | 117/107 | Leads | Leads | C | 3¼ x2 13/16 x3½ | 8.70 | 7.83 | 7.05 | 6.53 |
| P-6456 | 6.3 | CT | 6.0 | 2000 | 117/107 | Leads | Leads | A | 3¾ x2⅜ x2⅜ | 6.50 | 5.85 | 5.27 | 4.88 |
| P-6464 | 6.3 | CT | 10.0 | 2000 | 117 | Leads | Leads | C | 3¼ x2 13/16 x3½ | 9.47 | 8.52 | 7.67 | 7.10 |
| P-6308* | 6.3 | CT | 10.0 | 2500 | 117/107 | Leads | Leads | NV | 2⅝ x2 13/16 x3 7/16 | 12.04 | 10.84 | 9.75 | 9.03 |
| F-610 | 6.3 | CT | 10.0 | 2500 | 115/230 | Terms | Terms | SC | 4 x3¼ x4¼ | 31.64 | 28.48 | 25.63 | 23.73 |
| P-6309 | 6.3 | CT | 20.0 | 2500 | 117/107 | Leads | Leads | NV | 3⅜ x3¾ x4 9/16 | 13.83 | 12.45 | 11.20 | 10.37 |
| P-5015* | 7.5 | CT | 4.0 | 2500 | 117 | Lugs | Lugs | NV | 2¼ x2½ x3⅛ | 9.40 | 8.46 | 7.61 | 7.05 |
| P-6138* | 7.5 | CT | 8.0 | 2500 | 117 | Leads | Leads | NV | 2¾ x3⅛ x3 13/16 | 11.26 | 10.13 | 9.12 | 8.45 |
| P-6457 | 7.5 | CT | 21.0 | 2000 | 117/107 | Leads | Leads | C | 4 x3¾ x4⅝ | 22.77 | 20.49 | 18.44 | 17.08 |
| P-8380 | 10.0 | CT | 3.0 | 1500 | 117 | Leads | Leads | A | 3¾ x2¼ x2⅜ | 5.84 | 5.26 | 4.73 | 4.38 |
| P-5016* | 10.0 | CT | 4.0 | 2500 | 117 | Lugs | Lugs | NV | 2½ x2 13/16 x3 7/16 | 9.97 | 8.97 | 8.08 | 7.48 |
| P-6458 | 10.0 | CT | 5.0 | 2000 | 117/107 | Leads | Leads | NV | 2½ x2½ x3 1/16 | 9.16 | 8.24 | 7.42 | 6.87 |
| P-6139* | 10.0 | CT | 8.0 | 2500 | 117 | Leads | Leads | NV | 3 x3⅛ x3 13/16 | 9.80 | 8.82 | 7.94 | 7.35 |
| P-4097* | 10.0 | CT | 8.0 | 2500 | 117/107 | Leads | Leads | C | 3¾ x3⅛ x3⅞ | 10.79 | 9.71 | 8.74 | 8.09 |
| P-6461 | 10.0 | CT | 10.0 | 2000 | 117 | Leads | Leads | C | 3 9/16 x3¼ x3⅞ | 13.98 | 12.58 | 11.32 | 10.49 |
| P-8384 | 12.6 | CT | 1.0 | 1500 | 117 | Leads | Leads | A | 3¼ x1¾ x2 | 4.21 | 3.79 | 3.41 | 3.16 |
| P-8130 | 12.6 | CT | 2.0 | 1500 | 117 | Leads | Leads | A | 3¼ x2⅛ x2 | 4.00 | 3.60 | 3.24 | 3.00 |
| P-8715 | 12.6 | CT | 2.0 | 1500 | 230 | Leads | Leads | A | 3¼ x2 x2⅛ | 4.35 | 3.92 | 3.52 | 3.26 |
| P-8358 | 12.6 | CT | 3.0 | 1500 | 117 | Leads | Leads | A | 3¾ x2¼ x2⅜ | 4.65 | 4.19 | 3.77 | 3.49 |
| P-6469 | 25.2 | | 1.0 | 1500 | 117 | Leads | Leads | A | 3¼ x2⅛ x2 | 3.85 | 3.47 | 3.12 | 2.89 |
| P-8180 | 25.2 | CT | 1.0 | 1500 | 117 | Leads | Leads | A | 3¼ x2⅛ x2 | 4.10 | 3.69 | 3.32 | 3.08 |
| P-8357 | 25.2 | CT | 2.0 | 1500 | 117 | Leads | Leads | A | 4 x2¼ x2⅝ | 5.60 | 5.04 | 4.54 | 4.20 |
| P-8388 | 25.2 | CT | 2.8 | 1500 | 117 | Leads | Leads | A | 4 x2¼ x2⅝ | 8.02 | 7.22 | 6.50 | 6.02 |
| P-8608 | 26.5 | CT | .6 | 2500 | 117 | Leads | Leads | A | 3¼ x2⅛ x2 | 4.10 | 3.69 | 3.32 | 3.08 |
| P-8609 | 26.8 | CT | 1.0 | 1500 | 117 | Leads | Leads | A | 3¼ x2⅛ x2 | 4.10 | 3.69 | 3.32 | 3.08 |
| P-8606 | 26.0 | CT† | .04 | 2500 | 117‡ | Leads | Leads | A | 2⅛ x1⅜ x1¼ | 6.00 | 5.40 | 4.86 | 4.50 |
| P-8607 | 26.0 | CT† | .25 | 2500 | 117‡ | Leads | Leads | A | 2⅞ x1¾ x1⅝ | 6.00 | 5.40 | 4.86 | 4.50 |
| P-8605 | 48.0 | CT† | 1.0 | 2500 | 117§ | Leads | Leads | A | 4 x2⅜ x2⅝ | 8.62 | 7.76 | 6.98 | 6.47 |

*Has electrostatic shield. †Nominal. ‡Primary tapped to provide secondary voltages of 24.5 CT or 27
CT or 29 CT. §Primary tapped to provide secondary voltages of 45 CT or 51 CT or 54 CT.



A



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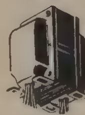

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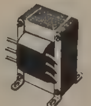
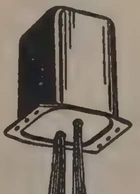


NV



SC

## MULTIPLE SECONDARY FILAMENT TRANSFORMERS

Primary 117 V. Insulation test, 2500 V rms, except model P-6434, 1500 V rms. Mounting "C". Lea
terminations.

| Stancor No. | Secondary Volts | Secondary Amps | Size, Inches W. x D. x H. | Net Each, Quantities of 1-9 | 10-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|---|---|
| P-6428* | 6.3, 6.3, 6.3, 6.3† | 1.75, 1.75, 1.75, 1.75 | 3⅛ x 2½ x 3⅛ | $ 9.16 | $ 8.24 | $ 7.42 | $ 6.87 |
| P-6430* | 6.3†, 6.3† | 3.0, 3.0 | 2⅞ x 2½ x 3⅛ | 8.00 | 7.20 | 6.48 | 6.00 |
| P-6429* | 6.3, 6.3, 6.3, 6.3† | 3.5, 3.5, 3.5, 3.5 | 3½ x 3⅛ x 3⅞ | 13.68 | 12.31 | 11.08 | 10.26 |
| P-6431* | 6.3†, 6.3† | 6.0, 6.0 | 3½ x 3⅛ x 3⅞ | 16.16 | 14.54 | 13.09 | 12.12 |
| P-6434• | 12.6, 12.6† | 2.5, 2.5 | 3¼ x 2 13/16 x 3½ | 8.60 | 7.74 | 6.97 | 6.45 |

*Has electrostatic shield. †Center tapped. •Windings may be connected in series or parallel if proper
phased.

## RECTIFIER TRANSFORMERS

Primary, 117 V, 60 Hz operation.

| Stancor No. | Max. Current, mADC Full-Wave CT | Bridge | ½-Wave | Mtg. Style | Size, In., W. x D. x H. | Wt., Lbs. | Net Each, Quantities of 1-9 | 10-24 | 25-49 | 50-9 |
|---|---|---|---|---|---|---|---|---|---|---|
| TP-1 | 1500 | 900 | 450 | C | 3 x 2½ x 3⅛ | 2.7 | $8.20 | $7.38 | $6.64 | $6.1 |
| TP-2 | 150 | 100 | 50 | A | 2⅞ x 1⅞ x 1⅝ | .7 | 4.10 | 3.69 | 3.32 | 3.0 |
| TP-3 | 400 | 300 | 150 | A | 3¾ x 2⅛ x 2⅜ | 1.5 | 5.10 | 4.59 | 4.13 | 3.8 |
| TP-4 | 1500 | 1000 | 500 | C | 3⅛ x 2½ x 3⅛ | 3.2 | 8.60 | 7.74 | 6.97 | 6.4 |
| TP-5 | 1100 | 750 | 375 | A | 4 x 2⅜ x 2⅝ | 2.3 | 6.60 | 5.94 | 5.35 | 4.9 |

**ALL PRICES ARE FOR INDIVIDUALLY BOXED UNITS. CALL US FOR BULK-PACKED QUANTITY PRICES.**

**ESSEX**
Stancor/RBM

STANCOR

# TRANSISTOR TRANSFORMERS

## MINIATURE TRANSISTOR AUDIO TRANSFORMERS

**Watt Group**—Dimensions: 1³⁄₁₆″ w. x ⅝″ d. x ³¹⁄₃₂″ h. Mtg. tabs ²⁵⁄₃₂″ centers, ³⁄₁₆″ w. Weight, 0.65 oz. . Type A1.

| ncor lo. | Application | Impedance, Ohms | | DC Resis., Ohms | | Net Each, Quantities of | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Primary | Secondary | Primary | Secondary | 1-9 | 10-24 | 25-49 | 50-99 |
| A-18 | Input | 30 CT | 50,000 | 14.7 | 4060 | $5.00 | $4.50 | $4.05 | $3.75 |
| A-19 | Interstage | 100 CT | 10 CT | 19 | 1.27 | 5.25 | 4.73 | 4.25 | 3.94 |
| A-20 | Output | 350 CT | 4, 12 | 38 | 1.45 | 6.42 | 5.78 | 5.20 | 4.82 |
| A-21 | Output | 500 CT | 4, 8, 16 | 75.3 | 3.55 | 5.00 | 4.50 | 4.05 | 3.75 |
| A-22 | Interstage | 500 CT | 50 | 59.7 | 7.9 | 5.00 | 4.50 | 4.05 | 3.75 |
| A-23 | Output | 600 CT | 4, 8, 16 | 73.2 | 3.2 | 5.00 | 4.50 | 4.05 | 3.75 |
| A-24 | Interstage | 500 CT | 50.000 | 76.8 | 5135 | 5.00 | 4.50 | 4.05 | 3.75 |
| A-25 | Output | 825 CT | 4, 8, 16 | 74 | 2.7 | 5.00 | 4.50 | 4.05 | 3.75 |
| A-26 | Output | 1,250 | 4, 12 | 132.5 | 1.4 | 5.00 | 4.50 | 4.05 | 3.75 |
| A-27 | Interstage | 1,200 | 20,000 CT | 142 | 1860 | 5.40 | 4.86 | 4.37 | 4.05 |
| A-28 | Interstage | 1,500 | 500 CT | 104 | 46.5 | 5.40 | 4.86 | 4.37 | 4.05 |
| A-29 | Output | 2,500 | 4, 16 | 370 | 2.3 | 5.00 | 4.50 | 4.05 | 3.75 |
| A-30 | Interstage | 5,000 CT | 7,500 CT | 650 | 790 | 5.00 | 4.50 | 4.05 | 3.75 |
| A-31 | Interstage | 5,000 CT | 10,000 CT | 635 | 825 | 5.00 | 4.50 | 4.05 | 3.75 |
| A-32 | Interstage | 5,000 CT | 80,000 CT | 500 | 5200 | 5.40 | 4.86 | 4.37 | 4.05 |
| A-33 | Output | 10,000 CT | 4, 8, 16 | 1174 | 2.6 | 4.00 | 3.60 | 3.24 | 3.00 |
| A-34 | Interstage | 10,000 | 200 CT | 1200 | 33.4 | 5.40 | 4.86 | 4.37 | 4.05 |
| A-35 | Interstage | 10,000 | 2,000 CT | 1200 | 257 | 4.84 | 4.36 | 3.92 | 3.63 |
| A-36 | Interstage | 10,000 | 3,000 CT | 1200 | 385 | 5.32 | 4.79 | 4.31 | 3.99 |
| A-37 | Output | 400 CT | 11 | 71.5 | 1.5 | 5.32 | 4.79 | 4.31 | 3.99 |
| A-38 | Interstage | 500 CT | 150 CT | 62 | 21.2 | 4.92 | 4.43 | 3.99 | 3.69 |
| A-54 | Interstage | 20,000 | 800 CT | 1350 | 95 | 4.72 | 4.25 | 3.82 | 3.54 |

**Watt Group**—Dimensions: 1⅝″ w. x ¾″ d. x 1³⁄₁₆″ h. Mtg. centers, 1⅜″. Weight, 1.2 oz. Mtg. Type A.

| ncor lo. | Application | Impedance, Ohms | | DC Resis., Ohms | | Net Each, Quantities of | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Primary | Secondary | Primary | Secondary | 1-9 | 10-24 | 25-49 | 50-99 |
| A-39 | Output | 100 CT | 4, 8, 16 | 10.9 | 1.45 | $4.25 | $3.83 | $3.44 | $3.19 |
| A-40 | Output | 160 | 4, 8, 16 | 18.7 | 1.4 | 5.86 | 5.27 | 4.75 | 4.40 |
| A-41 | Output | 400 CT | 4, 8, 16 | 34 | 1.5 | 4.84 | 4.36 | 3.92 | 3.63 |
| A-42 | Output | 500 CT | 4, 8, 16 | 47 | .85 | 4.60 | 4.14 | 3.73 | 3.45 |
| A-43 | Output | 700 CT | 4, 8, 16 | 77 | 1.15 | 6.00 | 5.40 | 4.86 | 4.50 |
| A-44 | Output | 2,500 | 4, 8, 16 | 172 | 1.15 | 5.80 | 5.22 | 4.70 | 4.35 |
| A-45 | Output | 3,000 | 4, 8, 16 | 192 | 1.2 | 5.65 | 5.09 | 4.58 | 4.24 |
| A-46 | Interstage | 100,000 | 1,500 CT | 3250 | 143 | 5.80 | 5.22 | 4.70 | 4.35 |
| A-47 | Input | 1,000 CT | 200,000 CT | 123 | 1815 | 5.40 | 4.86 | 4.37 | 4.05 |
| A-52 | Interstage | 500 CT | 500 CT | 40 | 55 | 5.40 | 4.86 | 4.37 | 4.05 |
| A-55 | Input | 500,000 | 200 CT | 7000 | 8.5 | 7.00 | 6.30 | 5.67 | 5.25 |
| A-63 | Driver | 20,000 CT | 2,000 CT | 2140 | 325 | 6.30 | 5.67 | 5.10 | 4.73 |

## MINATURE TRANSISTOR AUDIO TRANSFORMERS FOR PRINTED CIRCUITS

**Watt Group**—Dimensions: 1¹⁄₃₂″w. x 1″ d. x ⅞″ h. Mtg. Type B.

| ancor No. | Application | Impedance, Ohms | | DC Resis., Ohms | | Net Each, Quantities of | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Primary | Secondary | Primary | Secondary | 1-9 | 10-24 | 25-49 | 50-99 |
| PC-5 | Driver | 2,000 | 200 | 720 | 115 | $7.25 | $6.53 | $5.87 | $5.44 |

**Watt Group**—Dimensions: 1³⁄₁₆″ w. x .65″ d. x ¾″ h. Mtg. Type B.

| ancor No. | Application | Impedance, Ohms | | DC Resis., Ohms | | Net Each, Quantities of | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Primary | Secondary | Primary | Secondary | 1-9 | 10-24 | 25-49 | 50-99 |
| PC-19 | Interstage | 100 CT | 10 CT | 19 | 1.27 | $5.94 | $5.35 | $4.81 | $4.46 |
| PC-26 | Output | 1,250 | 4, 12 | 132.5 | 1.4 | 5.94 | 5.35 | 4.81 | 4.46 |
| PC-27 | Interstage | 1,200 | 20,000 CT | 142 | 1860 | 6.10 | 5.49 | 4.94 | 4.58 |
| PC-28 | Interstage | 1,500 | 500 CT | 104 | 46.5 | 6.10 | 5.49 | 4.94 | 4.58 |
| PC-30 | Interstage | 5,000 CT | 7,500 CT | 650 | 790 | 5.94 | 5.35 | 4.81 | 4.46 |
| PC-31 | Interstage | 5,000 CT | 10,000 CT | 635 | 825 | 6.10 | 5.49 | 4.94 | 4.58 |
| PC-32 | Interstage | 5,000 CT | 80,000 CT | 500 | 5200 | 6.10 | 5.49 | 4.94 | 4.58 |
| PC-34 | Interstage | 10,000 | 200 CT | 1200 | 25 | 6.10 | 5.49 | 4.94 | 4.58 |
| PC-35 | Interstage | 10,000 | 2,000 CT | 1200 | 257 | 5.27 | 4.74 | 4.27 | 3.95 |
| PC-36 | Interstage | 10,000 | 3,000 CT | 1200 | 385 | 5.94 | 5.35 | 4.81 | 4.46 |
| PC-38 | Interstage | 500 CT | 150 CT | 62 | 21.2 | 5.41 | 4.87 | 4.38 | 4.06 |

**Watt Group**—Dimensions: 1¹⁄₃₂″ w. x 1″ d. x ⅞″ h. Mtg. Type B.

| ancor No. | Application | Impedance, Ohms | | DC Resis., Ohms | | Net Each, Quantities of | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Primary | Secondary | Primary | Secondary | 1-9 | 10-24 | 25-49 | 50-99 |
| PC-47 | Input | 1,000 CT | 200,000 CT | 123 | 1815 | $5.94 | $5.35 | $4.81 | $4.46 |
| PC-52 | Interstage | 500 CT | 500 CT | 40 | 55 | 5.74 | 5.17 | 4.65 | 4.31 |
| PC-63 | Driver | 20,000 CT | 2,000 CT | 2140 | 325 | 6.92 | 6.23 | 5.61 | 5.19 |

## TRANSISTOR AUDIO TRANSFORMERS

cial transformers for transistor applications. Mtg. Types: TA-56, J: TA-57 and TA-61, S; TA-13, TA-60, TS; all others, Mtg. Type A.

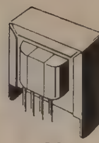
| ancor umber | Impedance, Ohms | | DC Res., Ohms | | Max. Pri. mADC | Watts | Net Each, Quantities of | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pri. | Sec. | Pri. | Sec. | | | 1-9 | 10-24 | 25-49 | 50-99 |
| A-1* | 600 CT | 10 | 42 | .8 | 20 | .05 | $3.40 | $3.06 | $2.75 | $2.55 |
| A-2† | 100 CT | 10 CT | 4.3 | .8 | 100 | .25 | 3.59 | 3.23 | 2.91 | 2.69 |
| A-3† | 100 | 1000 CT | 5.8 | 45 | 100 | .25 | 2.99 | 2.69 | 2.42 | 2.24 |
| A-4† | 500 CT | 5000 CT | 37 | 250 | 12 | .03 | 4.18 | 3.76 | 3.39 | 3.14 |
| A-5‡ | 1000 | 200 CT | 400 | 115 | 10 | .05 | 5.94 | 5.35 | 4.81 | 4.46 |
| A-6‡ | 2000 | 200 CT | 720 | 115 | 5 | .05 | 4.50 | 4.05 | 3.65 | 3.38 |
| A-7‡ | 100 | 100 CT | 12 | 12 | 100 | .5 | 3.43 | 3.09 | 2.78 | 2.57 |
| A-9§ | 1000 | 4/8/16 | 180 | 3.5 | 10 | .2 | 4.30 | 3.87 | 3.48 | 3.23 |
| A-10§ | 2000 CT | 4/8/16 | 250 | 4 | ........ | .2 | 5.00 | 4.50 | 4.05 | 3.75 |
| A-11§ | 48 CT | 8/16 | 5 | 1.5 | 275 | 5 | 5.10 | 4.59 | 4.13 | 3.83 |
| A-12§ | 20 CT | 8 | .55 | .35 | 500 | 10 | 3.23 | 2.91 | 2.62 | 2.42 |
| A-13‡ | 200 CT | 400 CT | 4 | 7 | 10 | .6 | 6.00 | 5.40 | 4.86 | 4.50 |
| A-56§ | 48 CT | 3.2/8/16 | 3.6 | 1.4 | 550 | 10 | 4.17 | 3.75 | 3.38 | 3.13 |
| A-57§ | 100 CT | 3.2/8/16 | 6.6 | 1.5 | 500 | 10 | 5.00 | 4.50 | 4.05 | 3.75 |
| A-58‡ | 100 | 200 CT | 6.5 | 15.5 | 200 | .5 | 3.58 | 3.22 | 2.90 | 2.69 |
| A-59‡ | 500 CT | 200 CT | 36.5 | 15.5 | 50 | .5 | 3.68 | 3.31 | 2.98 | 2.76 |
| A-60§ | 125 CT | 8 | 7.5 | 0.9 | 50 | 1.5 | 8.00 | 7.20 | 6.48 | 6.00 |
| A-61‡ | • | • | 1.8 | 1.8 | ........ | ..... | 3.78 | 3.40 | 3.06 | 2.84 |
| A-62§ | 25 | 4 | 1.5 | 0.4 | 400 | 4 | 3.00 | 2.70 | 2.43 | 2.25 |

put. †Interstage. ‡Driver. §Output. •Trifilar wound ratio, 1:1:1.

## TRANSISTOR POWER SUPPLY TRANSFORMERS

transistor power supplies. Primary 117 VAC, 60 Hz. Lead wire termination. For rectifier circuits, P-8193, P-8194, showing DC voltages and allowable DC current, write for Stancor Bulletin No. 587.

| tancor No. | Secondary No. 1 | | Secondary No. 2 | | Size, Inches W. x D. x H. | Mtg. Type | Net Each, Quantities of | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | V | A | V | A | | | 1-9 | 10-24 | 25-49 | 50-99 |
| -8604 | 20 CT | 1.0 rms | ..... | ......... | 3¼ x 2⅛ x 2 | A | $ 3.67 | $ 3.30 | $ 2.97 | $ 2.75 |
| -8614 | 30 | 3.0 rms | ..... | ......... | 2¹³⁄₁₆ x 3⅝ x 3½ | C | 8.66 | 7.79 | 7.01 | 6.50 |
| -8197 | 50 CT | 1.0 rms | ..... | ......... | 2½ x 2¹¹⁄₁₆ x 3⅛ | C | 7.04 | 6.34 | 5.70 | 5.28 |
| -8198 | 54 CT | .5 rms | 6.3 | .5 rms | 2³⁄₁₆ x 2⁹⁄₁₆ x 2⅝ | C | 6.50 | 5.85 | 5.27 | 4.88 |
| -8193 | 17/18 | 6.0 rms | ..... | ......... | 3⅛ x 3⅛ x 3¹³⁄₁₆ | NV | 12.50 | 11.25 | 10.13 | 9.38 |
| -8194 | 36 | 3.0 rms | 36 | 3.0 rms | 3¾ x 3¾ x 4⁹⁄₁₆ | NV | 24.00 | 21.60 | 19.44 | 18.00 |
| -8196 | 80 CT | 1.2 DC | ..... | ......... | 2¹³⁄₁₆ x 3⅝ x 3½ | C | 8.50 | 7.65 | 6.89 | 6.38 |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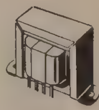
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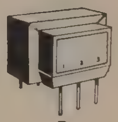
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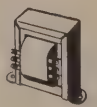
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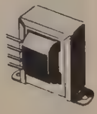
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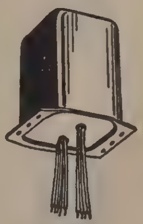
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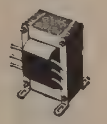
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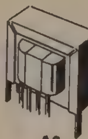
# Chokes, Transformers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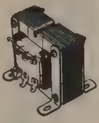
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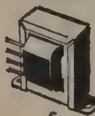
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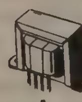
A

## HIGH CURRENT FILTER CHOKES

Inductance measured at 1 volt, 60 Hz. Lead termination.

| Stancor No. | Inductance mH | DC Amps | DC Resis. Ohms | Insul. Test V rms | Mtg. Type | Size, Inches W. x D. x H. | Net Each, Quantities of 1-9 | 10-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|---|---|---|---|---|
| TC-1 | 3.0 | 1.0 | .25 | 1000 | A2 | 1⅛ x 1³⁄₁₆ x 1³⁄₁₆ | $ 2.22 | $ 2.00 | $ 1.80 | $ 1.67 |
| TC-2 | 11.0 | 1.0 | .75 | 1000 | A2 | 1⅛ x 1³⁄₁₆ x 1³⁄₁₆ | 2.08 | 1.87 | 1.68 | 1.56 |
| C-2690 | 300 or<br>75 | 1.0<br>2.0 | 3.0<br>.75 | 1500 | NV | 3 x 2¹³⁄₁₆ x 3⁷⁄₁₆ | 9.35 | 8.42 | 7.57 | 7.01 |
| C-2685 | 35 | 2.0 | .75 | 1500 | NH | 2⅛ x 2⅝ x 2⁵⁄₁₆ | 5.75 | 5.18 | 4.66 | 4.31 |
| C-2691 | 80 or<br>20 | 2.5<br>5.0 | .60<br>.15 | 1500 | NV | 3½ x 3⅛ x 3¹³⁄₁₆ | 13.30 | 11.97 | 10.77 | 9.98 |
| C-2686 | 25 | 4.0 | .425 | 1500 | NH | 2⅝ x 3⅜ x 2⅞ | 7.60 | 6.84 | 6.16 | 5.70 |
| C-2687 | 10 | 8.0 | .15 | 1500 | NH | 3 x 3¾ x 3³⁄₁₆ | 11.09 | 9.98 | 8.98 | 8.32 |
| C-2688 | 10 | 12.5 | .11 | 1500 | NH | 2⅞ x 4⅛ x 3½ | 13.06 | 11.75 | 10.58 | 9.80 |
| C-2689 | 5 | 22.5 | .03 | 1500 | NH | 4⅜ x 4½ x 3¹³⁄₁₆ | 22.00 | 19.80 | 17.82 | 16.50 |
| C-2692 | 24<br>6 | 20<br>40 | .12<br>.029 | 1500 | NV | 5¼ x 4⁷⁄₁₆ x 5¼ | 50.00 | 45.00 | 40.50 | 37.50 |

## LOW CURRENT "VERSATILE" CONTROL/RECTIFIER TRANSFORMERS

Primary 117 V, 50/60 Hz. Three isolated 12-volt secondaries (one with a center tap) provide many combinations of voltage and current with series or parallel connections. Ideal for pilot lamps, miniature relays, low current-low voltage power supplies, etc. Mounting type S.

| Stancor No. | Secondary No. 1 V | A | No. 2 V | A | No. 3 V | A | Size, Inches W. x D. x H. | Net Each, Quantities of 1-9 | 10-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P-8361 | 12 | .10 | 12 | .10 | 12 CT | .10 | 2 x 1½ x 1¾ | $4.60 | $4.14 | $3.73 | $3.45 |
| P-8362 | 12 | .15 | 12 | .15 | 12 CT | .15 | 2⅜ x 1¾ x 2 | 3.68 | 3.31 | 2.98 | 2.76 |
| P-8363 | 12 | .25 | 12 | .25 | 12 CT | .25 | 2⅞ x 1¾ x 2⅜ | 5.00 | 4.50 | 4.05 | 3.75 |
| P-8364 | 12 | .50 | 12 | .50 | 12 CT | .50 | 2⅞ x 2⅛ x 2⅜ | 5.50 | 4.95 | 4.46 | 4.13 |

## MINIATURIZED CONTROL/RECTIFIER TRANSFORMERS

Primary 117 V, 50–60 Hz; secondary, 12 V. Lead wire termination.

| Stancor No. | Secondary Amperes rms | Bridge | Half-Wave | Mtg. Style | Size, Inches W. x D. x H. | Wt., Lbs. | Net Each, Quantities of 1-9 | 10-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|---|---|---|---|---|
| P-8390 | .150 | .100 DC | .050 DC | A | 2⅛ x 1¼ x 1¼ | .25 | $3.00 | $2.70 | $2.43 | $2.25 |
| P-8391 | .350 | .225 DC | .110 DC | A | 2⅜ x 1⅜ x 1⅜ | .35 | 3.50 | 3.15 | 2.84 | 2.63 |
| P-8392 | .700 | .450 DC | .225 DC | A | 2⅞ x 1½ x 1⅝ | .60 | 3.67 | 3.30 | 2.97 | 2.75 |
| P-8393 | 1.200 | .750 DC | .375 DC | A | 3¼ x 1⅝ x 2 | .85 | 3.90 | 3.51 | 3.16 | 2.93 |

## MINIATURIZED CONTROL/RECTIFIER TRANSFORMERS

Primary 117 V, 50–60 Hz. Lead wire termination. Mounting style A.

| Stancor No. | Secondary Amperes rms | Full-Wave CT | Bridge | Sec. VCT | Size, Inches W. x D. x H. | Wt., Lbs. | Net Each, Quantities of 1-9 | 10-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|---|---|---|---|---|
| P-8394 | .085 | .135 DC | .065 DC | 24 | 2⅛ x 1¼ x 1¼ | .25 | $3.38 | $3.04 | $2.74 | $2.54 |
| P-8395 | .200 | .275 DC | .135 DC | 24 | 2⅜ x 1⅜ x 1⅜ | .35 | 3.52 | 3.17 | 2.85 | 2.64 |
| P-8396 | .400 | .550 DC | .270 DC | 24 | 2⅞ x 1½ x 1⅝ | .60 | 3.55 | 3.20 | 2.88 | 2.66 |
| P-8397 | .700 | .925 DC | .450 DC | 24 | 3¼ x 1⅝ x 2 | .85 | 3.90 | 3.51 | 3.16 | 2.93 |
| P-8600 | .085 | .110 DC | .065 DC | 28 | 2⅛ x 1¼ x 1¼ | .25 | 3.38 | 3.04 | 2.74 | 2.54 |
| P-8601 | .175 | .225 DC | .125 DC | 28 | 2⅜ x 1⅜ x 1⅜ | .35 | 3.40 | 3.06 | 2.75 | 2.55 |
| P-8602 | .300 | .350 DC | .200 DC | 28 | 2⅞ x 1½ x 1⅝ | .60 | 3.80 | 3.42 | 3.08 | 2.85 |
| P-8603 | .800 | 1.000 DC | .500 DC | 28 | 3¼ x 1⅝ x 2 | 1.0 | 4.30 | 3.87 | 3.48 | 3.23 |
| P-8610 | .065 | .075 DC | .045 DC | 36 | 2⅛ x 1¼ x 1¼ | .25 | 3.40 | 3.06 | 2.75 | 2.55 |
| P-8611 | .135 | .175 DC | .100 DC | 36 | 2⅜ x 1⅜ x 1⅜ | .35 | 3.30 | 2.97 | 2.67 | 2.48 |
| P-8612 | .300 | .350 DC | .200 DC | 36 | 2⅞ x 1½ x 1⅝ | .60 | 3.60 | 3.24 | 2.92 | 2.70 |
| P-8613 | .550 | .650 DC | .350 DC | 36 | 3¼ x 1⅝ x 2 | 1.0 | 4.30 | 3.87 | 3.48 | 3.23 |

## MINIATURIZED CONTROL/RECTIFIER TRANSFORMERS

Primary, 230 VAC, 50–60 Hz. All have lead wire termination. Mounting style A.

| Stancor No. | Secondary Amperes rms | Full-Wave CT | Bridge | Sec. VCT | Size, Inches W. x D. x H. | Wt., Lbs. | Net Each, Quantities of 1-9 | 10-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|---|---|---|---|---|
| P-8720 | .085 | .135 DC | .065 DC | 24 | 2⅛ x 1¼ x 1¼ | .25 | $3.38 | $3.04 | $2.74 | $2.54 |
| P-8721 | .200 | .275 DC | .135 DC | 24 | 2⅜ x 1⅜ x 1⅜ | .35 | 3.52 | 3.17 | 2.85 | 2.64 |
| P-8722 | .400 | .550 DC | .270 DC | 24 | 2⅞ x 1½ x 1⅝ | .60 | 3.55 | 3.20 | 2.88 | 2.66 |
| P-8723 | .700 | .925 DC | .450 DC | 24 | 3¼ x 1⅝ x 2 | .85 | 3.90 | 3.51 | 3.16 | 2.93 |
| P-8728 | .065 | .075 DC | .045 DC | 36 | 2⅛ x 1¼ x 1¼ | .25 | 2.86 | 2.57 | 2.31 | 2.14 |

## AUTOMATION CONTROL/RECTIFIER TRANSFORMERS

Automatic control transformers for such usages as automatic assembly equipment, relays, solenoids, small motors, speed changers, recording devices, pumps, tubes, heating elements, control valves, fans and blowers and many others. Primary, 115/230 volts, 50/60 Hz. Solder lug termination.

| Stancor No. | Secondary Parallel | Series | VA Rating | Mtg. Type | Wt., Lbs. | Net Each, Quantities of 1-9 | 10-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|---|---|---|---|
| P-6375 | 6 V at 2 amps | 12 V at 1 amp | 12 | S | 1 | $ 4.40 | $ 3.96 | $ 3.56 | $ 3.30 |
| P-6376 | 6 V at 4 amps | 12 V at 2 amps | 24 | S | 1½ | 5.20 | 4.68 | 4.21 | 3.90 |
| P-6377 | 12 V at 4 amps | 24 V at 2 amps | 48 | S | 2½ | 6.60 | 5.94 | 5.35 | 4.95 |
| P-6378 | 12 V at 8 amps | 24 V at 4 amps | 96 | NV | 4⅛ | 11.90 | 10.71 | 9.64 | 8.93 |
| P-6379 | 12 V at 16 amps | 24 V at 8 amps | 192 | NV | 8 | 22.00 | 19.80 | 17.82 | 16.50 |

## AUTOMATION CONTROL/RECTIFIER TRANSFORMERS

Primary, 115/230 VAC, 50–60 Hz. Solder lug termination.

| Stancor No. | Secondary Parallel | Series | VA Rating | Mtg. Type | Wt., Lbs. | Net Each, Quantities of 1-9 | 10-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|---|---|---|---|
| P-8615 | 24 V/0.5 A | 48 V/0.25 A | 12 | S | 1.0 | $ 5.00 | $ 4.50 | $ 4.05 | $ 3.75 |
| P-8616 | 24 V/1 A | 48 V/0.5 A | 24 | S | 1.5 | 5.80 | 5.22 | 4.70 | 4.35 |
| P-8617 | 24 V/2 A | 48 V/1 A | 48 | S | 2.5 | 7.20 | 6.48 | 5.83 | 5.40 |
| P-8618 | 24 V/4 A | 48 V/2 A | 96 | NV | 4.3 | 12.50 | 11.25 | 10.13 | 9.38 |
| P-8619 | 24 V/8 A | 48 V/4 A | 192 | NV | 8.0 | 22.43 | 20.19 | 18.17 | 16.82 |

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## SMOOTHING FILTER CHOKES

uctance tolerance, −15% +50% at 10 volts, 60 Hz. Insulation test voltage is twice allowable rms king voltage plus 1000 volts. Lead termination unless otherwise noted.

| Stancor No. | Inductance H | mA DC | DC Resis. Ohms | Insul. Test V rms | Mtg. Type | Size, Inches W. x D. x H. | Net Each, Quantities of 1-9 | 10-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|---|---|---|---|---|
| 345 | 350 | 5 | 5600 | 2500 | A | 3¼ x 1¾ x 2 | $ 4.89 | $ 4.40 | $ 3.96 | $ 3.67 |
| 344 | 1.5 | 10 | 85 | 2500 | A | 2⅛ x 1⅛ x 1¼ | 2.50 | 2.25 | 2.03 | 1.88 |
| 707 | 2.0 | 15 | 70 | 1500 | A | 2⅛ x 1⅛ x 1¼ | 2.16 | 1.94 | 1.75 | 1.62 |
| 515 | 20.0 | 15 | 900 | 1500 | A | 2⅞ x 1⅜ x 1⅝ | 3.30 | 2.97 | 2.67 | 2.48 |
| 346 | 35.0 | 15 | 1800 | 1500 | A | 2⅜ x 1⅜ x 1⅜ | 2.50 | 2.25 | 2.03 | 1.88 |
| 318 | 12.0 | 30 | 400 | 2000 | A | 2⅜ x 1⅜ x 1⅜ | 2.50 | 2.25 | 2.03 | 1.88 |
| 080 | 3.5 | 50 | 200 | 1500 | A | 2⅞ x 1⅜ x 1⅝ | 2.97 | 2.67 | 2.41 | 2.23 |
| 706 | 4.5 | 50 | 300 | 1500 | A | 2⅜ x 1¼ x 1⅜ | 2.42 | 2.18 | 1.96 | 1.82 |
| 707 | 7.0 | 50 | 550 | 1500 | A | 2⅜ x 1¼ x 1⅜ | 3.30 | 2.97 | 2.67 | 2.48 |
| 279 | 8.5 | 50 | 400 | 1500 | A | 2⅞ x 1⅜ x 1⅝ | 3.38 | 3.04 | 2.74 | 2.54 |
| 215 | 9.0 | 50 | 500 | 1500 | A | 2⅞ x 1⅜ x 1⅝ | 2.84 | 2.56 | 2.30 | 2.13 |
| 003 | 16.0 | 50 | 580 | 1500 | A | 3¼ x 1⅝ x 2 | 3.50 | 3.15 | 2.84 | 2.63 |
| -1555* | 15.0 | 55 | 380 | 2500 | SC | 2 11/16 x 2¼ x 2 11/16 | 11.93 | 10.74 | 9.66 | 8.95 |
| 708 | 13.0 | 65 | 500 | 1500 | A | 3¼ x 1¾ x 2 | 3.59 | 3.23 | 2.91 | 2.69 |
| 355* | 8.0 | 75 | 290 | 1500 | L | 2 x 2⅜ x 2 | 4.19 | 3.77 | 3.39 | 3.14 |
| 002 | 15.0 | 75 | 400 | 1500 | A | 3¾ x 1⅞ x 2⅜ | 3.92 | 3.53 | 3.18 | 2.94 |
| 420 | 16.0 | 80 | 360 | 1500 | C | 2¾ x 2½ x 3⅛ | 7.64 | 6.88 | 6.19 | 5.73 |
| 709 | 8.0 | 85 | 250 | 1500 | A | 3¼ x 1⅞ x 2 | 3.42 | 3.08 | 2.77 | 2.57 |
| 305 | 5.0 | 100 | 300 | 1500 | SC | 2 11/16 x 2¼ x 2 11/16 | 6.91 | 6.22 | 5.60 | 5.18 |
| 001 | 10.5 | 110 | 225 | 3000 | A | 4 x 2⅛ x 2⅝ | 5.04 | 4.54 | 4.08 | 3.78 |
| 704 | 9.0 | 125 | 250 | 1500 | A | 3¾ x 1⅞ x 2⅜ | 4.50 | 4.05 | 3.65 | 3.38 |
| 303 | 2.5 | 130 | 100 | 2000 | A | 3¼ x 1⅝ x 2 | 4.07 | 3.66 | 3.30 | 3.05 |
| 421 | 7.0 | 140 | 165 | 3000 | C | 2¾ x 2½ x 3⅛ | 7.00 | 6.30 | 5.67 | 5.25 |
| 304 | 2.3 | 150 | 60 | 1500 | A | 3¼ x 1¾ x 2 | 4.40 | 3.96 | 3.56 | 3.30 |
| 309 | 3.0 | 150 | 90 | 2000 | A | 3¾ x 1⅞ x 2⅜ | 3.85 | 3.47 | 3.12 | 2.89 |
| 335 | 7.0 | 150 | 170 | 1500 | SC | 3 x 2½ x 3 1/16 | 8.60 | 7.74 | 6.97 | 6.45 |
| 710 | 7.0 | 150 | 200 | 1500 | A | 4 x 2 x 2⅝ | 5.65 | 5.09 | 4.58 | 4.24 |
| -8150 | 8.0 | 150 | 100 | 2500 | SC | 4 x 3¼ x 3⅞ | 13.86 | 12.47 | 11.23 | 10.40 |
| -12150 | 12.0 | 150 | 150 | 2500 | SC | 4 x 3¼ x 3⅞ | 16.66 | 14.99 | 13.49 | 12.50 |
| 410 | 4.0 | 175 | 100 | 3000 | C | 2¾ x 2½ x 3⅛ | 7.64 | 6.88 | 6.19 | 5.73 |
| 327 | 1.5 | 200 | 85 | 1500 | A | 2⅞ x 1½ x 1⅝ | 3.22 | 2.90 | 2.61 | 2.42 |
| 325 | 2.0 | 200 | 60 | 1500 | A | 3¾ x 1⅞ x 2⅜ | 3.98 | 3.58 | 3.22 | 2.99 |
| 411 | 4.5 | 200 | 80 | 3000 | C | 4¼ x 2 13/16 x 3½ | 9.00 | 8.10 | 7.29 | 6.75 |
| 646 | 5.0 | 200 | 90 | 5000 | C | 3½ x 3⅛ x 3⅞ | 11.88 | 10.69 | 9.62 | 8.91 |
| -8200 | 8.0 | 200 | 85 | 2500 | SC | 4 7/16 x 3 11/16 x 4 5/16 | 19.40 | 17.46 | 15.71 | 14.55 |
| 721 | 8.5 | 200 | 120 | 3000 | NV | 2⅝ x 2 13/16 x 3 7/16 | 12.00 | 10.80 | 9.72 | 9.00 |
| 705 | 10.0 | 200 | 150 | 2500 | C | 3 9/16 x 2 13/16 x 3½ | 9.70 | 8.73 | 7.86 | 7.28 |
| 717 | 4.0 | 250 | 100 | 2500 | A | 4 x 2⅛ x 2⅝ | 5.20 | 4.68 | 4.21 | 3.90 |
| 412 | 4.0 | 250 | 60 | 3000 | C | 3⅝ x 2 13/16 x 3½ | 10.00 | 9.00 | 8.10 | 7.50 |
| 343 | 0.75 | 300 | 32 | 1500 | A | 2⅞ x 1⅜ x 1⅝ | 2.50 | 2.25 | 2.03 | 1.88 |
| 326 | 1.0 | 300 | 43 | 1500 | A | 3¾ x 2 x 2⅜ | 3.90 | 3.51 | 3.16 | 2.93 |
| 334 | 2.8 | 300 | 60 | 1500 | A | 4 x 2⅛ x 2⅛ | 7.47 | 6.72 | 6.05 | 5.60 |
| 722 | 8.0 | 300 | 80 | 3000 | NV | 3 x 3¾ x 4 9/16 | 14.50 | 13.05 | 11.75 | 10.88 |
| 308 | 8.0 | 300 | 80 | 3000 | C | 4 x 3¾ x 4 11/16 | 16.20 | 14.58 | 13.12 | 12.15 |
| 706 | 2.6 | 310 | 50 | 1500 | C | 3⅜ x 2½ x 3⅛ | 8.30 | 7.47 | 6.72 | 6.23 |
| 347 | 1.0 | 350 | 40 | 1500 | A | 3¼ x 1¾ x 2 | 3.45 | 3.11 | 2.79 | 2.59 |
| 328 | 0.8 | 375 | 25 | 1500 | A | 3¾ x 1⅞ x 2⅜ | 5.50 | 4.95 | 4.46 | 4.13 |
| 709 | 2.0 | 400 | 40 | 2500 | A | 4 x 2⅛ x 2⅝ | 6.30 | 5.67 | 5.10 | 4.73 |
| 414* | 7.5 | 400 | 60 | 5000 | C | 5 x 3¾ x 4 11/16 | 26.70 | 24.03 | 21.63 | 20.03 |
| 708 | 0.32 | 600 | 10 | 1500 | A | 3¼ x 1⅝ x 2 | 3.50 | 3.15 | 2.84 | 2.63 |

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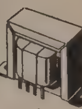
## PRINTED CIRCUIT POLYCHROMATRANS

nted circuit board transistor transformers. Test volts, 500 rms. Color-coded by application. Up to % reduction in distortion over other brands. Improved lower-end frequency response. Leads are fatigue stant gold-plated nickel-iron alloy, .020" dia., 5/16" long and have multiples of 0.1" grid spacing for application. Size .410" w. x .310" d. x .480" h.

| tancor No. | Power Level mW | Use | Matching Impedance, Ohms Primary | Secondary | Max. mA DC* | Net Each, Quantities of 1-9 | 10-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|---|---|---|---|
| CT-14 | 15 | Input | 200K CT | 1K CT | 0 | $10.50 | $ 9.45 | $ 8.51 | $ 7.88 |
| CT-15 | 35 | Input | 50K CT | 1K CT | 0 | 10.00 | 9.00 | 8.10 | 7.50 |
| CT-16 | .5 | Input | 250K | 250K | 0 | 14.78 | 13.30 | 11.97 | 11.09 |
| CT-17 | 15 | Input | 200K | 1K | 0 | 9.60 | 8.64 | 7.78 | 7.20 |
| CT-21 | 55 | Interst. | 25K | 1K | .5 | 8.50 | 7.65 | 6.89 | 6.38 |
| CT-23 | 55 | Interst. | 25K CT | 1K CT | .5 | 9.15 | 8.24 | 7.41 | 6.86 |
| CT-25 | 75 | Interst. | 10K CT | 1.5K CT | 1 | 9.00 | 8.10 | 7.29 | 6.75 |
| CT-31 | 75 | Driver | 10K CT | 2K CT | 1 | 9.00 | 8.10 | 7.29 | 6.75 |
| CT-39 | 75 | Driver | 10K CT | 500 CT | 1 | 8.48 | 7.63 | 6.87 | 6.36 |
| CT-54 | 75 | Output | 600 CT | 12 | 4.5 | 9.60 | 8.64 | 7.78 | 7.20 |
| CT-62 | 75 | Output | 1.5K CT | 600 | 3 | 8.00 | 7.20 | 6.48 | 6.00 |
| CT-70 | 75 | Output | 320 CT | 3.2 | 6 | 8.53 | 7.68 | 6.91 | 6.40 |
| CT-71 | 75 | Output | 600 CT | 3.2 | 4.5 | 8.70 | 7.83 | 7.05 | 6.53 |
| CT-76 | 75 | Output Isolation | 10K CT | 10K CT | 1 | 8.46 | 7.61 | 6.85 | 6.35 |
| CT-77 | 75 | Output Isolation | 600 CT | 600 CT | 3 | 7.50 | 6.75 | 6.08 | 5.63 |
| CT-116 | ........ | Choke | 6 H | ............ | 2 | 7.05 | 6.35 | 5.71 | 5.29 |
| CT-117 | ........ | Choke | 1.25 H | ............ | 2 | 6.00 | 5.40 | 4.86 | 4.50 |

nbalanced in primary.

. **SPCT-10**—Magnetic alloy shield for all PCT transformers. Net Each, Quantities of 1–9 ..... **$1.37**
t Each, Quantities of 10–24 ............ **$1.23**; 25–49 ............ **$1.11**; 50–99 ............ **1.03**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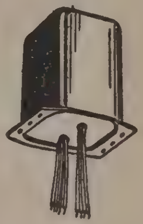
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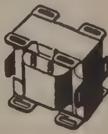
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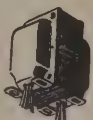
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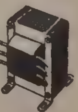
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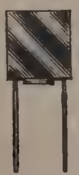

PCT

**ALL PRICES ARE FOR INDIVIDUALLY BOXED UNITS. CALL US FOR BULK-PACKED QUANTITY PRICES.**

**ESSEX** Stancor/RBM | STANCOR

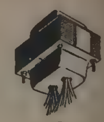
# Power Transformers

## POWER TRANSFORMERS FOR CAPACITOR INPUT SYSTEMS

Primary 117 V, 60 Hz; PCC and PSC types may be operated at 50 Hz. Meets EIA requirements for electrical tolerances, dielectric strength, temperature rise and construction. Operating temperature 105° C max. All secondary AC voltages ±3%.

| Stancor No. | Plate Windings AC V | Plate Windings mA DC | Rectifier Filament V | Rectifier Filament A | Other Windings V | Other Windings A | Base Area, Inches | Case Style | Wt., Lbs. | Net Each, Quantities of 1-9 | 10-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P-8379 | 115§ | 290 | ...... | ... | 2.7/6.3 | .45/8.0 | 3 7/16 x2 13/16 | M* | 5.7 | $17.65 | $15.89 | $14.30 | $13.24 |
| P-8386 | 117§ | 300 | ...... | ... | 6.3 | 10.0 | 4 x3¾ | C4* | 6.9 | 16.70 | 15.03 | 13.53 | 12.53 |
| P-6146 | 120–0–120 | 250 | 5.0 | 3.0 | ...... | ...... | 3¼ x3⅛ | C | 4.2 | 13.30 | 11.97 | 10.77 | 9.98 |
| PS-8415 | 125# | 15 | ...... | ... | 6.3 | .6 | 2⅜ x1⅜ | S | .7 | 3.64 | 3.28 | 2.95 | 2.73 |
| P-8624 | 125# | 15 | ...... | ... | 12.6 | .3 | 2⅜ x1⅜ | S | .7 | 3.64 | 3.28 | 2.95 | 2.73 |
| PS-8416 | 125–0–125 | 25 | ...... | ... | 6.3 | 1.0 | 2 13/16x1¾ | S | 1.0 | 4.66 | 4.19 | 3.77 | 3.50 |
| P-8625 | 125–0–125 | 25 | ...... | ... | 12.6 | .5 | 2 13/16x1¾ | S | 1.0 | 4.66 | 4.19 | 3.77 | 3.50 |
| PA-8421 | 125# | 50 | ...... | ... | 6.3 | 2.0 | 3 11/16x2⅛ | A | 1.5 | 5.69 | 5.12 | 4.61 | 4.27 |
| P-8626 | 125# | 50 | ...... | ... | 12.6 | 1.0 | 3 11/16x2⅛ | A | 1.5 | 5.69 | 5.12 | 4.61 | 4.27 |
| P-8181 | 150# | 25 | ...... | ... | 6.3 CT | .5 | 2⅜ x1 13/16 | VE | .8 | 5.37 | 4.83 | 4.35 | 4.03 |
| P-8627 | 150# | 25 | ...... | ... | 12.6 CT | .3 | 2⅜ x1 13/16 | VE | .8 | 5.37 | 4.83 | 4.35 | 4.03 |
| P-9000C | 155§ | 450 | ...... | ... | 6.3/6.3 | 2.0/13.5 | 4⅞ x3½ | C* | 12.0 | 22.00 | 19.80 | 17.82 | 16.50 |
| P-8359 | 190–160–0 160–190 | 70 | ...... | ... | 6.3 CT/ 6.3 | 3.0/.6 | 2⅝ x2½ | C | 2.8 | 12.08 | 10.87 | 9.78 | 9.06 |
| P-8383 | 200–0–200 | 110 | ...... | ... | 6.3/6.3 CT | 2.0/4.0 | 3¼ x2½ | C | 3.0 | 12.30 | 11.07 | 9.96 | 9.23 |
| PC-8417 | 220–0–220 | 50 | ...... | ... | 6.3/25.2 | .6/.5 | 2⅝ x2½ | C | 2.2 | 9.82 | 8.84 | 7.95 | 7.37 |
| PSC-40† | 225–0–225 | 40 | 5.0 | 2.0 | 6.3 CT | 2.0 | 3½ x2⅞ | SC | 3.2 | 24.42 | 21.98 | 19.78 | 18.32 |
| PC-8418 | 230–0–230 | 50 | ...... | ... | 6.3 | 2.5 | 2⅝ x2½ | C | 2.2 | 7.00 | 6.30 | 5.67 | 5.25 |
| PM-8418 | 230–0–230 | 50 | ...... | ... | 6.3 | 2.5 | 3 x2½ | M | 2.2 | 7.00 | 6.30 | 5.67 | 5.25 |
| PC-8401 | 235–0–235 | 40 | 5.0 | 2.0 | 6.3 CT | 2.0 | 2⅝ x2½ | C | 2.2 | 7.70 | 6.93 | 6.24 | 5.78 |
| PM-8401 | 235–0–235 | 40 | 5.0 | 2.0 | 6.3 CT | 2.0 | 3 x2½ | M | 2.2 | 9.92 | 8.93 | 8.04 | 7.44 |
| PC-8402 | 240–0–240 | 55 | 5.0 | 2.0 | 6.3 CT | 2.0 | 2¾ x2½ | C | 2.4 | 8.40 | 7.56 | 6.80 | 6.30 |
| PM-8402 | 240–0–240 | 55 | 5.0 | 2.0 | 6.3 CT | 2.0 | 3 x2½ | M | 2.4 | 9.20 | 8.28 | 7.45 | 6.90 |
| PC-8419 | 240–0–240 | 70 | ...... | ... | 6.3 | 3.0 | 2⅞ x2½ | C | 2.6 | 8.94 | 8.05 | 7.24 | 6.71 |
| PM-8419 | 240–0–240 | 70 | ...... | ... | 6.3 | 3.0 | 3 x2½ | M | 2.6 | 9.00 | 8.10 | 7.29 | 6.75 |
| P-8173 | 250–0–250 | 10 | ...... | ... | 6.3/6.3 | .6/1.2 | 2⅛ x2⅞ | C1 | 1.0 | 7.40 | 6.66 | 5.99 | 5.55 |
| PC-8403 | 250–0–250 | 70 | 5.0 | 2.0 | 6.3 CT | 2.5 | 3⅛ x2½ | C | 3.2 | 9.10 | 8.19 | 7.37 | 6.83 |
| PM-8403 | 250–0–250 | 70 | 5.0 | 2.0 | 6.3 CT | 2.5 | 3 x2½ | M | 3.2 | 9.50 | 8.55 | 7.70 | 7.13 |
| PC-8404 | 260–0–260 | 90 | 5.0 | 2.0 | 6.3 CT | 3.0 | 3½ x2 13/16 | C | 4.0 | 11.24 | 10.12 | 9.10 | 8.43 |
| PM-8404 | 260–0–260 | 90 | 5.0 | 2.0 | 6.3 CT | 3.0 | 3⅜ x2 13/16 | M | 4.0 | 11.41 | 10.27 | 9.24 | 8.56 |
| PC-8420 | 260–0–260 | 90 | ...... | ... | 6.3 | 4.0 | 3¼ x2 13/16 | C | 3.5 | 10.24 | 9.22 | 8.29 | 7.68 |
| PM-8420 | 260–0–260 | 90 | ...... | ... | 6.3 | 4.0 | 3⅜ x2 13/16 | M | 3.5 | 10.24 | 9.22 | 8.29 | 7.68 |
| PCC-55 | 270–0–270 | 55 | 5.0 | 2.0 | 6.3 CT | 2.0 | 3½ x2⅞ | SC | 3.5 | 17.96 | 16.16 | 14.55 | 13.47 |
| PC-8405 | 270–0–270 | 120 | 5.0 | 3.0 | 6.3 CT | 3.5 | 3½ x3⅛ | C | 4.9 | 12.46 | 11.21 | 10.09 | 9.35 |
| PM-8405 | 270–0–270 | 120 | 5.0 | 3.0 | 6.3 CT | 3.5 | 3¾ x3⅛ | M | 4.9 | 13.64 | 12.28 | 11.05 | 10.23 |
| P-8356 | 270–0–270 | 260 | 5.0 | 3.0 | 6.3 | 8.8 | 3⅜ x3⅛ | C* | 6.5 | 18.25 | 16.43 | 14.78 | 13.69 |
| P-8377 | 270–0–270 | 280 | 5.0 | 3.0 | 6.3 | 10.0 | 3 15/16x3⅛ | M* | 6.7 | 20.17 | 18.15 | 16.34 | 15.13 |
| P-8373 | 280–0–280 | 280 | 5.0 | 3.0 | 6.3/24.0 | 10.0/2.6 | 3¾ x3⅛ | M | 8.0 | 24.62 | 22.16 | 19.94 | 18.47 |
| P-8378 | 280–0–280<br>250–0–250 | 300 | 5.0/3.0 | 4.5 | 6.3/24.0 | 10.0/1.2 | 4⅝ x3⅛ | C* | 7.9 | 23.78 | 21.40 | 19.26 | 17.84 |
| P-8355 | 285–0–285 | 250 | 5.0 | 3.0 | 6.3 | 9.5 | 3½ x3¾ | C4* | 6.5 | 21.38 | 19.24 | 17.32 | 16.04 |
| P-8367‡ | 290–0–290 | 270 | 5.0 | 6.0 | 6.3/6.3 | 8.5/1.2 | 4½ x3¾ | M5* | 12.5 | 25.60 | 23.04 | 20.74 | 19.20 |
| PCC-60 | 300–0–300 | 60 | 5.0 | 2.0 | 6.3 CT | 3.0 | 4 x3¼ | SC | 4.5 | 20.00 | 18.00 | 16.20 | 15.00 |
| PSC-60† | 300–0–300 | 60 | 5.0 | 2.0 | 6.3 CT | 3.0 | 4 x3¼ | SC | 4.5 | 24.00 | 21.60 | 19.44 | 18.00 |
| P-6358 | 300–0–300 | 65 | ...... | ... | 6.3 CT | 2.7 | 2½ x2½ | C | 3.0 | 8.30 | 7.47 | 6.72 | 6.23 |
| P-8175 | 300–0–300 | 70 | 5.0 | 3.0 | 6.3 CT | 3.0 | 3⅛ x2⅞ | C | 4.0 | 13.30 | 11.97 | 10.77 | 9.98 |
| PM-8423 | 300–0–300 | 90 | 5.0 | 2.0 | 6.3 CT | 3.5 | 3⅜ x2 13/16 | M | 4.0 | 10.25 | 9.23 | 8.30 | 7.69 |
| P-8177 | 300–0–300 | 120 | 5.0 | 3.0 | 6.3 CT | 3.0 | 3⅝ x3 3/16 | C | 5.8 | 16.00 | 14.40 | 12.96 | 12.00 |
| PC-8406 | 325–0–325 | 40 | 5.0 | 2.0 | 6.3 CT | 2.0 | 2¾ x2½ | C | 2.4 | 8.00 | 7.20 | 6.48 | 6.00 |
| PM-8406 | 325–0–325 | 40 | 5.0 | 2.0 | 6.3 CT | 2.0 | 3 x2½ | M | 2.4 | 9.20 | 8.28 | 7.45 | 6.90 |
| PC-8407 | 325–0–325 | 55 | 5.0 | 2.0 | 6.3 CT | 2.0 | 3⅛ x2½ | C | 3.2 | 9.20 | 8.28 | 7.45 | 6.90 |
| PM-8407 | 325–0–325 | 55 | 5.0 | 2.0 | 6.3 CT | 2.0 | 3 x2½ | M | 3.2 | 9.50 | 8.55 | 7.70 | 7.13 |
| PC-8422 | 325–0–325 | 150 | 5.0 | 3.0 | 6.3 CT | 5.0 | 3⅞ x3⅛ | C | 5.8 | 15.28 | 13.75 | 12.38 | 11.46 |
| PM-8422 | 325–0–325 | 150 | 5.0 | 3.0 | 6.3 CT | 5.0 | 3¾ x3⅛ | M | 5.8 | 16.00 | 14.40 | 12.96 | 12.00 |
| P-8339 | 325–0–325 | 255 | 5.0 | 3.0 | 12.6 CT | 5.25 | 4 x3¾ | C | 8.5 | 19.40 | 17.46 | 15.71 | 14.55 |
| PC-8408 | 340–0–340 | 70 | 5.0 | 2.0 | 6.3 CT | 2.5 | 3⅜ x2 13/16 | C | 3.8 | 9.75 | 8.78 | 7.90 | 7.31 |
| PM-8408 | 340–0–340 | 70 | 5.0 | 2.0 | 6.3 CT | 2.5 | 3⅜ x2 13/16 | M | 3.8 | 9.75 | 8.78 | 7.90 | 7.31 |
| PCC-105 | 345–0–345 | 105 | 5.0 | 2.0 | 6.3 CT | 3.5 | 4 7/16 x3 11/16 | SC | 6.5 | 20.00 | 18.00 | 16.20 | 15.00 |
| P-6011 | 350–0–350 | 70 | 5.0 CT | 3.0 | 6.3 CT | 2.5 | 3 x2½ | M | 3.5 | 12.85 | 11.57 | 10.41 | 9.64 |
| PC-8409 | 350–0–350 | 90 | 5.0 | 2.0 | 6.3 CT | 3.0 | 3⅝ x2 13/16 | C | 4.5 | 12.50 | 11.25 | 10.13 | 9.38 |
| PM-8409 | 350–0–350 | 90 | 5.0 | 2.0 | 6.3 CT | 3.0 | 3⅜ x2 13/16 | M | 4.5 | 12.94 | 11.65 | 10.48 | 9.71 |
| P-8176 | 350–0–350 | 110 | 5.0 | 2.0 | 6.3 CT<br>6.3 CT | 3.0<br>3.0 | 3⅞ x3¼ | C | 5.5 | 20.35 | 18.32 | 16.48 | 15.26 |
| P-8345 | 350–0–350 | 215 | 5.0 | 3.0 | 6.3/6.3 | 9.0/1.2 | 4 9/16 x3¾ | M* | 11.5 | 18.20 | 16.38 | 14.74 | 13.65 |
| PC-8410 | 360–0–360 | 120 | 5.0 | 3.0 | 6.3 CT | 3.5 | 3¾ x3⅛ | C | 5.5 | 12.00 | 10.80 | 9.72 | 9.00 |
| PM-8410 | 360–0–360 | 120 | 5.0 | 3.0 | 6.3 CT | 3.5 | 3¾ x3⅛ | M | 5.5 | 13.86 | 12.47 | 11.23 | 10.40 |
| P-6315 | 370–0–370 | 275 | 5.0 CT | 3.0 | 6.3 CT | 7.0 | 4½ x3¾ | M | 9.3 | 23.30 | 20.97 | 18.87 | 17.48 |
| PC-8411 | 375–0–375 | 150 | 5.0 | 3.0 | 6.3 CT | 4.5 | 4 x3 7/16 | C | 5.8 | 16.00 | 14.40 | 12.96 | 12.00 |
| PM-8411 | 375–0–375 | 150 | 5.0 | 3.0 | 6.3 CT | 4.5 | 4⅛ x3 7/16 | M | 5.8 | 16.00 | 14.40 | 12.96 | 12.00 |
| PC-8412 | 400–0–400 | 200 | 5.0 | 3.0 | 6.3 CT | 5.0 | 4 x3¾ | C | 8.2 | 17.35 | 15.62 | 14.05 | 13.01 |
| PM-8412 | 400–0–400 | 200 | 5.0 | 3.0 | 6.3 CT | 5.0 | 4½ x3¾ | M | 8.2 | 18.35 | 16.52 | 14.86 | 13.76 |
| PC-8413 | 400–0–400 | 250 | 5.0 | 4.0 | 6.3 CT | 5.0 | 4½ x3¾ | C | 10.0 | 23.50 | 21.15 | 19.04 | 17.63 |
| PC-8414 | 600–0–600 | 200 | 5.0 | 3.0 | 6.3/6.3 | 3.0/3.0 | 4¼ x3¾ | C | 8.3 | 22.88 | 20.59 | 18.53 | 17.16 |

*With copper shorting band to reduce external magnetic field. †Lug; all others leads. ‡Plate and rectifier filament connected to tube socket on sec. leads. §For voltage doubler circuits. #For half-wave circuits.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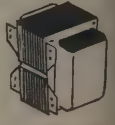
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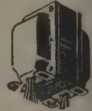
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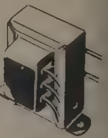
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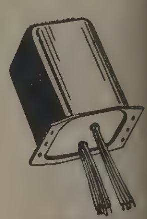
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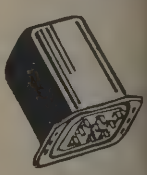
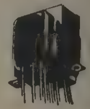

SC With Lugs


C1

## SILICON RECTIFIER POWER TRANSFORMERS

Mtg. type C. Lead wire termination. Height, 4¼". Primary 117 V, 50/60 Hz.

| Stancor No. | Secondary No. 1 Volts | Secondary No. 1 mA DC | Secondaries 2 & 3 Volts | Secondaries 2 & 3 Amps | Base Area, Inches | Wt., Lbs. | Net Each, Quantities of 1-9 | 10-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|---|---|---|---|---|
| RP-400 | 400 CT | 400 | 6.3 | 3.0 | 3 7/16 x 4¼ | 7.1 | $17.70 | $15.93 | $14.34 | $13.28 |
| RP-600 | 300 CT | 600 | 6.3 | 2.5 | 3 7/16 x 4¼ | 7.1 | 19.10 | 17.19 | 15.47 | 14.33 |
| RP-800 | 200 CT | 800 | 6.3 | 2.0 | 3 7/16 x 4⅛ | 6.9 | 20.08 | 18.07 | 16.26 | 15.06 |
| RP-1600 | 100 CT | 1600 | 6.3 | 1.5 | 3 7/16 x 3⅞ | 6.0 | 18.86 | 16.97 | 15.28 | 14.15 |
| RP-2000 | 80 CT | 2000 | 6.3 | 1.5 | 3 7/16 x 4 | 6.5 | 17.00 | 15.30 | 13.77 | 12.75 |
| RP-2500 | 60 CT | 2500 | 6.3 | 1.5 | 3 7/16 x 3⅞ | 6.0 | 18.10 | 16.29 | 14.66 | 13.58 |

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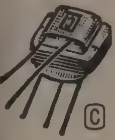
# MICROTRAN MINIATURIZED MILITARY AND INDUSTRIAL TRANSFORMERS

A

B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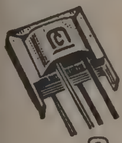
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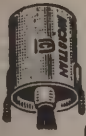
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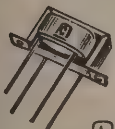
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## PICO MINIATURE TRANSFORMERS—PM SERIES

**PM-M (Fig. A):** Epoxy molded finish; gold plated leads, 0.020″ x ¾″. Frequency response ±2 dB, 300 Hz to 100 kHz (PM3 and PM5, to 45 kHz). Power level given for 15% max. distortion, except PM35, 20% and PM37, 25%. Size, .410″ x .465″ x .310″ max. Wt., 0.1 oz. MIL type TF5RX—ZZ. **PM-F (Fig. B):** Open frame, resin impregnated, 4″ #30 plastic leads. Size, .250″ x .375″ x .406″ max. Wt., .05 oz. MIL type TF6RX—ZZ.

| Micro-tran No.† | Appli-cation | Impedance |  | Pri. DC mA* | DC Resist., Ohms |  | Power Level, mW | MIL No. | Net Each, Lots of 1-9* |  |
|---|---|---|---|---|---|---|---|---|---|---|
|  |  | Primary | Secondary |  | Pri. | Sec. |  |  | -M | -F |
| **PM3-** | Input | 200K CT | 1K CT | 0 | 5300 | 110 | 10 | 16 | $12.30 | ..... |
| **PM5-** | Input | 200K | 1K | 0 | 5300 | 110 | 10 | 16 | 11.40 | ..... |
| **PM7-** | Interstage | 50K CT | 1K CT | 0 | 3300 | 75 | 10 | 16 | 12.00 | ..... |
| **PM9-** | Interstage | 50K | 1K/250‡ | 0 | 3300 | 75 | 10 | 16 | 12.00 | ..... |
| **PM11-** | Interstage | 25K CT | 1K CT | 0.5 | 1700 | 110 | 40 | 12 | 11.40 | ..... |
| **PM13-** | Interstage | 25K | 1K/250‡ | 0.25 | 1700 | 110 | 40 | 12 | 11.40 | ..... |
| **PM15-** | Interstage | 25K | 1K | 0.25 | 1700 | 110 | 40 | 12 | 10.50 | $5.10 |
| **PM17-** | Isolation | 10K CT | 10K CT | 1 | 1000 | 1300 | 50 | 12 | 10.95 | ..... |
| **PM19-** | Driver | 10K CT | 2K CT | 1 | 1000 | 300 | 50 | 12 | 11.25 | ..... |
| **PM21-** | Driver | 10K | 2K/500‡ | 0.5 | 1000 | 300 | 50 | 12 | 11.70 | ..... |
| **PM23-** | Driver | 10K CT | 1200 CT | 1 | 1050 | 280 | 50 | 12 | 11.25 | ..... |
| **PM25-** | Driver | 10K | 1200/300‡ | 0.5 | 1050 | 280 | 50 | 12 | 11.55 | ..... |
| **PM27-** | Driver | 10K | 1200 | 0.5 | 1050 | 280 | 50 | 12 | 10.20 | 4.80 |
| **PM29-** | Driver | 10K CT | 500 CT | 1 | 1050 | 80 | 50 | 12 | 11.10 | ..... |
| **PM31-** | Isolation | 2500 | 2500 CT | 1 | 250 | 325 | 50 | 12 | 10.65 | 6.60 |
| **PM33-** | Output | 1500 CT | 600 | 3 | 170 | 95 | 50 | 12 | 10.50 | 4.95 |
| **PM34-** | Output | 600 CT | 600 CT | 3 | 75 | 105 | 50 | 17 | 10.80 | 5.55 |
| **PM35-** | Output | 500 | 50 | 3 | 60 | 8 | 50 | 17 | 10.05 | 4.35 |
| **PM36-** | Output | 500 | 500/125‡ | 3 | 72 | 85 | 50 | 17 | 11.10 | 5.85 |
| **PM37-** | Output | 120 CT | 3.2 | 10 | 16 | 0.75 | 50 | 17 | 10.35 | 4.65 |
| **PM38-** | Output | 300 CT | 1600 | 7 | 41 | 98 | 50 | 17 | 10.95 | 4.80 |
| **PM39-** | Audio | 6 H |  | 2 | 1800 | ...... | ...... | 20 | 9.00 | 4.20 |
| **PM40-** | Choke | 3.5 H |  | 2 | 700 | ...... | ...... | 20 | 8.55 | 4.05 |
| **PM41-** |  | .3 H |  | 4 | 43 | ...... | ...... | 20 | 8.10 | 3.90 |
| **PM90-** | Magnetic shield Mumetal® slip-on can; 20 dB shld. |  |  |  |  |  |  |  | 1.05 | ..... |

*Unbalanced. ‡Split. ®Registered Allegheny-Ludlum Steel Corp. trademark.

## ULTRA-MINIATURE TRANSISTOR TRANSFORMERS—UM SERIES

Frequency Response: ±2 dB, 300–10K Hz. Leads supplied, 4″ #27 color-coded. Power levels given for 7½% max. distortion. **UM-F (Fig. C):** Size, ⅜″ x ⅜″ x 11/32″. Weight, 0.08 oz. MIL type TF6RX—ZZ (Insert MIL No. from table). **UM-M (Fig. D):** Size, ½″ dia. x ½″, with 1″ leads. Weight, 0.14 oz. MIL type TF5RX—ZZ.

| Micro-tran No.† | Applica-tion | Impedance |  | Unbal. Pri., DC mA | DC Resis., Ohms |  | Level at 1 kHz mW | MIL No. | Net Each, 1-9* |  |
|---|---|---|---|---|---|---|---|---|---|---|
|  |  | Primary | Sec. |  | Pri. | Sec. |  |  | -F | -M |
| **UM21-** | Input | 100K | 1K | 0 | 1900 | 135 | 70 | 16 | $6.00 | $8.40 |
| **UM22-** | Driver | 20K | 1K | 0.5 | 1100 | 100 | 300 | 13 | 4.35 | 7.95 |
| **UM23-** | Driver | 20K | 1200 CT | 0.5 | 1100 | 110 | 300 | 13 | 4.65 | 8.10 |
| **UM24-** | Output | 1K | 50 | 3 | 65 | 10 | 500 | 17 | 3.90 | 6.90 |
| **UM25-** | Output | 400 | 50 | 3 | 35 | 5 | 500 | 17 | 3.90 | 6.90 |
| **UM26-** | Output | 400 | 11 | 3 | 35 | 1.5 | 500 | 17 | 3.90 | 6.90 |
| **UM27-** | Output | 400 CT | 11 | 6 | 35 | 1.5 | 500 | 17 | 4.20 | 7.05 |
| **UM28-** | Choke | 10 H, 0 DC; 8 H, 0.5 mA |  |  | 650 | ...... | ...... | 20 | 3.75 | 6.00 |
| **UM29-** | Interstage | 600 CT | 600 CT | 7 | 45 | 60 | 400 | 21 | 4.65 | 8.25 |
| **UM30-** | Choke | 1.5 H, 0 DC; .7 H, 2 mA |  |  | 100 | ...... | ...... | 20 | 3.60 | 5.40 |
| **UM31-** | Interstage | 10K CT | 1200 CT | 2 | 850 | 120 | 500 | 21 | 4.80 | 9.60 |
| **UM32-** | Output | 1500 CT | 600 | 5 | 135 | 65 | 500 | 13 | 4.35 | 7.65 |
| **UM33-** | Output | 1K CT | 600 | 6 | 80 | 65 | 500 | 17 | 4.35 | 6.90 |
| **UM34-** | Driver | 10K CT | 600 CT | 2 | 850 | 40 | 500 | 13 | 4.50 | 9.45 |
| **UM35-** | Isolation | 15K CT | 15K CT | 1 | 930 | 1210 | 300 | 15 | 4.95 | 10.05 |
| **UM36-** | Driver | 20K CT | 800 CT | 0.5 | 1100 | 80 | 500 | 13 | 4.80 | 9.90 |
| **UM37-** | Driver | 10K | 2K CT | 1 | 850 | 200 | 500 | 13 | 4.50 | 7.80 |
| **UM39-** | Interstage | 2.5K CT | 600 CT | 2 | 250 | 50 | 500 | 13 | 4.50 | 7.65 |
| **UM90** | Magnetic shield Mumetal slip-on can; 20 dB shld. (Fig. E) |  |  |  |  |  |  |  | 1.35 | ..... |

## VERI-MINIATURE TRANSISTOR TRANSFORMERS—VM SERIES

Frequency Response: ±2 dB, 200–10K Hz. Leads supplied, 4″ #27 color-coded. Power levels given for 7½% max. distortion. **VM-M (Fig. F):** For plug-in printed circuit applications. Cast epoxy resin provides high resistance. Size, 9/16″ x 9/16″ x ½″. Weight, 0.25 oz. MIL type TF5RX—ZZ (Insert MIL No. from table). **VM-FPB (Fig. G):** Plug-in tab mounted channel. Size, 17/32″ x 15/32″ x 7/16″. Weight, 0.2 oz. MIL type TF6RX—ZZ.

| Micro. No.† | Application | Impedance |  | DCR, Ohms |  | Level, mW | MIL No. | Net Ea., 1-9* |  |
|---|---|---|---|---|---|---|---|---|---|
|  |  | Primary | Secondary | Pri. | Sec. |  |  | -FPB | -M |
| **VM1-** | Input | 50 | 600, 1.5 mA | 7 | 90 | 15 | 21 | $4.20 | $6.45 |
| **VM2-** | Input or intrstg. | 200K | 600, 1.0 mA | 3000 | 110 | 2.5 | 21 | 5.70 | 8.10 |
| **VM3-** | Interstage | 25K | 600, 1.0 mA | 720 | 45 | 2.5 | 21 | 4.50 | 7.20 |
| **VM4-** | Input or intrstg. | 200K | 1200, .72 mA | 3100 | 165 | 5 | 21 | 5.70 | 8.10 |
| **VM5-** | Interstage | 50K | 600, 1.0 mA | 830 | 55 | 5 | 21 | 4.65 | 7.50 |
| **VM6-** | Interstage | 100K | 1200‡ .72 mA | 2000 | 150 | 5 | 21 | 5.85 | 8.40 |
| **VM7-** | Output | 500, 3.5 mA | 3.4 | 50 | 0.5 | 15 | 21 | 4.20 | 6.45 |
| **VM8-** | Output | 1250, 2.0 mA | 3.4 | 135 | 0.5 | 15 | 21 | 4.35 | 6.60 |
| **VM9-** | Output | 1250, 2.0 mA | 50 | 135 | 6.5 | 15 | 21 | 4.35 | 6.60 |
| **VM10-** | Interstage | 2500, 1.5 mA | 2500 CT | 225 | 215 | 3 | 21 | 4.65 | 7.95 |
| **VM11-** | Choke | 20 H, 0 mA; 12 H, .5 mA |  | 1000 | ...... | ...... | 21 | 4.05 | 5.85 |
| **VM12-** | Interstage | 20K | 1000, .75 mA | 625 | 85 | 5 | 21 | 4.50 | 7.20 |
| **VM13-** | Interstage | 20K | 1000‡ .75 mA | 625 | 85 | 5 | 21 | 4.65 | 7.80 |
| **VM14-** | Interstage | 600‡, 7 mA | 600 CT | 50 | 65 | 15 | 17 | 4.50 | 7.65 |
| **VM15-** | Isolation | 50K CT | 50K CT | 2000 | 2600 | 5 | 15 | 6.00 | 9.75 |
| **VM16-** | Driver | 500‡ 7.5 mA | 250 CT | 50 | 25 | 15 | 17 | 4.50 | 7.65 |
| **VM17-** | Interstage | 10K CT | 5K CT | 400 | 300 | 5 | 17 | 5.85 | 8.10 |
| **VM90** | Magnetic shield Mumetal slip-on can; 20 dB shld. |  |  |  |  |  |  | 1.95 | ...... |

‡CT.

## DECI-MINIATURE PC CHOKES (FIG. U)

or audio frequency, servo mechanisms, computer applications, c. **Size:** 13/16″ w. x 19/32″ d. x 15/16″ h. Open frame.

| Micro. No. | Inductance, Henries |  | DC Res., Ohms | Net Each, 1-9* |
|---|---|---|---|---|
|  | At 0 mA | At Rated Cur. |  |  |
| CM51-PC | 10 | 5 at 3 mA | 300 | $3.60 |
| CM52-PC | 5 | 2 at 5 mA | 155 | 3.30 |
| CM51-PC | 2.5 | 1 at 7 mA | 75 | 3.15 |

**Quantity Discounts:** 1–9 Net; 10–49, less 10%; 50–99, less ⅔%; 100–249, less 33⅓%. Larger quantity prices on request.

**ORDER BY COMPLETE MICROTRAN NO. (PM3-M)**

## 60 Hz ISOLATION AND POWER TRANSFORMERS

With center tap for use in either full wave bridge or full wave CT circuitry. Electrostatic shielding; open frame. Color-coded leads.

| Micro. No. | Fig. | Volts |  | rms Amps | VA | Size, Inches W. x D. x H. | Net Ea., 1-9* |
|---|---|---|---|---|---|---|---|
|  |  | Input | Output |  |  |  |  |
| **M8294** | X | 115 | 115 CT | .0085 | 1 | 2⅛ x1⅛x1¾ | $ 5.55 |
| **M8295** | X | 115 | 115 CT | .030 | 3.5 | 2 13/16x1⅛x1⅝ | 11.40 |
|  |  |  | 12.6 CT | .25 | 3.15 |  |  |
|  |  |  | 12.6 | .25 | 3.15 |  |  |
| **M8251** | X | 115 | 115 CT | .13 | 15 | 3¼ x1⅝x1 15/16 | 13.20 |
| **M8296** | Z | 115* | 115 CT | .35 | 40 | 4 x2¼x2 9/16 | 12.15 |
| **M8278** | Y | 115* | 115 CT | .9 | 100 | 3¾ x3¼x3 15/16 | 17.55 |

*Primary 105/115/125 volts.

# MICROTRAN MINIATURIZED MILITARY AND INDUSTRIAL TRANSFORMERS

## MICRO-MINIATURE AUDIO AND TRANSISTOR TRANSFORMERS—MMT SERIES

**MM-M (Fig. J):** Molded, for plug-in printed circuit applications. Cast epoxy resin for high resistance to extremes of ambient temperature. MIL Type TF5RX—ZZ. Size, 7/8" x 25/32" x 17/32" with 5/32" pins, .020" dia. Weight, ½ oz. **MM-H (Fig. K):** Hermetically sealed with high compression glass terminals. Gray enamel finish. MIL Type TF4RX—YY. Size, 15/16" dia. x 11/16". Weight, ¾ oz.

**MM-FB (Fig. L):** Open frame with channel. Available with plug-in tab channel or without channel on special order. MIL Type TF6RX—ZZ. Size, 13/16" x 19/32" x 15/32", plus tabs. **MM-CM (Fig. M):** Contour molded on special order only; for mtg. on top of chassis. Size, 7/8" x 9/16" x 25/32". In 1–49 quantity, add **$12.50** lot set-up charge.

| Microtran No.† | Application | Impedance | | Pri. Unbal. DC mA | Oper. Level, dBm | Freq. Resp. ± 2 dB, Hz | MIL No. | Net Each, Lots of 1-9* | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Pri. | Sec. | | | | | -FB | -H | -M | -CM |
| MMT1- | Line to base | 600 | 600 | 8 | 22 | 200–15K | 17 | $3.90 | $7.35 | $8.55 | $11.10 |
| MMT3- | Coll. to base or line | 50K | 600 | 0.7 | 20 | 200–15K | 13 | 4.05 | 7.50 | 8.70 | 11.25 |
| MMT4- | P-p coll. to p-p base | 50K CT | 600 CT | 1.4 | 20 | 200–15K | 13 | 4.95 | 8.55 | 9.75 | 12.75 |
| MMT5- | Coll. to speaker | 50K | 6 | 1 | 20 | 200–15K | 13 | 4.35 | 7.95 | 9.15 | 11.85 |
| MMT7- | Coll. to p-p base | 25K | 1200 CT | 1 | 20 | 200–15K | 13 | 4.50 | 8.40 | 9.60 | 12.45 |
| MMT8- | P-p coll. to p-p base | 50K CT | 1200 CT | 1.4 | 20 | 200–15K | 13 | 4.95 | 8.55 | 9.75 | 12.75 |
| MMT9- | Line to p-p base | 600 CT | 1200 CT | 16 | 22 | 200–15K | 17 | 4.50 | 7.65 | 8.85 | 11.55 |
| MMT10- | Coll. to base | 25K | 600 | 1 | 20 | 200–15K | 13 | 4.35 | 7.20 | 8.40 | 10.95 |
| MMT11- | P-p coll. to p-p base or line | 4K CT | 600 CT | 5 | 28 | 200–15K | 12 | 4.50 | 7.80 | 9.00 | 11.70 |
| MMT12- | Coll. to speaker | 2K | 3.4 | 5 | 28 | 200–15K | 13 | 3.90 | 7.35 | 8.55 | 11.10 |
| MMT13- | Output p-p coll. to speaker | 4K CT | 3.4 | 5 | 28 | 200–15K | 13 | 4.05 | 7.50 | 8.70 | 11.25 |
| MMT16- | Coll. to p-p base | 10K | 1500 CT | 1 | 20 | 200–15K | 13 | 4.50 | 8.40 | 9.60 | 12.45 |
| MMT17- | P-p coll. to p-p base | 10K CT | 200 CT | 6 | 20 | 200–15K | 13 | 4.50 | 8.10 | 9.30 | 12.15 |
| MMT18- | P-p coll. to p-p base | 25K CT | 1200 CT | 2 | 20 | 200–15K | 13 | 4.65 | 8.55 | 9.75 | 12.75 |
| MMT19- | Coll. to p-p base | 2500 | 2500 CT | 2 | 23 | 200–15K | 13 | 4.35 | 7.50 | 8.70 | 11.25 |
| MMT21- | P-p coll. to p-p base | 4K CT | 600/150 split | 5 | 28 | 200–15K | 13 | 4.65 | 8.55 | 9.75 | 12.75 |
| MMT25- | P-p coll. to p-p base | 7500 CT | 600 CT | 4 | 22 | 200–15K | 13 | 4.50 | 7.80 | 9.00 | 11.70 |
| MMT26- | Line to base | 600 CT | 600 CT | 16 | 22 | 200–15K | 17 | 4.20 | 7.65 | 8.85 | 11.55 |
| MMT27- | P-p coll. to p-p base | 25K CT | 600 CT | 2 | 20 | 200–15K | 13 | 4.50 | 8.40 | 9.60 | 11.55 |
| MMT28- | P-p coll. to p-p base | 10K CT | 1500 CT | 2 | 20 | 200–15K | 13 | 4.65 | 8.55 | 9.75 | 12.75 |
| MMT29- | Driver/Isolation | 10K CT | 10K CT | 2 | 20 | 200–15K | 13 | 4.65 | 8.55 | 9.75 | 12.75 |
| MMT30- | P-p coll. to p-p base | 7500 CT | 1200 CT | 4 | 22 | 200–15K | 13 | 4.50 | 8.40 | 9.60 | 12.45 |
| MMT31- | P-p coll. to p-p base | 2K CT | 500 CT | 10 | 28 | 200–15K | 13 | 4.35 | 8.25 | 9.45 | 12.30 |
| MMT32- | Line to p-p base | 600 CT | 1.2K/300 split | 16 | 22 | 200–15K | 17 | 4.80 | 8.85 | 9.75 | 12.75 |
| MMT33- | Line to p-p base | 600 CT | 600/150 split | 16 | 22 | 200–15K | 10 | 4.80 | 8.85 | 9.75 | 12.75 |
| MMT35- | P-p coll. to p-p base | 10K CT | 150/37.5 split | 2 | 20 | 200–15K | 13 | 4.80 | 8.70 | 9.90 | 12.90 |

## SUBMINIATURE AUDIO AND TRANSISTOR TRANSFORMERS—SMT SERIES

**SM-AF (Fig. N):** MIL-T-27B-AF modified case; compression sealed ceramic terminals; gray enamel finish. MIL type TF4RX—YY. Size, ¾" x ¾" x 1⅛" max. with two 4-40NC-2 spade mtg. bolts. Wt., 1⅛ oz. **SM-H (Fig. K):** Hermetically sealed; high compression glass terminals; gray enamel finish. MIL type TF4RX—YY. Size, 15/16" dia. x 15/16" h. Weight, 1 oz.

**SM-FB (Fig. L):** Open frame with channel. With plug-in tab mounted channel or without channel on special order. MIL type TF6RX—ZZ. Size, 15/16" x 19/32" x ¾", plus tabs. Wt., 0.750 oz. **SM-M (Fig. O):** Molded, for plug-in PC applications. MIL type TF5RX—ZZ. Size, 1 5/32" x ⅞" x ¾" max. Wt., 1½ oz. **SM-CM (Fig. M):** Contour molded on special order.

| Microtran No.† | Application | Impedance | | Pri. DC mA* | Oper. Level, dBm | Freq. Resp. ± 2 dB, Hz | MIL No. | Net Each, Lots of 1-9* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Pri. | Sec. | | | | | -AF | -FB | -H | -M | -CM• |
| SMT1- | Line to base | 600 | 600 | 9 | 23 | 200–15K | 17 | $6.75 | $4.50 | $7.20 | $8.40 | $ 9.30 |
| SMT3- | Coll. to base or line | 50K | 600 | 1 | 20 | 300–15K | 13 | 7.35 | 5.10 | 7.95 | 9.00 | 10.20 |
| SMT4- | P-p coll. to p-p base | 50K CT | 600 CT | 2 | 20 | 200–15K | 13 | .... | 5.70 | 8.40 | 9.60 | 10.65 |
| SMT5- | Coll. to speaker | 50K | 6 | 1 | 20 | 300–15K | 13 | 7.20 | 4.95 | 7.80 | 8.85 | 9.90 |
| SMT7- | Coll. to p-p base | 25K | 1200 CT | 1.5 | 20 | 200–15K | 13 | 7.50 | 5.40 | 8.10 | 9.30 | 10.35 |
| SMT8- | P-p coll. to p-p base | 50K CT | 1200 CT | 2 | 20 | 200–15K | 13 | .... | 5.70 | 8.40 | 9.60 | 10.65 |
| SMT9- | Line to p-p base | 600 CT | 1200 CT | 18 | 23 | 200–15K | 17 | .... | 4.95 | 7.65 | 8.70 | 9.75 |
| SMT10- | Coll. to base | 25K | 600 | 2 | 20 | 200–15K | 13 | 7.05 | 4.95 | 7.65 | 8.70 | 9.75 |
| SMT12- | Output coll. to speaker | 2K | 3.4 | 5 | 30 | 200–15K | 13 | 6.75 | 4.50 | 7.20 | 8.40 | 9.30 |
| SMT13- | Output p-p coll. to speaker | 4K CT | 3.4 | 5 | 30 | 200–15K | 13 | 6.90 | 4.65 | 7.35 | 8.55 | 9.60 |
| SMT16- | Coll. to p-p base | 10K | 1500 CT | 1 | 23 | 200–15K | 13 | 7.50 | 5.40 | 8.10 | 9.30 | 10.35 |
| SMT17- | P-p coll. to p-p base | 10K CT | 200 CT | 6 | 20 | 200–15K | 13 | .... | 5.55 | 8.25 | 9.45 | 10.50 |
| SMT18- | P-p coll. to p-p base | 25K CT | 1200 CT | 3 | 20 | 200–15K | 13 | .... | 5.70 | 8.40 | 9.60 | 10.65 |
| SMT19- | Coll. to p-p base | 2500 | 2500 CT | 5 | 26 | 200–15K | 13 | 7.50 | 5.25 | 8.10 | 9.30 | 10.35 |
| SMT26- | Line to base | 600 CT | 600 CT | 18 | 23 | 200–15K | 17 | .... | 5.10 | 7.95 | 9.00 | 10.20 |
| SMT36- | Interstage | 2.5K CT | 2.5K/625 split | 10 | 26 | 200–15K | 13 | .... | 5.85 | 8.55 | 9.75 | 10.80 |

*Unbalanced. •In 1–49 quantity, add **$12.50** lot set-up charge. **†ORDER BY COMPLETE MICROTRAN NO. (MMT1-FB)**

## DC TO DC CONVERTER TRANSFORMERS—SWITCHING TYPE

Provide improved reliability and efficiency over vibrator and rotary power converters. Approximate repetition rate, 800 Hz. Full wave and CT loads may be simultaneously drawn, but total VA output should not be exceeded for continuous-duty operation. Transistors listed are for reference only; user must verify that max. ratings will not be exceeded.

### LAMINATED SERIES (FIG. L)

| Microtran No. | Input VDC | Output VA | Transistors Suggested | DC Output | | | | Size, Inches W. x D. x H. | Mtg. Ctrs., In. | | MIL Case | Net Each, 1-9* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | FW V | mA† | CT FW V | CT FW mA | | ML | MW | | |
| M8072 | 2.7 | 190§ | 2N1307 | 480* | 400‡ | .... | .... | 13/16x1 11/16x 27/32 | 1⅜ | .... | ZZ | $ 8.40 |
| M8120 | 28 | 190§ | 2N3417 | 480* | 400‡ | .... | .... | 13/16x1 11/16x 27/32 | 1⅜ | .... | ZZ | 7.80 |

Permit conversion of low-voltage direct current to higher voltages for operating mobile electronic equipment. Operating frequencies between 1500 and 5000 Hz. Case is epoxy molded with terminals and clearance hole for mounting. DC output shown is based on 1 volt drop per rectifier.

### TOROIDAL SERIES (FIG. V)

| Microtran No. | Input VDC | Output VA | Transistors Suggested | FW V | mA† | CT FW V | CT FW mA | Size, Inches | Mtg. Ctrs., In. ML | MW | MIL Case | Net Each, 1-9* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M8132▲ | 13.8 | 30 | 2N3055 | ■ | 1000 | 15 | 2000 | 1¼x ¾# | .140• | | .... | $18.90 |
| M8133▲ | 28 | 30 | 2N3055 | ■ | 1000 | 15 | 2000 | 1¼x ¾# | .140• | | .... | 18.45 |
| M8113 | 13.8 | 50 | 2N278 | 28 | 1750 | 14 | 3500 | 2⅛x1¼# | .170• | | .... | 28.50 |
| M8114 | 28 | 50 | 2N375 | 28 | 1750 | 14 | 3500 | 2⅛x1¼# | .170• | | .... | 27.75 |
| M8115 | 13.8 | 5 | 2N376 | 500 | 10 | 250 | 20 | 1¼x ¾# | .140• | | .... | 21.30 |
| M8116 | 13.8 | 50 | 2N278 | 70 | 700 | 35 | 1400 | 2⅛x1¼# | .170• | | .... | 28.50 |
| M8117 | 28 | 5 | 2N375 | 500 | 10 | 250 | 20 | 1¼x ¾# | .140• | | .... | 21.30 |
| M8118 | 28 | 50 | 2N375 | 70 | 700 | 35 | 1400 | 2⅛x1¼# | .170• | | .... | 27.75 |

*Output when used with half-wave capacitor-input rectifier. †Bridge. ‡μA. §mW. #Dia. x ht. •Clearance hole dia. ▲Operating frequencies between 1500 and 20 kHz. ■±15 or 30.

## DC TO DC CONVERTER TRANSFORMERS—BLOCKING OSCILLATOR TYPE

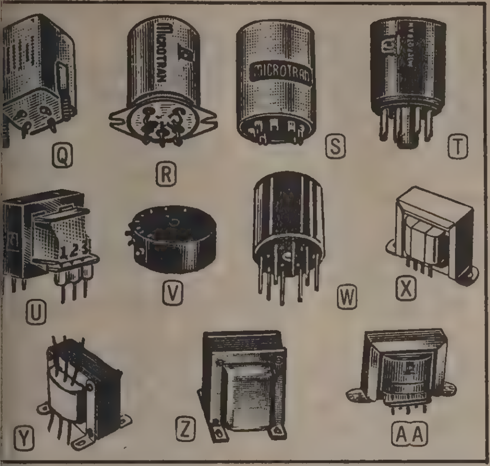
Laminated series blocking oscillator type. Approximate repetition rate, 400 Hz. All are **Fig. L** except M8051, **Fig. Q.** DC output voltage for all but M8073 is given for transformer used in blocking oscillator circuit with single capacitor-input rectifier. DC input current, output current and output voltage of Model M8073 depend on load and bias; frequency varies from 100 to 2800 Hz. Fig. L types are open frame units meeting MIL designation TF6RX09ZZ; Fig. Q type is enclosed unit meeting MIL designation TF4RX09YY.

| Microtran No. | Turns Ratio HV: Coll.: Feedback | Input DC V | Input DC mA | Output DC Volts | Output DC μA | Size, Inches W. x D. x H. | Mtg. Ctr., In. | Net Each, 1-9* |
|---|---|---|---|---|---|---|---|---|
| M8050 | 600:12:1 | 3 | 20 | 1000 | 25 | 13/16x1 11/16x 27/32 | 1⅜ | $ 7.35 |
| M8051 | 600:12:1 | 3 | 20 | 1000 | 25 | 1 x1 x1⅜ | 1⅛ | 13.50 |
| M8073 | 44:1:1 | 4 | 2–15 | 425–500 | 50* | ⅜x ⅜ x ⅜ | ...... | 5.25 |
| M8074 | 65.5:.33:1 | 3 | 45 | 535 | 90 | 13/16x1 11/16x 27/32 | 1⅜ | 6.30 |

*Maximum.

★**Quantity Discounts:** 1–9 Net; 10–49, less 10%; 50–99, less 16⅔%; 100–249, less 33⅓%. Larger quantity prices on request.

# MICROTRAN MINIATURIZED MILITARY AND INDUSTRIAL TRANSFORMERS



## MINIATURE TRANSISTOR AND AUDIO TRANSFORMERS— M AND MT SERIES

**M-M (Fig. O):** Molded, for plug-in printed circuit use. Cast epoxy resin provides highest resistance to temperature extremes. MIL Type TF5RX—ZZ (Insert MIL No. from table). Max. Size, 1 5/32″ x ⅞″ x ⅞″. Weight, 1¾ oz. **M-AG (Fig. Q):** Enclosed in modified MIL-T-27B AG case with compression sealed ceramic terminals. MIL Type TF4RX—YY. Max. Size, 1″ x 1″ x 1⅜″. Weight, 2⅜ oz. **M-H (Fig. R):** Hermetically sealed with high compression glass terminals, gray enamel finish. Available on special order with .120″ holes. MIL Type TF4RX—YY. Size, 15/16″ dia. x 1 7/16″ max. Weight, 1¼ oz. **M-A (Fig. S):** Aluminum case with 2-56 screws. MIL Type TF3RX—YY. Size, .875″ dia. x 1 3/16″. Weight, 1.25 oz. **M-FB (Fig. L):** Open frame with channel. Available with plug-in tab channel or without channel on special order. MIL Type TF6RX—ZZ. Size, 1 3/64″ x 13/16″ x 27/32″ max., plus tabs. Weight, 1.13 oz. **M-P (Fig. T):** Octal plug-in type in sealed plastic housing. MIL Type TF6RX—ZZ. Size, 1 3/32″ dia. x 1 15/32″. Wt., 2 oz. **M90 Shield (Fig. E):** 25 dB magnetic shield for Type M-A. Two clearance holes on 11/16″ centers. **M-PC (Fig. U):** Open frame PC with terminals molded into bobbin to maintain accurate dimensions for PC board. MIL Type TF6RX—ZZ. Size, ⅞″ x 1 1/32″ x 1″; terminals 3/16″ below bobbin. Wt., 1.2 oz. **M-CM (Fig. M):** Contour molded on special order only; for mtg. on top of chassis. Size, 1 5/32″ x ⅞″ x ⅞″.

### MINIATURE AUDIO TRANSFORMERS—M SERIES

| Micro-tran No.† | Application | Impedance | | Pri. DC mA* | Oper. Level, dBm | Freq. Resp. ±2dB, Hz | MIL No. | Net Each, Lots of 1-9* | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Pri. | Sec. | | | | | -A | -AG | -FB, -PC | -H | -M | -P | -CM• |
| 1-♦ | Mike or line to 1 grid | ‡ | 50K | 0 | 5 | 20–20K | 10 | $ 9.90 | $10.80 | $5.85 | $10.50 | $10.80 | $ 9.90 | $15.45 |
| 2-♦ | Mike or line to 2 grids | ‡ | 50K CT | 0 | 5 | 20–20K | 10 | 10.20 | 11.10 | 6.30 | 10.80 | 11.20 | 10.20 | 15.90 |
| 5- | Single plate to 1 grid | 15K | 60K | 4 | 14 | 200–20K | 15 | 8.55 | 9.30 | 4.95 | 9.00 | 9.30 | 8.85 | 13.35 |
| 6- | Single plate to 2 grids | 15K | 95K CT | 0 | 5 | 20–15K | 10 | 9.60 | 10.35 | 5.25 | 10.05 | 10.35 | 9.60 | 13.20 |
| 7- | Single plate to 2 grids | 15K | 95K CT | 4 | 11 | 200–20K | 15 | 9.60 | 10.20 | 5.10 | 9.90 | 10.65 | 9.60 | 15.15 |
| 8-♦ | Single plate to line | 15K | ‡ | 0 | 8 | 20–20K | 16 | 9.90 | 10.65 | 6.00 | 10.35 | 11.25 | 10.20 | 16.20 |
| 9-♦ | Single plate to line | 15K | ‡ | 4 | 21 | 150–20K | 13 | 9.90 | 10.80 | 5.85 | 10.50 | 11.25 | 10.20 | 16.20 |
| 10-♦ | Push-pull plates to line | 30K, p-p | ‡ | 0 | 8 | 30–50K | 16 | 10.35 | 11.10 | 6.30 | 10.80 | 11.85 | 10.35 | 16.35 |
| 11-♦ | Crystal mike to line | 50K | ‡ | 0 | 5 | 20–20K | 16 | 9.90 | 10.80 | 5.85 | 10.50 | 10.80 | 10.20 | 16.35 |
| 12-♦ | Mixing and matching | § | ‡ | 0 | 8 | 20–20K | 16 | 9.90 | 10.80 | 5.85 | 10.50 | 10.80 | 10.20 | 16.35 |
| 13- | Reactor | 300 H at 0 DC, 50 H at 3 mA; 6K | | | | DCR | 20 | 8.10 | 9.00 | 4.20 | 8.70 | 8.85 | 8.55 | 12.75 |
| 14- | 50:1 mike to grid | 200 | ½ meg | 0 | 9 | 80–3K | 10 | 9.45 | 10.80 | 5.25 | 10.50 | 11.10 | 10.20 | 15.90 |
| 15- | 10:1 plate to grid | 10K | 1 meg | 0 | 11 | 100–2500 | 10 | 9.45 | 10.20 | 5.40 | 9.90 | 10.50 | 10.20 | 14.55 |
| 90 | Magnetic shield Mumetal® slip on can; 25 dB shielding | | | | | | | 1.50 | ...... | ...... | ...... | ...... | ...... | ...... |

### MINIATURE TRANSISTOR TRANSFORMERS—MT SERIES

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T1- | Line to base | 600 | 600 | 10 | 23 | 200–15K | 17 | $8.10 | $ 8.70 | $3.75# | $7.80 | $ 9.00 | $7.35 | $14.10 |
| T7-♦ | Coll. to p-p base | 25K | 1200 CT | 3 | 22 | 200–15K | 13 | 8.85 | 9.45 | 4.65 | 8.55 | 9.75 | 8.10 | 15.15 |
| T8- | P-p coll. to p-p base | 50K CT | 1200 CT | 3 | 20 | 300–15K | 13 | 9.00 | 9.60 | 4.80 | 8.70 | 9.90 | 8.25 | 15.45 |
| T9- | Line to p-p base | 600 CT | 1200 CT | 4 | 23 | 200–15K | 17 | 9.00 | 9.60 | 4.65 | 8.70 | 9.90 | 7.80 | 15.45 |
| T10-♦ | Coll. to base | 25K | 600 | 3 | 22 | 200–15K | 13 | 8.70 | 9.30 | 4.05 | 8.40 | 9.60 | 7.95 | 15.00 |
| T11- | P-p coll. to p-p base | 4K CT | 600 CT | 3 | 32 | 200–15K | 13 | 9.00 | 9.60 | 4.50 | 8.70 | 9.90 | 8.25 | 15.45 |
| T21-♦ | P-p coll. to p-p base | 4K CT | ■ | 3 | 32 | 200–15K | 13 | 9.15 | 9.75 | 5.25 | 8.85 | 10.05 | 8.40 | 15.75 |
| T22-♦ | Line to p-p base | ■ | 1200 CT | 4 | 23 | 200–15K | 17 | 9.15 | 9.75 | 5.25 | 8.85 | 10.05 | 8.40 | 15.75 |
| T23- | P-p coll. to servo | 250 CT | 1000 | 10 | 30 | 200–15K | 17 | 8.70 | 9.30 | 4.05 | 8.40 | 9.60 | 7.95 | 15.00 |
| T24-♦ | Coll. to p-p base | 2500 | 600 CT | 10 | 32 | 200–15K | 13 | 8.70 | 9.30 | 4.05 | 8.40 | 9.60 | 7.95 | 15.00 |
| T25- | P-p coll. to p-p base | 7500 CT | 600 CT | 8 | 32 | 200–15K | 12 | 9.00 | 9.60 | 4.50 | 8.70 | 9.90 | 8.25 | 15.45 |
| T26- | Line to p-p base | 600 CT | 600 CT | 20 | 23 | 200–15K | 17 | 8.85 | 9.45 | 4.50 | 8.55 | 10.65 | 8.10 | 15.15 |
| T35-♦ | Hybrid tel circuit | 600 | 600 CT/<br>600 CT | 0 | 5 | 40–20K | 16 | 9.90 | 10.50 | 5.85 | 9.60 | 10.95 | 9.15 | ..... |

Unbalanced. ‡50/250/600 CT. §50/250 CT. #MT1-PC, **$4.05.** ▲1200/300 split. ■600/150 split. ♦Not available in -PC type. Allegheny-Ludlum Steel Corp. trademark. •In 1–49 quantity, add **$12.50** lot set-up charge.

## PLUG-IN PRINTED CIRCUIT POWER TRANSFORMERS

esigned for use in latest solid state circuitry for such applications power supplies, control equipment and instrumentation. Pro- de voltage step-down and isolation from power line at relatively w power levels. Power ratings range from 1.5 to 7.5 VA in 60 Hz ries, from .325 to 4 VA in 400 Hz series, yet units are small ough for optimum miniaturization. Precision spaced plug-in rminals provide fixed mounting centers, usually found only in expensive molded transformers. Constructed in accordance with MIL-T-27 Grade 6, class R; class S available on special order. Dual secondaries can be parallel connected to double the current rating or series connected to double the voltage rating of one winding; series connection also provides center tap. All models have 115 V primary. Series PC4300, PC4400 and PC6500 are **Fig. U;** Series PC6600 and PC6700 are **Fig. AA**

| Series | Approx. Watts | W. x D. x H. Max. | Wt., Oz. |
|---|---|---|---|
| PC4300 | .325 | 49/64″ x 1 1/16″ x 29/32″ | 0.5 |
| PC4400 | 4 | 1 1/64″ x 61/64″ x 1 1/32″ | 1.2 |
| PC6500 | 1.5 | 1 25/64″ x 1 5/32″ x 1 23/64″ | 3.2 |
| PC6600 | 4.5 | 1 45/64″ x 1¼″ x 1 37/64″ | 6.5 |
| PC6700 | 7.5 | 1 61/64″ x 1 15/32″ x 1 53/64″ | 9.5 |

### SERIES PC4300—400 Hz

| Microtan Number | Secondary Volts | | Net Each, Lots 1-9* |
|---|---|---|---|
| | Parallel Connected | Series Connected | |
| PC4304 | 3.15 at .1 A | 6.3 CT at .05 A | $4.35 |
| PC4312 | 12.6 at .026 A | 25.2 CT at .013 A | 4.50 |
| PC4316 | 28 at .012 A | 56 CT at .006 A | 4.50 |
| PC4320 | 35 at .01 A | 70 CT at .005 A | 4.65 |

### SERIES PC4400—400 Hz

| | | | |
|---|---|---|---|
| PC4408 | 6.3 at .60 A | 12.6 CT at .30 A | $4.50 |
| PC4412 | 12.6 at .30 A | 25.2 CT at .15 A | 4.50 |
| PC4416 | 28 at .14 A | 56 CT at .07 A | 4.65 |
| PC4424 | 40 at .10 A | 80 CT at .05 A | 4.65 |
| PC4428 | 58 at .066 A | 116 CT at .033 A | 4.80 |
| PC4432 | 115 at .010 A, 12.6 at .150 A | | 4.95 |

ORDER BY COMPLETE MICROTRAN NUMBER (M1-A)

### SERIES PC6500—60 Hz

| Microtan Number | Secondary Volts | | Net Each, Lots 1-9* |
|---|---|---|---|
| | Parallel Connected | Series Connected | |
| PC6506 | 6.3 V CT at .250 A (Single Secondary) | | $5.10 |
| PC6512 | 12.6 at .120 A | 25.2 CT at .060 A | 5.40 |
| PC6524 | 40 at .040 A | 80 CT at .020 A | 5.25 |
| PC6528 | 58 at .026 A | 116 CT at .013 A | 5.25 |

### SERIES PC6600—60 Hz

| | | | |
|---|---|---|---|
| PC6608 | 6.32 at .70 A | 12.6 CT at .35 A | $5.10 |
| PC6616 | 28 at .156 A | 56 CT at .078 A | 5.25 |
| PC6624 | 40 at .110 A | 80 CT at .055 A | 5.40 |
| PC6628 | 58 at .066 A | 116 CT at .033 A | 5.40 |
| PC6632 | 115 at .010 A, 12.6 at .150 A | | 5.70 |

### SERIES PC6700—60 Hz

| | | | |
|---|---|---|---|
| PC6708 | 6.3 at 1.2 A | 12.6 CT at .60 A | $5.25 |
| PC6712 | 12.6 at .6 A | 25.2 CT at .30 A | 5.25 |
| PC6716 | 28 at .27 A | 56 CT at .135 A | 5.25 |
| PC6724 | 40 at .18 A | 80 CT at .090 A | 5.40 |
| PC6728 | 58 at .130 A | 116 CT at .065 A | 5.40 |
| PC6732 | 115 at .025 A, 12.6 at .250 A | | 5.70 |

★**Quantity Discounts:** 1–9 Net; 10–49, less 10%; 50–99, less 16⅔%; 100–249, less 33⅓%. Larger quantity prices on request.

# MICROTRAN MINIATURIZED MILITARY AND INDUSTRIAL TRANSFORMERS

## POWER SUPPLY TRANSFORMERS (FIG. P)

For silicon rectifier circuitry and filament applications. Hermetically sealed. Primary, 105/115/125 V. Output voltage given for resistive or inductive loads, based on approx. 1 V drop per rectifier. MIL Type TF4RX01— (add MIL case type from table) per MIL-T-27B.

### 400 Hz TYPE

| Micro. No. | Secondary VAC | Secondary rms | Rect. Cir. VDC* | Rect. Cir. VDC† | Size, Inches W. x D. x H. | MIL Case | Net, 1-9* |
|---|---|---|---|---|---|---|---|
| M8063‡• | 2.85 | .045 A | 1.5§ | 3 | 15/16 dia. x 11/16 | YY | $10.50 |
| | 2.85 | .045 A | | | | | |
| M8064‡ | 6.3 CT | .6 A | 1.9 | 3.8 | 1 5/16 x1 5/16 x1 3/4 | AH | 11.55 |
| M8075‡• | 6.3 CT | .3 A | 1.9 | 3.8 | 15/16 dia. x 11/16 | YY | 9.75 |
| M8076‡ | 12.6 CT | .3 A | 4.7 | 9.4 | 1 5/16x1 5/16 x1 3/4 | AH | 11.70 |
| M8039 | 12.6 | .8 A | 10.5§ | 21§ | 1 5/8 x1 5/8 x2 3/8 | AJ | 19.65 |
| | 12.6 CT | .8 A | | | | | |
| M8077 | 12.6 | 2 A | 10.5§ | 21§ | 2 1/16 x2 5/16 x3 1/8 | FA | 27.75 |
| | 12.6 CT | 2 A | | | | | |
| M8038 | 12.6 | .3 A | 16§ | 32§ | 1 5/8 x1 5/8 x2 3/8 | AJ | 18.60 |
| | 12.6 | .3 A | | | | | |
| | 12.6 | .3 A | | | | | |
| M8018 | 18.5 CT | 1 A | 7.4 | 14.8 | 1 13/16x1 15/16x2 3/4 | EA | 18.00 |
| M8019 | 18.5 CT | 3 A | 7.4 | 14.8 | 2 1/16 x2 5/16 x3 1/8 | FA | 23.55 |
| M8065 | 26 CT | 1.5 A | 10.8 | 21.6 | 1 13/16x1 15/16x2 3/4 | EA | 23.25 |
| M8066 | 26 CT | 3 A | 10.7 | 21.5 | 2 1/16 x2 5/16 x3 1/8 | FA | 31.50 |
| M8079 | 26 CT | 4 A | 10.8 | 21.6 | 2 5/8 x3 1/16 x4 1/4 | HA | 31.50 |
| M8067 | 30 CT | 1.5 A | 12.5 | 25 | 2 1/16 x2 5/16 x2 1/2 | FB | 24.15 |
| M8020 | 35 CT | 3 A | 14.5 | 29 | 2 3/8 x2 3/4 x3 13/16 | GA | 28.50 |
| M8068 | 40 CT | .2 A | 17 | 34 | 1 5/8 x1 5/8 x2 3/8 | AJ | 15.15 |
| M8041‡ | 50 CT | .25 A | 21.5 | 43 | 1 5/16 x1 5/16 x1 3/4 | AH | 11.10 |
| M8080 | 50 CT | .2 A | 21.5 | 43 | 1 5/8 x1 5/8 x2 3/8 | AJ | 14.85 |
| M8069‡• | 60 CT | .003 A | 26 | 52 | 15/16 dia. x 11/16 | YY | 9.75 |
| M8070‡ | 65 CT | .170 A | 28.4 | 56.8 | 1 5/16 x1 5/16 x1 3/4 | AH | 14.85 |
| M8081‡• | 65 CT | .030 A | 28.4 | 56.8 | 15/16 dia. x 11/16 | YY | 9.75 |
| M8021 | 70 CT | 1 A | 30 | 60 | 2 1/16 x2 5/16 x3 1/8 | FA | 27.75 |
| M8071 | 80 CT | .90 A | 35 | 70 | 2 1/16 x2 5/16 x3 1/8 | FA | 24.15 |

### 60 Hz TYPE

| Micro. No. | Secondary VAC | Secondary rms | Rect. Cir. VDC* | Rect. Cir. VDC† | Size, Inches W. x D. x H. | MIL Case | Net, 1-9* |
|---|---|---|---|---|---|---|---|
| M8042 | 6.3 CT | .6 A | 1.9 | 3.8 | 1 5/8 x1 5/8 x2 3/8 | AJ | $14.70 |
| M8043 | 6.3 CT | 2 A | 1.9 | 3.8 | 2 1/16 x2 5/16 x2 1/2 | FB | 17.40 |
| M8086 | 6.3 CT | 6 A | 1.9 | 3.8 | 2 3/8 x2 3/4 x3 13/16 | GA | 21.60 |
| M8087 | 12.6 CT | 3 A | 4.7 | 9.4 | 2 3/8 x2 3/4 x3 13/16 | GA | 21.60 |
| M8044 | 12.6 | 2 A | 10.5§ | 21§ | 3 1/16 x3 9/16 x3 7/8 | JB | 25.65 |
| | 12.6 CT | 2 A | | | | | |
| M8022 | 18.5 CT | 3 A | 7.4 | 14.8 | 3 1/16 x3 9/16 x3 7/8 | JB | 28.05 |
| M8088 | 26 CT | 2.5 A | 10.8 | 21.6 | 2 5/8 x3 1/16 x4 1/4 | HA | 24.15 |
| M8152 | 28 CT | .15 A | 11.7 | 23.4 | 1 5/8 x1 5/8 x2 3/8 | AJ | 15.30 |
| M8045 | 28 CT | .6 A | 11.7 | 23.4 | 2 1/16 x2 5/16 x3 1/8 | FA | 21.15 |
| M8055 | 30 CT | 2.5 A | 12.5 | 25 | 3 1/16 x3 9/16 x4 7/8 | JA | 27.60 |
| M8023 | 35 CT | 3 A | 14.5 | 29 | 3 3/8 x3 15/16x5 1/4 | KA | 30.00 |
| M8089 | 40 CT | .1 A | 17 | 34 | 1 5/8 x1 5/8 x2 3/8 | AJ | 13.80 |
| M8090 | 40 CT | .3 A | 17 | 34 | 1 13/16x1 15/16x2 3/4 | EA | 19.80 |
| M8091 | 40 CT | .75 A | 17 | 34 | 2 3/8 x2 3/4 x2 13/16 | GB | 21.15 |
| M8046 | 49 CT | 2.5 A | 21 | 42 | 3 11/16x4 5/16 x5 9/16 | LA | 33.00 |
| M8024 | 70 CT | 1 A | 30 | 60 | 3 1/16 x3 9/16 x4 7/8 | JA | 26.85 |
| M8056 | 80 CT | .6 A | 35 | 70 | 2 5/8 x3 1/16 x4 1/4 | HA | 22.20 |

*Full-wave CT. †Full-wave bridge. ‡Primary 115 V only. §Series. •Fig. K.

## LOW LEVEL CHOPPER INPUT TRANSFORMERS

Efficiently transfer 30–500 Hz signals to instrument amplifiers. Signal level range, 0.5 µV to 0.5 V. Resin impregnated. Three Mumetal®, two copper shields; 90 dB shielding. Size, 1 3/8" dia. x 1 25/32" h. with 6–32 x 3/8" studs on 1 1/2" ctrs. Wt., 5 oz.

### CASED (FIG. H)

| Microtran No. | Turn Ratio Full Pri.-Full Sec. | Turn Ratio 1/2 Pri.-Full Sec. | Full Pri. H* | Full Pri. Imped.* | DC Resis. Full Pri. | DC Resis. Sec. | Net Each, 1-9* |
|---|---|---|---|---|---|---|---|
| M8025 | 1:7.7 | 1:15.4 | 17.5 | 6600 | 365Ω | 4140Ω | $13.80 |
| M8026 | 1-3.2 | 1:6.4 | 60 | 22,500 | 455Ω | 3500Ω | 13.80 |
| M8052 | 1:4.53 | 1:9.06 | 90 | 34,000 | 760Ω | 5220Ω | 15.60 |
| M8053‡ | 1:0.5 | 1:1 | 140 | 53,000 | 920Ω | 653Ω | 14.10 |
| M8112 | 1:0.5 | 1:1 | 450 | 80,000 | 2300Ω | 1600Ω | 15.00 |

*At 0.5 V, 60 Hz. ‡Secondary is center tapped.
®Registered Allegheny-Ludlum Steel Corp. trademark.

## DECI-MINIATURE PC TRANSFORMERS (FIG. U)

Primary and secondary windings may be interchanged to obtain varied matching requirements such as input, interstage, output and isolation. Designed for printed circuits; frequency response: ±2 dB, 200–15,000 Hz. **Size:** 13/16" w. x 19/32" d. x 3/4" h.

| Micro. No. DCM | Impedance Primary | Impedance Secondary | Unbal. Pri. mADC | Oper. Level dBm | Net Each, 1-9* |
|---|---|---|---|---|---|
| 1-PC | 25K CT | 1200 CT | 2 | 18 | $4.95 |
| 2-PC | 15K CT | 15K CT | 3 | 19 | 5.10 |
| 3-PC | 15K CT | 600 CT | 3 | 19 | 4.80 |
| 4-PC | 10K CT | 5000 CT | 4 | 20 | 4.95 |
| 5-PC | 10K | 2500/625 split | 2 | 20 | 4.95 |
| 6-PC | 10K CT | 1500 CT | 4 | 20 | 4.65 |
| 7-PC | 5000 CT | 80K CT | 6 | 15 | 5.25 |
| 8-PC | 4000 CT | 1200 CT | 6 | 20 | 4.50 |
| 9-PC | 4000 CT | 600 CT | 6 | 20 | 4.35 |
| 10-PC | 4000 | 600/150 split | 3 | 20 | 4.80 |
| 11-PC | 2500 CT | 2500 CT | 8 | 20 | 4.50 |
| 12-PC | 2500 | 2500/625 split | 4 | 20 | 4.80 |
| 13-PC | 2500 CT | 625 CT | 8 | 20 | 4.35 |
| 14-PC | 2500 CT | 200 CT | 8 | 20 | 4.20 |
| 18-PC | 600 CT | 50K CT | 16 | 20 | 4.65 |
| 19-PC | 600 | 8000/2000 split | 8 | 20 | 4.80 |
| 20-PC | 600 CT | 200 CT | 16 | 20 | 4.05 |
| 21-PC | 600 CT | 600 CT | 16 | 20 | 4.05 |
| 22-PC | 250 CT | 600 CT | 25 | 20 | 4.05 |

## 400 Hz ISOLATION TRANSFORMERS (FIG. P)

Electrostatic shielding. Also for use in either FW bridge or FW CT circuit. MIL Type TF4RX01—.

| Micro. No. | Input Volts | Output Volts | rms Amps | VA | Size, Inches W. x D. x H. | MIL Case | Net, 1-9* |
|---|---|---|---|---|---|---|---|
| M8058† | 115 | 115 CT | .017 | 2 | 15/16 dia. x 1 7/16 | YY | $10.20 |
| M8059 | 115 | 115 CT | .35 | 40 | 1 13/16x1 15/16x2 7/16 | EB | 17.10 |
| M8060 | 115 | 115 CT | 1.3 | 150 | 2 3/8 x2 3/4 x3 13/16 | GA | 28.50 |
| M8061 | 115* | 115 CT | 2.6 | 300 | 3 1/16 x3 9/16 x4 7/8 | JA | 48.00 |
| M8062 | 115* | 115 CT | 4.4 | 500 | 3 3/8 x3 15/16x5 1/4 | KA | 55.50 |
| M8082† | 26 | 12.6 CT | .15 | 1.9 | 15/16 dia. x 1 7/16 | YY | 10.50 |
| | | 12.6 | .15 | 1.9 | | | |
| M8083 | 115 | 115 CT | .03 | 10 | 1 5/8 x1 5/8 x2 3/8 | AJ | 18.60 |
| | | 12.6 CT | .25 | total | | | |
| | | 12.6 | .25 | | | | |
| M8084 | 115 | 115 CT | .12 | 14 | 1 5/8 x1 5/8 x2 3/8 | AJ | 16.50 |
| M8085 | 115 | 115 CT | .7 | 80 | 2 1/16 x2 5/16 x3 1/8 | FA | 34.20 |

*Primary 105/115/125 V. †Fig. K.

## 60 Hz ISOLATION/POWER TRANSFORMERS (FIG. P)

Electrostatic shielding. Center tap permits use in either FW bridge or FW CT circuit. MIL type TF4X01—.

| Micro. No. | Input Volts | Output Volts | rms Amps | VA | Size, Inches W. x D. x H. | MIL Case | Net Ea., 1-9* |
|---|---|---|---|---|---|---|---|
| M8094 | 115 | 115 CT | .0085 | 1 | 1 5/16 x1 5/16 x1 3/4 | AH | $14.10 |
| M8095 | 115 | 115 CT | .03 | 3.5 | 1 13/16x1 15/16x2 3/4 | EA | 28.50 |
| | | 12.6 CT | .25 | 3.15 | | | |
| | | 12.6 | .25 | 3.15 | | | |
| M8151 | 115 | 115 CT | .13 | 15 | 2 1/16 x2 5/16 x3 1/8 | FA | 23.40 |
| M8096* | 115 | 115 CT | .35 | 40 | 2 3/8 x2 3/4x3 13/16 | GA | 22.20 |
| M8078* | 115 | 115 CT | .9 | 100 | 3 3/8 x3 15/16x5 1/4 | KA | 35.10 |

*Primary 105/115/125 V.

## 60 Hz CONTROL/POWER SUPPLY TRANSFORMERS

For low voltage, high current applications such as filament supplies, relays, silicon rectifiers, etc. Primary 105/115/125 VAC. Open frame construction. Color-coded leads.

| Micro. No. | Fig. | Secondary VAC | Secondary rms A | Rectifier VDC* | Rectifier VDC‡ | Size, Inches W. x D. x H. | Net Ea., 1-9* |
|---|---|---|---|---|---|---|---|
| M8242 | X | 6.3 CT | .6 | 1.9 | 3.8 | 2 3/8 x1 3/8x1 1/2 | $ 7.65 |
| M8243 | X | 6.3 CT | 2.0 | 1.9 | 3.8 | 3 1/4 x1 5/8x1 15/16 | 9.00 |
| M8286 | X | 6.3 CT | 6.0 | 1.9 | 3.8 | 3 11/16x2 1/8x2 1/4 | 8.85 |
| M8287 | X | 12.6 CT | 3.0 | 4.7 | 9.4 | 3 11/16x2 1/8x2 1/4 | 8.85 |
| M8247# | Y | 12 | 4.0 | 9.9§ | 19.8§ | 4 1/8 x3 1/8x3 3/4 | 17.40 |
| | | 12 | 4.0 | 9.9§ | 19.8§ | | |
| M8244 | Y | 12.6 CT | 2.0 | 10.5§ | 21§ | 3 3/8 x2 7/8x3 5/16 | 12.00 |
| | | 12.6 | 2.0 | 10.5§ | 21§ | | |
| M8222 | Y | 18.5 CT | 3.0 | 7.4 | 14.8 | 3 3/8 x2 1/2x3 3/32 | 11.70 |
| M8288 | Y | 26 CT | 2.5 | 10.8 | 21.6 | 3 x2 3/4x2 3/4 | 12.15 |
| M8245 | X | 28 CT | .6 | 11.7 | 23.4 | 3 1/4 x2 1/8x1 15/16 | 9.60 |
| M8255 | Y | 30 CT | 2.5 | 12.5 | 25 | 3 3/4 x2 3/4x3 15/32 | 12.90 |
| M8223 | Y | 35 CT | 3.0 | 14.5 | 29 | 4 1/8 x3 x3 3/4 | 16.35 |
| M8289 | X | 40 CT | .1 | 17 | 34 | 2 3/8 x1 3/8x1 1/2 | 7.80 |
| M8290 | X | 40 CT | .3 | 17 | 34 | 2 13/16x1 5/8x1 5/8 | 8.70 |
| M8291 | X | 40 CT | .75 | 17 | 34 | 3 11/16x2 1/8x2 1/4 | 9.45 |
| M8246 | Y | 49 CT | 2.5 | 21 | 42 | 4 1/2 x3 1/4x4 1/32 | 19.65 |
| M8224 | Y | 70 CT | 1.0 | 30 | 60 | 3 3/4 x2 3/4x3 15/32 | 12.45 |
| M8256 | Y | 80 CT | .6 | 35 | 70 | 3 x2 5/8x2 3/4 | 12.45 |

DC output for resistive or inductive load, output volts based on 1 V approx., drop/rectifier. Full wave *CT; ‡bridge. §Series. #Sec. connected series, 24 V at 4 A; parallel, 12 V at 8 A.

## 400 Hz TOROIDAL POWER TRANSFORMERS (FIG. W)

Ideal for applications requiring minimum size and weight. Feature epoxy molded case and printed circuit pins which can be bent for chassis mounting. Toroidal cores provide greater efficiency and low phase shift. All have 115 V primary windings and center .170" clearance hole for #8 screw. MIL Type TF5SX01ZZ.

| Micro. No. | Secondary V | Secondary mA | VA | Size, Inches O.D. x Ht. | Wt., Oz. | Net Ea., 1-9* |
|---|---|---|---|---|---|---|
| M8106 | 28 CT | 320 | 9 | 1 5/32 x 1 1/8 | 2 | $17.55 |
| M8107 | 28 CT | 710 | 20 | 1 1/2 x 1 1/4 | 4 | 17.10 |
| M8108 | 56 CT | 160 | 9 | 1 5/32 x 1 1/8 | 2 | 17.10 |
| M8109 | 56 CT | 356 | 20 | 1 1/2 x 1 1/4 | 4 | 17.55 |
| M8110 | 115 CT | 78 | 9 | 1 5/32 x 1 1/8 | 2 | 18.60 |
| M8111 | 115 CT | 170 | 20 | 1 1/2 x 1 1/4 | 4 | 16.80 |

## LOW VOLTAGE FILTER INDUCTORS (FIG. X)

Windings may be connected in series or parallel for varied inductive requirements. Tested at 1500 volts. Open construction.

| Microtran No. | Series Connected Ind., H | Series Connected DC Amps | Series Connected DCR Ohms | Parallel Connected Ind., H | Parallel Connected DC Amps | Parallel Connected DCR Ohms | Mtg. Ctrs., Inches | Net Each, 1-9* |
|---|---|---|---|---|---|---|---|---|
| M8198 | 3.5 | .050 | 200 | .875 | .10 | 50 | 1 3/4 | $ 3.60 |
| M8199 | 1.0 | .15 | 65 | .25 | .30 | 16 | 2 | 3.75 |
| M8200 | .5 | .3 | 30 | .125 | .6 | 7.5 | 2 3/8 | 5.85 |
| M8201 | .32 | .6 | 16 | .08 | 1.2 | 4 | 2 13/16 | 6.60 |
| M8202* | .2 | 1.0 | 4 | .05 | 2.0 | 1 | 2 13/16x2 1/8 | 10.05 |
| M8203* | .07 | 2.5 | .84 | .0175 | 5.0 | .21 | 3 1/8x2 1/2 | 12.90 |
| M8204* | .022 | 4.0 | .4 | .0055 | 8.0 | .1 | 2 3/16x2 1/2 | 12.60 |
| M8205* | .022 | 5.0 | .2 | .0055 | 10 | .05 | 3 3/4x2 1/2 | 17.25 |

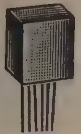
*Fig. Y.

★**Quantity Discounts:** 1–9 Net; 10–49, less 10%; 50–99, less 16⅔%; 100–249, less 33⅓%. Larger quantity prices on request.

# Miniature Transformers

## AUDIO, POWER AND TRANSISTOR TRANSFORMERS

Type EE

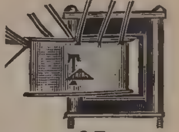

SP

JAF

JO

X

JZ


S Type

### ROIDAL TRANSISTOR POWER SUPPLY TRANSFORMERS

xy molded, DC to DC. Exceed MIL-T-27B Grade 5, Class pecs. Case type EE except open types case S.

| riad No. | Input, Volts | Output V* | Output mA | Size, Inches Dia. | Size, Inches Height | Wt., Lbs. | Net Each* |
|---|---|---|---|---|---|---|---|
| 68S† | 12 | 250 | 65 | § | 1¾ | .2 | $ 6.60 |
| 69S† | 12 | 300 | 100 | # | 1⅞ | .5 | 8.33 |
| 70S† | 12 | 325 | 150 | • | 2 | .6 | 8.53 |
| 71S† | 12 | 375 | 200 | • | 2 | .65 | 8.53 |
| 74S† | 12 | 600 | 200 | ‡ | 2 | 1.07 | 12.93 |
| 78 | 12.6 | 250 | 100 | 1¾ | ¹¹⁄₁₆ | .35 | 14.59 |
| 79 | 12.6 | 300 | 200 | 1¾ | 1 | .35 | 15.50 |
| 80 | 12.6 | 325 | 150 | 1¾ | 1 | .35 | 15.02 |
| 81 | 12.6 | 375 | 200 | 2 | 1 | .50 | 14.98 |
| 82 | 12.6 | 450 | 150 | 2 | 1 | .50 | 15.28 |
| 83 | 12.6 | 500 | 250 | 2¾ | 1⅜ | .85 | 22.12 |
| 84 | 12.6 | 600 | 200 | 2¾ | 1⅜ | 1.00 | 23.27 |
| 85 | 12.6 | 600 | 350 | 2⅞ | 1⅞ | 2.00 | 24.60 |
| 86 | 12.6 | 425 | 350 | 2¾ | 1⅜ | 1.00 | 23.51 |
| 88 | 28 | 250 | 80 | 1⁵⁄₁₆ | ⁹⁄₁₆ | .25 | 13.86 |
| 89 | 28 | 300 | 100 | 1¾ | ¹¹⁄₁₆ | .35 | 13.86 |
| 90 | 28 | 325 | 200 | 1¾ | 1 | .35 | 16.25 |
| 91 | 28 | 375 | 200 | 2 | 1 | .50 | 16.25 |
| 92 | 28 | 450 | 200 | 2 | 1 | .50 | 16.51 |
| 93 | 28 | 500 | 250 | 2¾ | 1⅝ | .85 | 24.77 |
| 94 | 28 | 600 | 200 | 2¾ | 1⅝ | 1.00 | 22.27 |
| 99 | 6 | 300 | 100 | 1¾ | 1 | .35 | 14.49 |
| 100 | 6 | 325 | 150 | 2 | 1 | .50 | 23.95 |
| 101 | 6 | 375 | 200 | 2¾ | 1⅜ | 1.00 | 19.39 |
| 102 | 6 | 450 | 150 | 2¾ | 1⅜ | 1.00 | 19.75 |

V. bridge. †Open frame type. ‡4⅛" w. x 3" d. §1¾" w. x " d. #2⅜" w. x 1⅞" d. •2⅜" w. x 2⁷⁄₁₆" d.

### DC TO AC TRANSISTOR TRANSFORMERS

n and vertical shielded types. Secondary, 110–115–125 volts.

| iad o. | DC Pri. | Secondary W | Secondary Hz | Case | Size, Inches H. x W. x D. | Wt., Lbs. | Net Each* |
|---|---|---|---|---|---|---|---|
| 468 | 28 | 60 | 400 | L | 1⅞ x 2¼ x 2 | ½ | $12.70 |
| 462 | 12 | 60 | 400 | L | 1⅞ x 2¼ x 2 | ½ | 17.44 |
| 75A | 12 | 115 | 60 | A | 3⅞ x 3⁹⁄₃₂ x 3½ | 5 | 18.76 |
| 76A | 12 | 60 | 60 | A | 3⁵⁄₃₂ x 2²¹⁄₃₂ x 2⅝ | 3 | 11.70 |

### "RED SPEC" TRANSISTOR TRANSFORMERS

: 0.31" x 0.41" x 0.465" h. Weight, 1/10 oz.

| ad o. | Application | Impedance, Ohms Primary* | Impedance, Ohms Secondary | Net Each* |
|---|---|---|---|---|
| 4 | Input | 200000 CT | 1000 CT | $10.50 |
| 5 | Input | 50000 CT | 1000 CT | 9.95 |
| 7 | Input | 200000 | 1000 | 9.52 |
| 11 | Interstage | 25000/200000 | 1000/800 | 8.27 |
| 13 | Interstage | 25000/20000 CT | 1000/800 CT | 9.07 |
| 15 | Interstage | 10000 CT | 1500 CT | 8.99 |
| 20 | Driver | 10000 CT | 1200 CT | 8.72 |
| 21 | Driver | 10000 CT | 2000 CT | 8.77 |
| 22 | Driver | 10000 | 2000 CT/500§ | 9.10 |
| 29 | Driver | 10000 CT | 500 CT | 8.49 |
| 32 | Output | 500 | 50 | 6.87 |
| 33 | Output | 1000 | 50 | 7.10 |
| 34 | Output | 600 | 3.2 | 6.55 |
| 35 | Output | 1200 | 3.2 | 6.65 |
| 42 | Output | 150 CT | 12 | 7.28 |
| 47 | Output | 1500 CT | 12 | 7.70 |
| 48 | Output | 7500 CT | 12 | 7.78 |
| 49 | Output | 300 CT | 600 | 7.48 |
| 50 | Output | 500 CT | 600 | 7.62 |
| 51 | Output | 900 CT | 600 | 7.67 |
| 52 | Output | 1500 CT | 600 | 7.98 |
| 64 | Output | 1600 CT | 3.2 | 7.27 |
| 65 | Output | 8000 CT | 3.2 | 7.50 |
| 66 | Output# | 10000 CT | 10000 CT | 8.48 |
| 67 | Output# | 600 CT | 600 CT | 7.55 |
| 68 | Output# | 10000 | 10000 CT/2500§ | 8.90 |
| 69 | Output# | 600 | 600 CT/150§ | 8.50 |
| 70 | Output# | 600 | 600 | 6.95 |
| 106 | Choke | 6 H at 2 mA | .................... | 7.07 |
| 107 | Choke | 1.25 H at 2 mA | .................... | 5.98 |
| 108 | Choke | 3.5 H at 2 mA | .................... | 6.22 |
| 117 | Choke | .9 H at 2 mA | .................... | 6.28 |
| 118 | Choke | .3 H at 4 mA | .................... | 6.02 |
| 128 | Choke | .1 H at 5 mA | .................... | 5.93 |
| 310 | Magnetic Shielding Case | | | .84 |

A ratings are DC. §Split secondary. #Isolation.

### TRANSCEIVER TRANSFORMERS, VOICE FREQUENCY

| ad o. | Application | Pri. Ohms | Sec. Ohms | Size, Inches H. x W. x D. | Net Each* |
|---|---|---|---|---|---|
| 1X | Mike or plate to grid | 100<br>10000 | 100000 | 1³⁄₁₆ x 2¹⁄₁₆ x 1¼ | $3.34 |
| 3X | Tube to line or phones | 10000 | 50,<br>2000 | 1⅝ x 2⅝ x 1⅝ | 3.90 |

### OUTPUT AND DRIVER TRANSISTOR TRANSFORMERS

| Triad No. | Impedance, Ohms Primary• | Impedance, Ohms Secondary | Output, Watts | Net Each* |
|---|---|---|---|---|
| TY-20Z | 100 CT (500 mA bal) | 16/8/4 | 10 | $ 4.80 |
| TY-29X | 24 CT (500 mA bal) | 8/4 | 8 | 5.22 |
| TY-31X | 200 CT (50 mA bal) | 8/4 | 2 | 3.31 |
| TY-48X | 100 CT (40 mA) | 16/8/4 | .5 | 4.21 |
| TY-30X | 100 CT (100 mA bal) | 8/4 | 2 | 3.82 |
| TY-53X | 200 CT (10 mA) | 400 CT | .6 | 4.17 |
| TY-61X | 100 (100 mA) | 100 CT | .5 | 3.37 |
| TY-63X | 48 CT (275 mA bal) | 16/8 | 5 | 5.20 |
| TY-64X | 32 CT (575 mA bal) | 16/8/4 | 10 | 5.32 |
| TY-65Z | 32 CT (575 mA bal) | 6K/4K/3K | 10 | 4.59 |
| TY-66A | 6 CT (5 A DC) | 6K/4K/3K | 40 | 10.22 |
| TY-67A | 6 CT (5 A DC) | 16/8/4 | 40 | 11.60 |

### MIDGET AUDIOS—HERMETICALLY SEALED

All units have 45 dB shielding. Std. threaded stud mounting plus optional bracket (1¼" mtg.). Conform to MIL specs.

| Triad No. | Impedance, Ohms Primary• | Impedance, Ohms Secondary | Frequency Response, Hz‡ | Net Each* |
|---|---|---|---|---|
| JO-1§■ | 600/250/50 | 50000 | 60–15000 | $12.84 |
| JO-2§■ | 600/250/50 | 250000 | 100–8000 | 12.84 |
| JO-3§ | 600/250/50 | 60000 CT | 60–15000 | 12.84 |
| JO-5§■ | 30/12/4 | 50000 | 50–12000 | 12.84 |
| JO-11 | 15000 | 60000 | 50–15000† | 12.84 |
| JO-12 | 15000 | 60000 CT | 50–15000† | 12.84 |
| JO-13 | 15000* | 95000 CT | 300–7000† | 12.84 |
| JO-21 | 15000 | 600/250/50 | 50–15000† | 12.84 |
| JO-22 | 15000* | 600/250/50 | 300–7000† | 12.84 |
| JO-23 | 20000 CT | 600/250/50 | 50–15000† | 12.84 |
| JO-31■ | 600/250/50 | 600/250/50 | 50–15000† | 12.84 |
| JO-101 | 50 H at 2 mA coupling reactor | | | 12.84 |

### MINIATURE "TRIJETS" AUDIOS

Open frame construction, 1⁷⁄₃₂" w. x ¾" d. x ⅝" h. except T-32X, T-34X, T-41X and T-42X, 1⁹⁄₃₂" w. x ¹¹⁄₁₆" d. x ⅝" h.

| | | | | |
|---|---|---|---|---|
| T-1X■ | 600/250/50 | 50000 | 60–15000 | $5.43 |
| T-2X■ | 600/250/50 | 250000 | 100–15000 | 5.30 |
| T-3X | 600/250/50 | 60000 CT | 60–15000 | 5.42 |
| T-5X■ | 30/12/4 | 50000 | 50–15000 | 4.93 |
| T-11X | 15000 | 50000 | 60–15000† | 4.57 |
| T-12X | 15000 | 60000 CT | 60–15000† | 5.27 |
| T-13X | 15000* | 95000 CT | 350–7000† | 4.08 |
| T-14X■ | 200 | 500000 | 300–3000† | 4.00 |
| T-15X | 15000 | 1 meg | 150–15000† | 4.12 |
| T-20X | 15000 | 600/250/50 | 60–15000† | 4.52 |
| T-21X | 30000 | 50 | 100–15000† | 4.13 |
| T-22X | 15000* | 600/250/50 | 350–7000† | 4.10 |
| T-23X | 20000 CT | 600/250/50 | 60–15000† | 4.85 |
| T-24X | 10000 CT⧗ | 2000 CT | 50–20000† | 3.88 |
| T-25X | 12000 CT⧗ | 600 CT/150⁑ | 50–16000† | 4.03 |
| T-26X | 50000 CT▴ | 600 CT/150⁑ | 100–15000♦ | 4.00 |
| T-31X■ | 600/250/50 | 600/250/50 | 50–15000† | 4.38 |
| T-32X | 1500 CT⧗ | 600 CT/150⁑ | 50–20000♦ | 3.33 |
| T-33X■ | 5000 CT | 5000 CT | 60–15000† | 5.47 |
| T-34X | 500 CT⧗ | 500 CT/125⁑ | 50–20000♦ | 3.18 |
| T-35X | 600 CT (1mA) | 2000CT/500⁑ | 50–20000† | 3.95 |
| T-41X | 1000 (10 mA) | 200 CT | 20–15000 | 4.47 |
| T-42X | 9800⧗ | 15 | 200–50000 | 4.28 |
| T-101X | 50 H at .75 mA audio choke | | | 3.82 |
| T-102X | 6 or 4 H, 3 or 6 mA coupling reactor | | | 2.48 |

### MINIATURE JAF AUDIOS—HERMETICALLY SEALED

"Trialloy" case meets MIL specs; 45 dB shielding. 5¹⁄₆₄" sq. x 1⁵⁄₃₂" h.

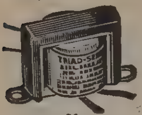
| | | | | |
|---|---|---|---|---|
| JAF-1■ | 600/250/50 | 50000 | 60–15000 | $16.25 |
| JAF-2■ | 600/250/50 | 250000 | 100–15000 | 15.33 |
| JAF-3 | 600/250/50 | 60000 CT | 60–15000 | 16.25 |
| JAF-5■ | 30/12/4 | 50000 | 50–15000 | 16.25 |
| JAF-11 | 15000 | 50000 | 60–15000† | 16.25 |
| JAF-12 | 15000 | 60000 CT | 60–15000† | 16.25 |
| JAF-13 | 15000* | 95000 CT | 350–7000† | 16.25 |
| JAF-14■ | 200 | ½ megohm | 300–3,000 | 16.25 |
| JAF-15 | 15000 | 1 megohm | 350–5,000† | 14.57 |
| JAF-21 | 15000 | 600/250/50 | 60–15000† | 16.25 |
| JAF-22 | 15000* | 600/250/50 | 350–7000† | 16.25 |
| JAF-23 | 20000 CT | 600/250/50 | 60–15000† | 16.25 |
| JAF-24 | 10000 CT⧗ | 2000 CT | 50–20000† | 16.25 |
| JAF-25 | 12000 CT⧗ | 600 CT/150⁑ | 50–15000† | 16.25 |
| JAF-26 | 50000 CT▴ | 600 CT/150⁑ | 50–20000† | 16.25 |
| JAF-31■ | 600/250/50 | 600/250/50 | 60–15000† | 16.25 |
| JAF-32 | 1500 CT⧗ | 600 CT/150⁑ | 50–20000♦ | 16.25 |
| JAF-33■ | 5000 CT | 5000 CT | 60–15000† | 16.49 |
| JAF-34 | 500 CT⧗ | 500 CT/125⁑ | 50–20000♦ | 16.25 |
| JAF-35 | 600 CT(1mA) | 2K CT/500⁑ | 50–20000† | 16.25 |
| JAF-101 | 50 H at .75 mA coupling reactor | | | 16.25 |
| JAF-102 | 6 or 4 H at 3 or 6 mA coupling reactor | | | 16.25 |

*Designed for 3 mA in primary except: ⧗2 mA; ▴.5 mA (low freq. results from DC in primary of all other units). ‡Power output 1 mW except: †10 mW; ♦20 mW. §1¹³⁄₃₂" x ¹⁵⁄₁₆" dia.; other JO types are 1²⁵⁄₃₂" x ¹⁵⁄₁₆" dia. ⁑Split winding. ■Static shield. •mA ratings are DC.

### ★ QUANTITY DISCOUNTS

1–9, Net; 10–24, 10%; 25–49, 19%; 50–99, 25%; 100–249, 28¾%; 250 up, 32½%.

# Audio Transformers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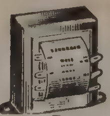
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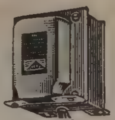
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## SUBMINIATURE AUDIO TRANSFORMERS

Can-type case ⁹⁄₁₆" dia. x ³¹⁄₃₂" long; wire leads. Hermetically sealed.

| Triad No. | Application | Impedance, Ohms | | Net Each* |
|---|---|---|---|---|
| | | Primary‡ | Secondary | |
| **JZ-1** | Mike or line to grid | 600/250/50 | 60000 | $10.83 |
| **JZ-5** | Mike or VC to grid | 30/12/4 | 50000 | 10.83 |
| **JZ-7** | Mike or VC to xsistor | 30/12/4 | 1000 | 10.83 |
| **JZ-13** | Plate to sgle. or p-p grids | 15000 (1mA) | 135000 CT | 10.83 |
| **JZ-15** | Transistor interstage | 20000 (.5 mA) | 1200/600/100 | 10.83 |
| **JZ-25** | Plate or xsistor to xsistor or line | 10000 (1mA) | 200 | 10.83 |
| **JZ-26** | Xsistor to line or xsistor | 1000 (5 mA) | 50 | 10.83 |

## MINIATURE AUDIO TRANSISTOR TRANSFORMERS

| Triad No. | Impedance, Ohms | | Output, Watts | Net Each* |
|---|---|---|---|---|
| | Primary‡ | Secondary | | |
| **TY-23X** | 50000 (.5 mA) | 500 CT | .1 | $5.74 |
| **TY-24X** | 50000 (.5 mA) | 300 CT | .2 | 7.31 |
| **TY-25X** | 100000 (.5 mA) | 200 CT | .2 | 6.76 |
| **TY-26X** | 100000 (.5 mA) | 3000 CT | .2 | 10.34 |
| **TY-27XT** | 500 CT (2 mA) | 500 CT | .01 | 4.37 |
| **TY-28XT** | 500 CT (2 mA) | 200 CT | .01 | 4.25 |
| **TY-32X** | 200 CT (2 mA) | 2000 CT | .2 | 3.76 |
| **TY-33X** | 400 CT (5 mA) | 16/8/4 | .2 | 3.76 |
| **TY-34X** | 400 CT (5 mA) | 2000 CT | .2 | 3.76 |
| **TY-35X*** | 500 CT (2 mA) | 150 CT | .1 | 3.02 |
| **TY-36X** | 2000 (2 mA) | 1500 CT | .2 | 3.82 |
| **TY-37X*** | 2000 CT (4 mA) | 8000 CT | .2 | 4.82 |
| **TY-38X*** | 3000 CT (4 mA) | 1000 CT | .2 | 4.64 |
| **TY-39X** | 4000 CT (4 mA) | 16/8/4 | .2 | 6.25 |
| **TY-40X** | 5000 (1 mA) | 200 CT | .1 | 4.12 |
| **TY-41X** | 16000 (1 mA) | 4000 | .1 | 5.13 |
| **TY-42X** | 20000 (.5 mA) | 8/4 | .1 | 4.58 |
| **TY-43X** | 20000 (.5 mA) | 800 CT | .1 | 4.94 |
| **TY-44X** | 1000 (10 mA) | 16/8/4 | .2 | 4.25 |
| **TY-45X*** | 500 CT (5 mA) | 16/8/4 | .2 | 4.59 |
| **TY-46X** | 100 (100 mA) | 1000 CT | .25 | 2.98 |
| **TY-47X** | 2000 CT (10 mA) | 16/8/4 | .2 | 4.84 |
| **TY-49X** | 500 CT (12 mA) | 5000 CT | .3 | 4.21 |
| **TY-50X** | 125000 | 2000 CT | .04 | 7.21 |
| **TY-51X*** | 2000 CT (10 mA) | 200 CT | .05 | 4.37 |
| **TY-52X** | 20000 CT (1 mA) | 2000 CT | .1 | 6.32 |
| **TY-54X** | 15000 (1.5 mA) | 200 CT | .1 | 5.65 |
| **TY-55X** | 2000 CT (2 mA) | 500 CT | .2 | 4.84 |
| **TY-56X** | 10000 (1 mA) | 2000 CT | .05 | 5.68 |
| **TY-57X** | 250 CT (10 mA) | 16/8/4 | .2 | 4.09 |
| **TY-58X** | 125 CT (15 mA) | 8/4 | .2 | 3.74 |
| **TY-59X** | 5000 CT (1 mA) | 50000 CT | .2 | 7.38 |
| **TY-60X** | 200000 | 1000 | .1 | 6.10 |
| **TY-62X** | 10000 (2 mA) | 4 | .1 | 3.77 |

*Also available in XT mounting for printed circuit cards.

## PLUG-IN PC AUDIO TRANSFORMERS

Output 100 mW. Size, ⅝" x 1³⁄₁₆" x 1⁹⁄₃₂".

| Triad No. | Impedance, Ohms | | Pri. DC Unbal. | Net Each |
|---|---|---|---|---|
| | Primary | Secondary | | |
| **TY-141P** | 10000 CT | 10000 CT | 4 | $4.70 |
| **TY-142P** | 10000 CT | 2000 CT | 4 | 4.25 |
| **TY-143P** | 10000 CT | 1500 CT | 4 | 4.15 |
| **TY-144P** | 15000 CT | 15000 CT | 4 | 4.70 |
| **TY-145P** | 600 CT | 600 CT | 15 | 3.55 |

## SUBMINIATURE AUDIO TRANSFORMERS

Open frame construction. Type XT, ⁷⁄₁₆" x ¹⁷⁄₃₂" x ⁷⁄₁₆". All others, ⁷⁄₁₆" x ½" x ⁷⁄₁₆". Power output, 1 mW.

| Triad No. | Impedance, Ohms | | Frequency Resp., Hz | Net Each* |
|---|---|---|---|---|
| | Primary‡ | Secondary | | |
| **TZ-1** | 600/250/50 | 60000 | 70–20000 | $6.12 |
| **TZ-2XT** | 200 CT | 200000 | 100–20000 | 6.38 |
| **TZ-5** | 30/12/4 | 50000 | 70–20000 | 8.07 |
| **TZ-7** | 30/12/4 | 1000 | 40–20000 | 4.38 |
| **TZ-13** | 15000 (1 mA) | 135000 CT | 70–15000 | 6.37 |
| **TZ-15** | 20000 (.5 mA) | 1200/600/100 | 70–15000 | 4.62 |
| **TZ-17XT** | 10000 CT | 2000 CT | 70–15000 | 5.07 |
| **TZ-24XT** | 25000 CT (.5 mA) | 500 CT | 100–15000 | 5.80 |
| **TZ-25** | 10000 (1 mA) | 200 | 70–20000 | 5.25 |
| **TZ-26** | 1000 (5 mA) | 50 | 100–10000 | 4.65 |
| **TZ-28** | 600 | 50 | 40–60000 | 3.60 |
| **TZ-29XT** | 10000 CT (1 mA) | 10000 CT | 100–20000 | 4.72 |
| **TZ-32XT** | 1500 CT (2.5 mA) | 600 CT/150* | 70–20000† | 4.87 |
| **TZ-103XT** | 1 or 4 H | Coupling Reactor | | 3.53 |

*Split wdg. †Power output, 10 mW. ‡mA ratings are DC.

## TRANSISTOR DRIVER TRANSFORMERS—SPLIT SECONDARY

Size, 1¹⁵⁄₁₆" h. x 3⁵⁄₁₆" w. x 1¾" d.

| Triad No. | Output, Watts | DC Resistance | | Turns Ratio | Net Each* |
|---|---|---|---|---|---|
| | | Pri. | Ea. Sec. | | |
| **TY-158X** | 3–5 | 3 | 3.6 | 1.5:1:1 | $5.03 |
| **TY-159X** | 3–5 | 11 | 3.6 | 3:1:1 | 5.17 |
| **TY-160X** | 3–5 | 45 | 3.6 | 6:1:1 | 5.65 |

**★SEE ANOTHER PAGE FOR QUANTITY DISCOUNTS**

**Note: Last letter(s) of Triad No. indicates case style. See table on another page for case sizes not listed hereon.**

## DRIVER TRANSFORMERS

| Triad No. | Impedance | | Freq., Hz | Size, Inches H. x W. x D. | Net Each* |
|---|---|---|---|---|---|
| | Primary | Secondary | | | |
| **A-81X** | 15000† | 8500 CT | 300–3K | 1³⁄₁₆ x 2¹⁄₁₆ x 1¼ | $3.46 |
| **A-83X** | 7000‡ | 15800 CT | 70–7K | 1⅝ x 2¹³⁄₁₆ x 1½ | 4.17 |
| **A-85X** | 7000‡ | 4000 CT | 50–10K | 1¹⁵⁄₁₆ x 3⁵⁄₁₆ x 1¾ | 4.36 |
| **A-89A** | 4K/8K§ | 4.4K/8.8K* | 50–10K | 3³⁄₁₆ x 2²¹⁄₃₂ x 2⅝ | 9.72 |
| **TY-61X** | 100# | 100 CT | 50–10K | 1⅝ x 2¹³⁄₁₆ x 1½ | 3.37 |

*Split winding. †15 mADC. ‡40 mADC. §100 mADC per side. #100 mADC.

## HIGH FIDELITY OUTPUT TRANSFORMERS
### Tube to Line or Voice Coil

| Triad No. | Impedance, Ohms | | Output, Watts | Case Size, Inches H. x W. x D. | Wt., Lbs. | Net Each* |
|---|---|---|---|---|---|---|
| | Primary | Secondary | | | | |
| **S-31A** | 8000 CT | 16/8/4 | 15 | 3³⁄₁₆x2²¹⁄₃₂x3⅜ | 3.8 | $11.22 |
| **S-32A** | 8000 CT | 500/250/125 | 15 | 3³⁄₁₆x2²¹⁄₃₂x3⅜ | 3.8 | 8.82 |
| **S-142A** | 8000 CT† | 16/8/4 | 15 | 3³⁄₁₆x2²¹⁄₃₂x3⅜ | 3.75 | 12.38 |
| **S-35A** | 5000 CT | 16/8/4 | 20 | 3³⁄₁₆x2²¹⁄₃₂x3⅝ | 4.3 | 13.13 |
| **S-36A** | 5000 CT | 500/250/125 | 20 | 3³⁄₁₆x2²¹⁄₃₂x3⅜ | 4.25 | 9.32 |
| **S-144A** | 8000 CT† | 16/8/4 | 25 | 3½x2³¹⁄₃₂x4¼ | 6 | 18.34 |
| **S-146A** | 6600 CT† | 16/8/4 | 25 | 3½x2³¹⁄₃₂x4¼ | 5.75 | 19.10 |
| **S-149A** | 3300 CT† | 16/8/4 | 50 | 4⅝x3¹⁵⁄₁₆x4½ | 8 | 18.35 |
| **S-42A** | 4500 CT | 16/8/4 | 50 | 4¼x3¹⁹⁄₃₂x4⅝ | 8.25 | 21.00 |
| **SR-45Z*** | 4000/2000/1000/500 | 16/8/4 | 10 | 2²³⁄₃₂x3⅛x2⅛ | 1.75 | 7.45 |
| **S-46A*** | 2000/1000/500/250 | 16/8/4 | 20 | 3³⁄₁₆x2²¹⁄₃₂x3⅜ | 4 | 10.24 |

†Williamson type circuit may be used. Taps on primary for proper screen operation. *70 V line autoformer.

## HI-FI STEREO SHIELDED OUTPUT TRANSFORMERS

Baked vacuum varnished structure. Frequency response, ±2 dB, 20–20,000 Hz. High open circuit inductance; low leakage. Output, 10–15 W (SX-203, 5–7 W). Sec. Imped., 4/8/16 ohms. Test, 1500 V rms. Size, 3" w. x 2¾" d. x 2¹⁹⁄₃₂" h. Weight, 2½ lbs.

| Williamson Circuit | | | Push-Pull Operation | | |
|---|---|---|---|---|---|
| Triad No. | Pri. Imp. | Net* | Triad No. | Pri. Imp. | Net* |
| **SX-201** | 3300 CT | $7.44 | **SX-204** | 5000 CT | $ 7.44 |
| **SX-202** | 4500 CT | 7.41 | **SX-205** | 6600 CT | 7.50 |
| **SX-206** | 6600 CT | 7.59 | **SX-208** | 8000 CT | 10.47 |
| **SX-207** | 8000 CT | 7.62 | **SX-203*** | 5000 | 7.26 |

*Single ended operation.

## UNIVERSAL OUTPUT TRANSFORMERS
### Single or Push-Pull Tubes to Voice Coil

| Triad No. | Pri. Imped., Kohms | Pri. mADC | | Output, Watts | Wt., Lbs. | Net Each* |
|---|---|---|---|---|---|---|
| | | P-P | Single | | | |
| **S-51X*** | 4–14 | 70 | 35 | 5 | .45 | $4.25 |
| **S-52X*** | 4–24 | 50 | 25 | 4 | .45 | 4.97 |
| **S-53X*** | 4–14 | 80 | 40 | 8 | .6 | 4.60 |
| **S-54X†** | 1.5–5 | ........ | 70 | 8 | .6 | 4.88 |
| **S-55Z‡** | 4–14 | 100 | ........ | 10 | 1 | 6.43 |
| **S-55X‡** | 4–14 | 100 | ........ | 10 | 1 | 6.37 |
| **S-56Z†** | 1.5–6 | ........ | 85 | 12 | 1.6 | 5.27 |
| **S-57Z‡** | 4–14 | 110 | ........ | 15 | 1.6 | 6.43 |
| **S-59Z‡** | 1.5–4 | 175 | ........ | 15 | 1.6 | 5.72 |
| **S-61Z‡** | 4–12 | 125 | ........ | 20 | 1.8 | 7.15 |
| **S-62X*** | 2–10 | 60 | 30 | 2 | .21 | 4.63 |
| **S-63X*** | 1.5–7 | 100 | 50 | 6 | .45 | 4.04 |

*Single or p-p plates. †Single plate. ‡P-p plates.

## INTERSTAGE TRANSFORMERS, PLATE TO GRID

| Triad No. | Frequency, Resp., Hz | Impedance, Ohms | | Turns Ratio | Size, Inches H. x W. x D. | Net Ea.* |
|---|---|---|---|---|---|---|
| | | Pri. | Sec. | | | |
| **A-31X** | 100–10000 | 10000 | 90000 CT | 1:3 | 1⅜ x2⅜x1⅜ | $4.27 |
| **A-33X** | 70–10000 | 10000 | 90000 CT | 1:3 | 1¹⁵⁄₁₆x3⁵⁄₁₆x1¾ | 4.17 |
| **A-42Z** | 70–10000 | 15000 CT | 135000 CT | 1:3 | 2⁵⁄₁₆ x2⅞x1¾ | 5.35 |
| | | 15000 CT | 33750 | 1:1.5 | | |
| | | 3750 | 135000 CT | 1:6 | | |
| **A-39A** | 50–10000 | 20000 CT | 45000 CT | 1:1.5 | 2²⁵⁄₃₂x2¹¹⁄₃₂x2⅜ | 8.68 |

## LOW LEVEL OUTPUT TRANSFORMERS

| Triad No. | Freq. Resp., Hz | Impedance, Ohms | | Size, Inches H. x W. x D. | Net Each* |
|---|---|---|---|---|---|
| | | Pri. | Sec. | | |
| **A-51X** | 200–8000 | 7000 | 50 | 1³⁄₁₆ x 2¹⁄₁₆ x 1¼ | $2.98 |
| **A-53X** | 70–7000 | 18000 CT | 600/250/50 | 1⅝ x 2¹³⁄₁₆x 1½ | 4.32 |
| **S-58X** | 100–10000 | 600†/150* | 600†/150* | 1³⁄₁₆ x 2¹⁄₁₆ x 1¼ | 3.74 |
| **S-81X** | 100–10000 | 600 | 600 | 1³⁄₁₆ x 2¹⁄₁₆ x 1¼ | 3.34 |

*Split windings. †Center tapped.

## MATCHING TRANSFORMERS—25 OR 70.7 VOLT LINE

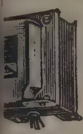
| Triad No. | Matching Imped., Ohms | | Audio Watts | Size, Inches H. x W. x D. | Net Each* |
|---|---|---|---|---|---|
| | Primary | Sec. | | | |
| **S-129Z** | 20.8 CT (25–70 V)<br>166 CT (70–25 V) | 166 CT<br>20.8 CT | 30 | 3³⁄₃₂ x3⅝x2¼ | $6.08 |
| **S-130Z** | 62.5 CT (25–70 V)<br>500 CT (70–25 V) | 500 CT<br>62.5 CT | 10 | 2⁵⁄₁₆ x2⅞x1¾ | 4.01 |

## OUTPUT TRANSFORMERS
### 25 Volt Line to Voice Coil

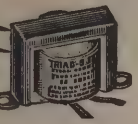
| Triad No. | Impedance, Ohms | | Output, W | Size, Inches H. x W. x D. | Net Each* |
|---|---|---|---|---|---|
| | Primary | Secondary | | | |
| **S-131X** | 1250/625/312* | 8/4 | 2 | 1⅜x2⅜ x1⅜ | $3.45 |
| **S-132X** | 1000/500/250/125* | 16/8/4 | 5 | 1⅝x2¹³⁄₁₆x1⅝ | 4.15 |
| **S-133Z** | 500/250/125/62.5* | 16/8/4 | 10 | 2²³⁄₃₂x3⅛x2 | 5.85 |

*Isolation.

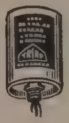
# Audio Transformers



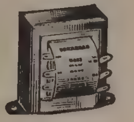
A



X



J



Z

## LOW LEVEL AUDIO

le-hole mounting, permits rotation for minimum hum pickup. y shielding for a 40–60 dB reduction in hum pickup (60–80 dB -11J and A-12J); flexible leads. Units have a wide frequency e. Input units electrostatically and magnetically shielded. uit diagrams permanently affixed to case.

| ad o. | Application | Primary Imped., Ohms | Net Each* |
|---|---|---|---|
| † | Line or mike to grid | 600/250/50 | $11.75 |
| J† | Bal. line or mike to grid | 600 CT/150* | 11.79 |
| J† | Line or mike to grid | 600/250/50 | 11.27 |
| J† | Bal. line or mike to grid | 600 CT/150* | 12.94 |
| J† | Line to line or transistor | 600/300/200 CT/ 110/50* | 11.22 |
| J | Plate to 1 or 2 grids | 15000 | 11.69 |
| J | P-P plates to voice coil | 10000 CT | 6.55 |
| J | Line or transistor to line or transistor | 500 CT/125* | 7.40 |
| J | Plate to line | 15000 | 11.25 |
| J | Line or transistor to VC | 500 CT/125* | 7.34 |
| J | Line or transistor to line | 600/250/50 | 11.00 |
| J | P-P plates or transistors to line or transistors | 10000 CT/2500* | 8.55 |
| J | Line to 2 simultaneously loaded lines or transistors | 600/150* | 14.27 |
| J | Line or transistor to transistor | 100 CT/25* | 7.27 |
| J | Sgl or p-p plates to bal. line | 15000 CT | 11.60 |
| J | Plate to line | 15000 | 11.14 |
| J† | Bal. line to bal. line | 600 CT/150* | 11.45 |
| J | Sgl or p-p plates to bal. line | 15000 CT | 12.40 |
| J | P-P plates or bridging to line | 25000 CT/6250* | 9.14 |
| J | Line or transistor to line or transistor | 500 CT/125* | 7.50 |
| J | Audio choke, 250 H, 5 mA DC; 62.5 H, 10 mADC | ..................... | 11.47 |
| J | 1 or 2 transistor to bal. line | 2000 CT | 11.69 |
| J | Transistor to p-p transistors or line | 1000 | 11.50 |

: Frequency response of all units is 30–15,000 Hz except J, 60–15,000 Hz; A-69J, 50–20,000 Hz; A-66J, A-68J, 40– 00 Hz and A-79J, 20–15,000 Hz. *Split winding. †Static shield.

## NPUT TRANSFORMERS, LINE OR MIKE TO GRID

| d . | Application | Pri. Ohms | Turns Ratio | Size, Inches H. x W. x D. | Net Each* |
|---|---|---|---|---|---|
| X | Line or mike to grid | 100 | 1:31.4 | 1 3/16 x 2 1/16 x 1 1/4 | $3.41 |
| X | Line or mike to grid | 400* | 1:22.1 | 1 3/16 x 2 1/16 x 1 1/4 | 3.46 |
|  | Line to single grid | † | 1:12 | 1 3/16 x 2 1/16 x 1 1/4 | 4.42 |
|  | Mike or line to sgl. or p-p grid | 100 | 1:83.3 | 1 5/8 x 2 13/16 x 1 1/2 | 4.54 |
|  | Intercom-spkr. VC to grid | 8/4 | 1:79.6 | 1 3/16 x 2 1/16 x 1 1/4 | 3.43 |
|  |  | 3.2-4 | 1:124 | 1 3/32 x 1 5/32 | 9.24 |

nter tapped. †500 CT/333/200 CT/125/67.5 CT/50.

## PLUG-IN INPUT TRANSFORMERS

nly magnetic shielded for coupling low-Z mikes or magnetic ls to amplifier input. No. A-202P has 9-prong plug for mercial amplifiers; HS-273P has 8-prong plug.

| lad o. | Imped., Ohms |  | Freq. Resp., Hz | Shield-ing | Size, In. H. x Dia. | Net Each* |
|---|---|---|---|---|---|---|
|  | Pri.† | Sec. |  |  |  |  |
| 2P | 200/50 CT | 36,000 | 30-15,000 | 90 db | 2 3/4 x 1 3/4 | $20.85 |
| 273P | 200/50 CT | 80,000 | 30-20,000 | 70 db | 1 3/4 x 1 3/8 | 19.65 |
| .0P* | 1:1 ratio, 0 dBm |  | 20-20,000 | 45 db | 2 5/16 x 1 1/16 | 10.86 |

reo isolation transformer; primary and secondary impedance, ohms. †Split winding except A-210P.

## REPLACEMENT PUSH-PULL OUTPUT TRANSFORMERS

n-pull tubes to voice coil, 3–4 ohms.

| ad . | Primary Impedance | Total mADC | Output, Watts | Size, Inches H. x W. x D. | Net Each* |
|---|---|---|---|---|---|
| X | 12000 CT | 60 | 3–4 | 1 3/8 x 2 3/8 x 1 3/8 | $2.69 |
| X | 6000 CT | 80 | 4–6 | 1 3/8 x 2 3/8 x 1 1/2 | 2.80 |
| X | 10000 CT | 70 | 7–10 | 1 5/8 x 2 13/16 x 1 1/2 | 3.04 |
| Z | 10000 CT | 100 | 10–14 | 2 5/16 x 2 7/8 x 2 | 4.25 |
| Z | 3400 CT/3000 CT/3800 CT | 180 | 15–18 | 2 23/32 x 3 1/8 x 2 | 3.78 |
| Z | 5000 CT | 120 | 15–18 | 2 23/32 x 3 1/8 x 2 | 5.35 |
| Z | 8000 CT | 110 | 15–18 | 2 23/32 x 3 1/8 x 2 | 5.37 |

## LINE OUTPUT TRANSFORMERS

### Tube to Voice Coil and Line

| Triad No. | Impedance, Ohms |  | Audio Watts | Size, Inches H. x W. x D. | Net Each* |
|---|---|---|---|---|---|
|  | Primary | Secondary |  |  |  |
| S-27A | 2500 | 500/16/8/4 | 8 | 2 25/32 x 2 11/32 x 2 3/8 | $7.12 |
| S-28X | 7500 | 500/16/8/4 | 5 | 1 15/16 x 3 5/16 x 1 3/4 | 4.99 |
| S-29X | 5000 | 500/16/8/4 | 5 | 1 15/16 x 3 5/16 x 1 3/4 | 5.20 |
| S-22A | 5000 CT | 500/16/8/4 | 15 | 2 25/32 x 2 11/32 x 2 5/8 | 8.05 |
| S-24A | 8000 CT | 500/16/8/4 | 15 | 2 25/32 x 2 11/32 x 2 5/8 | 7.58 |
| S-60A | 6600 CT | 500/250/16/ 8/4 | 35 | 3 7/8 x 3 9/32 x 3 5/8 | 13.36 |

### Line to Voice Coil

| Triad No. | Impedance, Ohms |  | Audio Watts | Size, Inches H. x W. x D. | Net Each* |
|---|---|---|---|---|---|
|  | Primary | Secondary |  |  |  |
| S-23X* | 50 | 3.2-4 | 1 | 1 3/16 x 2 1/16 x 1 1/4 | $ 2.53 |
| S-26X* | 500/50 | 3.2-4 | 4 | 1 3/16 x 2 1/16 x 1 1/4 | 2.70 |
| S-65X | 500 | 8/4 | 5 | 1 3/8 x 2 3/8 x 1 3/8 | 3.03 |
| S-66X* | 500 | 16/8/4 | 3 | 1 3/8 x 2 3/8 x 1 3/8 | 3.38 |
| S-76Z | 250/125/ 62.5/31 | 16/8/4 | 10 | 2 23/32 x 3 1/8 x 2 1/8 | 6.03 |
| S-77U§ | 500 CT/125 | 32/16/8/4/2 | 30 | 3 7/16 x 2 13/16 x 4 9/16 | 12.88 |

### 70.7 Volt Line to Voice Coil

|  |  |  |  |  |  |
|---|---|---|---|---|---|
| S-70Z* | 16K/8K/ 4K/2K/ 1K | 8/4 | 5 | 1 11/16 x 2 x 1 3/8 | $ 4.57 |
| S-71Z* | 4K/2K/ 1K/500 | 16/8/4 | 10 | 1 15/16 x 2 3/8 x 1 1/2 | 5.95 |
| S-25Z* | 4K/2K/ 1K/500 | 8/4 | 10 | 2 5/16 x 2 7/8 x 1 3/4 | 5.13 |
| SR45Z* | 4K/2K/ 1K/500 | 16/8/4 | 10 | 2 23/32 x 3 1/8 x 2 1/8 | 7.45 |
| SR74K† | 4K/2K/ 1K/500 | 16/8/4 | 10 | 3 7/32 x 2 19/32 x 3 1/32 | 6.45 |
| S-72Z* | 2K/1K/ 500/250 | 16/8/4 | 20 | 2 5/16 x 2 7/8 x 1 3/4 | 5.95 |
| S-46A* | 2K/1K/ 500/250 | 16/8/4 | 20 | 3 3/32 x 2 21/32 x 3 3/8 | 10.24 |
| S-78Z‡ | 4K/2K/ 1K/500 | 16/8/4 | 10 | 1 15/16 x 2 3/8 x 1 1/2 | 5.65 |
| S-79Z‡ | 2K/1K/ 500/250 | 16/8/4 | 20 | 2 5/16 x 2 7/8 x 1 3/4 | 6.00 |
| S-47Z‡ | 10K/5K/ 2.5K/ 1250/625 | 16/8/4 | 8 | 1 15/16 x 2 3/8 x 1 5/8 | 4.72 |
| S-73X‡ | 16K/8K/ 4K/2K/ 1K | 16/8/4 | 5 | 1 3/8 x 2 3/8 x 1 3/8 | 4.70 |

*Autoformer. †Weatherproof autoformer. ‡Isolation transformer. §Split winding.

## REPLACEMENT OUTPUT TRANSFORMERS

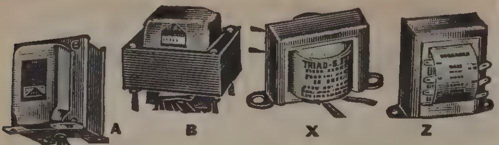
### Single Tube to Standard Voice Coil (3–4 ohms)

| Triad No. | Pri. Imped., Ohms | mA DC | Audio Watts | Size, Inches H. x W. x D. | Net Each* |
|---|---|---|---|---|---|
| S-40X | 14000 | 5.5 | .25 | 13/16 x 1 5/8 x 1 | $3.47 |
| S-37X | 25000 | 4 | .25 | 13/16 x 1 5/8 x 1 | 4.43 |
| S-20X | 2000 | 50 | 2–3 | 1 3/16 x 2 1/16 x 1 1/4 | 2.26 |
| S-20Z | 2000 | 50 | 2–3 | 1 7/16 x 1 13/16 x 1 1/4 | 2.27 |
| S-12X | 2500 | 50 | 2–3 | 1 3/16 x 2 1/16 x 1 1/4 | 2.23 |
| S-12Z | 2500 | 50 | 2–3 | 1 7/16 x 1 13/16 x 1 1/4 | 2.27 |
| S-16X | 3000/5% tap | 50 | 2–3 | 1 3/16 x 2 1/16 x 1 1/4 | 2.33 |
| S-14Z | 4000 | 50 | 2–3 | 1 7/16 x 1 13/16 x 1 1/4 | 2.33 |
| S-6X | 5000 | 35 | 2–3 | 1 3/16 x 2 1/16 x 1 1/4 | 2.41 |
| S-6Z | 5000 | 35 | 2–3 | 1 7/16 x 1 13/16 x 1 1/4 | 2.46 |
| S-48Z | 6500 | 35 | 2–3 | 1 7/16 x 1 13/16 x 1 1/4 | 2.00 |
| S-8X | 8000 | 30 | 2–3 | 1 3/16 x 2 1/16 x 1 1/4 | 2.41 |
| S-8Z | 8000 | 30 | 2–3 | 1 7/16 x 1 13/16 x 1 1/4 | 2.47 |
| S-11X | 10000 | 30 | 2–3 | 1 3/16 x 2 1/16 x 1 1/4 | 2.51 |
| S-11Z | 10000 | 30 | 2–3 | 1 7/16 x 1 13/16 x 1 1/4 | 2.51 |
| S-38X | 16000 | 15 | 2–3 | 1 3/16 x 2 1/16 x 1 1/4 | 2.64 |
| S-38Z | 16000 | 15 | 2–3 | 1 7/16 x 1 13/16 x 1 1/4 | 2.64 |
| S-13X | 25000 | 10 | 2–3 | 1 3/16 x 2 1/16 x 1 1/4 | 2.61 |
| S-13Z | 25000 | 10 | 2–3 | 1 7/16 x 1 13/16 x 1 1/4 | 2.64 |
| S-2X | 2000 | 55 | 3–5 | 1 3/8 x 2 3/8 x 1 3/8 | 2.46 |
| S-1X | 2500 | 60 | 3–5 | 1 3/8 x 2 3/8 x 1 3/8 | 2.48 |
| S-30X | 3000 | 60 | 3–5 | 1 3/8 x 2 3/8 x 1 3/8 | 2.48 |
| S-41X | 4000 | 50 | 3–5 | 1 3/8 x 2 3/8 x 1 3/8 | 2.48 |
| S-3X | 5000 | 40 | 3–5 | 1 3/8 x 2 3/8 x 1 3/8 | 2.56 |
| S-7X | 7500 | 30 | 3–5 | 1 3/8 x 2 3/8 x 1 3/8 | 2.56 |
| S-17X | 10000 | 30 | 3–5 | 1 3/8 x 2 3/8 x 1 3/8 | 2.58 |
| S-50X | 2500 | 60 | 4–6 | 1 5/8 x 2 13/16 x 1 1/2 | 2.71 |
| S-67X | 3200 | 60 | 4–6 | 1 5/8 x 2 13/16 x 1 1/2 | 2.74 |
| S-18X | 8000 | 45 | 4–6 | 1 5/8 x 2 13/16 x 1 1/2 | 2.89 |
| S-18Z | 8000 | 45 | 4–6 | 1 15/16 x 2 3/8 x 1 1/2 | 2.89 |
| S-10X | 10000 | 45 | 4–6 | 1 5/8 x 2 13/16 x 1 1/2 | 2.87 |
| S-4X | 3000 | 70 | 5–8 | 1 15/16 x 3 5/16 x 1 3/4 | 3.20 |
| S-5X | 5000 | 50 | 5–8 | 1 15/16 x 3 5/16 x 1 3/4 | 3.32 |
| S-5Z | 5000 | 50 | 5–8 | 2 5/16 x 2 7/8 x 1 3/4 | 3.37 |
| S-9X | 7500 | 50 | 5–8 | 1 15/16 x 3 5/16 x 1 3/4 | 3.32 |
| S-9Z | 7500 | 50 | 5–8 | 2 5/16 x 2 7/8 x 1 3/4 | 3.36 |

## ★ QUANTITY DISCOUNTS

1–9, Net; 10–24, 10%; 25–49, 19%; 50–99, 25%; 100–249, 28¾%: 250 up, 32½%.

# Standard Series Transformers



## COMBINED PLATE AND FILAMENT

**Primary 115 Volts—60 Hz**

"Climatite" treated coils and cores for protection against moisture and for elimination of lamination chatter. Small in size, yet loss is at a minimum. Temperature rise design is 55° C. Copper foil static shields grounded to case and core.

| Triad No. | Secondary | | Rect. Fil. | | Other Filament | | Wt., Lbs. | Net Each* |
|---|---|---|---|---|---|---|---|---|
| | AC Volts | mA DC | V | A | Volts | A | | |
| R-104A | 500 CT | 40 | ... | ... | 6.3 CT | 2 | 1.55 | $ 6.76 |
| R-104B | 500 CT | 40 | ... | ... | 6.3 CT | 2 | 1.55 | 6.88 |
| R-105A | 600 CT | 65 | ... | ... | 6.3 CT | 2.7 | 2 | 8.05 |
| R-105B | 600 CT | 65 | ... | ... | 6.3 CT | 2.7 | 2 | 8.11 |
| R-106A | 480 CT | 50 | 5 | 2 | 6.3 CT | 2 | 2.1 | 8.54 |
| R-106B | 480 CT | 50 | 5 | 2 | 6.3 CT | 2 | 2.1 | 8.63 |
| R-107A | 600 CT | 50 | 5 | 2 | 6.3 CT | 2 | 2.35 | 7.60 |
| R-107B | 600 CT | 50 | 5 | 2 | 6.3 CT | 2 | 2.35 | 7.60 |
| R-108A | 500 CT | 75 | 5 | 2 | 6.3 CT | 2.5 | 2.4 | 8.92 |
| R-108B | 500 CT | 75 | 5 | 2 | 6.3 CT | 2.5 | 2.4 | 8.99 |
| R-109A | 600 CT | 75 | 5 | 2 | 6.3 CT | 3 | 2.9 | 8.87 |
| R-109B | 600 CT | 75 | 5 | 2 | 6.3 CT | 3 | 2.9 | 8.83 |
| R-110A | 525 CT | 90 | 5 | 2 | 6.3 CT | 5 | 3.25 | 10.42 |
| R-110B | 525 CT | 90 | 5 | 2 | 6.3 CT | 5 | 3.25 | 10.34 |
| R-111A | 700 CT | 90 | 5 | 3 | 6.3 CT | 3.5 | 3.25 | 10.88 |
| R-111B | 700 CT | 90 | 5 | 3 | 6.3 CT | 3.5 | 3.25 | 10.81 |
| R-112A | 550 CT | 110 | 5 | 2 | 6.3 CT | 5 | 3.7 | 10.90 |
| R-112B | 550 CT | 110 | 5 | 2 | 6.3 CT | 5 | 3.7 | 10.82 |
| R-113A | 650 CT | 40 | 5 | 2 | 6.3 CT | 2 | 2.3 | 7.57 |
| R-113B | 650 CT | 40 | 5 | 2 | 6.3 CT | 2 | 2.3 | 9.16 |
| R-114A | 700 CT | 125 | 5 | 3 | 6.3 CT | 4.5 | 4.7 | 12.05 |
| R-114B | 700 CT | 125 | 5 | 3 | 6.3 CT | 4.5 | 4.7 | 12.05 |
| R-115A | 680 CT | 70 | 5 | 2 | 6.3 CT | 2.5 | 3.5 | 8.50 |
| R-115B | 680 CT | 70 | 5 | 2 | 6.3 CT | 2.5 | 3.5 | 8.50 |
| R-116A | 700 CT | 160 | 5 | 3 | 6.3 CT | 5 | 5.65 | 13.84 |
| R-116B | 700 CT | 160 | 5 | 3 | 6.3 CT | 5 | 5.65 | 13.88 |
| R-118A | 750 CT | 175 | 5 | 3 | 6.3 CT | 8 | 7.45 | 15.64 |
| R-118B | 750 CT | 175 | 5 | 3 | 6.3 CT | 8 | 7.45 | 15.44 |
| R-120A | 700 CT | 200 | 5 | 3 | 6.3 CT | 8 | 8.25 | 17.40 |
| R-120B | 700 CT | 200 | 5 | 3 | 6.3 CT | 8 | 8.25 | 12.75 |
| R-121A | 800 CT | 200 | 5 | 3 | 6.3 CT | 6 | 8.25 | 18.22 |

## FILAMENT TRANSFORMERS, SINGLE SECONDARY

**Primary 115 Volts—50–60 Hz**

| Triad No. | Secondary | | Test Volts | Case Size, In. H. x W. x D. | Wt. Lbs. | Net Each* |
|---|---|---|---|---|---|---|
| | Volts | Amps | | | | |
| F-1X§ | 2.5 CT | 3 | 1500 | 1 5/8 x2 13/16x1 5/8 | .68 | $ 3.46 |
| F-72Z§ | 2.5 CT | 5 | 7500 | 2 23/32x3 1/8 x2 1/8 | 1.7 | 5.88 |
| F-6X§ | 2.5 CT | 6 | 2500 | 1 15/16x3 5/16 x1 3/4 | 1 | 4.99 |
| F-3X§ | 2.5 CT | 10 | 3000 | 2 9/32 x3 3/4 x2 1/8 | 1.7 | 5.65 |
| F-5U | 2.5 CT | 10 | 7500 | 3 1/16 x2 1/2 x2 7/16 | 2.2 | 7.12 |
| F-71U§ | 2.5 CT | 10 | 10000 | 3 7/16 x2 13/16x2 9/16 | 2.6 | 8.57 |
| F-7X | 5 CT | 3 | 1500 | 1 15/16x3 5/16 x2 | 1.3 | 4.07 |
| F-8X | 5 CT | 6 | 1500 | 2 9/32 x3 3/4 x2 1/8 | 1.7 | 5.93 |
| F-12X | 5 CT | 8 | 2500 | 2 19/32x4 x2 1/4 | 2.5 | 6.58 |
| F-9U | 5.2 CT | 13 | 1500 | 3 7/16 x2 13/16x2 15/16 | 4 | 10.99 |
| F-15U§ | 5 CT | 15 | 3000 | 3 1/2 x 2 7/8x2 11/16 | 3.25 | 12.52 |
| F-10U§ | 5 CT | 14 | 10000 | 3 13/16x3 3/16 x3 1/16 | 4.75 | 11.52 |
| F-11U | 5.2 CT | 24 | 1500 | 3 13/16x3 3/16 x3 7/16 | 6.75 | 13.07 |
| F-13X | 6.3 | .6 | 1500 | 1 3/8 x2 3/8 x1 3/8 | .37 | 3.09 |
| R-84K† | 6.3 | .6 | 3500 | 2 3/4 x2 1/4 x2 11/16 | 1.5 | 10.39 |
| F-14X | 6.3 CT | 1.2 | 2500 | 1 5/8 x2 13/16x1 5/8 | .7 | 3.36 |
| F-52X† | 6.3 | 1.2 | 5000 | 1 15/16x3 5/16 x1 3/4 | 1 | 4.42 |
| F-51X†§ | 6.3/5 | 2 | 5000 | 1 15/16x3 5/16 x2 | 1.25 | 5.63 |
| F-53X | 6.3 | 4 | 5000 | 2 19/32x4 x2 1/4 | 2.1 | 5.55 |
| F-43X§ | 6.3 | 4 | 1500 | 1 15/16x3 5/16 x2 | 1.25 | 4.60 |
| F-16X | 6.3 CT | 3 | 2500 | 1 15/16x3 5/16 x2 | 1.3 | 4.43 |
| F-18X | 6.3 CT | 6 | 1500 | 2 19/32x4 x2 1/4 | 2.3 | 6.58 |
| F-18A | 6.3 CT | 6 | 1500 | 3 3/32 x2 21/32x2 5/8 | 2.5 | 7.79 |
| F-19X* | 6.3/6 CT | 6 | 2000 | 2 19/32x4 x2 1/4 | 2.3 | 6.68 |
| F-21A | 6.3 CT | 10 | 1500 | 3 1/2 x2 31/32x3 1/8 | 3.8 | 10.70 |
| F-20U* | 6.3/6 CT | 11 | 3000 | 3 1/2 x2 7/8 x2 15/16 | 4 | 11.44 |
| F-17U§ | 6.3 CT | 15 | 10000 | 4 1/4 x3 1/2 x3 5/16 | 7.5 | 15.56 |
| F-22A | 6.3 CT | 20 | 2000 | 3 7/8 x3 9/32 x3 7/8 | 7 | 14.67 |
| F-24U* | 7.5/6.3CT | 8 | 3000 | 3 1/2 x2 7/8 x2 13/16 | 3.65 | 9.47 |
| F-28U* | 7.5/6.3CT | 25 | 3000 | 4 5/8 x3 13/16x3 7/16 | 7.5 | 22.19 |
| F-23U | 10 CT | 7 | 1500 | 3 1/2 x2 7/8 x2 13/16 | 3.9 | 9.58 |
| F-29U* | 12/11/<br>10 CT | 11 | 3000 | 4 3/8 x3 1/2 x3 1/16 | 6.5 | 15.14 |
| F-25X | 12.6 CT | 1.5 | 1500 | 1 15/16x3 5/16 x2 | 1.3 | 4.12 |
| F-44X§ | 12.6 CT | 2 | 1500 | 1 15/16x3 5/16 x2 | 1.25 | 4.04 |
| F-26X§ | 12.6 CT | 2.5 | 1500 | 2 9/32 x3 11/16x2 | 1.55 | 4.64 |
| F-40X§ | 26.8 CT | 1 | 1500 | 1 15/16x3 5/16 x2 | 1.3 | 4.12 |
| F-55X | 28.8 CT | 1.7 | 1500 | 2 19/32x4 x2 1/4 | 2.3 | 5.25 |
| F-57X | 25.2 CT | 1 | 1500 | 1 15/16x3 5/16 x2 | 1.5 | 4.40 |
| F-41X§ | 25.2 CT | 2 | 1500 | 2 19/32x4 x2 1/4 | 2.2 | 5.55 |
| F-56X | 25.2 CT | 2.8 | 1500 | 2 21/32x4 x2 1/4 | 2.5 | 7.67 |
| F-50X†‡§ | 6.3/5 | 2 | 5000 | 1 15/16x3 5/16 x2 | 1.2 | 5.59 |
| F-45X§ | 24 CT | 1 | 1500 | 1 15/16x3 5/16 x2 | 1.3 | 4.17 |
| F-54X | 35 CT | 1.5 | 1500 | 2 19/32x4 x2 1/4 | 2.2 | 5.65 |
| F-58A | 50 CT | 5 | 1500 | 4 5/8 x3 15/16x4 1/2 | 1.0 | 19.50 |
| F-59X | 60 CT | .4 | 1500 | 1 15/16x3 5/16 x2 | 1.3 | 4.05 |

*Tapped primary to produce lower voltages. †Static shield. ‡Filament line transformer; primary 6.3 V/5 V. §60 Hz operation.

## FILAMENT TRANSFORMERS, MULTIPLE SECONDARY

**Primary 115 Volts—50–60 Hz**

| Triad No. | Secondary | | Test Volts rms | Case Size, In. H. x W. x D. | Wt. Lbs. | Net Each* |
|---|---|---|---|---|---|---|
| | Volts | Amps | | | | |
| F-27U | 10 CT<br>2.5 CT | 10<br>10 | 1500<br>7500 | 4 3/8 x 3 1/2 x3 1/16 | 6.2 | $16.65 |
| F-32A | 6.3 CT†<br>6.3 CT† | 3<br>3 | 1500 | 3 3/32 x2 21/32x2 5/8 | 2.5 | 7.80 |
| F-34A | 6.3 CT†<br>6.3†<br>6.3†<br>6.3† | 1.75<br>1.75<br>1.75<br>1.75 | 1500 | 3 3/32 x2 21/32x3 | 3.3 | 9.40 |
| F-36A | 6.3 CT†<br>6.3†<br>6.3†<br>6.3† | 3.5<br>3.5<br>3.5<br>3.5 | 1500 | 3 7/8 x3 9/32 x3 1/4 | 5 | 13.84 |
| F-38A | 6.3 CT†<br>6.3†<br>6.3<br>5 CT<br>5 | 5<br>5<br>1<br>2<br>4 | 1500 | 3 7/8 x3 9/32 x3 1/2 | 6 | 13.87 |
| F-42A | 12.6 CT†<br>12.6† | 2.5<br>2.5 | 1500 | 3 1/2 x2 21/32x3 1/8 | 3.7 | 8.57 |
| F-83A* | 12.6 CT†<br>12.6† | 5<br>5 | 1500<br>2500 | 3 7/8 x3 9/32 x3 1/2 | 6 | 14.75 |

*Primary tapped for 105/115/125 volts; 60 Hz operation.
†Windings may be connected in series or in parallel.

## PLATE POWER TRANSFORMERS

**Static Shield; Primary 115 Volts—60 Hz**

| Triad No. | Secondary Volts | | Secondary mADC | | Rect. Fil. | Wt. Lbs. | Net Each* |
|---|---|---|---|---|---|---|---|
| | AC§ | DC | CCS | ICAS | | | |
| P-1A | 440/220 CT | 180/90 | 160 | 192 | 5V-3A | 4 | $10.73 |
| P-3A | 600/300 CT | 250/125 | 300 | 360 | 5V-4A | 6.25 | 13.50 |
| P-5A | 1100 CT | 400 | 250 | 300 | 5V-4A | 8 | 18.30 |
| P-7A | 1235 CT | 500 | 250 | 300 | 5V-4A | 9 | 19.25 |
| P-9A | 1235 CT | 500 | 500 | 600 | 5V-6A | 18 | 36.63 |
| P-11A | 1455 CT | 600 | 250 | 300 | ...... | 8.5 | 17.84 |
| P-213AL | 1780 CT*† | 750 | 250 | 300 | ...... | 9.5 | 26.43 |
| P-14A | 1780 CT‡ | 750/600 | 250 | 300 | ...... | 13.5 | 28.13 |
| P-215AL | 2340 CT*† | 1000 | 250 | 300 | ...... | 13.5 | 31.42 |
| P-216AL | 2430 CT*† | 1000 | 500 | 600 | ...... | 25 | 56.47 |
| P-217AL | 2880 CT*† | 1250 | 250 | 300 | ...... | 14.8 | 35.31 |
| P-218AL | 2880 CT*† | 1250 | 500 | 600 | ...... | 27.5 | 63.00 |
| P-220AL | 3300 CT*† | 1500 | 350 | 420 | ...... | 24.5 | 55.19 |
| PR-21AL | 3300 CT*† | 1500 | 500 | 600 | ...... | 29 | 62.18 |

*Primary, 115/230 VAC. †Plate leads outside of case for rectifiers. ‡Also 1425 VAC CT. §Secondary CT must be grounded.

## COMBINED PLATE AND FILAMENT TRANSFORMERS

**Static Shield; Primary 115 Volts—50–60 Hz**

| Triad No. | Secondary | | Rect. Fil. | | Other Filament | | Wt. Lbs. | Net Each* |
|---|---|---|---|---|---|---|---|---|
| | AC Volts | mA DC | V | A | Volts | A | | |
| R-22A* | 380/<br>320 CT | 70 | ... | ... | 6.3<br>6.3 CT | .6<br>3 | 2 3/4 | $ 9.48 |
| R-22B* | 380/<br>320 CT | 70 | ... | ... | 6.3<br>6.3 CT | .6<br>3 | 2 3/4 | 9.61 |
| R-4A | 500 CT | 40 | ... | ... | 6.3 CT | 2 | 1 3/4 | 7.67 |
| R-4B | 500 CT | 40 | ... | ... | 6.3 CT | 2 | 1 3/4 | 7.62 |
| R-5A* | 600 CT | 65 | ... | ... | 6.3 CT | 2.7 | 2 3/4 | 9.12 |
| R-5B* | 600 CT | 65 | ... | ... | 6.3 CT | 2.7 | 2 3/4 | 9.07 |
| R-6A | 480 CT | 50 | 5 | 2 | 6.3 CT | 2 | 2 3/4 | 9.37 |
| R-6B | 480 CT | 50 | 5 | 2 | 6.3 CT | 2 | 2 3/4 | 9.29 |
| R-7A* | 600 CT | 50 | 5 | 2 | 6.3 CT | 2 | 2 3/4 | 9.12 |
| R-7B* | 600 CT | 50 | 5 | 2 | 6.3 CT | 2 | 2 3/4 | 9.07 |
| R-8A | 500 CT | 75 | 5 | 2 | 6.3 CT | 2.5 | 3 | 10.04 |
| R-8B | 500 CT | 75 | 5 | 2 | 6.3 CT | 2.5 | 3 | 9.99 |
| R-9A | 600 CT | 75 | 5 | 2 | 6.3 CT | 3 | 3 1/2 | 11.52 |
| R-9B | 600 CT | 75 | 5 | 2 | 6.3 CT | 3 | 3 1/2 | 11.35 |
| R-10A | 525 CT | 90 | 5 | 2 | 6.3 CT | 5 | 4 1/2 | 11.88 |
| R-10B | 525 CT | 90 | 5 | 2 | 6.3 CT | 5 | 4 1/2 | 11.70 |
| R-11A | 700 CT | 90 | 5 | 3 | 6.3 CT | 3.5 | 4 1/4 | 12.50 |
| R-11B | 700 CT | 90 | 5 | 3 | 6.3 CT | 3.5 | 4 1/4 | 12.32 |
| R-12A | 550 CT | 110 | 5 | 2 | 6.3 CT | 5 | 4 1/2 | 12.42 |
| R-12B | 550 CT | 110 | 5 | 2 | 6.3 CT | 5 | 4 1/2 | 12.40 |
| R-14A | 700 CT | 125 | 5 | 3 | 6.3 CT | 4.5 | 6 | 14.84 |
| R-14B | 700 CT | 125 | 5 | 3 | 6.3 CT | 4.5 | 6 | 14.79 |
| R-16A | 700 CT | 160 | 5 | 3 | 6.3 CT | 5 | 7 | 16.10 |
| R-16B | 700 CT | 160 | 5 | 3 | 6.3 CT | 5 | 7 | 16.05 |
| R-17A | 750 CT<br>80 Tap | 160 | 5 | 3 | 6.3 CT<br>2.5 CT | 5<br>5 | 7 1/4 | 18.53 |
| R-18A | 750 CT | 175 | 5 | 3 | 6.3 CT | 8 | 8 1/2 | 16.13 |
| R-18B | 750 CT | 175 | 5 | 3 | 6.3 CT | 8 | 8 1/2 | 15.92 |
| R-19A | 750 CT<br>80 Tap | 200 | 5 | 3 | 6.3 CT<br>2.5 CT | 6<br>10 | 9 1/2 | 16.45 |
| R-20A | 700 CT | 200 | 5 | 3 | 6.3 CT | 8 | 9 1/4 | 15.02 |
| R-20B | 700 CT | 200 | 5 | 3 | 6.3 CT | 8 | 9 1/4 | 14.87 |
| R-72A* | 800 CT | 140 | 5 | 3 | 6.3 CT | 4 | 5 3/4 | 14.49 |
| R-21A | 800 CT | 200 | 5 | 3 | 6.3 CT | 6 | 9 1/4 | 21.15 |
| R-21B | 800 CT | 200 | 5 | 3 | 6.3 CT | 6 | 9 1/4 | 20.97 |
| R-24A* | 800 CT | 300 | 5 | 6 | 6.3 CT | 6 | 14 | 24.80 |
| R-24B* | 800 CT | 300 | 5 | 6 | 6.3 CT | 6 | 14 | 24.80 |
| R-25A | 800 CT | 500 | 5 | 6 | 6.3 CT | 7 | 19 | 33.14 |
| R-58A | 875 CT | 185 | 5 | 3 | 6.3<br>6.3<br>6.3 | 3<br>3<br>4 | 9 1/2 | 18.39 |
| R-71A* | 900 CT | 250 | 5 | 4 | 6.3 CT<br>6.3 | 2<br>4 | 12 | 21.12 |
| R-94H* | 180/177 | 500 | 6.3 | 5.5 | 6.3 | 5.5 | 17 | 26.11 |

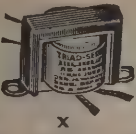
*60 Hz.

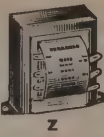
**★SEE ANOTHER PAGE FOR QUANTITY DISCOUNTS**

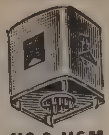
**Note: Last letter(s) of Triad No. indicates case style. See table on another page for case sizes not listed hereon.**

# Special Transformers

A


X


Z


HS & HSM

## MODULATION TRANSFORMERS, TUBE TO RF LOAD

| riad No. | Primary Imped.† | Secondary Imped.† | Secondary mA | Audio Watts | Size, Inches H. x W. x D. | Net Each* |
|---|---|---|---|---|---|---|
| -65Z | 32 CT (575 mA) Xsistor use | 3K/4K/6K | 100 | 10 | 2 5/16 x2⅞x2 | $ 4.59 |
| 4Z | 5000 Autoformer | 6750/4 | 100 Total | 10 | 1 15/16x2⅜x1⅝ | 4.17 |
| 1X | 10000 CT (5 mA)‡ | 5000/8000/10000 | 50 | 5 | 1 3/16 x2 1/16x1¼ | 3.48 |
| 3X | 10000 CT (10 mA)‡ | 3000/5000/8000 | 100 | 20 | 2 9/32x3 11/16x2 | 5.77 |
| 6X | 10000 CT (10 mA)‡ | 3K/5K/8K/4 | 100 | 20 | 2 9/32x3 11/16x2 | 4.77 |
| -66A | 6 CT (5 A) Xsistor use | 3K/4K/6K | 200 | 40 | 3⅞ x3 9/32x3⅜ | 10.22 |
| 7AL* | 4250 CT | 3000/5000/8000 | 200 | 60 | 4¼x3 19/32x3⅞ | 11.22 |
| 15A | 4000–20000 Universal | 4000 to 20000 | 150 | 30 | 3½x2 31/32x3¼ | 9.05 |
| 12AL* | 4000–20000 Universal | 4000 to 20000 | 300 | 125 | 4⅝x3 15/16x4⅝ | 22.15 |

ate leads outside of case. †Ohms. ‡Unbalanced.

## AUTO RADIO TRANSISTOR TRANSFORMERS

| Triad No. | Imped., Ω Pri. | Imped., Ω Sec. | Pri. mADC | Pwr. W | Size, Inches H. x W. x D. | Mtg. Ctr., In. | Net Each* |
|---|---|---|---|---|---|---|---|
| -1XT* | 1K | 40 | 10 | 2 | 1 11/16x2x1⅜ | 1 8/32x 17/32 | $3.82 |
| -2Z† | 30 CT | 4 | 50# | 10 | 2 5/16x2⅞x1¾ | 2⅜ holes | 3.89 |
| -3XT†‡ | 9 tap at 4 | | 920 | 10 | 1 15/16x3¼x1¾ | 1⅞x 13/16 | 3.37 |

terstage. †Output. ‡Autoformer. #Per side.

## FILTER CHOKES

st Voltage, 1000 V rms. Size, 1 3/16" h. x 2 1/16" w. x 1¼" d. Mtg. s., 1¾" holes on 1¼" x 7/16".

ad No. **TY-16XT**—3 mH at 1 A. Net Each.........**$2.05***

ad No. **TY-17XT**—11 mH at 1 A. Net Each........ **2.05***

## SIGNALLING TRANSFORMERS

| riad No. | Primary Volts | Secondary Volts, AC | Amps | Size, Inches H. x W. x D. | Net Each* |
|---|---|---|---|---|---|
| .02X | 115 60 Hz | 4/8/12/16/20/24 | 2 | 2 9/32x3 11/16x2½ | $5.05 |
| .04U | 115 60 Hz | 4/8/12/16/20/24 | 4 | 3½x2⅞ x2 9/16 | 9.80 |

## CONTROL TRANSFORMERS

Multiple usage with relays, solenoids, electronic tubes, recording devices and similar applications. All use 115/230 VAC, 50/60 Hz and have lug type connections.

| Triad No. | Secondary Parallel | Secondary Series | VA Rating | Size, Inches H. | Size, Inches Base | Net Each* |
|---|---|---|---|---|---|---|
| F-105Z | 6 V at 2A | 12 V at 1A | 12 | 2⅜ | 2⅞x1¾ | $ 4.38 |
| F-106Z | 6 V at 4A | 12 V at 2A | 24 | 2¾ | 3⅛x2 | 5.18 |
| F-107Z | 12 V at 4A | 24 V at 2A | 48 | 3⅛ | 3⅝x2⅜ | 6.57 |
| F-108U | 12 V at 8A | 24 V at 4A | 96 | 3½ | 2⅞x3 | 11.93 |
| F-109U | 12 V at 16A | 24 V at 8A | 192 | 4⅛ | 3¾x3½ | 21.94 |

## UNIVERSAL ISOLATING AUTOFORMERS

For 50/60 Hz voltage control use.

| Triad No. | Output Watts (VA) Isolation | Output Watts (VA) Auto-former | rms Test Voltage | Size, Inches H. x W. x D. | Net Each* |
|---|---|---|---|---|---|
| N-64AC | 500 | 1000 | 1500 | 5 5/16x4½x4⅞ | $ 35.36 |
| N-62AC | 1000 | 2000 | 1500 | 6½x5½x6 | 71.83 |
| N-60SC | 2000 | 4000 | 2500 | 4¾x8½x13½ | 131.68 |

## LOW VOLTAGE RECTIFIER TRANSFORMERS

All use 115 volt tapped primary. Used to supply transistor DC voltage, 15 half wave or 30 in bridge circuit.

| Triad No. | Secondary Volts | Secondary Amps | Test Voltage | Size, Inches H. x W. x D. | Net Each* |
|---|---|---|---|---|---|
| F-94X | 10-20 CT-40 CT | .035 | 1500 | 1⅜ x2⅜ x1⅜ | $4.05 |
| F-90X | 10-20 CT-40 CT | .1 | 1500 | 1⅝ x2 13/16x1⅝ | 4.08 |
| F-91X | 10-20 CT-40 CT | .3 | 1500 | 2 9/32 x3 11/16x2 | 5.05 |
| F-93X | 10-20 CT-40 CT | .75 | 1500 | 2 19/32x4 x2¼ | 6.55 |
| F-92A | 10-20 CT-40 CT | 1 | 1500 | 3 3/16 x2 21/32x3 | 8.50 |

## CHOPPER INPUT GEOFORMERS

Adjusted at 60 Hz; high Z and untuned windings for frequency of 30–500 Hz, Static shield.

| Triad No. | Impedance, Ohms Primary | Impedance, Ohms Secondary | Turns Ratio‡ | Max. Pri. Volts | Case Key• | Net Each* |
|---|---|---|---|---|---|---|
| G-20 | 10,000 CT-2,500 | 640,000 CT | 1:8 | 25 | GP-4T | $37.51 |
| G-21 | 200,000 CT | 12,500 CT | 4:1 | 84 | GP-2L | 31.69 |
| G-21TS | 200,000 CT | 12,500 CT | 4:1 | 84 | GP-4T | 38.67 |
| G-22 | 50,000 CT | 800,000 CT | 1:4 | 90 | GP-5W | 38.12 |
| G-22H | 50,000 CT | 800,000 CT | 1:4 | 90 | GP-3R | 25.85 |
| G-23 | 40,000 CT | 1,000 CT | 6.32:1 | 75 | GP-2L | 31.22 |
| G-24 | 40,000 CT | 40,000 CT | 1:1 | 19.5 | GP-5S | 33.34 |
| G-25 | 40,000 CT-10,000 CT | 10,000 CT | 2:1 | 70 | GP-2L | 31.11 |
| G-25TS | 40,000 CT-10,000 CT | 10,000 CT | 2:1 | 70 | GP-4T | 38.22 |

‡Full primary to full secondary. •See case size table elsewhere.

## HERMETICALLY SEALED MIL-T-27B TRANSFORMERS

### FILAMENT TRANSFORMERS, 380–1500 Hz

| Triad No. | Primary Volts | Secondary Volts | Secondary Amperes | rms Test Voltage | Case Key• | Net Each* |
|---|---|---|---|---|---|---|
| -436 | 115 | 6.3 CT | 1 | 1500 | AH | $11.75 |
| -425 | 105-115-125 | 6.3 CT | 2 | 1500 | AJ-2 | 16.34 |
| -427 | 105-115-125 | 6.3 CT | 5 | 500<br>2500 | EA | 21.19 |
| -445 | 105-115-125 | 12.6 CT | 3 | 2500 | EA | 21.89 |
| -438 | 105-115-125 | 24 CT | 1.5 | 1500 | EA | 20.59 |
| -433 | 105-115-125 | 6.3 CT*<br>6.3* | 5<br>5 | 1500<br>2500 | FA | 23.34 |
| -435 | 105-115-125 | 6.3 CT*<br>6.3*<br>6.3/5† | 3.5<br>3.5<br>3 | 2000 | FA | 25.54 |
| -441 | 105-115-125 | 5 CT*<br>5*<br>2.5 CT | 10<br>10<br>10 | 2000<br>7500 | HA | 39.47 |
| -443 | 105-115-125 | 12.6 CT*<br>12.6* | .8<br>.8 | 1500 | AJ-2 | 18.69 |
| -442‡ | 57.5-99.7-115-120 | 12.6 CT*<br>12.6* | 2<br>2 | 1500 | EA | 22.34 |
| -444‡ | 57.5-99.7-115-120 | 26 CT*<br>26 CT* | 2<br>2 | 2000 | FA | 31.32 |

/indings may be connected in series or parallel. †Tapped for / rectifier use. ‡For Scott conn. •See case size table elsewhere.

### ISOLATION TRANSFORMERS

**Primary 115 V—380–1500 Hz**

types are electrostatically shielded.

| Triad No. | VA Output | Secondary Amps | Output, Volts | Case Key• | Net Each* |
|---|---|---|---|---|---|
| S-470 | 40 | .35 | 115 | EA | $17.97 |
| S-471 | 80 | .7 | 115 | FA | 20.75 |
| S-472 | 160 | 1.39 | 115 | GA | 22.09 |
| S-474 | 300 | 2.6 | 115 | JA | 31.77 |
| S-475 | 505 | 4.4 | 115 | KA | 35.92 |

ee case size table elsewhere.

### BOX SHIELDED ISOLATION TRANSFORMERS

**Primary 115 V—50–60 Hz**

Epoxy potted with leads.

| Triad No. | Secondary Voltage | Secondary Current | VA | rms Test Volts | Case Key• | Net Each* |
|---|---|---|---|---|---|---|
| HC-115 | 115 | 1 A | 115 | 1000 | KA | $29.25 |
| HC-300 | 115 | 2.6 A | 300 | 1000 | NB | 38.10 |

### ISOLATION TRANSFORMERS

**Primary 115/230 V—50–60 Hz**

| Triad No. | VA Output | Secondary Amps | Output, Volts | Case Key• | Net Each* |
|---|---|---|---|---|---|
| HSM-270 | 50 | .4 | 105/115/125 | JB | $26.04 |
| HSM-271 | 125 | 1 | 105/115/125 | KA | 33.87 |
| HSM-272 | 250 | 2 | 105/115/125 | NB | 48.19 |

### HERMETICALLY SEALED FILTER REACTORS

Meet inductance tolerances of +50%, −20%.

| Triad No. | Cur., mADC | Induct., Henries | Resist., Ohms | rms Test Volts | Case Key• | Net Each* |
|---|---|---|---|---|---|---|
| HSM-301 | 20 | 30 | 1000 | 1500 | EB | $21.10 |
| HSM-302 | 20 | 14 | 560 | 1500 | AJ | 12.44 |
| HS-331 | 40 | 4 | 375 | 1500 | AH-2 | 9.37 |
| HS-303 | 50 | 12 | 385 | 1500 | EB | 14.49 |
| HS-333 | 70 | 3 | 225 | 1500 | AJ-2 | 10.67 |
| HSM-305 | 70 | 15 | 300 | 2500 | GB | 16.95 |
| HS-335 | 120 | 3 | 150 | 1500 | EB | 14.20 |
| HSM-307 | 120 | 15 | 185 | 2500 | JB | 22.65 |
| HS-339 | 200 | 3 | 105 | 2000 | FB | 16.50 |
| HSM-315 | 200 | 10 | 100 | 2500 | JA | 23.59 |
| HS-341 | 300 | 2 | 48 | 2000 | GB | 17.75 |
| HSM-319 | 300 | 10 | 85 | 2500 | LA | 33.87 |

•See case size table elsewhere.

### ★ QUANTITY DISCOUNTS

1–9, Net; 10–24, 10%; 25–49, 19%; 50–99, 25%; 100–249, 28¾%; 250 up, 32½%.

# MIL-T-27B Sealed Transformers

HS & HSM

## HERMETICALLY SEALED IN MIL STANDARD CASES

All Series HS and HSM units are designed to meet MIL-T-27B specifications, and are cased in MIL-T-27B standard cases. Exceptions are those in GP cases, which may be classified as MIL-T-27B "YY" cases. All are "Climatite" treated, finished in gray enamel, and permanently marked with electrical and test data as specified in MIL-T-27B.

### LOW LEVEL AUDIO INPUT TRANSFORMERS

Static shield except HS-5.

| Triad No. | Impedance, Ohms Primary | Impedance, Ohms Secondary | Freq. Resp. Hz | Case Key• | Net Each* |
|---|---|---|---|---|---|
| **HS-1** | 600*/250*/150/62.5 | 77000 | 20–20000 | GP-4‡ | **$25.27** |
| **HS-11** | 600*/250*/150/62.5 | 77000 | 20–20000 | GP-2§ | **19.05** |
| **HS-3** | 600*/250*/150/62.5 | 117600 CT | 20–20000 | GP-5‡ | **31.92** |
| **HS-4** | 600*/250*/150/62.5 | 117600 CT | 20–20000 | GP-4# | **28.40** |
| **HS-14** | 600*/250*/150/62.5 | 117600 CT | 20–20000 | GP-3§ | **25.59** |
| **HS-15†** | 600*/250*/150/62.5 (10 mA) | 38400 CT* | 30–20000 | GP-5# | **31.92** |
| **HS-5** | 30 | 127500 | 40–12000 | GP-4‡ | **22.00** |

### LOW LEVEL AUDIO INTERSTAGE TRANSFORMERS

| | | | | | |
|---|---|---|---|---|---|
| **HS-23** | 15000 | 110000 | 20–20000 | GP-4# | **$22.87** |
| **HS-25** | 15000 | 111000 CT▪ | 20–20000 | GP-4§ | **26.22** |
| **HS-35** | 15000 | 111000 CT▪ | 20–20000 | GP-2§ | **19.51** |
| **HS-27** | 20000 CT*/5000 | 60000 CT*/15000 | 20–20000 | GP-4§ | **24.72** |
| **HS-29** | 20000 CT*/5000 | 80000 CT*/20000 | 20–20000 | GP-4‡ | **25.92** |
| **HSM-31** | 20000 CT*/5000 | 20000 CT*/5000 CT | 20–20000 | FA | **27.33** |
| **HS-32†** | 15000 (6 mA) | 60000 CT*/15000 | 20–15000 | GP-5§ | **26.84** |

### LOW LEVEL OUTPUT, MIXING, MATCHING, BRIDGING

| | | | | | |
|---|---|---|---|---|---|
| **HS-50** | 15000 | 600*/250*/150/62.5 | 20–20000 | GP-4# | **$25.29** |
| **HS-60** | 15000 | 600*/250*/150/62.5 | 20–20000 | GP-2§ | **19.32** |
| **HS-61†** | 15000 (5 mA) | 600*/250*/150/62.5 | 40–15000 | GP-5§ | **20.64** |
| **HS-52** | 20000 CT*/5000 | 600*/250*/150/62.5 | 20–20000 | GP-4§ | **26.27** |
| **HS-54** | 20000 CT*/5000 | 600*/250*/150/62.5 | 20–20000 | GP-4‡ | **25.71** |
| **HS-56VI** | 600*/250*/150/62.5 | 600*/250*/150/62.5 | 10–30000 | GP-4# | **30.19** |
| **HS-66I** | Same as above | | 10–30000 | GP-3§ | **25.71** |
| **HS-58I** | Same as above | | 20–20000 | GP-5♦ | **36.64** |

*Balanced two windings. †Designed for DC in primary; all other types will show low frequency loss with unbalanced DC in winding. §45 dB shielding. #70 dB shielding. ‡90 dB shielding. IStatic shield. ▪Split winding. ♦115 dB shield.

### HI-FI AUDIO TRANSFORMERS

Hi-Fi output to line or voice coil. All models except HSM-184 have split winding in primary.

| Triad No. | Impedance, Ohms Primary | Impedance, Ohms Secondary | Output, Watts | Case Key• | Net Each* |
|---|---|---|---|---|---|
| **HSM-79*** | 20000 CT (20 mA) or 5000 (40 mA) | 16/8/4 | 5 | FA | $22.89 |
| **HSM-80*** | 20000 CT (20 mA) or 5000 (40 mA) | 600 CT/250 CT/150/62.5 | 5 | FA | 24.45 |
| **HSM-81‡** | 8000 CT | 16/8/4 | 15 | JB | 33.92 |
| **HSM-82‡** | 8000 CT | 500/250/125 | 15 | JB | 35.64 |
| **HSM-182†‡** | 8000/2000 CT | 600/250/125 | 15 | JB | 37.21 |
| **HSM-84§** | 5000 CT | 16/8/4 | 20 | JB | 34.02 |
| **HSM-184†#** | 8000 CT | 16/8/4 (Split) | 25 | KB | 30.02 |
| **HSM-189†‡** | 10000/2500CT | 16/8/4 | 25 | KB | 43.14 |
| **HSM-190†‡** | 10000/2500CT | 500/250/125 | 25 | KB | 45.19 |
| **HSM-187†‡** | 6600/1650 CT | 500/250/125 | 25 | KB | 44.43 |
| **HSM-94‡** | 4500 CT | 16/8/4 | 55 | LA | 49.87 |

Frequency Response: *40–20,000 Hz; ‡7–50,000 Hz; #10–50,000 Hz; §15–30,000 Hz. †Williamson type circuit may be used. Taps on primary for proper screen operation.

### SOLID STATE POWER TRANSFORMER

**Triad No. HSM-248**—Primary 105/115/125 V, 50/60 Hz. Secondary 35 VAC CT at 3 amps rms. For full-wave or full-wave bridge rectifier circuits providing 14.5 or 29 VDC. Case KA. Net Each........................................................**$29.18***

### ★ QUANTITY DISCOUNTS

1–9, Net; 10–24, 10%; 25–49, 19%; 50–99, 25%; 100–249, 28¾%; 250 up, 32½%.

### POWER OUTPUT TO LINE OR VC

| Triad No. | Impedance, Ohms Primary | Impedance, Ohms Secondary | Max. Watts | Case Key• | Net Each* |
|---|---|---|---|---|---|
| **HS-71** | 10000 (10 mA) | 600 CT/150 (Split) | 2 | AH-2 | **$14.10** |
| **HS-73** | 5000 (40 mA) | 4/8/16/250/500 | 5 | AJ-2 | **16.75** |
| **HS-75** | 10000 CT (50 mA) | 4/8/16/250/500 | 10 | EB | **24.39** |
| **HS-77** | 9000 CT (120 mA) | 4/8/16/250/500 | 25 | GA | **21.20** |

### COMBINED PLATE AND FILAMENT TRANSFORMERS

**Primary 115 V—50-60 Hz**

All types have static shield.

| Triad No. | Plate Supply AC Volts | Plate Supply mA DC | Filaments, Volts at A | Case Key• | Net Each* |
|---|---|---|---|---|---|
| **HSM-200*** | 120 | 100 | 6.3 CT-1.6 A | FA | **$18.20** |
| **HSM-201** | 500 CT | 20 | 6.3 CT-2 A | GA | **23.09** |
| **HSM-202** | 120 | 20 | 6.3 CT-.6 A | EA | **17.79** |
| **HSM-203** | 600 CT | 50 | 6.3 CT-2.5 A<br>5 -2 A | JB | **26.34** |
| **HSM-205** | 700 CT | 70 | 6.3 CT-3 A<br>5 -3 A | JA | **33.87** |
| **HSM-207** | 700 CT | 120 | 6.3 CT-5 A<br>5 -3 A | KA | **36.24** |
| **HSM-208** | 626 CT | 200 | 6.3/5.0-3 A<br>6.3 CT-5 A | KA | **44.49** |
| **HSM-241** | 700 CT<br>70 V bias tap | 150 | 6.3 CT-6 A<br>6.3 V-2 A<br>5 V-3 A | LA | **44.83** |
| **HSM-212** | 1000/800 CT | 150 | 6.3 CT†-4 A<br>6.3† -4 A<br>6.3†‡-4 A | LA | **47.43** |
| **HSM-245** | 800/700 CT<br>70 V bias tap | 200 | 6.3 CT-6 A<br>6.3 V-4 A<br>5 -6 A | MA | **53.51** |
| **HSM-216** | 1000/800 CT | 200 | 6.3 CT†-5 A<br>6.3† -5 A<br>6.3/5†‡-4 A | MA | **54.64** |
| **HS-247** | 800/700 CT<br>70 V bias tap | 300 | 6.3 CT-8 A<br>6.3 V-4 A<br>5 -6 A | GP-15 | **70.53** |

### COMBINED PLATE AND FILAMENT TRANSFORMERS

**Primary 115 V—400 Hz, Operate 380-1500 Hz**

All types have static shield.

| | | | | | |
|---|---|---|---|---|---|
| **HS-402** | 476 CT | 20 | 6.3 CT-1.5 A | AJ | **$15.96** |
| **HS-400** | 125 | 25 | 6.3 CT-.8 A | AH | **15.34** |
| **HS-401** | 500 CT | 40 | 6.3 CT†-1 A<br>6.3†-1 A | EB | **23.17** |
| **HS-405** | 600 CT | 70 | 6.3 CT†-2 A<br>6.3†-2 A<br>6.3/5†‡-2 A | GA | **28.56** |
| **HS-404** | 450 CT | 120 | 6.3 CT-3 A<br>6.3/5-3 A | FA | **26.47** |
| **HS-407** | 600 CT | 120 | 6.3 CT†-3.5 A<br>6.3†-3.5 A<br>6.3/5‡-3 A | JB | **34.32** |
| **HS-409** | 700 CT | 150 | 6.3 CT-4 A<br>6.3/5‡-3 A | HA | **30.87** |
| **HS-413** | 450 CT | 200 | 6.3 CT†-6 A<br>6.3†-6 A<br>6.3/5‡-4 A | JA | **34.82** |
| **HS-415** | 800/600 CT | 200 | 6.3 CT†-6 A<br>6.3†-6 A<br>6.3/5†‡- 6 A | KB | **47.21** |
| **HS-417** | 800/600 CT | 300 | 6.3 CT†-6 A<br>6.3†-6 A<br>6.3/5†‡-6 A | LA | **49.44** |

*60 Hz operation. †Series or parallel connection. ‡Tapped for 5-volt rectifier use.

### FILAMENT TRANSFORMERS, 50-60 HZ

| Triad No. | Primary Volts | Secondary Volts | Secondary A | rms Test Volts | Case Key• | Net Each* |
|---|---|---|---|---|---|---|
| **HSM-223*** | 115 | 6.3 | 0.6 | 1500 | AJ-2 | **$11.62** |
| **HSM-225*** | 105-115-125 | 6.3 CT | 2 | 1500 | EA | **22.47** |
| **HSM-226*** | 105-115-125 | 6.3 CT | 3.6 | 1500 | FA | **19.00** |
| **HSM-224** | 105-115-125 | 6.3 CT | 5.5 | 2500 | HB | **19.94** |
| **HSM-234** | 105-115-125 | 6.3 CT†<br>6.3† | 10<br>10 | 2500 | KA | **37.61** |
| **HSM-227** | 105-115-125 | 6.3 CT†<br>6.3† | 3<br>3 | 2500 | GA | **22.42** |
| **HSM-229** | 105-115-125 | 6.3 CT | 8 | 2500 | JB | **24.25** |
| **HSM-233** | 105-115-125 | 12.6 CT | .8 | 1500 | EA | **18.97** |
| **HSM-237** | 105-115-125 | 12.6 CT | 2 | 2500 | FA | **16.49** |
| **HSM-230** | 105-115-125 | 24 CT | 0.8 | 1500 | FA | **17.35** |
| **HSM-239** | 105-115-125 | 24 CT | 1.5 | 2500 | GA | **18.67** |
| **HSM-240** | 115/230 | 12.6 CT†<br>12.6† | 1.5<br>1.5 | 2500 | GA | **21.77** |
| **HSM-236** | 105-115-125 | 12.6 CT†<br>12.6† | 2<br>2 | 2500 | JB | **23.15** |
| **HSM-228** | 105-115-125 | 6.3 CT†<br>6.3† | 6<br>6 | 2500 | JA | **26.66** |
| **HSM-231** | 105-115-125 | 6.3 CT<br>5 CT | 5<br>3 | 2500 | JB | **25.39** |
| **HSM-238*** | 105-115-125 | 26 CT†<br>26† | 2<br>2 | 2500 | JA | **30.19** |

*60 Hz operation. †Series or parallel connection.
•See case size table listed elsewhere in this section.

# Special Transformers, Filters

### INSTRUMENT POWER SUPPLY TRANSFORMERS PRIMARY 115 VOLTS,* FOR PREAMPS, VTVM, ETC.

| lad o.‡ | Plate Supply AC Volts | Plate Supply mA DC | Filament Windings Volts and Amps | Size, Inches H. x W. x D. | Wt., Lbs. | Net Each* |
|---|---|---|---|---|---|---|
| 68A | 800 CT | 30 | 5v.-2a., 6.3†-1.2a., 6.3†-1.2 a. | 3 5/32 x2 21/32x3⅛ | 3 | $11.48 |
| 23B | 250 CT | 22 | 6.3 v.-.8 a.<br>15.5/12.6 v.-.6 a. | 1⅞ x2⅝ x2 3/16 | 1¾ | 7.68 |
| 2C | 135 | 15 | 6.3 v.-.9 a. | 1¾ x1⅞ x1 9/16 | 1 | 6.63 |
| 3A | 500 CT | 20 | 6.3 CT-2 a. | 2 25/32x2 11/32x2½ | 1¾ | 7.68 |
| 29A | 230 CT | 40 | 6.3 CT-1.5 a. | 2 25/32x2 11/32x2⅜ | 1¾ | 6.76 |
| 30X | 135 | 50 | 6.3 v.-1.5 a. | 2 9/32 x3¾ x2⅛ | 1½ | 6.40 |
| 54X | 115 | 15 | 6.3 v.-.6 a. | 1⅝ x2 13/16x1⅝ | 1 | 4.04 |
| 56A | 130 | 20 | 0/15/22.5/30-.6 a. | 2 25/32x2 11/32x2¾ | 2 | 7.48 |
| 73B | 135 | 200 | 6.3 CT-5.5 a. | 1⅞ x3⅜ x2 13/16 | 2¾ | 10.01 |

–60 Hz (R-73B, 60 Hz). †Series or parallel. ‡Static shield.

### FOR CATHODE RAY TUBES (115 V 50-60 Hz)

| riad No. | Plate Supply AC Volts | Plate Supply mA DC | Filament Windings Volts and Amps | Case Size, Inches H. x W. x D. | Net Each* |
|---|---|---|---|---|---|
| 41C | 440-0-440-1250 | 125/5 | 5 v.-3 a., 2.5 v.†-1.75 a., 2.5 v.†-1.75 a., 6.3 v.-.6 a. | 3¼x4 3/16 x3½ | $19.49 |
| 45C | 400-0-400-800 | 30/5 | 5 v.†-2 a., 5 v.†-2 a., 6.3 v.-.6 a., 6.3 CT-3 a., 6.3 v.-1 a. | 2⅝x3¾ x3⅛ | 17.63 |
| 43C | 1600 | 3 | 6.3/5/2.5/0 v.-1 a.<br>6.3/5/2.5/0 v.-3 a. | 2⅜x3 1/16 x2 9/16 | 14.44 |
| 83A* | 800 CT<br>650 | 70<br>3 | 6.3 CT-3.5 a.<br>6.3-.6 a., 1.25‡-.3 a. | 3 19/32 x 2 21/32 x 3¾ | 18.71 |
| 84K | .......... | ..... | 6.3-.6 a. | 2¾x2¼ x2¾ | 10.39 |
| 85A | 1825<br>117<br>180 | 3<br>200§<br>475§ | 1.25 v.-.2 a.<br>6.3 CT-5.65 a. | 3⅞x3 9/32 x4⅝ | 15.99 |

Hz operation. †Windings may be connected in series or par-
el. ‡2-ohm resistor (2 W) in series with filament when 1V2 is
d. §rms.

### FOR REGULATED POWER SUPPLIES

have static shield; 115 volts, 50–60 Hz.

| riad No. | Plate Supply AC Volts | Plate Supply mA DC | Filament Windings Volts and Amps | Case Size, Inches H. x W. x D. | Net Each* |
|---|---|---|---|---|---|
| 70A | 880† | 75 | 6.3 v.-.6 a., 6.3 v.-.9 a., 6.3 v.-.3 a., 6.3 v.-3 a. | 3 15/16x3 9/32x3⅜ | $16.05 |
| 26A | 880-720† | 200 | 6.3†-8 a., 6.3 v.-3 a., 6.3 v.-1 a., 5 v.-3 a. | 4⅝x3 15/16x4⅝ | 27.54 |
| 28A | 1250† | 300 | 6.3†-8 a., 6.3 v.‡-3 a., 6.3 v.‡-3 a., 5 v.-6 a. | 5 5/16x4½ x5⅝ | 31.94 |
| 16A | 1250†<br>130* | 350<br>50 | 5 v.-4 a., 6.3 v.-4 a.,<br>6.3v.‡-1a.,6.3v.‡-1a. | 5 5/16x4½ x5⅝ | 28.51 |
| 27A | 1500† | 400 | 5 v.-6 a., 6.3 v.-3 a., 6.3 v.-8 a. | 5 5/16x4½ x7⅛ | 44.03 |

or bias using sel. rect.; supplies 550 v. DC using 2-5R4GY rect.
es, choke input, filament windings regulate screen voltages.
enter tapped. ‡Windings may be connected in series or parallel.

### ISOLATION TRANSFORMERS—50-60 Hz

| Triad No. | VA Output | Input Volts | Output Volts | Case Size, In. H. x W. x D. | Net Each* |
|---|---|---|---|---|---|
| 18X | 15 | 115 | 115 | 1 15/16 x 3 3/16 x 2 | $ 4.15 |
| 51X† | 35 | 115 | 115 | 2 9/32 x 3 11/16 x 2⅛ | 5.18 |
| 8X | 50 | 115/230‡ | 115 | 2 9/32 x 3 11/16 x 2⅛ | 5.70 |
| 3M | 85 | 115 | 115 | 3 19/32 x 2 21/32 x 3⅝ | 12.64 |
| 4M | 150 | 115 | 115 | 3⅞ x 3 9/32 x 4¼ | 15.39 |
| 3A | 150 | 115 | 115/230‡ | 3⅞ x 3 9/32 x 4 | 13.35 |
| 4A | 150 | 115 | 57.5/115‡ | 3⅞ x 3 9/32 x 4 | 13.29 |
| 7A | 150 | 115/230‡ | 115 | 3⅞ x 3 9/32 x 4⅛ | 13.37 |
| 5M# | 250 | 115 | 115 | 4⅝ x 3 15/16 x 5 | 27.06 |
| 6A | 250 | 115/230‡ | 115 | 4⅝ x 3 15/16 x 4⅝ | 17.82 |
| 7M# | 500 | 115 | 115 | 5 5/16 x 4½ x 6¼ | 63.23 |
| 9M# | 1000 | 115 | 115 | 5 5/16 x 4½ x 8 | 70.51 |
| 6M*† | 150 | 95–130§ | 115 | 4⅝ x 3 15/16 x 5⅜ | 41.29 |
| 2M* | 350 | 95–130§ | 115 | 4⅝ x 3 15/16 x 7¾ | 68.41 |
| 69A† | 50 | 220/440‡ | 115 | 3 3/16 x 2 21/32 x 2½ | 7.55 |
| 70A† | 150 | 220/440‡ | 115 | 3⅞ x 3 9/32 x 3⅝ | 12.22 |
| 71A† | 300 | 220/440‡ | 115 | 4⅝ x 3 15/16 x 4⅜ | 20.49 |

ith cord, switch and meter for primary voltage control. †60 Hz.
lit winding. §5-volt steps. #Also available with 3-wire cord,
g and socket (MG).

### "SPLATTER" CHOKES

| lad lo. | Inductance, Henries | Cur., mA | Res., Ohms | Size, Inches H. x W. x D. | Net Each* |
|---|---|---|---|---|---|
| 6X | .2 to 1.5* | 100 | 95 | 1 15/16 x 3 5/16 x 2 | $3.55 |
| 3X | .05 to 1* | 300 | 40 | 2 19/32 x 4 x 2¼ | 4.77 |

pped; inductance tolerance, −20% +50%.

**e: Last letter(s) of Triad No. indicates case style.**

### ★QUANTITY DISCOUNTS

, Net; 10–24, 10%; 25–49, 19%; 50–99, 25%; 100–249, 28¾%;
up, 32½%.

### STEPDOWN AUTOFORMERS—50-60 Hz

| Triad No. | VA Output | Input Volts | Output Volts | Size, Inches H. x W. x D. | Net Each* |
|---|---|---|---|---|---|
| N-1X | 50 | 230 | 115 | 2 9/32 x 3 11/16x 2 | $ 4.23 |
| N-3M | 85 | 230 | 115 | 3 19/32x 2 21/32x 2⅞ | 10.09 |
| N-4M | 150 | 230 | 115 | 3 19/32x 2 21/32x 3⅝ | 11.75 |
| N-5M§ | 250 | 230 | 115 | 3⅞ x 3 9/32 x 4¼ | 15.13 |
| N-7M§ | 600 | 230 | 115 | 4⅝ x 3 15/16x 5 | 27.57 |
| N-9M§ | 1250 | 230 | 115 | 5 5/16 x 4½ x 6¼ | 61.33 |
| N-11M | 2000 | 230 | 115 | 5 5/16 x 4½ x 8 | 69.68 |
| N-34X | 150 | 0/95/105/115/125/135 | 115 | 2 19/32x 4 x 2¼ | 6.37 |
| N-35M* | 250 | 95–130‡ | 115 | 4¼ x 3 19/32x 5 | 24.13 |
| N-50M† | 500 | 95–130‡ | 115 | 4⅝ x 3 15/16x 5¼ | 53.62 |

*M case with switch for primary voltage control; detachable cord. †With switch and meter for primary voltage control; detachable cord. ‡5-volt steps. §Also available with 3-wire cord, plug and socket (MG).

### DC TO DC CONVERTER TRANSFORMERS

For use in blocking oscillator type power supplies where small size, high voltage and low power are required.

| Triad No. | Typical Operation Input | Typical Operation Output | Net Each* |
|---|---|---|---|
| TY-200X | 3 VDC at 20 mA | 1050 VDC at 25 μA | $8.38 |
| TY-201TZ | 4 VDC at 15 mA | 500 VDC at 50 μA | 5.63 |
| TY-202X | 4 VDC at 45 mA | 550 VDC at 80 μA | 6.10 |

### VOLTAGE STABILIZERS

Input: 95–130 v. 60 Hz. Output: 117 v., 118 v. normal harmonic.

| | |
|---|---|
| **Triad No. K-100**—30 VA. Net Each.................. | $ 26.45* |
| **Triad No. K-101**—60 VA. Net Each.................. | 32.45* |
| **Triad No. K-102**—120 VA. Net Each.................. | 43.35* |
| **Triad No. K-103**—250 VA. Net Each.................. | 63.70* |
| **Triad No. K-104**—500 VA. Net Each.................. | 99.75* |
| **Triad No. K-105**—750 VA. Net Each.................. | 114.50* |
| **Triad No. K-106**—1000 VA. Net Each.................. | 165.90* |

### 400 Hz FILTERS—SOURCE IMP., 10K-OHM

| No. | Application | Load Imp. | Case Key• | Net Ea.* |
|---|---|---|---|---|
| FL-381 | Bandpass | 1 Meg | GP-4 | $43.90 |
| FL-389 | Band rej. | 10 kΩ | EA | 41.39 |

•See case size table listed elsewhere in this section.

### MINIATURE BANDPASS FILTERS (EPOXY MOLDED)

Source and load imp., 47 kΩ. Insertion loss, less than 3 dB at $f_o$. Attenuation ($f_o$ ±15%): Less than 1 dB, pass band; over 20 dB, below .15 x $f_o$; over 30 dB, above 2 x $f_o$. 1.562" x 1.375" x .75" h.

| Triad No. | IRIG Chan. No. | Center Freq., $f_o$ | Net Each* | Triad No. | IRIG Chan. No. | Center Freq., $f_o$ | Net Each* |
|---|---|---|---|---|---|---|---|
| FL-384 | A | 22 kHz | $62.25 | FL-387 | D | 52.5 kHz | $61.42 |
| FL-385 | B | 30 kHz | 61.42 | FL-388 | E | 70 kHz | 63.62 |
| FL-386 | C | 40 kHz | 61.42 | | | | |

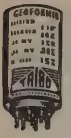
### SMOOTHING FILTER REACTORS

| Triad No. | Induct., Henries* | Current mADC | Resist., Ohms | Size, Inches H. x W. x D. | Net Each* |
|---|---|---|---|---|---|
| C-30X | 50 | 15 | 3500 | 1⅜ x2⅜ x1½ | $ 3.09 |
| C-2X | 2 | 15 | 70 | 1 3/16 x2 1/16 x1¼ | 2.14 |
| C-1X | 15 | 20 | 1000 | 1 3/16 x2 1/16 x1¼ | 2.41 |
| C-3X | 10 | 50 | 500 | 1⅝ x2 13/16x1½ | 2.84 |
| C-4X | 4 | 50 | 360 | 1⅜ x2⅜ x1⅜ | 2.42 |
| C-6X | 5 | 65 | 330 | 1⅝ x2 13/16x1½ | 2.74 |
| C-5X | 12 | 75 | 390 | 1 15/16x3 5/16 x1¾ | 3.47 |
| C-8X | 7 | 75 | 240 | 1 15/16x3 5/16 x1¾ | 3.36 |
| C-7X | 10 | 90 | 270 | 1 15/16x3 5/16 x2 | 3.76 |
| C-9X | 4 | 90 | 100 | 1 15/16x3 5/16 x1¾ | 3.32 |
| C-11X | 6 | 110 | 160 | 2 9/32 x3 11/16x2 | 4.59 |
| C-10X | 9 | 125 | 250 | 2 9/32 x3 11/16x2 | 4.54 |
| C-12X | 6 | 160 | 165 | 2 9/32 x3 11/16x2⅛ | 4.70 |
| C-12A | 6 | 160 | 165 | 2 25/32x2 11/32x2½ | 6.67 |
| C-13X | 3 | 160 | 75 | 2 9/32 x3 11/16x2⅛ | 4.42 |
| C-14X | 6 | 200 | 150 | 2 19/32x4 x2¼ | 5.37 |
| C-14A | 6 | 200 | 150 | 3 3/16 x2 21/32x2⅝ | 7.45 |
| C-16A | 10 | 200 | 150 | 3½ x2 31/32x3½ | 9.77 |
| C-21X | 1.5 | 225 | 65 | 1 15/16x3 5/16 x1¾ | 3.22 |
| C-15X | 4 | 250 | 100 | 2 19/32x4 x2¼ | 5.22 |
| C-15A | 4 | 250 | 100 | 3 3/16 x2 21/32x2⅝ | 7.19 |
| C-23X | 1.2 | 260 | 45 | 1 15/16x3 5/16 x2 | 3.89 |
| C-24X | 1 | 240 | 50 | 1⅝ x2 13/16x1½ | 2.71 |
| C-27X | .7 | 290 | 30 | 1⅝ x2 13/16x1½ | 2.46 |
| C-36X | .5 | 300 | 30 | 1⅜ x2⅜ x1½ | 2.41 |
| C-17X | 1.5 | 300 | 40 | 2 9/32 x3 11/16x2 | 3.97 |
| C-18A | 8 | 300 | 90 | 3⅞ x3 9/32 x3⅞ | 11.75 |
| C-19A | 10 | 300 | 105 | 4¼ x3 19/32x4⅛ | 15.04 |
| C-25A | 2.6 | 310 | 44 | 3 3/16 x2 21/32x3⅛ | 8.32 |
| C-42AL | 8 | 350 | 105 | 4⅝ x3 15/16x4⅛ | 15.35 |
| C-34X | .6 | 350 | 35 | 1⅝ x2 13/16x1½ | 2.51 |
| C-28X | 1 | 350 | 35 | 1 15/16x3 5/16 x2 | 3.47 |
| C-29X | 1.5 | 375 | 50 | 2 9/32 x3 11/16x2 | 4.07 |
| C-50X | 2 | 400 | 40 | 2 19/32x4 x2¼ | 6.26 |
| C-20A | 6 | 400 | 60 | 4⅝ x3 15/16x4½ | 17.40 |
| C-22A | 10 | 500 | 65 | 5 5/16 x4½ x5⅛ | 29.67 |
| C-45AL | 10 | 500 | 65 | 5 5/16 x4½ x5⅛ | 31.32 |
| C-40X | .32 | 600 | 10 | 1 15/16x3 5/16 x2 | 3.37 |
| C-47U | .3/.075† | 1A/2A | 3/0.75 | 3½ x2⅞ x3 3/16 | 9.35 |
| C-56U | .035 | 2.0 | .75 | 2¼ x2⅝ x2 | 5.79 |
| C-48U | .08/.02† | 2.5A/5A | .61/.155 | 3 13/16x3 3/16 x3 9/16 | 12.00 |
| C-57U | .025 | 4.0 | .55 | 3⅛ x3⅜ x2¼ | 7.27 |
| C-49U | .032/.008† | 5A/10A | .19/.05 | 4¼ x3½ x3⅝ | 18.64 |
| C-58U | .01 | 8.0 | .15 | 3⅛ x3¾ x3 | 11.09 |
| C-59U | .01 | 12.5 | .10 | 3½ x4⅛ x3 | 13.04 |
| C-80U | .024/.006† | 20A/40A | .1/.025 | 5 5/16 x4 9/16 x5½ | 49.68 |
| C-60U | .005 | 22.5 | .06 | 3¾ x4½ x4⅝ | 21.67 |

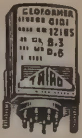
*Inductance tolerance, −20%+50%. †Split winding.

# Geoformers and Toroids

## GEOFORMERS



Designed to meet the peculiar conditions developed in geophysical recording equipment; approach linear response 5-2000 Hz with gradual attenuation above 2000 Hz. Inductances held within ±5% of standard. "Climatite" improved vacuum impregnation. GP-1 and AF-1 cases are min. and subminiature units.



### GEOFORMER REACTORS

| Triad No. | Inductance, Henries at 100 mV | "Q" at 60 Hz | DC Ohms | Case Key‡ | Net Each* |
|---|---|---|---|---|---|
| G-80 | 1050†-800†-550†-400†-280† | 11 | 13,000 | GP-2K | $31.32 |
| G-183 | 1050†-800†-550†-400†-280†-245†-153†-133†-80†-68†-45† | 9 | 11,500 | GP-1E | 29.41 |
| G-284 | 1000†-250* | 9 | 13,000 | GP-1G | 24.57 |
| G-285 | 500†-125* | 9 | 10,500 | GP-1G | 20.00 |
| G-388 | 1000 | 9 | 12,000 | AF-1 | 16.34 |
| G-394 | 100 | 9 | 1,950 | AF-1 | 14.02 |

### INTERSTAGE GEOFORMERS

| Triad No. | Impedance, Ohms |  | Pri. Hys.# | Case Key‡ | Net Each* |
|---|---|---|---|---|---|
|  | Primary | Secondary |  |  |  |
| G-31I | 10,000†-2500* | 100,000†-25,000* | 350 | GP-2K | $25.69 |
| G-32I | 10,000†-2500* | 100,000†-25,000* | 350 | GP-4T | 32.74 |
| G-33I | 10,000†-2500* | 90,000†-22,500* | 725 | GP-3P | 30.79 |
| G-36 | 10,000†-2500* | 22,500†-5625* | 135 | GP-1D | 19.79 |
| G-40I | 10,000†-2500* | 483,000†-120,700* | 230 | GP-3P | 29.86 |
| G-40TSI | 10,000†-2500* | 483,000†-120,700* | 230 | GP-5W | 37.27 |
| G-48 | 1000†-250* | 250†-62½* | 18 | GP-1D | 18.40 |
| G-48TS | 1000†-250* | 250†-62½* | 18 | GP-3P | 26.69 |
| G-135 | 10,000†-2500* | 75,000†-18,750* | 300 | GP-1D | 24.02 |
| G-235 | 10,000†-2500* | 75,000†-18,750* | 300 | GP-1F | 24.17 |
| G-335 | 10,000†-2500* | 75,000† CT | 80 | AF-1 | 20.00 |
| G-336 | 10,000†-2500* | 22,500† CT | 160 | AF-1 | 19.74 |
| G-435 | 10,000†-2500* | 90,000† CT | 285 | GP-1F | 23.89 |
| G437I | 10,000†-2500* | 22,500* CT | 375 | GP-1F | 23.52 |

### OUTPUT GEOFORMERS

|  |  |  |  |  |  |
|---|---|---|---|---|---|
| G-51 | 15,500†-3750* | 500†-125* | 915§ | GP-2K | $22.02 |
| G-51A | 15,500†-3750* | 500†-125* | 65§ | GP-2K | 22.62 |
| G-53 | 16,000†-4000* | 500†-333-233-200†-125*-67½†-50*-17* | 1600§ | GP-3P | 29.02 |
| G-53A | 16,000†-4000* | As above | 94§ | GP-3P | 20.80 |
| G-54 | 20,000†-5000* | 60†-45-30†-24-15*-7½*-5†-1.3* | 1750§ | GP-3P | 28.79 |
| G-59 | 600†-150* | 600†-150* | 15§ | GP-4T | 31.39 |
| G-57 | 18,000 CT | 500†-333-233-200†-125*-67½†-50*-17* | 280§ | GP-1D | 19.62 |
| G-64 | 500-125 | 500-125 | 3§ | GP-1D | 17.40 |
| G-65 | 500-125 | 16-4 | 3§ | GP-1D | 17.40 |
| G-150 | 15,000† CT | 16†-12.8†-6½-4*-2*-1⅓†-.35* | 1000§ | GP-1D | 19.60 |
| G-250 | 15,000† CT | 16†-12-8†-6½-4*-2*-1½†-.35* | 1000§ | GP-1F | 22.19 |
| G-255 | 15,000† CT | 60†-45-30†-24-15*-7½-5†-1.3* | 1000§ | GP-1F | 23.10 |
| G-455 | 20,000†-5000* | 50†-25-12.5-3 | 1450§ | GP-1F | 23.07 |

### AVC OUTPUT GEOFORMERS

|  |  |  |  |  |  |
|---|---|---|---|---|---|
| G-266 | 10,000†-2500* | 10,000† CT-10,000† | 150§ | GP-1F | $26.61 |
| G-274 | 15,000† CT | 240,000† CT-140†-35* | 200§ | GP-1F | 26.17 |

### LOW FREQUENCY TRANSISTOR GEOFORMERS

| Triad No.I | Impedance, Ohms |  | Min. Pri. Ind.• | Frequency Res., Hz at 5 mA DC Sec. Cur.■ | Net Each* |
|---|---|---|---|---|---|
|  | Primary | Secondary |  |  |  |
| G-18▲ | 1K or 250 | 125 or 31 | 60 | −3 db, 7-20,000 | $23.49 |
| G-19‡ | 1K or 250 | 1K or 250 | 65 | −3 db, 20-7,000 | 25.11 |
| G-30▲ | 1000 CT | 2500 CT | 20 | −3 db, 70-8,000 | 18.00 |

*Balanced, parallel windings. †Balanced two windings. #At 10 mV. §At 100 mV, 60 Hz. •Henries at 100 mV, 60 Hz with no unbalanced DC cur. ■Pri. signal of 1 V; freq. resp. slightly better with lower cur. IStatic shield. Case: ▲GP-1F; ‡GP-2L1.

### ‡CASE SIZE

| Type | H. x W. x D. | Type | H. x W. x D. |
|---|---|---|---|
| AF-1 | 1½" x ¾" x ¾" | GP-3P | 2⅜" x 1¹⁵⁄₃₂" x 1¼" |
| GP-1D | 1¹¹⁄₁₆" x 1⁷⁄₃₂" x ⅞" | GP-3R | 2⅜" x 1½" x 1¼" |
| GP-1E | 1¹³⁄₁₆" x 1⁷⁄₃₂" x ⅞" | GP-3S | 2¹⁄₃₂" x 1½" x 1¼" |
| GP-1F | 1¹¹⁄₁₆" x 1¹⁄₁₆" x ⅞" | GP-4T | 2½" x 1¾" x 1⁷⁄₁₆" |
| GP-1G | 1¹³⁄₁₆" x 1¹⁄₁₆" x ⅞" | GP-5S | 2¾" x 2" x 1⅝" |
| GP-2K | 2¼" x 1¹³⁄₃₂" x 1¹⁄₁₆" | GP-5W | 2¾" x 2" x 1⅝" |
| GP-2L | 2⅛" x 1¼" x 1¹⁄₁₆" |  |  |

### ★QUANTITY DISCOUNTS

1–9, Net; 10–24, 10%; 25–49, 19%; 50–99, 25%; 100–249, 28¾%; 250 up, 32½%.

### INPUT GEOFORMERS

| Triad No.§ | Impedance, Ohms |  | Pri. Hys.# | Case Key‡ | Net Each* |
|---|---|---|---|---|---|
|  | Primary | Secondary |  |  |  |
| G-2 | 500†-333-233-200†-125*-67½†-50*-17* | 157,000†-39,250* | 8.7 | GP-4T | $33.61 |
| G-4 | 60†-44-30†-25-15*-7½*-5†-1.25* | 157,000†-39,250* | .9 | GP-4T | 33.44 |
| G-5 | 1000†-666-466-400†-250*-135†-100*-34* | 137,000†-34,250* | 55 | GP-3P | 31.77 |
| G-5TS | As above | As above | 55 | GP-5W | 28.90 |
| G-7 | 500†-333-233-200†-125*-67½†-50*-17* | 315,000†-78,750* | 11.5 | GP-3P | 31.69 |
| G-8 | As above | As above | 11.5 | GP-5W | 39.22 |
| G-10 | 500†-333-233-200†-125*-67½†-50*-17* | 712,000†-178,000* | 8 | GP-5W | 39.99 |
| G-12 | 500†-125* | 50,000† CT | 10 | GP-2L | 27.84 |
| G-14TS | 500†-333-233-200†-125*-67½†-50*-17* | 450,000† CT | 6.8 | GP-4T | 32.74 |
| G-17 | 200†-50* | 442,000† CT | 4 | GP-3R | 38.84 |
| G-101 | 500†-333-233-200†-125*-67½†-50*-17* | 145,000† CT | 8.3 | GP-1D | 26.22 |
| G-101TS | As above | As above | 8.3 | GP-3R | 32.67 |
| G-202 | 500†-125* | 392,000† CT | 8.3 | GP-1F | 26.21 |
| G-301 | 500†-125* | 145,000† CT | 3 | AF-1 | 20.82 |
| G-306 | 500†-125* | 60,000† CT | 7 | AF-1 | 21.40 |
| G-313 | 500†-125* | 36,000† CT | 10.5 | AF-1 | 21.77 |
| G-315 | 500†-125* | 114,000† CT | 5.2 | AF-1 | 21.57 |
| G-401 | 500†-125* | 157,000† CT | 8 | GP-1F | 19.60 |

*Bal. parallel windings. †Bal. two windings. #At 10 mV, 60 Hz. §Static shield.

## TOROIDS

**Numbers indicate mH ratings. Tolerance, ±2% unless noted.**

### TYPES EA, EC AND EK

| EA- | mA* | Net* | EC- | mA* | Net* | EK- | mA* | Net* |
|---|---|---|---|---|---|---|---|---|
| 001 | 270 | $3.28 | 001 | 520 | $3.60 | 010 | 262 | $5.70 |
| 002 | 192 | 3.32 | 002 | 368 | 3.63 | 020 | 185 | 5.73 |
| 003 | 157 | 3.33 | 003 | 300 | 3.67 | 030 | 150 | 5.77 |
| 004 | 135 | 3.35 | 004 | 260 | 3.70 | 040 | 130 | 5.82 |
| 005 | 121 | 3.37 | 005 | 233 | 3.73 | 060 | 106 | 5.93 |
| 007 | 102 | 3.37 | 007 | 195 | 3.78 | 080 | 92 | 5.98 |
| 010 | 86 | 3.38 | 010 | 165 | 3.83 | 100 | 82 | 5.92 |
| 015 | 70 | 3.40 | 015 | 134 | 3.88 | 120 | 75 | 6.13 |
| 020 | 60 | 3.42 | 020 | 116 | 3.93 | 150 | 67 | 6.20 |
| 025 | 54 | 3.47 | 030 | 95 | 3.98 | 200 | 58 | 6.27 |
| 030 | 50 | 3.47 | 040 | 82 | 4.03 | 250 | 52 | 6.40 |
| 040 | 43 | 3.50 | 050 | 74 | 4.08 | 300 | 47 | 6.57 |
| 050 | 38 | 3.50 | 070 | 62 | 4.13 | 400 | 41 | 6.70 |
| 070 | 32 | 3.57 | 100 | 52 | 4.18 | 500 | 37 | 6.77 |
| 100 | 27 | 3.62 | 200 | 37 | 4.27 | 700 | 31 | 6.85 |
| 150 | 22 | 3.75 | 250 | 33 | 4.33 | 1000 | 26 | 7.15 |
| 200 | 19 | 3.80 | 300 | 30 | 4.40 | 1500 | 21 | 7.05 |
| 250 | 17 | 3.83 | 400 | 26 | 4.50 | 2000 | 18.4 | 7.08 |
| 300 | 16 | 3.88 | 500 | 23 | 4.60 | 2500 | 16.5 | 7.15 |
| 400 | 14 | 3.97 | 700 | 19.5 | 4.75 | 3000 | 15 | 7.25 |
| 500 | 12 | 4.08 | 1000 | 16.5 | 4.85 | 4000 | 13 | 7.35 |
| 600 | 11 | 4.17 | 1500 | 13.5 | 4.90 | 5000 | 11.6 | 7.47 |
| 700 | 10 | 4.25 | 2000 | 11.6 | 5.00 | 7000 | 9.8 | 7.58 |
| 1000 | 8.6 | 4.35 | 3000 | 9.5 | 5.10 | 10000 | 8.2 | 7.74 |
|  |  |  | 4000 | 8.2 | 5.18 | 20000 | 5.8 | 7.87 |
|  |  |  | 5000 | 7.4 | 5.25 | 30000 | 4.7 | 8.28 |
|  |  |  | 7000 | 6.2 | 5.35 | 40000 | 4.1 | 8.44 |
|  |  |  | 10000 | 5.2 | 5.42 |  |  |  |

**SIZES**

EA: 1" dia. x ⅜" h.
EC: 1¼" dia. x ⅝" h.
EK: 1¹⁵⁄₁₆" dia. x ⅞" h.

### TYPE EM (¾" dia. x ⅜" h.)

| EM- | mA* | Net* | EM- | mA* | Net* | EM- | mA* | Net* |
|---|---|---|---|---|---|---|---|---|
| 001 | 150 | $3.92 | 020 | 34 | $4.30 | 150 | 12.5 | $4.73 |
| 002 | 108 | 3.93 | 025 | 30 | 4.38 | 200 | 11 | 4.83 |
| 003 | 87 | 3.95 | 030 | 27.6 | 4.45 | 250 | 9.6 | 4.88 |
| 004 | 76 | 3.98 | 040 | 24 | 4.50 | 300 | 8.8 | 4.93 |
| 005 | 68 | 4.03 | 050 | 22 | 4.53 | 400 | 7.6 | 4.98 |
| 007 | 57 | 4.08 | 060 | 19.5 | 4.55 | 500 | 7 | 5.03 |
| 010 | 48 | 4.15 | 070 | 18 | 4.60 | 700 | 5.8 | 5.10 |
| 015 | 39 | 4.23 | 100 | 15 | 4.65 | 1000 | 4.8 | 5.15 |

### TYPE ET (1¼" dia. x ⅝" h.)

| ET- | mA* | Net* | ET- | mA* | Net* | ET- | mA* | Net* |
|---|---|---|---|---|---|---|---|---|
| 001 | 680 | $4.47 | 020 | 153 | $4.65 | 150 | 56 | $4.97 |
| 002 | 480 | 4.50 | 025 | 137 | 4.70 | 200 | 48 | 5.00 |
| 003 | 396 | 4.52 | 030 | 125 | 4.73 | 250 | 43 | 5.02 |
| 004 | 342 | 4.53 | 040 | 108 | 4.80 | 300 | 40 | 5.05 |
| 005 | 306 | 4.57 | 050 | 97 | 4.85 | 400 | 34 | 5.07 |
| 007 | 260 | 4.60 | 060 | 88 | 4.90 | 500 | 31 | 5.10 |
| 010 | 217 | 4.62 | 070 | 82 | 4.92 | 700 | 26 | 5.10 |
| 015 | 177 | 4.63 | 100 | 68 | 4.93 | 1000 | 22 | 5.13 |

Molded toroids with gold plated fixed terminals available; add suffix A. Prices on request.

### TYPE EX SUBMINIATURE ENCAPSULATED

Size, ⁷⁄₁₆" dia. x ¼" h. Per MIL-T-27B, Grade 5 Class S.

| EX- | mA | Net* | EX- | mA | Net* | EX- | mA | Net* |
|---|---|---|---|---|---|---|---|---|
| P05A† | 75 | $7.65 | 003A | 60 | $7.25 | 040A | 15 | $ 8.35 |
| P10A‡ | 75 | 7.65 | 005A | 47 | 7.25 | 050A | 14 | 8.35 |
| P20A§ | 75 | 7.65 | 006A | 43 | 7.25 | 060A | 12 | 9.20 |
| P30A# | 75 | 7.65 | 008A | 37 | 7.25 | 100A | 10 | 12.50 |
| P50A▲ | 75 | 7.65 | 010A | 33 | 7.25 | 120A | 8 | 9.20 |
| P60A | 75 | 7.65 | 012.5A | 30 | 7.65 | 200A | 6 | 10.35 |
| 001A | 75 | 8.00 | 015A | 27 | 7.65 | 300A | 5 | 11.05 |
| 001.5A | 60 | 8.00 | 020A | 23 | 7.65 | 400A | 4.5 | 11.05 |
| 002A | 60 | 8.00 | 025A | 21 | 7.65 |  |  |  |
| 002.5A | 60 | 7.25 | 030A | 19 | 7.65 |  |  |  |

*DC; for 5% inductance drop. †50 µH; ‡100 µH; §200 µH; #300 µH; ▲500 µH; ±5% tolerance.

# DIV. OF TRW TRANSFORMERS AND INDUCTORS

## DESIGNED, MANUFACTURED AND SUCCESSFULLY TESTED TO MIL-T-27C

### -T★ AND DI-T★ TRANSISTOR TRANSFORMERS

DO-T DI-T

Subminiature transistor transformers are designed, manufactured and tested to MIL-T-27C specifications. Leads are plastic insulated; withstand 10-lb. pull. Ideal for printed circuit use. High efficiency, low distortion and wide frequency range. Metal case. **Size:** 5/16" dia. x 13/32" lg., DO-T; 5/16" dia. x 1/4" lg., DI-T. U.S. Pat. No. 2,949,591; others pending.

| TC ype• | Ea., 1-4 | †† | Pri. Imped., Ohms, mADC | Sec. Imped., Ohms | UTC Type▲ | Ea., 1-4 |
|---|---|---|---|---|---|---|
| -T1 | $7.96 | a | 20K/30K, 0.5 | 800/1200 | DI-T1 | $7.96 |
| -T2 | 7.17 | b | 500/600, 3 | 50/60 | DI-T2 | 7.17 |
| -T3 | 7.17 | b | 1K/1.2K, 3 | 50/60 | DI-T3 | 7.17 |
| -T4 | 7.17 | b | 600, 3 | 3.2 | ....... | ..... |
| -T5 | 7.17 | b | 1.2K, 2 | 3.2 | DI-T5 | 7.17 |
| -T6 | 7.96 | b | 10K, 1 | 3.2 | ....... | ..... |
| -T7 | 12.33 | c | 200K | 1K | ....... | ..... |
| -T8 | 6.37 | d* | 3.5 H at 2 | 2.5 H‡‡ | DI-T8 | 6.37 |
| -T9 | 8.77 | e | 10K/12K, 1 | 500/600 CT | DI-T9 | 8.77 |
| -T10 | 8.77 | f | 10K/12.5K, 1 | 1.2K/1.5K CT | DI-T10 | 8.77 |
| -T11 | 8.77 | f | 10K/12.5K, 1 | 2K/2.5K CT | DI-T11 | 8.77 |
| -T12 | 7.58 | b | 150/200 CT, 10 | 12/16 | ....... | ..... |
| -T13 | 7.58 | b | 300/400 CT, 7 | 12/16 | ....... | ..... |
| -T14 | 7.96 | b | 600/800 CT, 5 | 12/16 | ....... | ..... |
| -T15 | 7.96 | b | 800/1070 CT, 4 | 12/16 | ....... | ..... |
| -T16 | 7.96 | b | 1K/1330 CT, 3.5 | 12/16 | ....... | ..... |
| -T17 | 7.96 | b | 1.5K/2K CT, 3 | 12/16 | ....... | ..... |
| -T18 | 8.36 | b | 7.5K/10K CT, 1 | 12/16 | ....... | ..... |
| -T19 | 7.96 | b | 300 CT, 7 | 600 | DI-T19 | 7.96 |
| -T20 | 7.96 | b | 500 CT, 5.5 | 600 | DI-T20 | 7.96 |
| -T21 | 7.96 | b | 900 CT, 4 | 600 | DI-T21 | 7.96 |
| -T22 | 7.96 | b | 1500CT, 3 | 600 | DI-T22 | 7.96 |
| -T23 | 9.16 | a | 20K/30K CT,.5 | 0.8K/1.2K CT | DI-T23 | 9.16 |
| -T24 | 13.14 | c | 200K CT | 1K CT | ....... | ..... |
| -T25 | 9.56 | a | 10K/12K CT, 1 | 1.5K/1.8K CT | DI-T25 | 9.56 |
| -T26 | 7.58 | d† | 6 H at 2 | 4.5 H‡‡ | DI-T26 | 7.58 |
| -T27 | 6.37 | d‡ | 1.25 H at 2 | 0.9 H‡‡ | DI-T27 | 6.37 |
| -T28 | 6.37 | d§ | 0.3 H at 4 | 0.1 H‡‡ | DI-T28 | 6.37 |
| -T29 | 7.58 | b | 120/150 CT, 10 | 3.2/4 | ....... | ..... |
| -T30 | 7.58 | b | 320/400 CT, 7 | 3.2/4 | ....... | ..... |
| -T31 | 7.96 | b | 640/800 CT, 5 | 3.2/4 | ....... | ..... |
| -T32 | 7.96 | b | 800/1K CT, 4 | 3.2/4 | ....... | ..... |
| -T33 | 7.96 | b | 1060/1330 CT,3.5 | 3.2/4 | ....... | ..... |
| -T34 | 7.96 | b | 1.6K/2K CT, 3 | 3.2/4 | ....... | ..... |
| -T35 | 8.36 | b | 8K/10K CT, 1 | 3.2/4 | ....... | ..... |
| -T36 | 9.97 | a | 10K/12K CT, 1 | 10K/12K CT | DI-T36 | 9.97 |
| -T37 | 10.35 | a | 2K/2.5K CT, 3 | 8K/10K split | DI-T37 | 10.35 |
| -T38 | 10.35 | a | 10K/12K CT, 1 | 2K/2.4K split | DI-T38 | 10.35 |
| -T39 | 10.35 | a | 20K/30K CT, .5 | 1K/1.5K split | ....... | ..... |
| -T40 | 11.14 | a | 40K/50K CT, .25 | 400/500 split | ....... | ..... |
| -T41 | 9.97 | a | 400/500 CT, 8/6 | 400/500 split | DI-T41 | 9.97 |
| -T42 | 9.97 | a | 400/500 CT, 8/6 | 120/150 split | ....... | ..... |
| -T43 | 9.97 | a | 400/500 CT, 8/6 | 40/50 split | DI-T43 | 9.97 |
| -T44 | 9.97 | a | 80/100 CT, 12/10 | 32/40 split | DI-T44 | 9.97 |
| -T45 | 10.35 | a | 1K/1.25K CT,3.5 | 16K/20K split | ....... | ..... |
| -T46 | 12.75 | c■ | 100K CT | 500 CT | ....... | ..... |
| -T47 | 10.76 | a■ | 9K/10K CT, 1 | 9K/10K CT | ....... | ..... |
| -T48 | 10.35 | a■ | 8K/10K CT, 1 | 1.2K/1.5K CT | ....... | ..... |
| -T49 | 10.35 | d# | Series, 20 H at 1 mA, 5.1K ohms; Par., 5 H at 2 mA, 1275 ohms | | ....... | ..... |
| -T50 | 7.58 | d# | Series, .075 H at 10 mA, 10.5 ohms; Par., .018 H at 20 mA, 2.6 ohms | | ....... | ..... |
| -T51 | 10.35 | a | 2K/2.5K CT, 3 | 2K/2.5K split | DI-T51 | 10.35 |
| -T52 | 10.35 | a■ | 4K/5K CT, 2 | 8K/10K CT | DI-T52 | 10.35 |
| -T53 | 10.35 | c | 400/500 CT, 8/6 | 4K/5K CT | DI-T53 | 10.35 |
| -T54 | 11.56 | a | 40K/50K CT, .25 | 4K/5K CT | ....... | ..... |
| -T400 | 8.77 | h | 28 V, 380–1 kHz | 6.3 V, 60 mA I | ....... | ..... |
| -T410 | 10.35 | h | 28 V, 380–1 kHz | Two 6.3 V, 30 mA | ....... | ..... |
| -T420 | 10.35 | h■ | 28 V, 380–1 kHz | 28 V, 10 mA | ....... | ..... |
| -TSH | 1.21 | High mu shield and cover; 25 dB | | | DI-TSH | 1.20 |

) ohms. †2100 ohms. ‡100 ohms. §25 ohms. #Two windings. pplication; **a**—Interstage. **b**—Output. **c**—Input. **d**—Inductor. Driver or output. **f**—Driver. **g**—Matching. **h**—Power unit. **I-T**—Primary impedance. •Wt., 1/10 oz. ▲Wt., 1/20 oz. ■With trostatic shield. IReplaces old No. DO-T500.

### DO-T200★ TRANSISTOR TRANSFORMERS

Rugged, metal case construction uses the same unique winding techniques as that of DO-T above. Hermetically sealed, high efficiency, low distortion and excellent response. Straight 7/8" long leads, .016" d. Dumet wire, gold plated and may be either welded or soldered. Designed, manufactured and successfully tested to MIL-T-27C. **Size:** .350" dia. x 9/16" high. Weight, 1/8 oz. U. S. Pat. No. 2,949,591, others pending.

| JTC Type | Application | Impedance, Ohms Primary | Impedance, Ohms Secondary | Ea., 1-4 |
|---|---|---|---|---|
| T-255 | Outp./match | 1K/1.2K CT | 50/60 | $ 9.16 |
| T-275 | Interstage | 10K/12K CT | 1.5K/1.8K CT | 10.35 |
| T-277 | Interstage | 10K/12K CT | 2K/2.4K split | 11.56 |
| T-278 | Driver | 10K/12.5K | 2K/2.5K CT | 11.56 |
| T-283* | Isol./Inter. | 10K/12K CT | 10K/12K CT | 11.56 |
| T-288 | Interstage | 20K/30K CT | 800/1.2K CT | 11.56 |
| T-297 | Input, Chopper | 200K CT | 1K CT | 14.34 |
| 200SH | Drawn Hipermalloy shield provides 15 to 20 dB shielding through side of case | | | 1.00 |

tio, 1:1.

C trademark.

### I-DO-IT★ AND I-DI-T★ TRANSFORMERS

Industrial versions of DO-T and DI-T (i.e., I-DO-T101 = DO-T1; I-DI-T301 = DI-T1), left. Same performance, but environmental specifications have been relaxed to reduce cost.

| UTC Type I- | Ea., 1-4 | UTC Type I- | Ea., 1-4 | UTC Type I- | Ea., 1-4 | UTC Type I- | Ea., 1-4 |
|---|---|---|---|---|---|---|---|
| DO-T101 | $5.13 | DO-T121 | $5.13 | DO-T141 | $5.66 | DI-T309 | $5.47 |
| DO-T102 | 4.90 | DO-T122 | 5.13 | DO-T142 | 5.66 | DI-T310 | 5.47 |
| DO-T103 | 4.90 | DO-T123 | 5.30 | DO-T143 | 5.66 | DI-T311 | 5.47 |
| DO-T104 | 5.02 | DO-T124 | 9.06 | DO-T144 | 5.66 | DI-T319 | 5.13 |
| DO-T105 | 5.02 | DO-T125 | 5.47 | DO-T145 | 6.15 | DI-T320 | 5.13 |
| DO-T106 | 5.13 | DO-T126 | 4.90 | DO-T146 | 9.30 | DI-T321 | 5.13 |
| DO-T107 | 9.28 | DO-T127 | 4.63 | DO-T147 | 6.27 | DI-T322 | 5.13 |
| DO-T108 | 4.63 | DO-T128 | 4.63 | DO-T148 | 5.78 | DI-T233 | 5.70 |
| DO-T109 | 5.30 | DO-T129 | 5.13 | DO-T149 | 5.78 | DI-T325 | 5.70 |
| DO-T110 | 5.30 | DO-T130 | 5.13 | DO-T150 | 5.13 | DI-T326 | 4.90 |
| DO-T111 | 5.30 | DO-T131 | 5.13 | DO-T151 | 5.70 | DI-T327 | 4.63 |
| DO-T112 | 5.13 | DO-T132 | 5.13 | DO-T152 | 5.70 | DI-T328 | 4.63 |
| DO-T113 | 5.13 | DO-T133 | 5.13 | DO-T153 | 5.70 | DI-T336 | 5.78 |
| DO-T114 | 5.13 | DO-T134 | 5.13 | DO-T154 | 5.86 | DI-T337 | 5.98 |
| DO-T115 | 5.13 | DO-T135 | 5.13 | DO-T155* | 5.86 | DI-T338 | 5.98 |
| DO-T116 | 5.13 | DO-T136 | 5.78 | DI-T301 | 5.13 | DI-T341 | 5.78 |
| DO-T117 | 5.13 | DO-T137 | 5.78 | DI-T302 | 4.90 | DI-T343 | 5.70 |
| DO-T118 | 5.13 | DO-T138 | 5.78 | DI-T303 | 4.90 | DI-T344 | 5.70 |
| DO-T119 | 5.13 | DO-T139 | 5.78 | DI-T305 | 5.02 | DI-T351 | 5.86 |
| DO-T120 | 5.13 | DO-T140 | 6.27 | DI-T308 | 5.02 | DI-T352 | 5.86 |

*No MIL (DO-T) equiv.; pri. and sec., 600 ohms CT; 4 mADC unbalanced primary.

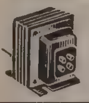
### DI-T200★ TRANSISTOR TRANSFORMERS

Rugged, reliable construction uses the same unique winding techniques and physical construction found in DO-T and DI-T transformers (see listing at left). Specially designed for printed circuit applications, units come with straight pin 1" long, .016" d. Dumet wire, gold-plated leads. Designed, manufactured and successfully tested to MIL-T-27C. Size: 5/16" dia. x 3/8" h. Wt., 1/15 oz. U.S. Pat. No. 2,949,591; others pending.

| UTC Type | Application | Impedance, Ohms Primary | Impedance, Ohms Secondary | Ea., 1-4 |
|---|---|---|---|---|
| DI-T225 | Interstage | 80/100 CT | 32/40 split | $11.14 |
| DI-T230 | Outp./match | 300 CT | 600 CT | 9.56 |
| DI-T235 | Interstage | 400/500 CT | 40/50 split | 11.14 |
| DI-T240* | Inter./outp. | 400/500 CT | 400/500 split | 11.14 |
| DI-T245 | Outp./match | 500/600 CT | 50/60 CT | 9.16 |
| DI-T250 | Oupt./mixing | 500 CT | 600 CT | 9.56 |
| DI-T255 | Outp./match | 1K/1.2K CT | 50/60 CT | 9.16 |
| DI-T260 | Output | 1500 CT | 600 CT | 9.56 |
| DI-T265 | Isol./inter. | 2K/2.5K CT | 8K/10K split | 11.56 |
| DI-T270 | Outp./driver | 10K/12K CT | 500/600 CT | 10.35 |
| DI-T273 | Outp./driver | 10K/12.5K CT | 1.2K/1.5K CT | 10.35 |
| DI-T276 | Inter./driver | 10K/12K CT | 2K/2.4K CT | 10.35 |
| DI-T278 | Inter./driver | 10K/12.5K CT | 2K/2.5K split | 11.56 |
| DI-T283 | Isol./inter. | 10K/12K CT | 10K/12K CT | 11.14 |
| DI-T288 | Inter./driver | 20K/30K CT | 800/1.2K CT | 10.76 |
| DI-T204 | Split inductor: 0.1 H–4 mA, 25 ohms, series; .025 H–8 mA, 6 ohms, parallel | | | 7.96 |
| DI-T208 | Split inductor: 0.9 H–2 mA, 105 ohms, series; 0.2 H–4 mA, 26 ohms, parallel | | | 7.96 |
| DI-T212 | Split inductor: 2.5 H–2 mA, 630 ohms, series; 0.6 H–4 mA, 157 ohms, parallel | | | 7.96 |
| DI-T216 | Split inductor: 4.5 H–2 mA, 2.3K ohms, series; 1.1 H–4 mA, 575 ohms, parallel | | | 9.16 |
| DI-T200SH | Drawn Hipermalloy shield provides 15 to 20 dB shielding through side of case | | | 1.00 |

*Ratio, 2:1:1.

### SIGNALLING AND CONTROL TRANSFORMERS



High power transformers, suitable for operating relays, sirens, horns, etc. from 115 VAC, 50/60 Hz. Primary, 110–120 VAC. Secondary, 4, 8, 12, 16, 20, 24 V. Volt-ampere rating is based on the 24 volt secondary voltage, with corresponding reduction on lower voltages. Primary leads UL Approved. Screw-type binding posts on output.

| UTC Type | Rating, Watts | Size, Inches L. | Size, Inches W. | Size, Inches H. | Mtg. Size, Inches | Wt., Lbs. | Net Ea., 1-4 |
|---|---|---|---|---|---|---|---|
| SC-3 | 50 | 3 | 3 1/16 | 3 9/16 | 1 3/4 x 2 1/4 | 3 | $20.91 |
| SC-4 | 100 | 3 1/4 | 3 7/16 | 4 | 2 1/8 x 2 1/2 | 5 | 25.09 |
| SC-5 | 250 | 4 | 4 5/8 | 4 3/4 | 3 5/16 x 3 | 10 | 32.84 |

### NV★ SERIES INVERTER AND CONVERTER TRANSFORMERS

Hermetically sealed units made to complete MIL-T-27C specifications. Advance winding coupling technique. Reduced spiking assures transistor reliability.

**NV-520**—Net Ea., 1–4...$49.78; **NV-530**—Net Ea., 1–4...$50.95
**NV-720**—Net Ea., 1–4... 48.96; **NV-730**—Net Ea., 1–4... 56.92
**NV-920**—Net Ea., 1–4... 47.77

| UTC Type | Freq. (kHz) | Full Wave Bridge Amps at 81 V* | 64.5 V* | 57 V* | 48 V* | 40.5 V* | 33 V* | 24 V* | 16.5 V* | Full Wave CT Amps at 81 V* | 48 V* | 33 V* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NV-520 | 10 | .4 | .45 | .5 | .55 | .8 | .6 | 1.05 | 1.2 | .55 | .65 | .85 |
| NV-530 | 10 | .8 | .9 | 1 | 1.1 | 1.6 | 1.2 | 2.1 | 2.4 | 1.1 | 1.3 | 1.7 |
| NV-720 | 20 | .55 | .6 | .65 | .70 | 1.1 | .8 | 1.3 | 1.6 | .70 | .85 | 1.05 |
| NV-730 | 20 | 1.1 | 1.2 | 1.3 | 1.4 | 2.2 | 1.60 | 2.6 | 3.2 | 1.4 | 1.7 | 2.1 |
| NV-920 | 50 | 1.0 | 1.1 | 1.2 | 1.3 | 2 | 1.5 | 2.5 | 3.0 | 1.3 | 1.55 | 2.0 |

*Zero to peak volts.

**SEE LAST TWO PAGES OF UTC LISTING FOR MILITARY SPECIFICATIONS**

©United Transformer Co., Div. of TRW Inc., N.Y., N.Y., 1971

# DIV. OF TRW TRANSFORMERS AND INDUCTORS

## DESIGNED, MANUFACTURED AND SUCCESSFULLY TESTED TO MIL-T-27C

### FILAMENT, POWER, PLATE TRANSFORMERS

Primary 105/115/125 V, 54/66 Hz. Current ratings are for high voltage secondary DC, choke input filter. For condenser input, reduce by 70%. All units are MIL grade 4, ruggedized; equally usable where grade 1 is specified. Electrostatically shielded. Designed, manufactured and tested to MIL-T-27C specifications.

| UTC Type | MS No. | MIL Type TF4RX- | Secondary Rating | MIL Case | Net Ea., 1-4 |
|---|---|---|---|---|---|
| N-583A | 90016-2 | 01EB022 | 2.5 V–3 A; 1000 WV | EB | $56.70 |
| N-584A | 90017-2 | 01GB003 | 2.5 V–10 A; 1000 WV | GB | 60.30 |
| N-585A | 90018-2 | 01FB004 | 5 V–3 A; 1000 WV | FB | 23.88 |
| N-586A | 90019-2 | 01HB005 | 5 V–10 A; 1000 WV | HB | 31.85 |
| N-587A | 90020-2 | 01FB006 | 6.3 V–2 A; 1000 WV | FB | 25.09 |
| N-588A | 90021-2 | 01GB007 | 6.3 V–5 A; 1000 WV | GB | 26.28 |
| N-589A | 90022-2 | 01JB008 | 6.3 V–10 A; 1000 WV | JB | 28.87 |
| N-590A | 90023-2 | 01KB009 | 6.3 V–20 A; 1000 WV | KB | 39.82 |
| N-591A | 90024-2 | 01JB012 | 2.5 V–10 A; 6300 WV | JB | 74.25 |
| N-592A | 90025-2 | 01KB013 | 5 V–10 A; 6300 WV | KB | 55.50 |
| N-593A | 90026-2 | 03HA001 | 200–100–0–100–200, 70 mA, 6.3/5 V–2 A; 6.3 V–3 A | HA | 91.80 |
| N-594A | 90027-2 | 03JB002 | 325–0–325, 70 mA; 6.3–5 V–2 A; 6.3 V–4 A | JB | 97.20 |
| N-595A | 90028-2 | 03KB006 | 325–0–325, 150 mA; 5 V–3 A; 6.3 V–5 A | KB | 108.00 |
| N-596A | 90029-2 | 03LB003 | 400–0–400, 175 mA; 5 V–3 A; 6.3 V–8 A | LB | 130.05 |
| N-597A | 90030-2 | 03MB004 | 450–0–450, 250 mA; 5 V–3 A; 6.3 V–8A | MB | 153.00 |
| N-598A | 90031-2 | 02KB001 | 350–0–350, 250 mA | KB | 87.75 |
| N-599A | 90032-2 | 02LB002 | 550–0–550, 250 mA | LB | 51.76 |
| N-600A | 90036-2 | 02NB003 | 800–0–800, 250 mA | NB | 144.00 |

### AUDIO TRANSFORMERS

Frequency response 300–10,000 Hz, ±2 dB. Split 600-ohm units provides for 600 ohms CT and 150 ohms. Electrostatic shielding provided on W-784, W-785 and W-786; W-783 has center-tapped secondary for 90K CT or 22.5K CT. All units in AJ case. Wt., 0.6 lb.

| UTC Type | MS No. | MIL Type TF4RX- | * | Primary Imped. Ohms | Primary mADC, Unbal. | Sec. Imped. Ohms | Net Ea., 1-4 |
|---|---|---|---|---|---|---|---|
| W-783 | 90000-A | 15AJ001 | a | 10K CT | 10 | 90K spl. | $57.15 |
| W-784 | 90001-A | 16AJ002 | b | 600 spl. | ........ | 4/8/16 | 25.30 |
| W-785 | 90002-A | 10AJ001 | c | 600 spl. | ........ | 135K CT | 57.15 |
| W-786 | 90003-A | 16AJ001 | d | 600 spl. | ........ | 600 spl. | 23.50 |
| W-787 | 90004-A | 13AJ001 | e | 7.6K/4.8K | 40 | 600 spl. | 21.31 |
| W-788 | 90005-A | 13AJ002 | f | 7.6K/4.8K | 40 | 4/8/16 | 21.70 |
| W-789 | 90006-A | 13AJ003 | g‡ | 15K CT | 10 | 600 spl. | 21.31 |
| W-790 | 90007-A | 13AJ004 | g§ | 24K CT | 20† | 600 spl. | 49.05 |
| W-791 | 90008-A | 13AJ005 | g# | 60K CT | 20† | 600 spl. | 48.15 |

*Use: **a**—PP plates to pp grids, 15 dBm level. **b**—Line to VC, 2 watts. **c**—Line to pp grids, 15 dBm. **d**—Line to line, 15 dBm. **e**—Plate to line, 2 watts. **f**—Plate to VC, 2 watts. **g**—PP plates to line. †Balanced. ‡2 watts. §1 watt. #0.5 watt.

### INDUCTORS

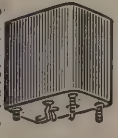
Two windings for series or parallel connection. Inductance shown for series connection. All but Z-857 are standard MIL case types. Rated 3500 WVDC, unless otherwise noted.

| UTC Type | MS No. | MIL Type TF1RX- | Induct. H | mA DC | DCR Ohms | MIL Case | Ea., 1-4 |
|---|---|---|---|---|---|---|---|
| Z-848* | 90009-2 | 04FA001 | 16 | 80 | 645 | FA | $21.90 |
| Z-849* | 90010-2 | 04GA002 | 25 | 80 | 670 | GA | 56.70 |
| Z-850* | 90011-2 | 04HA003 | 40 | 80 | 1020 | HA | 72.00 |
| Z-851† | 90013-2 | 04HA005 | 16 | 125 | 330 | HA | 54.00 |
| Z-852† | 90014-2 | 04JB006 | 25 | 125 | 460 | JB | 79.20 |
| Z-853 | 90037-2 | 04KA007 | 40 | 125 | 535 | KA | 121.50 |
| Z-854 | 75000-2 | 04LA009‡ | 16 | 200 | 180 | LA | 121.50 |
| Z-855 | 75001-2 | 04MA010‡ | 25 | 200 | 210 | MA | 135.00 |
| Z-856 | 75002-2 | 04NA012‡ | 16 | 315 | 105 | NA | 175.50 |
| Z-857 | 75003-2 | 04YY013‡ | 25 | 315 | 150 | YY | 225.00 |

*1000 WVDC. †2000 WVDC. ‡TF4RX- prefix.

### SRC-10★ PRECISION SCOTT-T REFERENCE TRANSFORMER

Used in precise conversion of 3-wire synchro information to equivalent resolver information. Two outputs 90° apart can be utilized in analog and digital computer or coordinate transformation applications. **Input:** 90 V, 60/400 Hz. 3-phase with high impedance suitable for synchro output. **Output:** 2-Phase: Two 3 V at .25 mA. Magnitudes of output voltage matched within 0.25%; phase angle of output voltage is 90° (±.225°). Designed, manufactured and successfully tested to MIL-T-27C, TF4SX09AJ.



**UTC Type SRC-10**—Net Each, 1–4 .................... **$31-85**

**UTC HAS MORE TRANSFORMERS AND FILTERS LISTED ON THE QPL* THAN ALL OTHER MANUFACTURERS COMBINED!**

***(1) MIL-T-27, QPL-27-48; (2) MIL-F-18327, QPL-18327-20; (3) MIL-T-21038, QPL-21038-13.**

### PIL★ ULTRAMINIATURE AUDIO INDUCTORS

Smallest audio inductor available. Incorporating the DO-T and DI-T construction, these units are designed, manufactured and successfully tested to MIL-T-27C. All inductors are subjected to a 500 volts dielectric strength test instead of 100 volts, for higher safety and reliability. Size: ⁵⁄₁₆" dia. x ⁵⁄₁₆" h. Wt., 1/20 oz. U.S. Pat. No. 2,949,591; others pend.

| UTC Type | Connection | Ind. H Min. at 2 V, 1 kHz | DC mA | DCR Ohms | Net Each, 1-4 |
|---|---|---|---|---|---|
| PIL-5 | Series | .11 | 0 | 43 | $18.00 |
| | Parallel | .03 | 0 | 10.7 | |
| | Series | .10 | 5 | ........ | |
| | Parallel | .025 | 10 | ........ | |
| PIL-8 | Series | .32 | 0 | 115 | 7.96 |
| | Parallel | .08 | 0 | 28 | |
| | Series | .18 | 5 | ........ | |
| | Parallel | .05 | 10 | ........ | |
| PIL-12 | Series | .8 | 0 | 300 | 7.96 |
| | Parallel | .2 | 0 | 75 | |
| | Series | .4 | 3 | ........ | |
| | Parallel | .15 | 5 | ........ | |

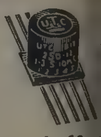
### PIL★ AUDIO TRANSFORMERS

The smallest audio transformers available, employing DO-T typ construction to overcome inherently poor electrical characteristic usually found in miniature audio transformers. Subjected to 500-volt dielectric strength test (instead of the usual 100 volts), al units offer higher safety margins and reliability. Ruggedized design employs rigid cylindrical bobbin that eliminates wire movement and stress. Turns are circular for uniform wire lay. Leads ar rigidly anchored to coil wire in terminal board fashion without need for tape; and, brought out through strain relief. Termination is weldable and solderable, insulated gold-plated Dumet leads. Max. level, 100 mW. Frequency Range, ±3 dB, 800–250,000 H at 1 mW. Metal case ⁵⁄₁₆" dia. x ³⁄₁₆" h. to Grade 4. Wt., 1/20 oz. U.S. Pat. No. 2,949,591; others pending. Illus. same as PIL inductors. **Available to Class S on special order. See other UTC pages for additional Audio Transformers.**

| UTC Type | MIL Type | Impedance, Ohms | | Primary | | Ea., 1-4 |
|---|---|---|---|---|---|---|
| | | Primary | Second. | mADC* | DCR† | |
| PIL-50 | TF4RX17YY | 500 CT | 500 CT | 3 | 40 | $9.56 |
| PIL-70 | TF4RX13YY | 10K CT | 500 CT | 1 | 530 | 9.97 |
| PIL-75 | TF4RX13YY | 10K CT | 2K CT | 1 | 530 | 9.97 |
| PIL-850 | TF4RX16YY | 150 | 600 CT | ‡ | 3 | 9.97 |

*Unbalanced. †Ohms. ‡±25%; Sec. DCR 7 (±25%); Freq. Range 300–450 kHz balanced modulator.

### BIT-250★ ULTRAMINIATURE METAL-ENCASED TRANSFORMERS



Manufactured with flat pack type terminals extending outward. Terminals may be bent for adoption to plug-in applications. Units are designed, manufactured and successfully tested to MIL-T-27C. MIL Type: TF4RX17YY, No. 14 to 36; TF4RX12YY, all others. Frequency response: ±2 dB, 300 Hz to 250 kHz at 1 mW. Subjected to 200 V rms dielectric strength test. Leads: .004 x .016, gold-plated ribbon-style Kover; solderable, and weldable. Size: .250" dia. x .250" h. Wt., 1.1 gm. **Special termination arrangements, 10 or more leads, etc. may be designed to customers requirements.**

| UTC Type BIT-250- | Impedence, Ohms | | Turns Ratio | | † | Net Ea., 1-4 |
|---|---|---|---|---|---|---|
| | Primary | Second.* | Pri./sec./sec. | Pri./overall sec. | | |
| 14 | 150 CT | 12/3 | 7.1:1:1 | 3.54:1 | a | $11.14 |
| 18 | 300 CT | 600/150 | 1.4:1:1 | 1:1.4 | b | 11.14 |
| 20 | 400 CT | 400/100 | 2:1:1 | 1:1 | c | 11.94 |
| 26 | 500 CT | 50/12.5 | 7.3:1:1 | 3.65:1 | a | 11.94 |
| 30 | 600 CT | 600/150 | 2:1:1 | 1:1 | d | 11.94 |
| 36 | 1K CT | 1000/250 | 2:1:1 | 1:1 | b | 12.33 |
| 40 | 1.5K CT | 600/150 | 3.16:1:1 | 1.58:1 | a | 12.33 |
| 48 | 2K CT | 8000/2000 | 1:1:1 | 1:2 | e | 13.13 |
| 56 | 10K CT | 500/125 | 8.92:1:1 | 4.46:1 | f | 13.53 |
| 60 | 10K CT | 1200/300 | 5.78:1:1 | 2.89:1 | g | 13.53 |
| 64 | 10K CT | 2000/500 | 4.48:1:1 | 2.24:1 | h | 13.53 |
| 70 | 10K CT | 10 K/2500 | 2:1:1 | 1:1 | e | 13.53 |
| 90 | 25K CT | 1000/250 | 10:1:1 | 5:1 | h | 14.34 |

*Split winding, series/parallel. †Typical applications: **a**—Output, **b**—Output or matching, **c**—Matching or intsg., **d**—Isolation or matching, **e**—Isolation or intsg., **f**—Output or driver, **g**—Driver, **h**—Interstage.

### BIT-250★ INDUCTORS

Type similar to BIT-250 transformers. Units include both single winding and split winding types. MIL Type: TF4RX20YY.

| UTC Type BIT-250- | Connection | Ind. H Min. at 5V, 1 kHz | mA DC | DCR Ohms | Net Ea., 1-4 |
|---|---|---|---|---|---|
| 03*<br>(2 wdgs.) | Series | 8.6 | 0 | 2260 | $11.14 |
| | Series | 2.5 | 2 | ...... | |
| | Parallel | 2.4 | 0 | 565 | |
| | Parallel | 0.63 | 4 | ...... | |
| 05<br>(1 wdg.) | | 5.5 | 0 | 1000 | 9.97 |
| | | 1.5 | 2 | ...... | |
| 06<br>(1 wdg.) | | .80 | 1 | 250 | 9.97 |
| | | .25 | 6 | ...... | |
| 09*<br>(2 wdgs.) | Series | .60 | 0 | 146 | 11.14 |
| | Series | .15 | 5 | ...... | |
| | Parallel | .15 | 0 | 37 | |
| | Parallel | .038 | 10 | ...... | |

*Winding ratio 1:1.

★UTC trademark.

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# DIV. OF TRW TRANSFORMERS, DECADES AND INVERTERS

## PRECISION MINIATURE WIDE-APPLICATION PULSE TRANSFORMERS TO MIL-T-20138B

### ALL UNITS INDIVIDUALLY ADJUSTED TO PARAMETERS SHOWN IN TABLES

iable, hermetically sealed to withstand service in a temperature range −70° C to +130° C. Wound-core construction provides temature stability. Designs are of the high inductance type, providing minimum droop and assuring true pulse width. Ratios, 1:1:1, es H-45 through H-57, MIL type TP7SX1110; ratio 4:4:1, types H-60 through H-68, MIL type TP7SX4410AZ; ratio 5:3:1, all ers, MIL type TP7SX5310.

### TRANSISTOR PULSE TRANSFORMERS

e and weight of Types H-60 thru H-671 are same as Type H-45 in Vacuum Tube Transformer table.

| C | Approx. DCR Ohms | | | Blocking Osc. Pulse | | | | | Coupling Circuit Characteristics | | | | | | | Net Each, 1-4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| pe | 1-2 | 3-4 | 5-6 | •Width µsec | Rise Time | * | † | ‡ | •Width µsec | Volts Out | Rise Time | * | † | ‡ | Imp. Ohms§ | |
| 60 | .124 | .14 | .05 | .05 | .016 | 0 | 0 | 30 | .05 | 9.3 | .012 | 0 | 0 | 20 | 50 | $12.34 |
| 61 | .41 | .48 | .19 | .1 | .016 | 0 | 0 | 30 | .1 | 8.2 | .021 | 0 | 0 | 15 | 50 | 12.34 |
| 62 | .78 | .94 | .33 | .2 | .022 | 0 | 0 | 18 | .2 | 7.4 | .034 | 0 | 5 | 12 | 100 | 12.34 |
| 63 | 1.86 | 2.26 | .70 | .5 | .027 | 2 | 10 | 20 | .5 | 7.5 | .045 | 0 | 20 | 25 | 100 | 12.34 |
| 64 | 3.73 | 4.4 | 1.33 | 1 | .033 | 0 | 12 | 25 | 1 | 7 | .078 | 0 | 15 | 23 | 100 | 12.34 |
| 65 | 6.2 | 7.3 | 2.22 | 2 | .066 | 0 | 15 | 25 | 2 | 6.6 | .14 | 0 | 10 | 20 | 100 | 13.74 |
| 66 | 10.2 | 12 | 3.6 | 3 | .087 | 0 | 18 | 30 | 3 | 6.8 | .17 | 0 | 10 | 20 | 100 | 13.94 |
| 67 | 14.5 | 17.5 | 5.14 | 5 | .097 | 0 | 23 | 28 | 5 | 7.9 | .2 | 0 | 18 | 28 | 200 | 32.40 |
| 68 | 42.3 | 52.1 | 14.8 | 10 | .14 | 0 | 15 | 28 | 10 | 6.5 | .4 | 0 | 15 | 30 | 200 | 14.34 |
| 11 | .426 | .32 | .132 | .1 | .018 | 8 | 0 | 12 | .1 | 8.2 | .02 | 0 | 0 | 30 | ▴ | 27.90 |
| 41 | 5 | 3.6 | 1.4 | 1 | .04 | 0 | 10 | 10 | 1 | 7 | .07 | 0 | 20 | 30 | ▪ | 27.90 |
| 71 | 21 | 16 | 6 | 5 | .08 | 0 | 14 | 12 | 5 | 8 | .2 | 0 | 25 | 30 | ♦ | 32.40 |
| 69 | Transistor pulse transformer kit, H-60 thru H-68 in plastic case. | | | | | | | | | | | | | | | 247.20 |

TYPICAL

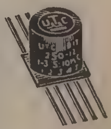
### VACUUM TUBE PULSE TRANSFORMERS

| C | Approx. DCR Ohms | | | Blkg. Osc. Pulse | | | | | Coupling Circuit Characteristics | | | | | | | Size Inches | | Wt. Grams | Net Each, 1-4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| pe | 1-2 | 3-4 | 5-6 | •Width µsec | Rise Time | * | † | ‡ | •Width µsec | Volts Out | Rise Time | * | † | ‡ | Imp. Ohms§ | L. | W. | | |
| 15 | 3 | 3.5 | 4 | .05 | .022 | 0 | 20 | 10 | .05 | 17 | .01 | 20 | 0 | 35 | 250 | 3/8 | 3/8 | 1 | $ 15.54 |
| 16 | 5.5 | 6.5 | 7 | .10 | .024 | 0 | 25 | 10 | .10 | 19 | .01 | 30 | 10 | 50 | 250 | 3/8 | 3/8 | 1 | 15.54 |
| 17 | 3.7 | 4.0 | 4 | .20 | .026 | 0 | 25 | 8 | .20 | 18 | .01 | 30 | 15 | 65 | 500 | 9/16 | 9/16 | 4 | 10.56 |
| 18 | 5.5 | 5.8 | 6 | .50 | .03 | 0 | 20 | 5 | .50 | 20 | .01 | 30 | 20 | 65 | 500 | 9/16 | 9/16 | 4 | 10.56 |
| 19 | 8 | 8.5 | 9 | 1 | .04 | 0 | 20 | 10 | 1 | 24 | .02 | 15 | 15 | 65 | 500 | 9/16 | 9/16 | 4 | 10.56 |
| 50 | 20 | 21 | 22 | 2 | .05 | 0 | 20 | 10 | 2 | 27 | .05 | 10 | 15 | 35 | 500 | 9/16 | 9/16 | 4 | 10.97 |
| 51 | 28 | 31 | 33 | 3 | .10 | 1 | 20 | 8 | 3 | 26 | .07 | 10 | 10 | 35 | 500 | 9/16 | 9/16 | 4 | 11.23 |
| 52 | 36 | 41 | 44 | 5 | .13 | 1 | 25 | 8 | 5 | 23 | .15 | 10 | 10 | 45 | 1000 | 9/16 | 9/16 | 4 | 11.74 |
| 53 | 37 | 44 | 49 | 7 | .28 | 0 | 25 | 8 | 7 | 24 | .20 | 10 | 10 | 50 | 1000 | 5/8 | 5/8 | 6 | 11.94 |
| 54 | 50 | 58 | 67 | 10 | .30 | 0 | 20 | 8 | 10 | 24 | .25 | 10 | 10 | 50 | 1000 | 5/8 | 5/8 | 6 | 12.54 |
| 55 | 78 | 96 | 112 | 16 | .75 | 0 | 20 | 10 | 16 | 23 | .40 | 5 | 15 | 20 | 1000 | 5/8 | 5/8 | 6 | 13.53 |
| 56 | 93 | 116 | 138 | 20 | 1.25 | 0 | 25 | 10 | 20 | 23 | .6 | 5 | 10 | 10 | 1000 | 5/8 | 5/8 | 6 | 10.76 |
| 57 | 104 | 135 | 165 | 25 | 2.0 | 0 | 30 | 10 | 25 | 24 | 1.5 | 5 | 10 | 10 | 1000 | 5/8 | 5/8 | 6 | 10.76 |
| 61 | 9.6 | 6.4 | 2.5 | .1 | .025 | 0 | 0 | 8 | .1 | 19 | .02 | 3 | 5 | 20 | Ɪ | 3/8 | 3/8 | 1 | 35.10 |
| 01 | 30 | 20 | 7 | 2 | .08 | 0 | 12 | 5 | 2 | 27 | .06 | 12 | 15 | 35 | Ŧ | 9/16 | 9/16 | 4 | 10.97 |
| 31 | 66 | 47 | 17 | 7 | .32 | 0 | 12 | 3 | 7 | 24 | .23 | 12 | 10 | 40 | ** | 5/8 | 5/8 | 6 | 27.00 |
| 61 | 180 | 142 | 53 | 20 | 1.75 | 0 | 13 | 5 | 20 | 23 | .7 | 5 | 10 | 10 | ** | 5/8 | 5/8 | 6 | 24.30 |
| 58 | Pulse transformer kit, consists of 1 each of H-45 through H-57 in partitioned plastic case. | | | | | | | | | | | | | | | | | | 289.36 |

## BIT-P★ ULTRAMINIATURE HIGH PERFORMANCE PULSE TRANSFORMERS

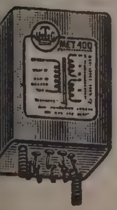
its are designed and tested to complete MIL-T-21038B specifications. Subjected to 200 V rms dielectric strength test. All units electromagnetically self-shielded. Gold-plated, ribbon-style Kovar leads are weldable and solderable. MIL type TP6RX4410CZ; io 4:4:1.

| UTC Type | Approx. DCR Ohms | | | Blocking Osc. Pulse | | | | | Coupling Circuit Characteristics | | | | | | | Net Each, 1-4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1&5 | 6&7 | 9&10 | •Width µsec | Rise Time | * | † | ‡ | •Width µsec | Volts Out | Rise Time | * | † | ‡ | Imp. Ohms§ | |
| IT-P21 | .32 | .29 | .28 | .05 | .01 | 0 | 0 | 35 | .05 | 0.2 | .01 | 0 | 0 | 20 | 50 | $11.14 |
| IT-P22 | .33 | .32 | .29 | .1 | .012 | 0 | 0 | 25 | .1 | .5 | .015 | 0 | 0 | 20 | 50 | 11.14 |
| IT-P23 | .38 | .37 | .3 | .2 | .02 | 0 | 0 | 15 | .2 | 1.2 | .02 | 0 | 0 | 20 | 100 | 11.14 |
| IT-P24 | .5 | .48 | .32 | .5 | .023 | 0 | 5 | 15 | .5 | 1.5 | .022 | 0 | 5 | 25 | 100 | 11.14 |
| IT-P25 | .62 | .57 | .35 | 1 | .03 | 0 | 10 | 14 | 1 | 1.5 | .025 | 0 | 20 | 28 | 100 | 11.14 |
| IT-P26 | .7 | .64 | .4 | 2 | .035 | 0 | 12 | 15 | 2 | 1.5 | .028 | 0 | 15 | 23 | 100 | 11.14 |
| IT-P27 | .85 | .76 | .48 | 3 | .04 | 0 | 13 | 15 | 3 | 1.5 | .032 | 0 | 18 | 28 | 100 | 11.14 |
| IT-P28 | .96 | .86 | .52 | 5 | .045 | 0 | 15 | 14 | 5 | 2 | .035 | 0 | 20 | 20 | 200 | 11.14 |
| IT-P29 | 1.4 | 1.1 | .57 | 10 | .065 | 0 | 15 | 10 | 10 | 2 | .05 | 0 | 25 | 25 | 200 | 11.14 |
| IT-P30 | 2.1 | 1.7 | .8 | 15 | .07 | 0 | 15 | 13 | 15 | 2 | .06 | 0 | 27 | 18 | 200 | 11.14 |
| IT-P31 | 2.7 | 2.1 | .97 | 25 | .08 | 0 | 15 | 13 | 25 | 3 | .1 | 0 | 30 | 30 | 500 | 11.14 |
| IT-P32 | 20 | 15 | 6 | 50 | .2 | 0 | 10 | 5 | 50 | 3 | .3 | 0 | 22 | 20 | 500 | 11.14 |
| IT-P33 | 42 | 32 | 12 | 100 | .35 | 0 | 11 | 13 | 100 | 6 | .4 | 0 | 15 | 18 | 500 | 11.14 |



overshoot. †Droop, %. ‡% backswing. §In and out. •Pulse. ▴140/50. ▪280/100. ♦560/200. Ɪ700/250. Ŧ1400/500. **2800/1000.

## MET★ ISOLATION TRANSFORMERS

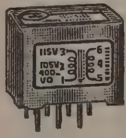


Metal encased, rugged and highly reliable units.

| UTC Type | MET-400 | MET-405 |
|---|---|---|
| **Primary** | 105/115/125 V<br>380–1000 Hz | 105/115/125 V<br>380–1000 Hz |
| **Secondary** | 115 VCT, .06 A<br>115 VCT, .06 A | 115 VCT, .2 A<br>115 VCT, .2 A |
| **Series Con.** | 230 V, .06 A | 230 VCT, .2 A |
| **Parallel Connection** | 115 V, .12 A | 115 VCT, .4 A |
| **MIL Type** | TF4SX03AH | TF4SX01EA |
| **Size, In.** | 1 5/16 sq. x 1 3/4 h. | 1 13/16 x 1 15/16 x 2 3/4 h. |
| **Weight** | 3/8 lb. | 1 lb. |
| **Net Ea., 1-4** | $20.29 | $25.09 |

## MOLDED ISOLATION AND SUPPLY TRANSFORMERS

Vacuum molded to MIL Grade 5. Ideal for printed circuit application. Special type mounting facilities are available on request.



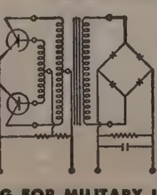
| UTC Type | H-149 | H-148 |
|---|---|---|
| **Application** | ............... | Isolation |
| **Primary** | 28 V,<br>380–1000 Hz | 105/115 V,<br>400 Hz |
| **Secondary** | 2 x 6.3V, .08A | 115 VCT, .02A |
| **Series Con.** | 12.6 V, .08 A | ............... |
| **Parallel** | 6.3 V, .16 A | ............... |
| **MIL Type** | TF5SX03ZZ | TF5SX03ZZ |
| **Size, In.** | 3/4 x 7/8 x 9/16 | 3/4 x 1 x 23/32 |
| **Weight** | .04 lb. | .05 lb. |
| **Net Ea., 1-4** | $11.14 | $14.34 |

## PRECISION INDUCTANCE DECADES

Instruments for use in design and experimental work with tuned circuits, wave filters, etc. Low hum pickup toroid coils employ a permalloy dust core, which combined with special winding offer high Q and stability. Lab adjusted inductance tolerance of 1%. **Size:** 4½″ l. x 4⅜″ w. x 2⅜″ h. Weight, 2 lbs. Case is DI Type.

| TC ype | Induct. H | Optimum Range | Max. Q | Max. mAAC | Ins. Test V rms | Net Ea., 1-4 |
|---|---|---|---|---|---|---|
| I-1 | 10 x .01 | 2–60 kHz | 200 | 500 | 500 | $75.65 |
| I-2 | 10 x .1 | .25–20 kHz | 200 | 150 | 500 | 91.56 |
| I-3 | 10 x 1 | .25–10 kHz | 200 | 50 | 500 | 216.00 |
| I-4 | 10 x 10 | .2–1.5 kHz | 100 | 15 | 500 | 270.00 |

## TRANSISTOR INVERTER TRANSFORMERS



Supply high voltage DC. Layer insulated. Drawn MIL case. Circuit details are supplied. With 6 VDC input instead of 12 V, output voltage is halved, current rating remains the same. For 12/14 or 24/48 V DC battery.

| UTC Type | DC Output Volts | mADC | MIL Case | Net Ea., 1-4 |
|---|---|---|---|---|
| H-97 | 250 | 60 | AH | $24.50 |
| H-98 | 375 | 100 | AJ | 26.28 |
| H-99 | 425 | 175 | FA | 39.82 |
| H-100 | 550 | 200 | GB | 37.82 |

UTC trademark.

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# UTC DIV. OF TRW Hermetic Components

## DESIGNED, MANUFACTURED AND SUCCESSFULLY TESTED TO MIL-T-27-C

### NEW PIP★ SERIES TRANSISTOR PULSE TRANSFORMERS TO MIL-T-20138B

Subminiature transistor-type pulse transformers are designed to give a maximum of component density in equipments. The configuration is especially compatible with transistors. Using the basic design of the UTC DO-T* and DI-T* series, units achieve exceptional reliability. Ratio 4:4:1, checked and adjusted in a transistor test circuit to give the required pulse width. Designed, manufactured and successfully tested to MIL-T-21038B by full environmental testing. All units are completely metal cased, MIL type TP6RX4410CZ. All units individually adjusted to parameters shown in table below. Size: 5/16" dia. x 5/16" h. Weight, 1/20 oz. U.S. Pat. No. 2,949,591; others pending.

| UTC No. | Approx. DC Ohms | | | Blocking Osc. Pulse | | | | | Coupling Circuit Characteristics | | | | | | | Net Each, 1-4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1-2 | 3-4 | 5-6 | •Width µsec | Rise Time | * | † | ‡ | •Width µsec | Volts Out | Rise Time | * | † | ‡ | Imp., Ohms§ | |
| PIP-1 | .21 | .23 | .13 | .05 | .02 | 0 | 0 | 37 | .05 | 9 | .018 | 0 | 0 | 12 | 50 | $ 7.96 |
| PIP-2 | .47 | .56 | .17 | .1 | .025 | 0 | 0 | 25 | .1 | 8 | .02 | 0 | 0 | 5 | 50 | 7.96 |
| PIP-3 | 1.01 | 1.25 | .37 | .2 | .030 | 2 | 0 | 15 | .2 | 7 | .035 | 0 | 0 | 5 | 100 | 7.96 |
| PIP-4 | 1.5 | 1.85 | .54 | .5 | .05 | 0 | 0 | 15 | .5 | 7 | .06 | 0 | 0 | 0 | 100 | 7.96 |
| PIP-5 | 2.45 | 3.1 | .9 | 1 | .08 | 0 | 0 | 14 | 1 | 6.8 | .15 | 0 | 0 | 5 | 100 | 7.96 |
| PIP-6 | 3.0 | 3.7 | 1.1 | 2 | .10 | 0 | 0 | 15 | 2 | 6.6 | .18 | 0 | 2 | 10 | 100 | 7.96 |
| PIP-7 | 4.9 | 6.05 | 1.8 | 3 | .20 | 0 | 0 | 14 | 3 | 6.8 | .20 | 0 | 2 | 10 | 100 | 7.96 |
| PIP-8 | 8.0 | 9.7 | 2.9 | 5 | .30 | 0 | 0 | 3 | 5 | 7.9 | .22 | 0 | 13 | 25 | 200 | 7.96 |
| PIP-9 | 13.1 | 15.9 | 4.7 | 10 | .35 | 0 | 5 | 12 | 10 | 6.5 | .4 | 0 | 15 | 20 | 200 | 7.96 |
| PIP-10# | .55 | .41 | .15 | .1 | .01 | 0 | 0 | 20 | .1 | 8 | .01 | 0 | 0 | 5 | 140/50 | 7.96 |
| PIP-11# | 2.9 | 2.2 | .82 | 1 | .02 | 4 | 4 | 6 | 1 | 6.6 | .05 | 0 | 6 | 12 | 280/100 | 7.96 |
| PIP-12# | 9.4 | 7.1 | 2.6 | 5 | .05 | 0 | 12 | 12 | 5 | 8 | .09 | 2 | 12 | 25 | 560/200 | 7.96 |
| PIP-100 | Transistor pulse transformer kit consists of 1 each PIP-1 through PIP-9 in plastic case | | | | | | | | | | | | | | | 67.68 |
| PIP-SH | Drawn Hipermalloy shield and cover for PIP's provides 20 to 30 db shielding | | | | | | | | | | | | | | | 1.20 |

*% overshoot. †Droop, %. ‡% backswing. •Pulse. §In and out. #Ratio 5:3:1, MIL type TP6RX5310CZ.

### TRANSISTOR SUPPLY TRANSFORMERS

Transistor supply transformers with primary 115 VAC, 50/60 Hz (tapped on H-143 thru H-146 for dual secondary voltages). DC ratings are approximate and are based on silicon bridge rectifier (except H-141, H-142 also shown F.W. CT.). Choke input VDC is based on 10% voltage drop in choke. Condenser value, C(*), is in 1000 µF. H-141, H-142, H-147 under secondaries in parallel is single winding. MIL type TF4RX02.

| UTC Type | Sec. Volts rms | Sec. Amps rms | Secondary in Parallel | | | | | Secondary in Series | | | | | MIL Case | Net Ea., 1-4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Choke Inp. VDC | Choke Inp. ADC | Cond. Inp. VDC | Cond. Inp. ADC | C* | Choke Inp. VDC | Choke Inp. ADC | Cond. Inp. VDC | Cond. Inp. ADC | C* | | |
| H-141 | 20 CT | .3 | 16.5 | .3 | 26 | .2 | .2 | ..... | .... | ...... | .... | ... | EB | $19.98 |
| | | | 8 | .43 | 12 | .3 | .5 | ..... | .... | ...... | .... | ... | | |
| H-142 | 20 CT | .6 | 16.5 | .6 | 26 | .4 | .4 | ..... | .... | ...... | .... | ... | EA | 20.91 |
| | | | 9 | .85 | 13 | .6 | 1 | ..... | .... | ...... | .... | ... | | |
| H-143 | 17/21.5 | 1.5 | 14/17.5 | 3 | 18.5/25 | 2 | 1 | 28/35 | 1.5 | 43/56 | 1 | .5 | HA | 31.05 |
| | 17/21.5 | 1.5 | | | | | | | | | | | | |
| H-144 | 17/21.5 | 4 | 14/17.5 | 8 | 18.5/25 | 5 | 2 | 28/35 | 4 | 43/56 | 2.5 | 1 | LA | 52.95 |
| | 17/21.5 | 4 | | | | | | | | | | | | |
| H-145 | 17/21.5 | 9 | 14/17.5 | 18 | 18.5/25 | 12 | 6 | 28/35 | 9 | 43/56 | 6 | 4 | RC-175 | 184.50 |
| | 17/21.5 | 9 | | | | | | | | | | | | |
| H-146 | 34/43 | 4.5 | 28/35 | 9 | 43/56 | 6 | 4 | 56/70 | 4.5 | 85/110 | 3 | 1 | RC-175 | 184.50 |
| | 34/43 | 4.5 | | | | | | | | | | | | |
| H-147 | 10 | 20 | 8.2 | 20 | 10 | 13 | 12 | ..... | .... | ...... | .... | ... | KA | 44.99 |

### UNIV. TRANSISTOR SUPPLY TRANSFORMERS

UTC universal transistor supply transformers are ideal for use in low voltage DC supplies, telephone supplies, bias voltage supplies, battery chargers and plating rectifiers. Highly reliable units are encased in MIL cases, similar to TF4 type illus. above. Primary taps can modify nominal AC voltages by −6%, +6% and ±12%. Capacitor following rectifier affects the DC voltage. All units TF4RX02.

#### 50/60-Hz TYPES

Primary 115 VAC, 50/60 Hz. Nom. secondary, 8.25–40.5 V except H-965, 16.5–81 volts nom.

| UTC Type | MIL DC Range | | Indus. DC Range | | MIL Case | Each, 1-4 |
|---|---|---|---|---|---|---|
| | Volts | Amps | Volts | Amps | | |
| H-915 | 6–53 | .065–.02 | 6–53 | .085–.025 | AH | $19.71 |
| H-925 | 6–53 | .22–.07 | 6–53 | .28–.085 | AJ | 19.90 |
| H-935 | 6–53 | 1.2–.4 | 6–53 | 1.52–.48 | FA | 29.86 |
| H-94 | 6–53 | 3–1 | 6–53 | 3.8–1.2 | HA | 33.43 |
| H-95 | 6–53 | 7.5–2.5 | 6–53 | 9–3 | KA | 43.80 |
| H-96 | 6–53 | 18–6 | 6–53 | 23–7.5 | OA | 83.61 |
| H-965 | 12–106 | 1.5–.5 | 12–106 | 1.9–.6 | HA | 33.84 |

#### NEW 400-Hz MET★ TYPES

Primary 115 V, 400 Hz. Nom. sec., 8.25–40.5 V except MET-495, 16.5–81 volts nom.

| | | | | | | |
|---|---|---|---|---|---|---|
| MET-445 | 6–53 | .6–.2 | 6–53 | .75–.24 | AH | $19.10 |
| MET-455 | 6–53 | 1.2–.4 | 6–53 | 1.52–.48 | AJ | 25.89 |
| MET-465 | 6–53 | 3–1 | 6–53 | 3.8–1.2 | FA | 26.28 |
| MET-475 | 6–53 | 7.5–2.5 | 6–53 | 9–3 | HA | 33.43 |
| MET-495 | 12–106 | .6–.2 | 12–106 | .76–.24 | AJ | 27.06 |

#### 400-Hz MOLDED TYPES

Primary, 105/115 V, 380-1,000 Hz. Secondary, 6.3 V CT; 2,500 V rms test. Molded type TF5SX01ZZ is illustrated,

| UTC Type | Sec. Amps | Size, Inches | | | Wt., Lbs. | Net Ea., 1-4 |
|---|---|---|---|---|---|---|
| | | L. | W. | H. | | |
| H-101 | 3.5 | 1 25/32 | 1 21/32 | 2 | .3 | $22.69 |
| H-102 | 5.5 | 1 3/4 | 2 | 2 1/4 | .44 | 58.50 |
| H-103 | 10 | 2 5/16 | 2 1/8 | 2 1/2 | .8 | 29.86 |
| H-104 | 25 | 2 7/8 | 2 1/2 | 3 1/32 | 1.5 | 39.82 |
| H-118 | .3 | 3/4 | 7/8 | 9/16 | .04 | 13.14 |

### CAT★ TRANSISTOR IMPEDANCE TYPES

All units in RC-50 case. Frequency range, ±2 dB, 50–15,000 Hz. Power level 1 watt except CAT-15, 5 watts.

| UTC Type | Application | Primary | | Secondary Imped., Ohms | Net Each, 1-4 |
|---|---|---|---|---|---|
| | | Impedance Ohms | Unbal. mADC | | |
| CAT-15 | Output | 48/12 spl. | 750* | 16 spl./8/4 | $33.30 |
| CAT-20 | Istg./outp. | 500/125 spl. | 20 | 16/4 split | 27.90 |
| CAT-25 | Isol./outp. | 500/125 spl. | 20 | 500/125 spl. | 27.90 |
| CAT-30 | Input/istg. | 500/125 spl. | 20 | 2K/500 split | 28.80 |
| CAT-40 | Istg./outp. | 10K/2.5K spl. | 8 | 2K/500 split | 29.70 |

*Balanced.

★UTC trademark.

### TRANSISTOR/FILAMENT SUPPLY TRANSFORMERS

Hermetically sealed units for transistor or filament supply use. **Primary:** 105/115/210/220 VAC, 50/60 Hz, except types H-119, H-130, H-137, H-138 (115 VAC) and H-131 (115/220 volts). Suited to 400/100 Hz service. **Size:** H-128, H-129; 6½" x 5½" x 7¾" h. Weight, H-128, 34 lbs.; H-129, 28 lbs. All ratings are MIL-T-27C except **Amps** (Industrial) ratings.

METAL CASED TF4RX01 TYPE

| UTC Type | MIL Type | Sec. Volts | Amps MIL | Amps Indus. | Test• Vrms | MIL Case | Ea., 1-4 |
|---|---|---|---|---|---|---|---|
| H-119 | TF4RX01AH | 6.3CT | .3 | .38 | 1500 | AH | $14.34 |
| H-120 | TF4RX01GB | 2.5 | 10 | 12 | 4000 | GB | 58.50 |
| H-121 | TF4RX01JB | 2.5 | 10 | 12 | 10000 | JB | 33.04 |
| H-122 | TF4RX01KB | 2.5 | 20 | 26 | 10000 | KB | 85.50 |
| H-123 | TF4RX01NB | 2.5 | 5 | 7.5 | 10000 | NB | 153.00 |
| | | 2.5 | 5 | 7.5 | | | |
| | | 2.5 | 10 | 15 | | | |
| H-124 | TF4RX01FB | 5 | 3 | 3.8 | 2000 | FB | 23.88 |
| H-125 | TF4RX01KB | 5 | 10 | 12 | 10000 | KB | 37.03 |
| H-126 | TF4RX01LA | 5 | 20 | 25 | 10000 | LA | 117.00 |
| H-127 | TF4RX01NA* | 5 | 20 | 30 | 21000 | NA | 99.52 |
| H-128 | TF4RX01YY* | 5 | 60 | 75 | 21000 | .... | 333.00 |
| H-129 | TF4RX01YY* | 5 | 10 | 12 | 21000 | .... | 468.00 |
| | | 5 | 10 | 12 | | | |
| | | 5 | 20 | 24 | | | |
| H-130 | TF4RX01AJ | 6.3CT | .6 | .75 | 1500 | AJ | 17.93 |
| H-131 | TF4RX01FB | 6.3CT | 2 | 2.5 | 2500 | FB | 21.90 |
| H-132 | TF4RX01JA | 6.3CT | 6 | 7 | 2500 | JA | 36.63 |
| | | 6.3CT | 6 | 7 | | | |
| H-133 | TF4RX01HB | 6.3CT | 7 | 8 | 2500 | HB | 29.84 |
| H-134 | TF4RX01HA | 6.3CT | 10 | 12 | 2500 | HA | 33.84 |
| H-135 | TF4RX01JB | 10CT | 10 | 13 | 2500 | JB | 37.03 |
| H-136 | TF4RX01LA | 14, 12, 11CT | 10 | 14 | 2500 | LA | 61.72 |
| H-137 | TF4RX01EB | 6.3 | .6 | .75 | 1500 | EB | 22.69 |
| | | 6.3 | .6 | .75 | | | |
| H-138 | TF4RX01GA | 12.6 | 2 | 2.5 | 1500 | GA | 27.87 |
| | | 12.6 | 2 | 2.5 | | | |

#### MET★ 400-Hz SERIES

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MET-410# | TF4SX01YY<br>400 Hz pri. | 6.3 | .6 | .75 | 500 | RC-25 | $10.35 |
| MET-420 | TF4SX01AH<br>380–1000 Hz‡ | 6.3CT | 2 | 2.5 | 1500 | AH | 19.10 |
| MET-430† | TF4SX01FA<br>400 Hz§ | 12.6CT<br>12.6 | 2<br>2 | 2.5<br>2.5 | 1500 | FA | 27.87 |
| MET-435 | TF4SX01FA<br>380–1000 Hz‡ | 6.3CT | 10 | 12 | 2500 | FA | 23.88 |
| MET-440 | TF4SX01GB<br>380–1000 Hz‡ | 6.3CT<br>6.3CT | 6<br>6 | 7<br>7 | 2500 | GB | 60.75 |

*Term. opposite mtg. †Two MET-430's, Scott-connected, provide 26 V, 2-phase from 115 V, 3-phase 400 Hz input. Replaces former No. H-139. ‡105/115/125 V primary. §57.5/99.7/115 V primary. #Replaces former No. H-140. •Secondary.

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# DIV. OF TRW Electric Wave Filters

## ELECTRIC WAVE FILTERS DESIGNED, MANUFACTURED & SUCCESSFULLY TESTED TO MIL-F-18327C

### INTERSTAGE AND LINE FILTERS

Designed, manufactured and successfully tested to MIL-F-18327C in compact, shielded case. **Frequency:** Indicated by stock number, in Hz; example, HMI-200 has 200 Hz cut-off. **Size:** 1 3/16" x 1 11/16" x 1⅝" h. (Wt., 6 oz.) except BMI-30, BMI-50, HML's, HMI's, LMI-100 and LML's are 2½" h. (Wt., 9 oz.). **BMI Types:** Bandpass interstage; operate between tube plate (or 10K ohms) and a grid. Provide gain of 2 at center frequency. **BML Types:** Same, but 500/600 ohms and gain of 9. **BTI Types:** 10K ohms input and output. **Types:** High pass interstage units. **LMI Types:** Low pass stage. **HML Types:** High pass with input and output 500/600 . **LML Types:** Low pass with input and output 500/600 . **LLP Types:** Low frequency, 10 Hz low pass; loss more than B at 20 Hz source and load 100K ohms; size, 2 1/16" x 2 5/16" x (Wt., 1½ lbs.).

| C Type | Ea., 1-4 | UTC Type | Ea., 1-4 | UTC Type | Ea., 1-4 |
|---|---|---|---|---|---|
| I-30 | $52.17 | LMI-150 | $49.95 | HMI-1000 | $49.95 |
| I-50 | 42.98 | LMI-200 | 44.99 | HMI-2000 | 49.95 |
| I-60 | 42.98 | LMI-400 | 44.99 | HMI-3000 | 49.95 |
| I-90 | 49.95 | LMI-500 | 44.99 | BML-400 | 42.98 |
| I-100 | 42.98 | LMI-800 | 44.99 | BML-1000 | 42.98 |
| I-120 | 49.95 | LMI-1000 | 44.99 | HML-40 | 59.72 |
| I-150 | 49.95 | LMI-1500 | 44.99 | HML-200 | 55.73 |
| I-200 | 42.98 | LMI-2000 | 44.99 | HML-300 | 55.73 |
| I-240 | 42.98 | LMI-2500 | 44.99 | HML-500 | 57.72 |
| I-300 | 42.98 | LMI-3000 | 44.99 | LML-500 | 49.95 |
| I-400 | 42.98 | LMI-4000 | 44.40 | LML-1000 | 44.99 |
| I-500 | 42.98 | LMI-5000 | 44.99 | LML-1500 | 49.95 |
| I-750 | 46.62 | LMI-10000 | 44.99 | LML-2000 | 49.95 |
| I-800 | 42.98 | BTI-60 | 51.76 | LML-2500 | 44.99 |
| I-1000 | 42.98 | BTI-100 | 51.76 | LML-3000 | 44.99 |
| I-1500 | 46.62 | BTI-120 | 52.17 | LML-4000 | 44.99 |
| I-2000 | 42.98 | HMI-50 | 44.97 | LML-8000 | 44.99 |
| I-3000 | 42.98 | HMI-100 | 44.97 | LML-10000 | 44.99 |
| I-4000 | 44.40 | HMI-200 | 44.97 | LML-12000 | 44.99 |
| I-5000 | 44.40 | HMI-300 | 44.97 | LLP-10 | 89.58 |
| I-10000 | 42.98 | HMI-400 | 49.95 | LLP-15 | 76.86 |
| I-50 | 55.73 | HMI-500 | 44.97 | | |
| I-100 | 44.99 | HMI-800 | 49.95 | | |

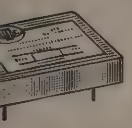
### MINIFILTERS★

BPM

de almost identical operational characteristics ndard units. Extremely miniaturized. Designed, ifactured and successfully tested to MIL-F- C. Cutoff frequency indicated by number suffix z). **Size:** BPH, BPM and LPM-6000 (and up), ¾" x 1⅛" h. (Wt., 1 oz.). HPM and LPM (thru , 1" x 1" x 1⅝" h. (Wt., 2¼ oz.). **BPM Types:** pass with gain 2:1. Attenuation, approx. 2 dB, from center freq.; 35 dB/octave. Input, 10K . Output to grid tapped for 10K ohms in transis- rcuitry. Used with tubes, continuity is on grid with transistors, continuity is on input side. **BPH Types:** pass units; attenuation less than 3 dB ±5% from center 40dB/octave. Source and load 500 ohms. **HPM Types:** High down less than 6 dB at cutoff freq.; more than 30 dB at .67 ; 40 dB at .6 cutoff. Input and output, 10K ohms. **LPM** s: Low pass units. Down less than 6 dB at cutoff freq.; more 30 dB at 1.5 cutoff; 40 dB at 1.65 cutoff. Input/output 10K.

| Type | Ea., 1-4 | UTC Type | Ea., 1-4 | UTC Type | Ea., 1-4 |
|---|---|---|---|---|---|
| I-50000 | $44.40 | BPM-2500 | $39.82 | HPM-4000 | $41.80 |
| I-100000 | 39.82 | BPM-3000 | 39.82 | LPM-200 | 41.80 |
| M-400 | 39.82 | BPM-3200 | 44.40 | LPM-300 | 41.80 |
| M-440 | 44.40 | BPM-4000 | 39.82 | LPM-500 | 41.80 |
| M-500 | 39.82 | BPM-4800 | 39.82 | LPM-1000 | 41.80 |
| M-600 | 39.82 | BPM-5000 | 44.40 | LPM-1500 | 41.80 |
| M-750 | 44.40 | BPM-6000 | 44.40 | LPM-2000 | 41.80 |
| M-800 | 39.82 | BPM-6400 | 44.40 | LPM-3000 | 41.80 |
| M-1000 | 39.82 | BPM-8000 | 39.82 | LPM-5000 | 41.80 |
| M-1200 | 39.82 | BPM-10000 | 39.82 | LPM-6000 | 41.80 |
| M-1500 | 39.82 | BPM-20000 | 39.82 | LPM-8000 | 41.80 |
| M-1600 | 39.82 | HPM-500 | 41.80 | LPM-10000 | 41.80 |
| M-1800 | 44.40 | HPM-1000 | 41.80 | LPM-15000 | 41.80 |
| M-2000 | 39.82 | HPM-1500 | 54.95 | | |

### FLATS★ FILTERS



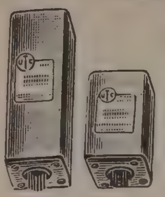
Offer excellent attenuation characteristics in ruggedized package to Grade 4, MIL-F-18327C. Straight pin terminals for printed circuit use. Hermetically-sealed flat metal case is shielded to reduce hum pickup. Low pass filters, unless otherwise mentioned. Source and load, 600 ohms for FLL-Type; all others 10K ohms. **Other Frequencies For High Pass, Low Pass and Bandpass Available on Special Order.**

| TC pe | MIL Type | Size, In. | | | Wt., Oz. | Min. Atten. | | Ea., 1-4 |
|---|---|---|---|---|---|---|---|---|
| | | W. | D. | H. | | dB | Above Hz | |
| 1* | FR6RX22YY1 | 2 | 1½ | ½ | 2.2 | 36 | 500‡<br>4000 | $75.65 |
| 10* | FR6RX22YY1 | 1¼ | 1¼ | ⅜ | 1.1 | 36 | 5000‡<br>40000 | 73.26 |
| 200† | FR6RX33YY1 | 2 | 2 | ½ | 2.5 | 40 | 140‡ | 55.80 |
| 600 | FR6RX11YY1 | 2 | 2 | ½ | 2.5 | 40 | 800 | 55.73 |
| 5000 | FR6RX11YY1 | 2 | 1½ | ⅜ | 2.0 | 43 | 6400 | 55.73 |
| 3500 | FR6RX11YY1 | 2 | 2 | ½ | 2.5 | 40 | 4500 | 55.73 |
| 18000 | FR6RX11YY1 | 2 | 2 | ½ | 2.5 | 43 | 23000 | 55.73 |
| 50000 | FR6RX11YY1 | 2 | 1½ | ⅜ | 2.0 | 43 | 64000 | 55.73 |

dpass filter. †High pass. ‡Below.

**★ALL PRODUCT LINES OR TYPE DESIGNATIONS ARE UTC TRADEMARKS.**

### TELEGRAPH TONE CHANNEL FILTERS



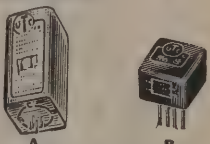
TGR TGT

Bandpass filters for multiplex transmitting and receiving. Units utilize a 7-terminal header, matching a 7-pin subminiature tube socket. **TGR** (receiving) and **TGT** (transmitting) filters are 600 ohms input and output. Down less than 3 dB at ±42.5 Hz from center freq. **TGR** units down more than 30dB at ±170 Hz. Attenuation, greater than 15 dB at adjacent channel crossover. **TGT** units down more than 16 dB at ±170 Hz. Attenuation, greater than 7.5dB at adjacent channel crossover. All units MIL Type FR4RX22YY1. **TGT Size:** 1½" x 1½" x 2½". Weight, 8 oz. Mtg. screws, 6-32. **TGR Size:** 1½" x 1½" x 4¼". Weight, 15 oz. Mtg. screws, 6-32.

| UTC Type TGT-* | Net Each, 1-4 | UTC Type TGT-* | Net Each, 1-4 | UTC Type TGR-* | Net Each, 1-4 | UTC Type TGR-* | Net Each, 1-4 |
|---|---|---|---|---|---|---|---|
| 425 | $53.56 | 2125 | $44.40 | 425 | $108.78 | 1955 | $79.62 |
| 595 | 67.30 | 2295 | 44.40 | 595 | 94.35 | 2125 | 79.62 |
| 765 | 49.95 | 2465 | 44.40 | 765 | 98.57 | 2295 | 79.62 |
| 935 | 51.06 | 2635 | 44.40 | 935 | 98.57 | 2465 | 76.31 |
| 1105 | 47.18 | 2805 | 44.40 | 1105 | 84.92 | 2635 | 76.31 |
| 1275 | 44.40 | 2975 | 44.40 | 1275 | 84.92 | 2805 | 76.31 |
| 1445 | 44.40 | 3145 | 44.40 | 1445 | 76.31 | 2975 | 76.31 |
| 1785 | 44.40 | 3315 | 44.40 | 1615 | 76.31 | 3145 | 76.31 |
| 1955 | 44.40 | | | 1785 | 76.31 | 3315 | 76.31 |

*Numerical suffix in UTC Type column is center freq. in Hz.

### TELEMETERING BANDPASS FILTERS

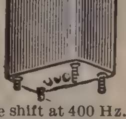


Both TMN and TMW types, designed for 100K ohms input and output impedance, with insertion loss of less than 6 dB. Four-pin hermetically sealed header matches small Winchester socket. **TMN Types (Fig. A):** Down less than 3 dB at ±7.5% of center freq.; down more than 18 dB at ±25% of center freq. Attenuation greater than 40 dB beyond 1.75 and .58 center freq. **TMW Types: (Fig. A):** Down less than 3 dB at ±15% of center frequency; down more than 20 dB at ±50% of center frequency. Attenuation, greater than 40 dB beyond 2.5 and .4 center frequency. **MNF, MWF Types (Fig. B):** (Tele-minifilter*) Provide same performance as TMN and TMW types except are extremely miniaturized for use in transistor circuitry. Pin terminals make use with printed circuits practical. **Size:** TMN-.4 thru -1.7, 11/16" x 1 9/32" x 2"h. Weight, 3.5 oz. TMN-2.3 thru TMW-70, 23/32" x 23/32" x 1⅜" h. Weight, 1.2 oz. MNF-.4 thru -5.4 (Minifilter), 1 3/16" x 1 3/16" x ½" h. Weight, 1 oz. MNF-7.35 thru MWF-70, 23/32" x 23/32" x ½" h. Weight, ⅛ oz.

| Frequency, kHz* | UTC Type | Net Ea., 1-4 | UTC Type | Net Ea., 1-4 |
|---|---|---|---|---|
| .4 or .56 | TMN- | $117.00 | MNF- | $55.73 |
| .73 or .96 | TMN- | 117.00 | MNF- | 55.73 |
| 1.3 or 1.7 | TMN- | 117.00 | MNF- | 55.73 |
| 2.3 or 3.0 | TMN- | 117.00 | MNF- | 55.73 |
| 3.9 or 5.4 | TMN- | 117.00 | MNF- | 55.73 |
| 7.35 | TMN- | 117.00 | MNF- | 59.72 |
| 10.5 or 14.5 | TMN- | 126.00 | MNF- | 59.72 |
| 22 or 30 | TMN- | 126.00 | MNF- | 59.72 |
| 40 | TMN- | 126.00 | MNF- | 59.72 |
| 52.5 or 70 | TMN- | 126.00 | MNF- | 56.88 |
| 22† | TMW- | 126.00 | MWF- | 59.72 |
| 30† | TMW- | 126.00 | MWF- | 59.72 |
| 40†, 52.5† or 70† | TMW- | 126.00 | MWF- | 56.88 |

*To order, add prefix according to type preferred (UTC Type), to frequency, i.e., TMN-.4, where .4 is freq. in kHz. †±15% bandwidth, all others ±7.5%.

### 400 Hz 115 V LINE FILTERS



Intended for use on 115 V, 400 Hz line to eliminate harmonic distortion.

**UTC No. PLF-25**—Gives 150 V output into 500 ohm load within ±1 dB, 375–425 Hz. Will attenuate 800 Hz by 30 dB; 1200 Hz and higher by at least 50 dB. MIL type FR4RX11NB1. Designed, manufactured and successfully tested to MIL-F-18327C. Size, 4 5/16" w. x 5 1/16" d. x 5½" h. Wt., 10 lbs. Ea., 1–4..... **$98.57**

**UTC No. PLP-13**—Eliminates harmonic distortion, rejects 60 and 120 Hz, and gives zero phase shift at 400 Hz. Operating into 1000-ohm load, provides 115 V output at 400 Hz, within ±1 dB, 375–425 Hz. Attenuates 800 Hz by 15 dB; 1200 Hz by 45 dB; above 1200 Hz by at least 35dB; 120 Hz by 20 dB; and, 60 Hz by 30 dB. MIL type FR4RX22LB1; meets MIL-F-18327C specifications. Size, 3 11/16" w. x 4 5/16" d. x 4½" h. Weight, 6½ lbs. Net Each, 1–4.................................... **$103.50**

### LOW FREQUENCY FILTER

| Application | Source Kohms | Load Ohms | Terms. | | |
|---|---|---|---|---|---|
| | | | * | Com. | † |
| Band-pass | 10 | 10 K | 1 | 2 | 3 |
| Band-pass | 10 | 3.3 megs | 1 | 2 | 4 |
| Band Reject | 10 | 50 K | 4 | 1 | 3 |

*Input. †Output.

Has four terminals. Can be used as a bandpass filter or rejector. As a filter, within 3 dB at 9.6 and 10.4 Hz; Attenuation at 5 and 20 Hz is at least 30 dB with 10K ohms load and 35 dB with 3.3 megohms. As a band rejector filter, the unit attenuates 10 Hz by a min. of 30 dB and varies less than 3 dB from DC to 7 Hz, and from 14 Hz to 36 kHz. MIL type FR6RX22FB1. FB case. Weight, 1¼ lbs.

**UTC Type LBP-10**—Net Each, 1–4........................ **$89.58**

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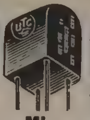
# DIV. OF TRW HIGH "Q" COILS AND INDUCTORS

## MINIDUCTORS★

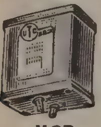
**MH, MM**


**ML**

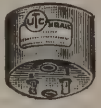
Ultraminiature high Q units designed, manufactured and successfully tested to MIL-T-27C, Grade 5; ideal for transistor and printed circuit use. ML types are in Hipermalloy shield case; others are molded permalloy dust toroids. Excellent temperature stability: 1%, −55° C to +100° C. Pin terminals. **Type MM:** Ultraminiature, epoxy molded, toroidal inductors. Max. Q at 30 kHz. Size, 7/16" dia. x 1/4". Wt., 0.7 oz. **Type MH:** Same, but max. Q at 100 kHz. **Type ML:** Ultraminiature, Hipermalloy cased inductors. Max. Q at 800–2,000 Hz, depending on inductance. Size, 7/16" x 31/64" x 9/16". Wt., 0.2 oz. **Type MO:** Miniature, molded type. Max. Q at 600–1500 Hz, depending on inductance. Size, 3/4" x 1 1/16". Wt., 1 oz. **Type MW:** Miniature, toroidal, epoxy molded. Max. Q, 5–10 kHz. Size, 23/32" dia. x 13/32". Wt., 0.25 oz.

| UTC Type | Ind., H (0 DC) | Net Ea., 1-4 | UTC Type | Ind., H (0 DC) | Net Ea., 1-4 | UTC Type | Ind., H (0 DC) | Net Ea., 1-4 |
|---|---|---|---|---|---|---|---|---|
| **ML-0** | .15 | $11.94 | **MM-6** | .030 | $11.14 | **MO-2** | 2 | $13.94 |
| **ML-1** | .25 | 11.94 | **MM-7** | .060 | 11.94 | **MO-5** | 5 | 13.94 |
| **ML-2** | .40 | 11.94 | **MM-8** | .120 | 11.94 | **MO-7.5** | 7.5 | 13.94 |
| **ML-3** | .70 | 11.94 | **MH-1** | .0006 | 11.14 | **MO-20** | 20 | 13.94 |
| **ML-4** | 1.4 | 11.94 | **MH-2** | .0015 | 11.14 | **MO-50** | 50 | 14.73 |
| **ML-5** | 2.5 | 11.94 | **MH-3** | .0025 | 11.94 | **MO-100** | 100 | 14.73 |
| **ML-6** | 4.0 | 11.94 | **MH-4** | .006 | 11.94 | **MW-.05** | .05 | 9.97 |
| **ML-7** | 6.0 | 11.94 | **MH-5** | .010 | 12.33 | **MW-.10** | .10 | 10.35 |
| **ML-8** | 10 | 11.94 | **MH-6** | .015 | 12.33 | **MW-.25** | .25 | 10.35 |
| **ML-9** | 25 | 12.33 | **MH-7** | .025 | 12.75 | **MW-.5** | .5 | 10.76 |
| **ML-10** | 60 | 13.94 | **MH-8** | .040 | 12.75 | **MW-.75** | .75 | 11.94 |
| **MM-1** | .003 | 10.35 | **MO-.1** | .1 | 13.53 | **MW-1** | 1.0 | 12.33 |
| **MM-2** | .005 | 10.35 | **MO-.15** | .15 | 13.53 | **MW-1.2** | 1.2 | 13.14 |
| **MM-3** | .008 | 10.76 | **MO-.3** | .3 | 13.53 | **MW-2** | 2 | 15.13 |
| **MM-4** | .0125 | 10.76 | **MO-.5** | .5 | 13.53 | **MW-3** | 3 | 16.32 |
| **MM-5** | .020 | 11.14 | **MO-1** | 1 | 13.53 | **MW-5** | 5 | 20.30 |

## HIGH "Q" TOROID INDUCTORS


**HQB**

**HQE**


**HQA and HQC**

Excelled only by the "M" series toroids. "HQ" coils are available for applications requiring coils for use in circuitry from 100 Hz to 100 kHz. Coils are adjusted to 1% and inductance is independent of frequency, temperature and vibration. Voltage stability is high and the shielding case assures coupling attenuation of 80 dB. All units are designed, manufactured and successfully tested to MIL-T-27C specifications under severe environmental conditions. All units are MIL Type TF4RX20YY. **Size:** HQA, HQC case, 1 13/16" dia. x 1 3/16" h.; HBQ case, 2 5/8" l. x 1 5/8" w. x 2 5/8" h.; HQE case, 1 1/16" l. x 1/2" w. x 1 7/32" h. Mounting screws 6-32 except HQE case, 4-40. **Cutout Size:** HQA, HQC cases, 9/16" x 1 3/16"; HBQ case, 9/16" x 1 1/8"; HQE case, 5/16" x 1/2". Weight, HQA, HQC cases, 5 oz.; HBQ case, 14 oz.; HQE case, 1.5 oz. *Millihenries.

| UTC Type | Induct. (0 DC*) | Max. mADC | Each, 1-4 | UTC Type | Induct. (0 DC*) | Max. mADC | Ea., 1-4 |
|---|---|---|---|---|---|---|---|
| **HQA-1** | 5 | 400 | $13.14 | **HQB-3** | 70 | 170 | $62.10 |
| **HQA-2** | 12.5 | 260 | 30.60 | **HQB-4** | 120 | 120 | 64.80 |
| **HQA-3** | 20 | 200 | 13.94 | **HQB-5** | .5 H | 60 | 66.66 |
| **HQA-4** | 30 | 160 | 32.40 | **HQB-6** | 1 H | 41 | 68.40 |
| **HQA-5** | 50 | 130 | 33.30 | **HQB-7** | 2 H | 30 | 72.00 |
| **HQA-6** | 80 | 100 | 34.20 | **HQB-8** | 3.5 H | 22 | 74.70 |
| **HQA-7** | 125 | 85 | 34.20 | **HQB-9** | 7.5 H | 16 | 78.30 |
| **HQA-8** | 200 | 65 | 36.00 | **HQB-10** | 12 H | 11 | 81.90 |
| **HQA-9** | 300 | 50 | 36.00 | **HQB-11** | 18 H | 9 | 85.50 |
| **HQA-10** | .5 H | 40 | 36.90 | **HQB-12** | 25 H | 8 | 90.40 |
| **HQA-11** | .75 H | 35 | 36.90 | **HQC-1** | 1 | 1350 | 23.09 |
| **HQA-12** | 1.25 H | 26 | 39.60 | **HQC-2** | 2.5 | 850 | 25.74 |
| **HQA-13** | 2 H | 20 | 42.30 | **HQC-3** | 5 | 600 | 59.40 |
| **HQA-14** | 3 H | 16 | 47.70 | **HQC-4** | 10 | 420 | 65.70 |
| **HQA-15** | 5 H | 13 | 22.30 | **HQC-5** | 20 | 300 | 78.30 |
| **HQA-16** | 7.5 H | 10 | 50.40 | **HQE-1** | 5 | 155 | 25.20 |
| **HQA-17** | 10 H | 9 | 56.70 | **HQE-2** | 10 | 110 | 25.20 |
| **HQA-18** | 15 H | 8 | 59.40 | **HQE-3** | 50 | 50 | 26.10 |
| **HQB-1** | 10 | 410 | 72.00 | **HQE-4** | 100 | 35 | 27.90 |
| **HQB-2** | 30 | 240 | 72.00 | **HQE-5** | 200 | 25 | 12.75 |

## LOW FREQUENCY HIGH "Q" COILS

### TYPE MQL

Designed, manufactured and successfully tested to MIL-T-27C specifications, all units are MIL Type TF4RX20YY. Inductance values are lab. adjusted to 2% tolerance at 1 V, 60 Hz. Total inductance swing is less than 3.5% from −55° C to +85° C. Two windings brought to four terminals permit series, parallel, center-tapped, or transformer type connections. Case, 1 13/16" dia. x 2 1/2" h. Square mounting, 1 1/2" x 1 1/2", 6-32 screw. Cutout, 1 1/2" dia. Weight, 1 lb.

| UTC Type | H (0 DC) |  | Each, 1-4 | UTC Type | H (0 DC) |  | Each, 1-4 |
|---|---|---|---|---|---|---|---|
|  | Series | Parallel |  |  | Series | Parallel |  |
| **MQL-0** | 1 | .25 | $117.00 | **MQL-3** | 200 | 50 | $51.76 |
| **MQL-1** | 10 | 2.5 | 51.76 | **MQL-4** | 400 | 100 | 121.50 |
| **MQL-2** | 20 | 5 | 51.76 | **MQL-5** | 2500 | 625 | 126.00 |

### TYPE MQM

Similar to above, MQM types provide exceptional stability. Inductance variation less than 2%, −55° C to +130° C. MIL type TF4SX20YY. Case, 1 5/16" dia. x 1 5/8" h. Cutout, 1" dia. Wt., 5 oz.

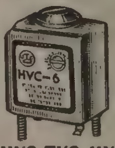
|  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|
| **MQM-2** | 2 | .5 | $27.46 | **MQM-300** | 300 | 75 | $29.06 |
| **MQM-16** | 16 | 4 | 27.46 | **MQM-600** | 600 | 150 | 67.50 |
| **MQM-40** | 40 | 10 | 27.46 |  |  |  |  |

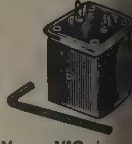
## HERMETIC "M" TYPE TOROIDS

Permalloy dust toroids provide maximum Q. Designed, manufactured and successfully tested to MIL-T-27C and laboratory adjusted to 1% tolerance; excellent voltage and temperature stability. Toroid plus magnetic case equals 80 dB shielding. **MQA Types:** Have Q of 40 at 500 Hz, 160 at 5 kHz, approx. 40 at 20 kHz. Size, 1 1/16" x 1 9/32" x 1 21/32" h., wt., 4 oz. **MQB Types:** Have Q of 40 at 250 Hz, 250 at 3 kHz, approx. 40 at 20 kHz. Size, 1 3/16" x 2 9/16" x 2 13/16" h.; wt., 14 oz. **MQD Types:** Have Q of 40 at 5 kHz, 185 at 50 kHz, approx. 40 at 300 kHz. Size, 1 1/16" x 1 9/32" x 1 21/32" h.; wt., 4 oz. **MQ Types:** Have Q of 20 at 600 Hz, 140 at 10 kHz, approx. 40 at 4 kHz. Size, 1/2" x 1 1/16" x 1 7/32" h.; wt., 1.5 oz. **TQA Types:** Cente tapped version of MQA types, see above for specifications.

| UTC Type | Ind., H | Ea., 1-4 | UTC Type | Ind., H | Ea., 1-4 | UTC Type | Ind., H | Ea., 1-4 |
|---|---|---|---|---|---|---|---|---|
| **MQA-1** | .007 | $11.14 | **MQB-8** | 3.5 | $60.30 | **MQE-12** | .90 | 13.5 |
| **MQA-2** | .012 | 11.56 | **MQB-9** | 7.5 | 28.67 | **MQE-13** | 1.5 | 32.4 |
| **MQA-3** | .020 | 11.94 | **MQB-10** | 12 | 67.50 | **MQE-14** | 2.0 | 35.1 |
| **MQA-4** | .030 | 12.74 | **MQB-11** | 18 | 73.80 | **MQE-15** | 2.8 | 38.7 |
| **MQA-5** | .050 | 13.14 | **MQB-12** | 25 | 34.64 | **MQE-16** | 4.0 | 44.1 |
| **MQA-6** | .070 | 13.53 | **MQB-13** | 40 | 84.60 | **TQA-1** | .007 | 27.0 |
| **MQA-7** | .120 | 13.94 | **MQB-14** | 60 | 93.60 | **TQA-2** | .012 | 27.9 |
| **MQA-8** | .20 | 14.32 | **MQD-0** | .001 | 21.90 | **TQA-3** | .020 | 28.8 |
| **MQA-9** | .30 | 14.73 | **MQD-1** | .002 | 50.40 | **TQA-4** | .030 | 29.7 |
| **MQA-10** | .50 | 15.13 | **MQD-2** | .003 | 51.75 | **TQA-5** | .050 | 30.6 |
| **MQA-11** | .70 | 15.54 | **MQD-3** | .005 | 54.00 | **TQA-6** | .070 | 31.5 |
| **MQA-12** | 1.0 | 15.92 | **MQD-4** | .007 | 55.80 | **TQA-7** | .120 | 32.4 |
| **MQA-13** | 1.5 | 36.90 | **MQD-5** | .012 | 59.40 | **TQA-8** | .20 | 33.1 |
| **MQA-14** | 2.5 | 37.80 | **MQD-6** | .020 | 69.30 | **TQA-9** | .30 | 34.2 |
| **MQA-15** | 4.0 | 39.60 | **MQD-7** | .030 | 74.70 | **TQA-10** | .50 | 35.1 |
| **MQA-16** | 6.0 | 43.20 | **MQE-0** | .004 | 9.97 | **TQA-11** | .70 | 36.0 |
| **MQA-17** | 10.0 | 20.30 | **MQE-1** | .007 | 23.40 | **TQA-12** | 1.0 | 36.9 |
| **MQA-18** | 15.0 | 49.50 | **MQE-2** | .012 | 10.76 | **TQA-13** | 1.5 | 37.8 |
| **MQA-19** | 22.0 | 58.50 | **MQE-3** | .020 | 11.14 | **TQA-14** | 2.5 | 38.7 |
| **MQA-20** | 35.0 | 67.50 | **MQE-4** | .030 | 11.14 | **TQA-15** | 4.0 | 40.5 |
| **MQB-1** | .010 | 29.86 | **MQE-5** | .050 | 11.56 | **TQA-16** | 6.0 | 44.1 |
| **MQB-2** | .030 | 67.50 | **MQE-6** | .070 | 12.33 | **TQA-17** | 10.0 | 47.7 |
| **MQB-3** | .070 | 23.88 | **MQE-7** | .100 | 12.33 | **TQA-18** | 15.0 | 52.2 |
| **MQB-4** | .120 | 23.88 | **MQE-8** | .150 | 12.75 | **TQA-19** | 22.0 | 63.0 |
| **MQB-5** | .50 | 23.88 | **MQE-9** | .250 | 12.75 | **TQA-20** | 35.0 | 70.2 |
| **MQB-6** | 1.0 | 25.89 | **MQE-10** | .40 | 13.14 |  |  |  |
| **MQB-7** | 2.0 | 25.89 | **MQE-11** | .60 | 13.14 |  |  |  |

## VARIDUCTORS★


**HVC, TVC, HVV**


**VIC**

Ideally suited for use in tuning of oscillator circuits, tuned circuits, etc. **HVC Types:** Designed, manufactured and successfully tested to MIL-T-27C specifications and provide a wide inductance range with high Q in a compact unit. Units are usable over a wide frequency range and have high stability with temperature and voltage fluctuation. TVC inductors are the same as HVC units except they provide taps a 30% and 50% of total turns. Inductance range, −70% to +200 of the mean value through use of adjusting screw on top of cas **VIC Types:** Standard inductors that may be adjusted through us of a set-screw on the side of case. Inductance range, −45% t +85% of the value. **HVV Types:** For precise matching; vernie inductance variation ±10% of nominal value. Offer high Q over wide frequency range and high temperature stability. **Size:** HVC TVC and HVV types, 1 1/8" lg. x 25/32" w. x 1 9/32" h.; weight, 2 o VIC type, 1 11/32" lg. x 1 1/4" w. x 1 7/16" h.; weight, 5 1/2 oz. HVC an TVC, U.S. Pat. No. 2,879,489; HVV, Pat. pending.

| UTC Type | Mean H | mA DC | Ea., 1-4 | UTC Type | Mean H | mA DC | Ea., 1-4 |
|---|---|---|---|---|---|---|---|
| **HVC-1** | .006 | 100 | $13.14 | **TVC-6** | .6 | 15 | $15.9 |
| **HVC-2** | .015 | 60 | 13.14 | **TVC-7** | 1.5 | 10 | 16.7 |
| **HVC-3** | .040 | 40 | 13.14 | **TVC-8** | 4 | 7 | 16.7 |
| **HVC-4** | .1 | 30 | 13.14 | **TVC-9** | 10 | 5 | 16.7 |
| **HVC-5** | .25 | 20 | 13.14 | **TVC-10** | 25 | 3.5 | 42.3 |
| **HVC-6** | .6 | 15 | 13.14 | **TVC-11** | 60 | 2 | 45.9 |
| **HVC-7** | 1.5 | 10 | 13.94 | **TVC-12** | 150 | 1.5 | 49.5 |
| **HVC-8** | 4 | 7 | 13.94 | **VIC-1** | .0085 | 75 | 10.3 |
| **HVC-9** | 10 | 5 | 13.94 | **VIC-2** | .013 | 60 | 10.3 |
| **HVC-10** | 25 | 3.5 | 14.34 | **VIC-3** | .021 | 50 | 10.3 |
| **HVC-11** | 60 | 2 | 15.54 | **VIC-4** | .034 | 40 | 10.3 |
| **HVC-12** | 150 | 1.5 | 17.12 | **VIC-5** | .053 | 35 | 10.3 |
| **HVV-.006** | .006 | 200 | 17.12 | **VIC-6** | .084 | 30 | 10.3 |
| **HVV-.015** | .015 | 120 | 17.12 | **VIC-7** | .13 | 25 | 10.3 |
| **HVV-.04** | .04 | 80 | 17.12 | **VIC-8** | .21 | 21 | 10.7 |
| **HVV-.1** | .10 | 50 | 17.12 | **VIC-9** | .34 | 18 | 10.7 |
| **HVV-.25** | .25 | 30 | 17.12 | **VIC-10** | .54 | 15 | 10.7 |
| **HVV-.6** | .6 | 20 | 17.12 | **VIC-11** | .85 | 12 | 10.7 |
| **HVV-1.5** | 1.5 | 13 | 18.71 | **VIC-12** | 1.3 | 10 | 11.1 |
| **HVV-4** | 4 | 6 | 18.71 | **VIC-13** | 2.2 | 8 | 11.1 |
| **HVV-10** | 10 | 4.5 | 18.71 | **VIC-14** | 3.4 | 7 | 11.1 |
| **HVV-25** | 25 | 3 | 18.71 | **VIC-15** | 5.4 | 6 | 11.5 |
| **HVV-60** | 60 | 2 | 20.71 | **VIC-16** | 8.5 | 5 | 11.5 |
| **HVV-150** | 150 | 1.3 | 22.69 | **VIC-17** | 13 | 4 | 11.5 |
| **TVC-1** | .006 | 100 | 15.92 | **VIC-18** | 21 | 3.5 | 11.9 |
| **TVC-2** | .015 | 60 | 15.92 | **VIC-19** | 33 | 3 | 11.9 |
| **TVC-3** | .040 | 40 | 15.92 | **VIC-20** | 52 | 2 | 30.6 |
| **TVC-4** | .1 | 30 | 15.92 | **VIC-21** | 83 | 1.5 | 33.3 |
| **TVC-5** | .25 | 20 | 15.92 | **VIC-22** | 130 | 1 | 42.3 |

**★UTC TRADEMARK. ALL PRODUCT LINES OR TYPE DESIGNATIONS ARE UTC TRADEMARKS.**

**SEE LAST TWO PAGES OF UTC LISTING FOR MILITARY INFORMATION**

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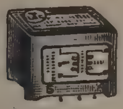
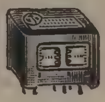
# DIV. OF TRW Miniature Transformers

## SUBOUNCER★ AND SUB-SUBOUNCER★ HERMETICALLY SEALED TRANSISTOR AND TUBE TYPE AUDIO TRANSFORMERS

ML-70



SO- P



SSO- P

miniaturized components offer high efficiency and wide ency response. Special nickel-iron core materials and winding ods assure exceptional performance and reliability. These are vacuum molded to MIL Grade 5. Employ 40 mil, y anchored pin terminals ideally suited for printed circuit ransistor applications. Terminals are strong enough to support these light weight units.

### SUBOUNCER★ PRINTED CIRCUIT MOLDED TO MIL GRADE 5

¾" x 1" x ³³⁄₆₄". Pin length, ¼". Weight, .05 lb.

| C be | Application | MIL Type | Imped., Ohms Primary | Imped., Ohms Second. | Ea., 1-4 |
|---|---|---|---|---|---|
| P | Interstage, 3:1 | TF5RX15ZZ | 10K | 90K | $10.56 |
| P | Plate to line | TF5RX13ZZ | 10K<br>25K | 200<br>500 | 10.35 |
| P | Inductor: 40 H at 1 mA, 2675 ohms, series; 5 H at 4 mA, 670 ohms, parallel; TF5RX20ZZ | | | | 9.97 |
| P | Transistor interstage | TF5RX13ZZ | 20K<br>30K | 800<br>1200 | 9.25 |
| P | Tr. to p-p sec. | TF5RX13ZZ | 10K | 2000 CT | 10.74 |
| P | P-p tr. to V.C. | TF5RX17ZZ | 500 CT | 3.2 | 10.35 |
| 4P | Transistor interstage | TF5RX17ZZ | 80 CT<br>100 CT | 32 spl.<br>40 spl. | 10.96 |
| 5P | Tr. output | TF5RX17ZZ | 600 CT | 600 spl. | 10.96 |
| 7P | Inductor: 16 H at 2 mA, 1.1K ohms, series; 4 H at 4 mA, 275 ohms, parallel; TF5RX17ZZ | | | | 9.97 |
| 8P | Tr. output | TF5RX13ZZ | 500 KCT | 600 spl. | 27.90 |

### HIPERMALLOY★ SHIELD CASE AUDIO UNIT

Ultra-miniature transformer provides high shielding, extremely low insertion loss with wide band response, 200–20,000 Hz. Provided with pin terminals .025" dia., strong enough to support the unit. Ideal for printed circuits. Size: ⁷⁄₁₆" x ³¹⁄₆₄" x ⁹⁄₁₆". Wt., .2 oz.

| UTC Type | Application | MIL Type | Imped., Ohms Primary | Imped., Ohms Second. | Ea., 1-4 |
|---|---|---|---|---|---|
| SML-70 | Input or chopper | TF5RX16ZZ | 200K | 1K | 25.20 |

### SUB-SUBOUNCER★ PRINTED CIRCUIT MOLDED TYPES TO MIL GRADE 5

Size: ¾" x ⅞" x ⁹⁄₁₆". Pin length, ¼". Weight, .04 lb.

| UTC Type | Application | MIL Type | Imped., Ohms Primary | Imped., Ohms Second. | Ea., 1-4 |
|---|---|---|---|---|---|
| SSO-3P | Plate to line | TF5RX13ZZ | 10K<br>25K | 200<br>500 | 11.74 |
| SSO-5P | Inductor: 100 H at 0 mA, 4.4K ohms, series; 25 H at 0 mA, 1.1K ohms, parallel; TF5RX20ZZ | | | | 11.14 |
| SSO-8P | Tr. to p-p sec. | TF5RX13ZZ | 10K | 2000 CT | 11.56 |
| SSO-14P | Transistor interstage | TF5RX13ZZ | 10K CT<br>25K CT | 200 CT<br>500 CT | 11.74 |
| SSO-15P | Transistor interstage | TF5RX13ZZ | 20K CT<br>30K CT | 800 CT<br>1200 CT | 11.74 |
| SSO-19P | Outp. matching | TF5RX17ZZ | 500 CT | 600 CT | 10.96 |
| SSO-20P | Output | TF5RX17ZZ | 1.5K CT | 600 CT | 10.96 |
| SSO-21P | Crys./chopper | TF5RX16ZZ | 200K CT | 1000 CT | 12.54 |
| SSO-22P | Interstage | TF5RX13ZZ | 10K CT<br>12K CT | 1500 CT<br>1800 CT | 11.36 |
| SSO-23P | Inductor: 8 H at 2 mA, 600 ohms, series; 2 H at 4 mA, 150 ohms, parallel; TF5RX20ZZ | | | | 10.96 |
| SSO-24P | Inductor: 3.5 H at 2 mA, 160 ohms, series; 0.9 H at 4 mA, 40 ohms, parallel; TF5RX20ZZ | | | | 10.96 |
| SSO-25P | Transistor interstage | TF5RX13ZZ | 10K CT | 10K/2.5K spl. | 11.94 |
| SSO-27P | Transistor Output or Driver | TF5RX13ZZ | 4K CT | 600 spl. | 12.33 |

## OUNCER★ AUDIO UNITS

### STANDARD AND PLUG-IN UNITS

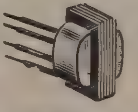
-In Ouncer

UTC Ouncer components are fully impregnated and sealed against severe environmental conditions in a drawn aluminum housing. Only ⅞" in diameter, they are ideal for mounting opposite terminal boards. Ideal for use in portable radios, aircraft, etc. Wide-frequency range characteristics are provided, ±1 dB, 30–20,000 sponse except where indicated otherwise. "P" units are iden- in all respects except are housed in a Bakelite* case with octal in pins. UTC Type O-16 has heavy shielding (1¹⁄₁₆" dia.) 3 oz.; P-16 has 9-pin plug (1³⁄₁₆" dia.). Weight, 4 oz. Weight incers, 1 oz., max. *Bakelite Corp. trademark.

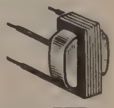
| Ea., 1-4 | Application | Pri. Imped., Ohms | Sec. Imped., Ohms | UTC Type | Ea., 1-4 |
|---|---|---|---|---|---|
| $11.36 | Input | 50, 200/250, 500/600 | 50K | P-1 | $13.14 |
| 11.74 | P-p input | See O-1 pri. | 50K CT | P-2 | 29.10 |
| 10.97 | Input | 7.5/30 | 50K | .... | ...... |
| 9.77 | Pl. to grid | 15K | 60K | .... | ...... |
| 9.97 | Pl. to grid | 15K, 4 mA | 60K | .... | ...... |
| 10.97 | Pl. to p-p | 15K | 95K CT | P-6 | 29.10 |
| 10.97 | Pl. to p-p | 15K, 4 mA | 95K CT | P-7 | 29.10 |
| 11.36 | Pl. to line | 15K | See O-1 pri. | P-8 | 29.10 |
| 11.36 | Pl. to line | 15K, 4 mA | As above | P-9 | 29.10 |
| 12.15 | P-p to line | 30K CT | As above | P-10 | 31.05 |
| 11.36 | Cry. to line | 50K | As above | P-11 | 27.00 |
| 11.36 | Mixing | 50, 200/250 | As above | P-12 | 13.14 |
| 9.37 | Inductor: 300 H–0 mA, 6000 ohms | | | .... | ...... |
| 10.97 | 50:1 input | 200 | 500K | .... | ...... |
| 10.97 | 10:1 P/G | 10K | 1 meg. | P-15 | 31.05 |
| 14.73 | Shld. input | 250 CT | 50K | P-16 | 17.52 |
| 2.19 | Hipermalloy shield, 25 dB, for Ouncers | | | .... | ...... |
| 11.36 | Tr. intrstg. | 10K/2.5K split | 2K/500 split | .... | ...... |
| 11.36 | Tr. intrstg. | 10K/2.5K split | 4K/1K split | .... | ...... |
| 9.16 | Tr. to line | 1.5K CT | 500/125split | .... | ...... |
| 18.90 | Tr. to V.C. | 2K/4K CT | 8/16 | .... | ...... |
| 7.96 | Tr. to V.C. | 500/400 CT | 4/3.2 | .... | ...... |
| 17.10 | Inductor: 7 H–3 mA, 230 ohms | | | .... | ...... |
| 7.58 | Inductor: 1.6 H–3 mA, 25 ohms | | | .... | ...... |
| 11.36 | Tr. input | 600/150 sp. | 2K/500 split | .... | ...... |
| 11.36 | Tr. intrstg. | 10K CT, 4 mA | 10K CT | .... | ...... |
| 11.74 | Tr. intrstg. | 10K CT, 4 mA | 500/125split | .... | ...... |
| 11.74 | Tr. intrstg. | 50K CT, 2 mA | 500/125split | .... | ...... |
| 11.94 | Tr. intrstg. or chopper | 100K CT, 1 mA | 500/125split | .... | ...... |
| 11.56 | Tr. intrstg. | 500/125 split | 500/125split | .... | ...... |
| 11.56 | Tr. intrstg. | 500/125 split | 150/37.5 sp. | .... | ...... |
| 11.56 | Tr. intrstg. | 500/125 split | 50/12.5 split | .... | ...... |
| 11.94 | Tr. intrstg. | 100/25 split | 40/10 split | .... | ...... |
| 18.00 | Spl. induct.: 60 mH–80 mA, 4 ohms, series; 15 mH–160 mA, 1 ohm, parallel | | | .... | ...... |
| 16.65 | Spl. induct.: 1 H–20 mA, 60 ohms, series; 0.25 H–40 mA, 15 ohms, parallel | | | .... | ...... |
| 11.56 | Tr. t line | 4K/1Kspl.,4mA | 650/150split | .... | ...... |
| 17.55 | Spkr. match | 0, 4, 8, 16 ΩDC | ........... | .... | ...... |
| .61 | Mounting U-bracket for Ouncers | | | .... | ...... |

C trademark.

## SUB-SUBOUNCERS★ AND SUBOUNCERS★



SO



SSO

Miniature nickel-iron core units for use in vacuum tube and transistorized circuitry. Units are vacuum sealed for highest dependability. Windings are wound on high-quality nylon bobbins; plastic insulated leads, 4" l., color coded. No mounting facilities are provided. Units may be used for impedances other than those indicated, keeping in mind that the impedance ratio is constant. Units may be reversed, input to secondary. Subouncer units handle a higher level than Sub-Subouncers. Constructional details are identical. Available hermetically sealed on special order. **SSO Sub-Subouncers:** Approx. 2 dB, 140–10,000 Hz. Size: ⁷⁄₁₆" x ¾" x ⁴³⁄₆₄"; weight, .02 lb. **SO Subouncers:** Approx. 2 dB, 100–10,000 Hz. Size: ¹⁹⁄₃₂" x ²³⁄₃₂" x ⅞"; weight, .03 lb.

| UTC SSO- | Ea., 1-4 | Application | Pri. Imp., Ohms | Sec. Imp., Ohms | UTC SO- | Ea., 1-4 |
|---|---|---|---|---|---|---|
| 1 | $7.96 | Input | 50/200 | 62.5K/250K | 1 | $7.17 |
| 2 | 7.96 | Interstage | 10K, .25 mA | 90K | 2 | 6.97 |
| 3 | 7.58 | Pl. to line | 10K/25K* | 200/500 | 3 | 6.36 |
| 4 | 7.17 | Output | 30K, 1 mA | 50 | 4 | 6.76 |
| 5 | 6.18 | Inductor | 50 H at 1 mA | 4400 ohms♯ | 5‡ | 5.18 |
| 6 | 7.17 | Output | 100K, .5 mA | 60 | 6 | 7.58 |
| 7 | 5.98 | Tr. intrstg. | 20K/30K† | 800/1200 | 7 | 5.57 |
| 8 | 6.58 | Tr. intrstg. | 10K, 1 mA | 2K CT | 8 | 6.37 |
| 9 | 5.98 | Tr. to V.C. | 10K, 2 mA | 16 | .... | ..... |
| .... | ..... | Tr. to V.C. | 500 CT | 3.2 | 9 | 5.57 |
| 10 | 5.98 | Tr. to V.C. | 10K, 2 mA | 3.2 | .... | ..... |
| .... | ..... | Tr. to V.C. | 2K/4K CT | 8/16 | 10 | 5.39 |
| 11 | 5.39 | Tr. output | 500/600§ | 50/60 | .... | ..... |
| .... | ..... | Tr. intrstg. | 400/500 CT | 400/500 split | 11 | 6.18 |
| 12 | 5.39 | Tr. output | 1K/1.2K†† | 50/60 | .... | ..... |
| .... | ..... | Tr. intrstg. | 400/500 CT | 120/150 split | 12 | 6.18 |
| 13 | 6.97 | Input | 200K | 1K | .... | ..... |
| .... | ..... | Tr. intrstg. | 400/500 CT | 40/50 split | 13 | 5.97 |
| 14 | 6.76 | Tr. intrstg. | 10K/25K CT | 200/500 CT | .... | ..... |
| .... | ..... | Tr. intrstg. | 80/100 CT | 32/40 split | 14 | 5.97 |
| 15 | 6.97 | Tr. intrstg. | 20K/30K CT | .8/1.2K CT | .... | ..... |
| .... | ..... | Tr. output | 600 CT, 6 mA | 600 split | 15 | 6.18 |
| 16 | 5.18 | Tr. output | 1.2K/1.5K†† | 3.2/4 | .... | ..... |
| .... | ..... | Tr. intrstg. | 2.5K CT, 4 mA | 2500 split | 16 | 6.57 |
| 17 | 5.78 | Output | 10K/12K** | 500/600 CT | .... | ..... |
| .... | ..... | Inductor: 16 H at 2 mA, 1.1K ohms, series; 4 H at 4 mA, 275 ohms, parallel | | | 17 | 5.78 |
| 18 | 5.98 | Output | 7.5K/9.4K CT | 3.2/4 | .... | ..... |
| .... | ..... | Tr. output | 50 KCT | 600 split | 18 | 18.45 |
| 19 | 5.78 | Matching | 500 CT, 10 mA | 600 CT | .... | ..... |
| 20 | 5.78 | Output | 1.5K CT, 7 mA | 600 CT | .... | ..... |
| 21 | 8.17 | Chopper | 200K CT | 1K CT | .... | ..... |
| 22 | 6.97 | Tr. intrstg. | 10K/12K CT | 1.5K/1.8K CT | .... | ..... |
| 23 | 4.58 | Inductor: 4 H at 5 mA, 650 ohms | | | .... | ..... |
| 24 | 4.78 | Inductor: 1.5 H at 5 mA, 160 ohms | | | .... | ..... |
| 25 | 7.58 | Tr. intrstg. | 10K/12K CT | 10K/12K CT | .... | ..... |
| 26 | 7.76 | Tr. intrstg. | 40K/50K CT | 400/500 split | .... | ..... |
| 27 | 7.76 | Tr. output | 4K CT, 2.5 mA | 600 split | .... | ..... |
| CH | .40 | Mounting channel for any of above | | | CH | .40 |

*1.5 mA. †0.5 mA. ‡Resis., 2675 ohms. §3.5 mA. **2 mA. ††3 mA. ♯DC resis.

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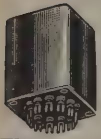
# UTC DIV. OF TRW HI-FI, BROADCASTING COMPONENTS

## HI-FI, AUDIO TRANSFORMERS

### ULTRA COMPACT★ HI-FI AUDIOS

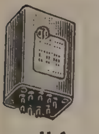


Compact, rugged audio transformers, small in size and light in weight, for use in remote amplifier and similar compact equipment. High fidelity frequency response is obtainable in all units. Frequency response, ±2 dB, 20–20,000 Hz, except where noted. All units except those carrying DC in primary employ a hum-balancing coil structure, combined with a high conductivity outer shell, effecting good inductive shielding. Case is die-cast, mounts top or bottom. **Size:** 1½" x 1½" x 2" h. Weight, ½ lb.

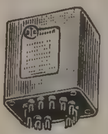
| UTC Type | Use | Primary Impedance, Ohms | Sec. Impedance, Ohms | # | Ea., 1-4 |
|---|---|---|---|---|---|
| **A-10** | Input | 50, 125/150, 200/250, 333, 500/600 | 50K split | a | $26.28 |
| **A-11** | Shld. Input | 50, 200, 500 | 50K CT | a | 19.71 |
| **A-12** | Input | Same as A-10 | 80K split | a | 25.87 |
| **A-15** | Interstage* | 10K/2.5K split** | 2K/500 split | c | 15.92 |
| **A-16** | Pl. to grid | 15K | 60K | a | 19.50 |
| **A-18** | Pl. to p-p | 15K split | 80K split | a | 23.09 |
| **A-19** | Pl. to p-p | 15K, 8 mA | 80K split | c | 19.31 |
| **A-20** | Mixing | Same as A-10 | Same as pri. | d | 25.87 |
| **A-21** | Sh. mixing | 50, 200/250, 500/600 | Same as pri. | e | 17.52 |
| **A-22** | Tr. to line* | 500 CT | 500/125 sp. | c | 14.53 |
| **A-23** | Tr. to V.C.* | 500 CT | 16/4 split | c | 14.53 |
| **A-24** | Pl. to line | 15K split | See A-10 pri. | f | 25.49 |
| **A-25** | Pl. to line | 15K, 8 mA | See A-10 pri. | c | 20.51 |
| **A-26** | P-p to line | 30K CT | See A-10 pri. | f | 25.69 |
| **A-27** | Input | 100K split | See A-10 pri. | b | 24.29 |
| **A-28** | Tr. to V.C. | 48 CT, 5 watts | 16 split, 8, 4 | c | 15.52 |
| **A-34** | Tr. intstge. | 25K/6250 split | 500/125 sp. | b | 17.11 |
| **A-35** | Tr. intstge. | 10K/2.5K split | 500/125 sp. | b | 16.73 |
| **A-36** | Tr. intstge. | 500/125 split | 150/37.5 sp. | c | 15.72 |
| **A-37** | Tr. intstge. | 500/125 split | 50/12.5 sp. | c | 15.92 |
| **A-38** | Tr. intstge. | 100/25 split | 40/10 split | c | 15.72 |
| **A-39** | Line to tr. | 600/150 split | 2K/500 sp. | a | 18.32 |
| **A-30** | Inductor: 250 H at 5 mA†, series 65 H at 10 mA‡ | | | | 19.71 |
| **A-32** | Split inductor: 60 H at 15 mA§; 15 H at 30 mA†† | | | | 25.20 |
| **A-33** | Hipermalloy shield fits A units; 20 dB | | | | 5.57 |
| **A-40** | Power transf.: 115 V, 60 Hz to 2–6.3 CT–.2 A sec. | | | | 16.12 |
| **A-41** | Split inductor 240 mH at .2 A, 6 ohms, series; 60 mH at .4 A, 1.5 ohms, parallel | | | | 15.60 |
| **A-42** | Split filter induct: 4 H–50mA, 100 ohms, series; 1 H–100 mA, 25 ohms, parallel | | | | 10.76 |
| **A-43** | Match 2 simul. lines or tr.: 600/150 spl. ohms, pri.; two 600/150 spl. ohms, sec. | | | g | 25.09 |
| **A-44** | I'stge/outp. | 4K/1K split, 12 mA | 600/150 spl. | b | 17.52 |
| **A-45** | Spkr. match | 4, 8, 16 | 4 W max lvl. | c | 39.60 |
| **A-46** | Chopper | 10K/2.5K | 50K | . . . | 54.00 |
| **A-47** | 3-wdg. hybd. | 50/600 CT | 2x500/600CT | . . . | 22.90 |
| **A-48** | '2–4 wire' hybd. ckt. | 500/600 | 2x500/600CT | c | 23.88 |

*Level, 1 mW. †6K ohms. ‡1.5K ohms. §2K ohms. ††500 ohms. **8 mA. #Frequency Response (±2 dB), Hz: **a**—20–20,000. **b**—30–20,000. **c**—40–20,000. **d**—10–50,000. **e**—30–30,000. **f**—20–40,000. **g**—20–30,000.

### HIPERMALLOY★ TRANSFORMERS



H-1



H-2

Hipermalloy audio and power transformers are designed specifically for use in portable and compact equipment. Neither dependability or wide-range response has been sacrificed. The frequency characteristic of Hipermalloy audio transformers is uniform 30–20,000 Hz, incorporation of a Hipermalloy-nickel iron core and hum balanced coil structure is responsible. Case is rugged, die-cast type of high conductivity alloy, finished in gray. Mounts with terminals up or down. DC in primary as shown is maximum, unbalanced. **Size:** H-1 Case, 2⅜" l. x 1¹⁵⁄₁₆" w. x 3⅛" h. H-2 Case, 3⁹⁄₁₆" l. x 2¹³⁄₁₆" w. x 3½" h. Mtg. screws, 6-32. Weight: H-1 case, 2 lbs.; H-2 case, 5 lbs.

#### LOW IMPEDANCE TO GRID AND MIXING TRANSFORMERS

Units housed in Type H-1 case.

| UTC Type | Application | Pri. Imped., Ohms | Sec. Imp., Ohms | Level dBm | Ea., 1-4 |
|---|---|---|---|---|---|
| **HA-100** | Line to grid | 50, 125/150, 200/250, 333, 500/600 | 60K split | +18 | $63.00 |
| **HA-100X** | Line to grid* | As above | As above | +16 | 31.85 |
| **HA-101** | Line to grids | As above | 120K split | +18 | 99.00 |
| **HA-101X** | As above* | As above | 80K split | +16 | 63.00 |
| **HA-103A** | Mike mixer to grid | 2.5, 5.5, 10, 15, 22, 30, 38, 60 | 60K split | +18 | 25.89 |
| **HA-108†** | Mixing | Same as HA-100 | Same as pri. | +20 | 35.02 |
| **HA-108X†** | As above* | As above | Same as pri. | +18 | 31.85 |
| **HA-130X** | Line to grids | 30, 50, 200/250 | 60K split | +18 | 81.00 |

#### INTERSTAGE AUDIO TRANSFORMERS

Units housed in Type H-1 case; HA-107 in H-2 case.

| UTC Type | Application | Pri. Imped., Ohms | Sec. Imp., Ohms | Level dBm | Ea., 1-4 |
|---|---|---|---|---|---|
| **HA-104** | Pl. to grids | 15K split | 95K | 100# | $74.70 |
| **HA-105** | Pl. to grids | 15K | 60K | 100# | 78.30 |
| **HA-106** | Pl. to grids | 15K split | 135K | 100# | 90.00 |
| **HA-107** | Pl's. to grids | 30K | 80K | 600# | 108.00 |
| **HA-137** | Pl's. to grids | 30K | 68K | 100# | 64.80 |

*Multiple-alloy shields for low hum pickup. †High electrostatic shielding. #Level in mW.

**★UTC TRADEMARK. ALL PRODUCT LINES OR TYPE DESIGNATIONS ARE UTC TRADEMARKS.**

### LINEAR STANDARD★ TRANSFORMERS

Frequency response, ±1 dB, 20–20,000 Hz; ±1 dB, 7–50,000 Hz on high level units. These transformers offer uniform frequency response of wide range and low distortion. High efficiency, dependability, and freedom from hum are provided by shielding. Mount from top or bottom. Die-cast case. Guaranteed frequency response.

#### LOW LEVEL TRANSFORMERS

Case Type LS-1. **Size:** 2⅝" x 3⅛" x 3¼" h. Suffix "X" indicates units that have multiple alloy shield. Weight, 3 lbs.

| UTC Type | Application | Pri. Imped., Ohms | Sec. Imped., Ohms | Level* | Ea., 1-4 |
|---|---|---|---|---|---|
| **LS-10** | Input | 50, 125/150, 200, 250, 333, 500/600 | 60K split | +19 | $41.80 |
| **LS-10X** | Input | As above | 50K | +17 | 41.80 |
| **LS-12** | Input | As above | 120K split | +19 | 47.77 |
| **LS-12X** | Input | As above | 80K split | +17 | 42.80 |
| **LS-30** | Mixing | As above | Same as pri. | +23 | 44.95 |
| **LS-30X** | Mixing | As above | Same as pri. | +20 | 45.79 |
| **LS-19** | Pl. to grids | 15K | 95K | 100§ | 79.20 |
| **LS-21** | Pl. to p-p | 15K | 135K | 100§ | 81.00 |
| **LS-40** | Pl. to p-p | 15K, 8 mA | 135K | 100§ | 99.00 |
| **LS-25** | P-p to p-p | 30K | 50K | 200§ | 49.75 |
| **LS-27** | Pl. to line | 15K, 8 mA | See LS-10 pri. | 200§ | 95.40 |
| **LS-50** | Pl. to line | 15K | See LS-10 pri. | 200§ | 83.75 |
| **LS-51** | P-p to line | 30K | See LS-10 pri. | 250§ | 116.45 |
| **LS-14X** | Lo-Z to grids | 2.5, 5.5, 10, 15, 22, 30, 38, 60 | 50K | +17 | 43.80 |
| **LS-26** | Line to grids | 5K | 60K (2 sect.) | +23 | 86.40 |
| **LS-31** | Line to line | 30, 50, 200, 250 | See LS-10 pri. | +23 | 42.80 |
| **LS-32** | Lo-Z to line | Same as LS-14X | See LS-10 pri. | +23 | 50.76 |
| **LS-68** | Matching‡ | 600/150 split | (2) 600/150 split | +15 | 41.21 |
| **LS-150** | Line to line | 4K | See LS-10 pri. | 200§ | 41.40 |
| **LS-151** | Line to line | 16K | See LS-10 pri. | 400§ | 42.41 |
| **LS-140** | 70 dB hybrid | 500/600 split | Same as pri. | +18 | 43.19 |
| **LS-141** | Hybrid† | 500/600 split | Same as pri. | +18 | 38.23 |

*In dBm. †Has three sets of coils. ‡Two simult. lines or tr. §mW.

#### HIGH LEVEL TRANSFORMERS

Case style similar to Low Level units. **Size:** LS-33, -47, -52, -54, -55, -56, -57, -61, -63, 3½" x 4⁷⁄₁₆" x 4³⁄₁₆" h. (Wt., 7½ lbs.). LS-6L1, -6L4, -34, -35, -48, -58, -65, -666, -667, 5" x 5¹³⁄₁₆" x 4¹¹⁄₁₆" h. (Wt., 15 lbs.). LS-691, 13" x 15¾" x 24" h. (Wt. 370 lbs.). LS-692, 13" x 15¾" x 28" h. (Wt., 520 lbs.).

| UTC Type | Application | Pri. Imped., Ohms | † | Level, Watts | Each, 1-4 |
|---|---|---|---|---|---|
| **LS-33** | Matching | 50, 125/150, 200/250, 333, 500/600 | a | 20 | $ 46.98 |
| **LS-34** | Matching | As above | a | 40 | 71.27 |
| **LS-47** | Driver | 5K | i | 20 | 99.00 |
| **LS-48** | Driver | 12K | j | 40 | 303.75 |
| **LS-6L1** | P-p output | 9K | b | 30 | 146.25 |
| **LS-6L4** | P-p output | 4.5K/3.8K | b | 55 | 247.50 |
| **LS-58** | P-p output | 2.5K/1.5K | b | 40 | 217.80 |
| **LS-52** | P-p output | 8000 | b | 20 | 44.79 |
| **LS-55** | P-p output | 5K/3K | b | 20 | 47.77 |
| **LS-61** | P-p output | 10K/6K | b | 20 | 47.37 |
| **LS-54** | P-p output | 8000 | c | 20 | 83.25 |
| **LS-57** | P-p output | 5K/3K | c | 20 | 81.00 |
| **LS-63** | P-p output | 10K/6K | c | 20 | 73.80 |
| **LS-56** | P-p output | 5K/3K | d | 20 | 49.57 |
| **LS-35** | EL-34's* | 5K CT 43% taps | e | 35 | 124.50 |
| **LS-65** | 6550's* | 3.3K CT 40% taps | e | 60 | 234.90 |
| **LS-666** | P-p transis. | 8 split | f | 50 | 139.50 |
| **LS-667** | P-p transis. | 8 split | e | 50 | 53.76 |
| **LS-691** | Modulation | 10,400 | g | 1,000 | 1650.00 |
| **LS-692** | Modulation | 4,750 | h | 2,500 | 2340.00 |

*With feedback loops. †Secondary impedance: **a**—1.2, 2.5, 5, 7.5, 10, 15, 20, 30, 50, 125, 200/250, 333, 500/600 ohms. **b**—500, 333, 250/200, 125, 50, 30, 20, 15, 10, 7.5, 5, 2.5, 1.2 ohms. **c**—30, 20, 15, 10, 7.5, 5, 2.5, 1.2 ohms. **d**—6K, 5K, 4K, 1.8K, 1.5K, 1K, 30, 20, 15, 10, 7.5, 5, 2.5, 1.2 ohms. **e**—4, 8, 16 ohms. **f**—500 ohms split. **g**—4.5K, 4K, 3.5K, 2.75K, 2K ohms. **h**—2.5K, 2K, 1.75K, 1.5K, 1.25K ohms. **i**—Pri./½. Sec. 3.2:1. **j**—Pri./½. Sec. 5.1:1.

#### PLATE-TO-LINE TRANSFORMERS

Units housed in H-1 case.

| UTC Type | Application | Pri. Imp., Ohms | Sec. Imped., Ohms | Level mW | Ea., 1-4 |
|---|---|---|---|---|---|
| **HA-113** | To multi-line | 15K split | 50, 125/150, 200/250, 333, 500/600 | 125 | $81.00 |
| **HA-114** | Lo-Z/multi-line | 30K | | 200 | 84.60 |
| **HA-133** | To multi-line | 15K split | | 160 | 37.42 |

#### OUTPUT TRANSFORMERS

| UTC Type | Application | Pri. Imp., Ohms | Sec. Imped., Ohms | Level | Ea., 1-4 |
|---|---|---|---|---|---|
| **HA-134†** | P-p to line | 5K/9.4K | 50, 125/150, 200/250, 333, 500/600 | 15 W | $74.70 |
| **HA-135†** | P-p to v-c | 3K/5K | 30, 20, 15, 10, 7.5, 5, 2.5, 1.2 | 18 W | 31.46 |
| **HA-136†** | 5881's* | 6.6K CT | 4, 8, 16 | 20 W | 43.80 |

*Screen taps provided. †Housed in Type H-2 case.

#### POWER TRANSFORMERS

Units housed: Type HP-122, H-1 case; HP-123, H-2 case.

| UTC Type | Application | Pri. Volts 50–60 Hz | Hi-Voltage | Filament Winding | Ea., 1-4 |
|---|---|---|---|---|---|
| **HP-122** | Preamp | 115 | 220–0–220, 15 mA | 6.3 V CT, .6 A; 6.3 V CT, 1.2 A | $67.50 |
| **HP-123** | Preamp or tuner | 115 | 275–0–275, 35 mA | 6.3 V CT, .6 A; 6.3 V CT, 2 A | 72.00 |

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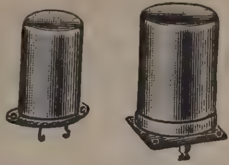
# DIV. OF TRW COMMERCIAL GRADE COMPONENTS

## COMMERCIAL GRADE COMPONENTS



ervative design and rug- construction assure de- ability under continuous ce. Cases are attractively ed in light gray enamel are intended for chassis ating. All items are poured a special sealing com- d plus vacuum impreg- n of coil structures to e operation under severe onmental conditions. All components are linear, dB. 40-10,000 Hz (no unbalanced DC), except CVL and units, 40-6,000 Hz. CG-134, -135, -136 are humbucking type sure low hum pickup. Parallel feed, low level interstage units, 0 ohms and .25 μF; 200 ohm windings on input transformers alanced and may be used for 150-250 ohm circuits. Case are given in the table below. **For CG type transistor/filament ly transformers see another UTC page.**

### SIZE, COMMERCIAL GRADE CASE "RC"

| e | Base Dim. (Sq.) | Mounting Dim. (Sq.) | Ht., + ⅛, − 1/16 | Cutout Dia. | Unit Wt. (Lbs.) |
|---|---|---|---|---|---|
| 7 | 1⅜ | 1⅛ | 1⅝ | 1¼ | .35 |
| 0 | 1⅝ | 1 1/16 | 2¼ | 1½ | ½ |
| 2 | 1 13/16 | 1½ | 2½ | 1½ | 1 |
| 5 | 2 3/16 | 1 15/16 | 2⅞ | 1⅞ | 1½ |
| 7 | 2 9/16 | 2 3/16 | 3¼ | 2 | 2½ |
| 00 | 3 | 2⅜ | 3¾ | 2⅝ | 3½ |
| 12 | 3 7/16 | 2 11/16 | 4⅛ | 2⅞ | 5 |
| 25 | 3¾ | 3 | 4½ | 3 | 6½ |
| 50 | 4½ | 3 9/16 | 5½ | 3¾ | 11 |
| 52 | 5⅛ | 4⅛ | 5½ | 4 | 15½ |
| 75 | 5¾ | 4⅞ | 7 | 4 | 22 |

## SWINGING INPUT AND FILTER CHOKES

| C pe | Induct. Henries | DC mA | DC Res. Ohms | Test Volts | Case No. | Each, 1-4 |
|---|---|---|---|---|---|---|
| 0 | 10 | 200 | 110 | 1750 | RC-112 | $19.10 |
| 4 | 30 | 100 | 400 | 1750 | RC-100 | 17.11 |
| 5 | 250 | 15 | 5000 | 1750 | RC-87 | 14.34 |
| 8C | 75 | 50 | 2200 | 1750 | RC-87 | 13.74 |
| 00 | 12 | 150 | 110 | 2500 | RC-125 | 21.11 |
| 02 | 12 | 250 | 100 | 3000 | RC-150 | 28.67 |
| 04 | 10 | 350 | 90 | 5000 | RC-152 | 37.82 |
| 08 | 10 | 500 | 52 | 7000 | RC-175 | 55.73 |
| 5 | 10 | 1000 | 40 | 9000 | 11½ x 4¾ x 6⅞ h.† | 137.85 |
| 01 | 25/5 | 150 | 110 | 2500 | RC-125 | 54.00 |
| 03 | 25/5 | 250 | 100 | 3000 | RC-150 | 81.00 |
| 05 | 25/5 | 350 | 90 | 5000 | RC-152 | 37.82 |
| 09 | 25/5 | 500 | 52 | 7000 | RC-175 | 126.00 |
| 11*<br>gs)‡ | 100/10 mH<br>25/2.5 mH | 2.5A<br>.5A | .6<br>.15 | 1500 | RC-87 | 36.00 |
| 12*<br>gs)‡ | 40/10 mH<br>10/2.5 mH | 6 A<br>12 A | .24<br>.06 | 1500 | RC-112 | 45.00 |
| 13*<br>gs)‡ | 7/1.75 mH<br>1.8/.45 mH | 17.5A<br>35 A | .036<br>.009 | 1500 | RC-125 | 54.00 |
| C | 25/5 | 1000 | 40 | 9000 | 11½ x 4¾ x 6⅞ h.† | 137.85 |

t winding in series. †Wt., 40 lbs. ‡Split winding in parallel.

## POWER AND BIAS TRANSFORMERS

ary 115 volts, 50/60 Hz; mADC is for choke input; reduce for condenser input. Filament 1 is 5 volts, 3 amps and ent 2 is 5 volts, 2 amps, except as otherwise noted.

| C pe | High Voltage | DC mA | Filament 3 | Filament 4 | Case No. | Ea., 1-4 |
|---|---|---|---|---|---|---|
| 22 | 435-365-0-365-435<br>125-0-125 | 125<br>25 | 6.3 VCT-3A | 2.5 VCT-5A | RC-150 | $63.69 |
| 28 | 500-0-500<br>80-0-80 | 250<br>100 | 6.3 VCT-4A | 6.3 VCT-3A, tapped 2.5 VCT-3A | RC-152 | 157.50 |
| 29* | 600-525-0-525-600 | 250 | 7.5 VCT-3A, tapped 6.3 VCT-4A | | RC-152 | 135.00 |
| 31† | 500-400-0-400-500<br>80-0-80 | 500<br>100 | 6.3 VCT-5A | 6.3 VCT-3A | RC-175 | 79.62 |
| 15 | Tapped for any DC voltage from 15 to 100 volts within 6%—250 mA | | | | RC-125 | 72.00 |
| 16 | Tapped for any DC voltage from 75 to 400 volts within 6%—250 mA | | | | RC-152 | 108.00 |

ment 2 is 6.3 VCT-3A. †Filament 1 is 5V-6A.

## VARIPOWER★ AUTOFORMERS

gned for line voltage control, filament control and reduced r operation. Output voltage: 0-130 volts, 50/60 Hz. Permit ol of filament voltage at tube socket to ±2½% simul- ously with line and plate voltage control. Use to reduce or ase voltages on filament transformers. Taps at: 25, 55, 75, 95, 105, 110, 115, 120, 125, and 130 volts.

| C e | Watts Output | Case No. | Ea., 1-4 | UTC Type | Watts Output | Case No. | Ea., 1-4 |
|---|---|---|---|---|---|---|---|
| -1 | 150 | RC-112 | $63.00 | CVA-4 | 1000 | RC-152 | $117.00 |
| -2 | 250 | RC-125 | 72.00 | CVA-5 | 2000 | RC-175 | 175.50 |
| -3 | 500 | RC-150 | 108.00 | | | | |

## AUDIO UNITS

| UTC Type | Use † | Pri. Imped., Ohms | Level | Case RC- | Each, 1-4 |
|---|---|---|---|---|---|
| CG-131 | a | 15K | +28 dBm | 50 | $47.25 |
| CG-132 | b | 15K | +30 dBm | 62 | 21.70 |
| CG-133 | c | 30K | +32 dBm | 75 | 23.09 |
| CG-134 | d | 50, 200, 500 | +30 dBm | 50 | 20.30 |
| CG-135 | e | 50, 200, 500 | +30 dBm | 50 | 51.75 |
| CG-235 | f | 50, 200, 500 | +28 dBm | 75 | 72.90 |
| CG-136 | g | 15K, 50, 200 | +30 dBm | 62 | 60.75 |
| CG-137 | h | 50, 200, 500 | +28 dBm | 50 | 17.93 |
| CG-140 | i | 15K | +30 dBm | 50 | 40.05 |
| CG-141 | j | 30K CT | +32 dBm | 50 | 40.05 |
| CG-233 | k | 30K CT | +35 dBm | 87 | 51.75 |
| CG-333 | k | 30K CT | +35 dBm | 87 | 51.75 |
| CG-433 | k | 5K CT | 10 W | 100 | 51.75 |
| CG-15 | l | 8K CT | 20 W | 100 | 58.95 |
| CG-16 | l | 3K/5K CT | 20 W | 100 | 54.90 |
| CG-19 | l | 6K/10K CT | 20 W | 100 | 54.90 |
| CG-710 | l | 14K/20K CT | 20 W | 100 | 75.15 |
| CG-2L6 | l | 9K CT | 30 W | 125 | 60.30 |
| CG-20 | m | 5K CT, 43% screen taps | 25 W | 125 | 67.50 |
| CG-21 | m | 3.3K CT, 40% screen taps | 50 W | 150 | 81.00 |
| CVP-1 | n | 3K/5K/6K/8K 10K/14K CT | 12 W | 100 | 32.84 |
| CVP-2 | n | As above | 30 W | 125 | 35.02 |
| CVP-3 | n | As above | 60 W | 150 | 49.78 |
| CVP-4 | n | As above | 125 W | 152 | 130.50 |
| CVP-5 | n | As above | 300 W | 175 | 84.60 |
| CVL-1 | p | 500 | 15 W | 87 | 47.70 |
| CVL-2 | p | 500 | 40 W | 125 | 60.75 |
| CVL-3 | p | 500 | 75 W | 150 | 80.10 |
| CVM-0 | q | Any Class B | 12 W | 100 | 28.47 |
| CVM-1 | q | As above | 30 W | 125 | 32.84 |
| CVM-2 | q | As above | 60 W | 150 | 44.19 |
| CVM-3 | q | As above | 125 W | 152 | 52.15 |
| CVM-4 | q | As above | 300 W | 175 | 101.50 |
| CVM-5 | q | As above | 600 W | * | 480.00 |
| CG-51AX | r | 15K | 5 W | 87 | 49.50 |
| CG-53AX | r | 3K/10K CT | 20 W | 112 | 57.15 |
| CG-59AX | r | 50, 200, 500 | 20 W | 112 | 52.20 |

*7" x 12" x 9"; Wt., 82 lbs. †**a**—Pl. to grid. **b**—Pl. to 2 grids. **c**—2 pl. to 2 grids. **d**—Input, humbucking. **e**—P-p input, humbucking. **f**—Input, mag. shielded. **g**—Dual input, humbucking. **h**—Mixing. **i**—Pl. to line. **j**—P-p to line. **k**—Driver. **l**—Output. **m**—Feedback output. **n**—Universal output. **p**—Universal matching. **q**—Universal modulator. **r**—Universal driver.

## PLATE TRANSFORMERS

Primaries for 105, 115, 210, 220, 230 V, 50/60 Hz. For reduced power, secondary can be cut in half, using 220 V primary on 110 volts; may be used 25 to 43 Hz in this case. **Suffix W:** Indicates units designed for full wave center tap and full wave bridge applications. Center tap map be disconnected from ground.

| UTC Type | High Voltage | DC Volts | Case RC- | Ea., 1-4 |
|---|---|---|---|---|
| CG-300W | 625-515-0-515-625 | 1000/800 | 150 | $43.80 |
| CG-301W | 580-530-300-0-300-530-580 | 950/850/500 | 152 | 59.72 |
| CG-302W | 950-750-0-750-950 | 1520/1220 | 175 | 76.58 |
| CG-303W | 1500-1235-400-0-400-1235-1500 | 2500/2000/600 | 175 | 89.58 |

## END CASTING UNITS

**Suffix W:** Units designed for full wave center tap and full wave bridge applications. Center tap may be disconnected from ground.

| UTC Type | High Volt | DC Volts | Size, Inches L. | W. | H. | Wt Lb. | Each, 1-4 |
|---|---|---|---|---|---|---|---|
| CG-304W | 1500-1235-0-1235-1500 | 2.5K/2K | 14⅝ | 8½ | 10⅜ | 100 | $570.00 |
| CG-305W | 2400-1750-0-1750-2400 | 4K/3K | 10½ | 4¾ | 6⅞ | 50 | 149.28 |
| CG-306W | as above | 4K/3K | 13⅞ | 8½ | 10⅜ | 100 | 510.00 |
| CG-307 | 3500-3000-2400-0-2400-3000-3500 | 3K/2.5K<br>2K | 13⅝ | 8½ | 10⅜ | 90 | 510.00 |
| CG-308 | as CG-307 | 3K/2.5K<br>2K | 15⅛ | 8½ | 10⅜ | 125 | 630.00 |
| CG-309 | as CG-307 | 3K/2.5K<br>2K | 21 | 10 | 13¼ | 253 | 1248.00 |
| CG-310 | 4600-4050-3500-0-3500-4050-4600 | 4K/3.5K<br>3K | 19¼ | 10 | 13¼ | 150 | 1080.00 |
| CG-311W | 1500-1235-0-1235-1500 | 2.5K/2K | 10½ | 4¾ | 6⅞ | 50 | 337.50 |
| CG-312 | 1800-1500-0-1500-1800 | 1.5K/1.25K | 10½ | 4¾ | 6⅞ | 38 | 360,00 |

Also see another UTC page for full wave bridge rectifier types.

**★UTC TRADEMARK. All Product Lines or Type Designations are UTC Trademarks.**

**SEE LAST TWO PAGES OF UTC LISTING FOR MILITARY SPECIFICATIONS**

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# UTC DIV. OF TRW AMATEUR AND PA TRANSFORMERS

## SPECIAL SERIES★ TRANSFORMERS

UTC Special Series* transformers are designed specifically for amateur and popular priced PA service. Units are finished in a fine, commercial type light gray enamel. Recessed terminal strip is provided, permitting above-chassis wiring or breadboard type wiring setups in addition to standard chassis wiring. Case sizes are in table below.

G-1–G-4

G-5–G-12

| Case | W., In. | D., In. | H., In. | Wt., Lbs. | Case | W., In. | D., In. | H., In. | Wt., Lbs. |
|---|---|---|---|---|---|---|---|---|---|
| G-1 | 2 11/16 | 1 3/4 | 1 7/8 | 1 | G-8 | 5 3/8 | 5 3/8 | 4 5/8 | 12 |
| G-2 | 3 5/16 | 1 15/16 | 2 5/16 | 1 1/2 | G-9 | 5 3/8 | 6 3/4 | 5 7/8 | 21 |
| G-3 | 3 5/8 | 2 5/32 | 2 1/2 | 2 | G-10 | 6 1/8 | 6 5/8 | 5 7/8 | 24 |
| G-4 | 4 1/8 | 2 5/16 | 2 15/16 | 3 | G-11 | 6 19/32 | 7 3/8 | 5 7/8 | 31 |
| G-5 | 3 1/8 | 4 1/2 | 3 3/4 | 4 1/2 | G-12 | 7 3/8 | 9 1/4 | 10 1/4 | 52 |
| G-7 | 4 5/8 | 5 1/2 | 4 5/8 | 8 | | | | | |

### INPUT AND DRIVER TRANSFORMERS

| UTC Type | Application | Ratio Pri. to Sec. | Level | Case | Ea., 1-4 |
|---|---|---|---|---|---|
| S-2 | Plate to p-p grids | 1:4 | +30 dBm | G-2 | $27.90 |
| S-3 | Pl. to 1 or 2 grids | 1:4 | +25 dBm | G-1 | 29.70 |
| S-5 | Line to grid, humbkg. | 1:16 | +30 dBm | G-2 | 28.80 |
| S-6 | Line to grid, compact | 1:16 | +25 dBm | G-1 | 12.15 |
| S-8 | Driver pl. to p-p | 2.66:1, 5:1 | 5 W | G-3 | 34.20 |
| S-9 | Driver p-p to p-p | 2.66:1, 3.6:1, 5:1 | 20 W | G-4 | 56.25 |
| S-10 | Driver p-p to p-p | 2.25:1 | 5 W | G-3 | 39.15 |

### MATCHING AND OUTPUT UNITS

| UTC Type | Application | Pri. Imped., Ohms | † | Level, Watts | Case | Ea., 1-4 |
|---|---|---|---|---|---|---|
| S-11 | Pl. to line | 15K | a | .25 | G-2 | $28.80 |
| S-12 | Line to V.C. | .5K/2K/4K | b | 15 | G-2 | 15.92 |
| S-13 | Line to V.C. | .5K/2K/4K | b | 30 | G-4 | 47.70 |
| S-14 | Output | 2.5K/4K/7K/10K | c | 10 | G-2 | 37.80 |
| S-15 | PP output | 4K/5K/10K | c | 12 | G-2 | 20.29 |
| S-16 | PP output | 3K/6K/9/10K | c | 30 | G-4 | 23.08 |
| S-17 | PP output | 3.8K/4.5-5K | c | 55 | G-5 | 81.90 |
| S-18 | Univ. modul. | Any Class B | d | 12 | G-3 | 46.80 |
| S-19 | Univ. modul. | Any Class B | d | 30 | G-4 | 23.69 |
| S-20 | Univ. modul. | Any Class B | d | 55 | G-5 | 34.85 |
| S-21 | Univ. modul. | Any Class B | d | 110 | G-7 | 99.45 |
| S-22 | Univ. modul. | Any Class B | d | 250 | G-9 | 175.50 |

†Secondary Impedance: a—200/500 ohms. b—2, 4, 8, 15 ohms. c—2, 8, 15, 500 ohms.

### PLATE AND BIAS TRANSFORMERS

Primary 115 V, 50/60 Hz

| UTC Type | High Voltage | DC Voltages* | DC mA | Case | Each, 1-4 |
|---|---|---|---|---|---|
| S-44 | 575-525-0-525-575 | 470/430 | 500 | G-9 | $63.69 |
| S-45 | 900-750-0-750-900 | 750/620 | 200 | G-8 | 47.77 |
| S-46 | 1000-750-0-750-1000 | 825/600 | 300 | G-9 | 59.72 |
| S-47 | 1500-1250-1000-0-1000-1250-1500 | 1275/1050/825 | 300 | G-10 | 77.63 |
| S-48 | 1500-1250-1000-0-1000-1250-1500 | 1300/1075/850 | 500 | G-11 | 86.58 |
| S-49 | 2100-1800-1500-0-1500-1800-2100 | 1815/1540/1275 | 300 | G-11 | 83.61 |
| S-50 | 3000-2500-0-2500-3000 | 2625/2175 | 300 | G-12 | 161.24 |
| S-51 | Any bias voltage from 15 to 100 ± 6% | | 200 | G-5 | 76.50 |
| S-52 | Any bias voltage from 75 to 400 ± 6% | | 200 | G-7 | 40.60 |

*Based on two section filter for 200 mA and 300 mA units. Single section filter for 500 mA units, both inductor input.

### COMBINED PLATE AND FILAMENT TRANSFORMERS

Primary 115 V, 50/60 Hz

| UTC Type | Voltage | DC V | Rect. Fil. | Filament No. 1 | Filament No. 2 | Case No. | Each, 1-4 |
|---|---|---|---|---|---|---|---|
| S-39 | 490-400-0-400-490 175 mA | 400/310 | 5 V-3A | 2.5 VCT-6A | 6.3 VCT-4A | G-7 | $106.2 |
| S-40 | 525-425-0-425-525 250 mA | 400/310 | 5 V-3A | 6.3 VCT-3A | 6.3 VCT-3A | G-7 | 47.77 |
| S-41 | 600-0-600 200 mA | 475 | 5 V-3A | 7.5 V tapped 6.3 V-3A | 6.3 VCT-2A | G-7 | 106.2 |
| S-42 | 600-525-0-525-600 300 mA | 480/400 | 5 V-6A | 7.5 V tapped 6.3 V-3A | 6.3 VCT-3A | G-8 | 53.7 |

### FILTER, SWINGING AND AUDIO CHOKES

| Type | Henries | mADC | Ohms | Insul. | Case | Each, 1-4 |
|---|---|---|---|---|---|---|
| S-23* | 300 | 5 | 5000 | 1500 V | G-2 | $27.00 |
| S-24‡ | 500 | 3 | 6000 | 1500 V | G-2 | 29.70 |
| S-25 | 30 | 30 | 800 | 1500 V | G-2 | 10.35 |
| S-26 | 12 | 60 | 250 | 1500 V | G-2 | 10.35 |
| S-27 | 25 | 75 | 350 | 1500 V | G-4 | 36.00 |
| S-28 | 20 | 100 | 350 | 1500 V | G-4 | 36.90 |
| S-29 | 6 | 175 | 90 | 1500 V | G-4 | 13.14 |
| S-30† | 4/20 | 175 | 90 | 1500 V | G-4 | 13.14 |
| S-31 | 6 | 225 | 100 | 2700 V | G-5 | 19.90 |
| S-32† | 4/20 | 225 | 100 | 2700 V | G-5 | 45.00 |
| S-33 | 8 | 300 | 100 | 4000 V | G-7 | 25.09 |
| S-34† | 4/20 | 300 | 100 | 4000 V | G-7 | 25.09 |
| S-35 | 8 | 400 | 60 | 5000 V | G-8 | 65.25 |
| S-36† | 4/20 | 400 | 60 | 5000 V | G-8 | 76.50 |
| S-37 | 8 | 550 | 60 | 6000 V | G-8 | 34.63 |
| S-38† | 4/20 | 550 | 60 | 6000 V | G-8 | 34.63 |
| S-80† | 45/10 mH | 1.75§ | .5 | 500 V | G-1 | 11.36 |
| S-81†# | 100/8 mH<br>25/2 mH | 2.5§<br>5§ | .6<br>.15 | 1500 V | G-3 | 13.74 |

*Audio. ‡P.P. inductor CT. †Swinging. #Two windings. §Amps.

### FILAMENT TRANSFORMERS

| UTC Type | Primary Tapped 105, 115 Volts, 50-60 Hz Secondary Volts | Secondary Current | Insulation | Case No. | Net Each, 1-4 |
|---|---|---|---|---|---|
| S-53 | 2.5 VCT | 10 Amp | 1500 V | G-3 | $14.84 |
| S-54 | 5 VCT | 4 Amp | 2500 V | G-3 | 16.73 |
| S-55 | 6.3 VCT | 3 Amp | 1500 V | G-3 | 14.34 |
| S-57 | 2.5 VCT | 10 Amp | 10000 V | G-5 | 25.67 |
| S-58 | 2.5 VCT | 20 Amp | 10000 V | G-5 | 26.88 |
| S-59 | 5 to 5.25 VCT | 13 Amp | 5000 V | G-5 | 25.09 |
| S-60 | 5 to 5.25 VCT | 22 Amp | 10000 V | G-7 | 35.23 |
| S-61 | 7.5 VCT tapped 6.3 VCT | 10 Amp | 3000 V | G-5 | 26.27 |
| S-62 | 10 VCT | 10 Amp | 3000 V | G-5 | 25.08 |
| S-63 | 14 VCT tapped 12 VCT & 11 VCT | 10 Amp | 5000 V | G-7 | 36.43 |

| Type | Filament 1 | Filament 2 | Filament 3 | Case | Each, 1-4 |
|---|---|---|---|---|---|
| S-64 | 2.5 VCT-5A | 2.5 VCT-5A | 5 VCT-6A | G-5 | $65.70 |
| S-67 | 5 VCT-6A | 6.3 VCT-5A | .............. | G-5 | 63.00 |
| S-68 | 5 VCT-3A | 6.3 VCT-4A | 7.5 VCT-5A | G-5 | 29.88 |
| S-70‡ | 6.3 VCT-5A | 6.3 VCT-5A | .............. | G-5 | 27.47 |
| S-71 | 2.5 VCT-6A | 2.5 VCT-6A | 2.5 VCT-12A | G-7 | 94.50 |
| S-72 | 5 VCT-3A | 5 VCT-3A | 5 VCT-6A | G-5 | 72.00 |

‡Insulation 3000 V rms.

**SEE ANOTHER UTC PAGE FOR TRANSISTOR TRANSFORMERS**

## TYPICAL MODULATOR COMBINATIONS

For universal modulation application. All units can have any class B primary impedance and any class C secondary impedance. **UTC Type S-18**—12 watts max. Plate voltage 250 V; case, G-3. Typical driver tubes, 6C4, 12AU7, 6J5, 6SN7GT.
Net Each, 1–4 .............................................. **$46.80**

| Driver Transf. | P-P Tubes | Output Watts | P-P Load | Bias Volts |
|---|---|---|---|---|
| S-8 | 6AC5G | 8 | 10,000 | 0 |
| S-2 | 6V6, 6AQ5 | 12 | 6,000 | 15 |

**UTC Type S-20**—55 watts max.; plate voltage, 500 V for S-9 driver transformer and 400 V for S-10; case, G5; bias transformer, S-51. Net Each, 1–4 .............................. **$34.85**

| Driver P-P Tubes | Driver Transf. | P-P Tubes | Output Watts | P-P Load | Plate Transf. | Bias Volts |
|---|---|---|---|---|---|---|
| 12AU7 | S-9 | 2E26 | 54 | 8000 | S-41 | 15 |
| 12AU7 | S-10 | 6AL6, AB2 | 60 | 3800 | S-39 | 25 |
| 12AU7 | S-10 | 4-6L6 | 60 | 4500 | S-40 | 23 |
| 2A3 | S-9 | 809 | 60 | 5000 | S-41 | 0 |

**★ALL PRODUCT LINES OR TYPE DESIGNATIONS ARE UTC TRADEMARKS. SPECIFY BY TRADEMARKS TO ASSURE UTC HIGH QUALITY AND RELIABILITY.**

**UTC Type S-19**—30 watts max.; plate voltage, 400 V; bias voltage, 23 V; case, G-4; driver, 6C4 tube or tubes and S-10 transformer. P-P tube, 6L6 self bias; p-p load, 9000.
Net Each, 1–4 .............................................. **$23.69**

**UTC Type S-21**—115 watts max.; driver, p-p 2A3 tube, S-9 transformer; case, G-7. Net Each, 1–4 .................. **$99.45**

| P-P Tubes | Output Watts | P-P Load | Plate Volts | Plate Transf. | Bias Volts | Bias Transf. |
|---|---|---|---|---|---|---|
| 807 | 80 | 6600 | 600 | S-45 | 30 | S-51 |
| 6146 | 95 | 6000 | 600 | S-46 | 50 | S-51 |
| 809 | 100 | 8400 | 750 | S-45 | 5 | S-51 |
| TZ-40 | 100 | 6000 | 750 | S-45 | 0 | ......... |
| T-756 | 100 | 7000 | 850 | S-46 | 30 | S-51 |
| 4-6L6 | 110 | 2000 | 400 | S-44 | 25 | S-51 |
| 35-T | 115 | 11000 | 1000 | S-47 | 30 | S-51 |

**UTC Type S-22**—250 watts max.; case, G-9; driver, p-p 2A3 tube, S-9 transformer. Net Each, 1–4 .................. **$175.50**

| P-P Tubes | Output, Watts | P-P Load | Plate Volts | Plate Transf. | Bias Volts | Bias Transf. |
|---|---|---|---|---|---|---|
| T-55 | 175 | 6900 | 1000 | S-47 | 40 | S-51 |
| 830B | 175 | 7600 | 1000 | S-47 | 35 | S-51 |
| 808 | 190 | 12700 | 1250 | S-47 | 15 | S-51 |
| 203Z | 200 | 6900 | 1000 | S-47 | 0 | ......... |
| HK-354 | 220 | 15000 | 1500 | S-49 | 100 | S-51 |
| HK-154 | 225 | 11400 | 1250 | S-47 | 210 | S-52 |
| 100TH | 250 | 7200 | 1250 | S-47 | 0 | ......... |
| 838 | 250 | 9000 | 1250 | S-47 | 0 | ......... |

**SEE LAST TWO PAGES OF UTC LISTING FOR MILITARY SPECIFICATIONS**

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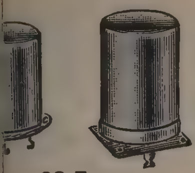
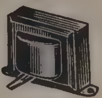
## TRANSISTOR TRANSFORMERS (COMMERCIAL TYPE)

### TRANSISTOR/FILAMENT SUPPLY TRANSFORMERS



CG Types



FT Type

**Primary, 115 VAC, 50/60 Hz**

| UTC Type | Sec. Volts rms | Sec. Amps rms | Sections in Parallel: Choke Inp. VDC | Sections in Parallel: Choke Inp. ADC | Sections in Parallel: Cond. Inp. VDC | Sections in Parallel: Cond. Inp. ADC | Sections in Series: Choke Inp. VDC | Sections in Series: Choke Inp. ADC | Sections in Series: Cond. Inp. VDC | Sections in Series: Cond. Inp. ADC | Net Ea., 1-4 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CG-30* | 17/21.5 | 1.5 | 14/17.5 | 3 | 18.5/25 | 2 | 28/35 | 1.5 | 43/56 | 1 | $79.20 |
| | 17/21.5 | 1.5 | | | | | | | | | |
| CG-31† | 34/43 | 4.5 | 28/35 | 9 | 43/56 | 6 | 56/70 | 4.5 | 85/110 | 3 | 126.00 |
| | 34/43 | 4.5 | | | | | | | | | |
| CG-32‡ | 6.3 CT | 1.2 | ....... | .... | ....... | .... | ...... | .... | ...... | .... | 36.00 |

Case Nos.: *RC-112; †RC-175; ‡RC-62. **(See another UTC page for case sizes.)**

**Primary, 115 VAC, 50/60 Hz Bridge Rectifiers**

Type S-77, S-78 and S-79 tapped for dual secondary volts. **nother UTC page for case sizes.**

| C pe | Volts DC | Amps DC | Case No. | Net Ea., 1-4 |
|---|---|---|---|---|
| 75 | 5.2/14 | 1.2/.4 | G-1 | $ 13.74 |
| 76 | 10/26 | 4/1.4 | G-4 | 18.51 |
| 77 | 14/56 | 3/1 | G-5 | 25.09 |
| 78 | 28/110 | 9/3 | G-9 | 135.00 |
| 79 | 32/120 | 3/1 | G-7 | 76.50 |

### CHANNEL FRAME TYPE

**ary, 115 VAC, 50/60 Hz. Test V rms, 1500.**

| C pe | Secondary VCT | Secondary Amps | Size, Inches W. | Size, Inches D. | Size, Inches H. | Size, Inches Mtg. | Wt., Lbs. | Each, 1-4 |
|---|---|---|---|---|---|---|---|---|
| | 2.5 | 3 | 2 7/8 | 1 5/8 | 1 11/16 | 2 3/8 | 3/4 | $8.57 |
| | 6.3 | 1.2 | 2 7/8 | 1 5/8 | 1 11/16 | 2 3/8 | 3/4 | 7.58 |
| | 2.5 | 6 | 3 5/16 | 1 7/8 | 2 | 2 13/16 | 1 | 18.00 |
| | 6.3 | 3 | 3 5/16 | 1 7/8 | 2 | 2 13/16 | 1 | 8.36 |
| | 2.5 | 10 | 3 3/4 | 2 1/8 | 2 5/16 | 3 1/8 | 1 1/2 | 21.60 |
| | 5 | 3 | 3 3/4 | 2 1/8 | 2 5/16 | 3 1/8 | 1 1/2 | 9.56 |
| | 7.5 | 3 | 3 3/4 | 2 1/8 | 2 5/16 | 3 1/8 | 1 1/2 | 9.97 |
| | 6.3 | 8 | 4 | 2 1/2 | 2 5/8 | 3 9/16 | 2 1/2 | 10.97 |
| 0* | 24 | 2 | 4 | 2 5/8 | 2 11/16 | 3 9/16 | 2 1/2 | 12.54 |
| 1† | 24 | 1 | 3 3/4 | 2 1/8 | 2 5/16 | 3 1/8 | 1 1/2 | 11.14 |
| 2‡ | 36 | 1.3 | 4 | 2 5/8 | 2 5/8 | 3 9/16 | 2 1/2 | 13.14 |
| 3§ | 26 | .04 | 2 1/8 | 1 3/8 | 1 1/4 | 1 3/4 | 1/4 | 10.97 |
| 4§ | 26 | .25 | 2 7/8 | 1 5/8 | 1 11/16 | 2 3/8 | 3/4 | 10.35 |
| 5§ | 48 | 1 | 4 | 2 1/2 | 2 5/8 | 3 9/16 | 2 1/2 | 13.94 |
| 6§ # | 11 | 2.5 | 3 3/4 | 2 1/8 | 2 5/16 | 3 1/8 | 1 1/2 | 13.94 |

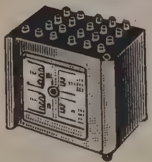
2 V, 4 amps sec. †Or 12 V, 2 amps sec. ‡Or 18 V, 2.6 amps sec. os on primary to modify sec. nom. voltage −6%, +6% and %. #Or 5.5 V, 5 amps sec.; for 120 V input, use 6% tap.

**Primary, 105/115/210/220/230 VAC, 50/60 Hz**

re as above, except Type CG-34, 105/115/220/230 VAC. e transformers may be operated on 25 to 43 Hz if 220 V ary is utilized on 110 V; simultaneously the secondary voltage is reduced by half. **See another UTC page for complete listing of CG Series types and case dimensions.**

| UTC Type | Secondary VCT | Secondary Amps | WVDC | Sec. Test V rms | Case No. | Each, 1-4 |
|---|---|---|---|---|---|---|
| CG-33 | 6.3 | .4 | 500 | 2000 | RC-75 | $45.00 |
| CG-34 | 2.5 | 10 | 2500 | 6000 | RC-112 | 63.00 |
| CG-35 | 6.3 | 6 | 500 | 2000 | RC-87 | 51.30 |
| CG-36 | 6.3/6.3 | 5/5 | 500 | 2000 | RC-100 | 72.00 |
| CG-120 | 2.5 | 10 | 5000 | 11000 | RC-125 | 81.00 |
| CG-121 | 5 | 25 | 5000 | 11000 | RC-150 | 41.80 |
| CG-122 | 7.5/6.3 | 10 | 1500 | 4000 | RC-125 | 68.85 |
| CG-124 | 10 | 10 | 1500 | 4000 | RC-150 | 85.50 |
| CG-125 | 14/12/11 | 10 | 1500 | 4000 | RC-150 | 90.00 |
| CG-126 | 14/11/10 | 10 | 1500 | 4000 | RC-152 | 59.72 |
| | 14/11/10 | 10 | | | | |

### LAB★ CIRCUIT DEVELOPMENT TRANSISTOR TRANSFORMERS



Aid the designer in selecting optimum impedances for best power and distortion results from his transistor circuit.

**UTC Type LAB-10**—20 Hz to 20 kHz, up to 1 watt continuous. Primary Impedance: 1900 to 14,400 ohms with 20:1 or 10:1 ratio to secondary; 925 to 7600 ohms with 10:1 or 5:1 ratio to secondary. Secondary Impedance: 19 to 36 ohms, and 37 to 76 ohms. Size, 3 1/8" x 2 5/8" x 3 1/4". Weight, 3 lbs. Net Each, 1–4 .................. **$126.00**

**UTC Type LAB-20**—20 Hz to 20 kHz, up to 50 watts, continuous. Primary Impedance: 6, 12, 24, 40, 54, 70 and 96 ohms. Secondary Impedance: 4, 8, 16 and 64 ohms. Size, 5 13/16" x 5" x 4 11/16". Wt., 15 lbs. Net Each, 1–4 .............................. **$225.00**

**UTC Type LAB-5**—20 Hz to 20 kHz, up to 50 mW, continuous. Humbucking balanced core and windings. High electrostatic shielding; multiple magnetic shielding. Primary Impedance: 125, 200 split, 500 split and 2000 split ohms. Secondary Impedance: Same as primary. Size, 3 1/8" x 2 5/8 x 3 1/4". Wt., 3 lbs. Net Each, 1–4 .................................. **$144.00**

## MILITARY DESIGNATIONS

### MIL-T-27C INDUCTORS AND TRANSFORMERS

| TF | 4 | R | X | 01 | FA |
|---|---|---|---|---|---|
| Ⓐ | Ⓑ | Ⓒ | Ⓓ | Ⓔ | Ⓕ |

### MIL-T-21038B PULSE TRANSFORMERS

| TP | 6 | R | X | 1100 | B | C |
|---|---|---|---|---|---|---|
| Ⓐ | Ⓑ | Ⓒ | Ⓓ | Ⓖ | Ⓗ | Ⓘ |

### MIL-F-18327B FILTERS

| FR | 4 | R | X | 11 | YY |
|---|---|---|---|---|---|
| Ⓐ | Ⓑ | Ⓒ | Ⓓ | Ⓔ | Ⓙ |

### MIL-F-18327C FILTERS

| FR | 4 | R | X | 11 | YY | 1 |
|---|---|---|---|---|---|---|
| Ⓐ | Ⓑ | Ⓒ | Ⓓ | Ⓔ | Ⓙ | Ⓚ |

Ⓐ **Component:** TF indicates all MIL-T-27( ) transformers or inductors. TP indicates all MIL-T-21038B pulse transformers. FR indicates filters.

Ⓑ **Grade:** Refers to case material and environmental capability. MIL-T-27C, Grade 4 is metal-cased with max. reliability; resistant to shock, vibration and thermal shock. Grade 5 same as Grade 4 except encapsulated or molded. MIL-T-21038B, Grade 6 same as Grade 4, MIL-T-27C plus use at high altitudes if required. Grade 7 is encapsulated or molded version of Grade 6. MIL-F-18327C, Grade 4 is metal-cased for vibration frequency range 10 to 55 Hz. Grade 5 same as Grade 4 except encapsulated. Grade 6 is metal-cased for vibration frequency range 10 to 2000 Hz. Grade 7 is encapsulated version of Grade 6.

Ⓒ **Class:** Indicative of max. operating temperature (ambient plus temperature rise). R is 105° C. S is 130° C.

Ⓓ **Life Expectancy:** Designers estimate of mean anticipated life. X indicates 10,000 hours life estimated.

Ⓔ **Family:** Two-digit number code-listed in specification, representing each application or category of transformer and inductor. MIL-F-18327B or C, refers to application i.e., 11 is low pass, 22 is band pass and 33 is high pass.

Ⓕ **Case Size and Mounting:** Two-letter code listed in specifications. See table of sizes, below. YY is non-standard metal case. ZZ is encapsulated or molded.

Ⓖ **Turns Ratio:** Four-digit code indicates number of windings and their ratios; e.g., 1110 is 1:1:1.

Ⓗ **Case Style:** Single letter code for fixed case styles; i.e., A for radial leads and C for terminations at one end.

Ⓘ **Case Size:** Single letter code for fixed envelope dimension, as given in individual listings. Z indicates other sizes.

Ⓙ **Case or envelop size and mounting:** Two letters code as given in individual listing. YY indicates non standard metal case. ZZ indicates encapsulated or molded case.

Ⓚ **Composition:** 1 indicates LC, 2 indicates crystal and 3 indicates other electromechanical.

### MIL-T-27C CASE SIZES

| MIL Case | Size, Inches: Dimension A | Size, Inches: Dimension B | Size, Inches: Dimension C | Size, Inches: Dimension D | Size, Inches: Dimension E | Mounting Studs |
|---|---|---|---|---|---|---|
| AF | 3/4 | 3/4 | 1 1/8 | Diag. | 9/16 | 4-40 x 3/8 |
| AG | 1 | 1 | 1 3/8 | Diag. | 3/4 | 4-40 x 3/8 |
| AH | 1 5/16 | 1 5/16 | 1 3/4 | Diag. | 1 1/4 | 6-32 x 3/8 |
| AJ | 1 5/8 | 1 5/8 | 2 3/8 | 1 3/16 | 1 3/16 | 6-32 x 3/8 |
| EA | 1 15/16 | 1 13/16 | 2 3/4 | 1 3/8 | 1 1/4 | 6-32 x 3/8 |
| EB | 1 15/16 | 1 13/16 | 2 7/16 | 1 3/8 | 1 1/4 | 6-32 x 3/8 |
| FA | 2 5/16 | 2 1/16 | 3 1/8 | 1 11/16 | 1 7/16 | 6-32 x 3/8 |
| FB | 2 5/16 | 2 1/16 | 2 1/2 | 1 11/16 | 1 7/16 | 6-32 x 3/8 |
| GA | 2 3/4 | 2 3/8 | 3 13/16 | 2 1/8 | 1 3/4 | 6-32 x 3/8 |
| GB | 2 3/4 | 2 3/8 | 2 13/16 | 2 1/8 | 1 3/4 | 6-32 x 3/8 |
| HA | 3 1/16 | 2 5/8 | 4 1/4 | 2 19/64 | 1 55/64 | 8-32 x 3/8 |
| HB | 3 1/16 | 2 5/8 | 3 9/16 | 2 19/64 | 1 55/64 | 8-32 x 3/8 |
| JA | 3 9/16 | 3 1/16 | 4 7/8 | 2 5/8 | 2 1/8 | 8-32 x 3/8 |
| JB | 3 9/16 | 3 1/16 | 3 7/8 | 2 5/8 | 2 1/8 | 8-32 x 3/8 |
| KA | 3 15/16 | 3 3/8 | 5 1/4 | 3 | 2 7/16 | 10-32 x 1/2 |
| KB | 3 15/16 | 3 3/8 | 4 5/16 | 3 | 2 7/16 | 10-32 x 1/2 |
| LA | 4 5/16 | 3 11/16 | 5 9/16 | 3 5/16 | 2 11/16 | 10-32 x 1/2 |
| LB | 4 5/16 | 3 11/16 | 4 1/2 | 3 5/16 | 2 11/16 | 10-32 x 1/2 |
| MA | 4 11/16 | 4 | 6 | 3 11/16 | 3 | 1/4-20 x 5/8 |
| MB | 4 11/16 | 4 | 4 15/16 | 3 11/16 | 3 | 1/4-20 x 5/8 |
| NA | 5 1/16 | 4 5/16 | 6 13/16 | 4 1/16 | 3 5/16 | 1/4-20 x 5/8 |
| NB | 5 1/16 | 4 5/16 | 5 1/2 | 4 1/16 | 3 5/16 | 1/4-20 x 5/8 |
| OA | 5 1/2 | 4 1/2 | 6 3/4 | 3 3/4 | 3 | 1/4-20 x 5/8 |

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**TC trademark.**

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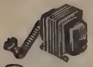
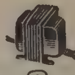
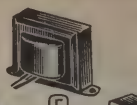
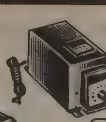
DIV. OF **TRW**

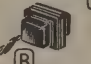
# REPLACEMENT TRANSFORMERS AND MIL INDUCTOR

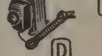


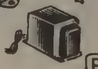












## REPLACEMENT TYPE COMPONENTS

All units vacuum sealed. Shells and brackets finished in high luster black enamel. A minimum number of transformers have been developed to cover any requirement in the replacement field.

### STEP-DOWN AUTO-TRANSFORMERS (FIG. A)

**220/240 to 110/120 VAC, 50/60 Hz**

With 6-ft. cord and female receptacle, except R-64.

| UTC Type | Rating | Size, Inches | | | Wt., Lbs. | Net Ea., 1-4 |
|---|---|---|---|---|---|---|
| | | L. | W. | H. | | |
| R-41 | 85 watt capacity | 3⁵⁄₁₆ | 2⅝ | 3⅛ | 4 | $ 15.92 |
| R-42 | 125 watt capacity | 3½ | 3 | 3½ | 5 | 20.92 |
| R-43 | 175 watt capacity | 3¾ | 3¼ | 3⅞ | 5½ | 19.71 |
| R-44 | 250 watt capacity | 4⅜ | 3¼ | 3⅞ | 6½ | 21.49 |
| R-45 | 500 watt capacity | 4⅝ | 3⅞ | 4⅝ | 12 | 30.48 |
| R-46 | 1200 watt capacity | 6⅞ | 3⅞ | 4⅝ | 18 | 57.33 |
| R-64 | 2500 watts, no cord | 10½ | 4¾ | 6¾ | 30 | 115.44 |

### DOUBLE SHELL POWER TRANSFORMERS (FIG. B)

Rectifier filaments 5 volts, 3 amps except R-101, 2 amps.

| UTC Type | High V | DC mA | Amplifier Filament | Overall Height | Wt., Lbs. | Net Ea., 1-4 |
|---|---|---|---|---|---|---|
| R-101 | 275-0-275 | 50 | 6.3 VCT-2.7A | 3" | 2½ | $17.12 |
| R-102 | 350-0-350 | 70 | 6.3 VCT-3A | 3⅝" | 3½ | 21.90 |
| R-103 | 350-0-350 | 90 | 6.3 VCT-3.5A | 3¹⁵⁄₁₆" | 4½ | 54.00 |
| R-104 | 350-0-350 | 120 | 6.3 VCT-5A | 3⅞" | 5½ | 54.00 |
| R-105 | 385-0-385 | 160 | 6.3 VCT-5A | 4⁵⁄₁₆" | 7 | 27.06 |

### VERTICAL SHELL POWER TRANSFORMERS (FIG. C)

Rectifier filaments 5 volts, 3 amps, except R-110, 2 amps.

| | | | | | | |
|---|---|---|---|---|---|---|
| R-110 | 300-0-300 | 50 | 6.3 VCT-2.7A | 3¼" | 2½ | $21.90 |
| R-111 | 350-0-350 | 70 | 6.3 VCT-3A | 3¼" | 3½ | 45.00 |
| R-112 | 350-0-350 | 120 | 6.3 VCT-5A | 4" | 5½ | 52.65 |
| R-113 | 400-0-400 | 200 | 6.3 VCT-6A | 4⅝" | 8 | 30.47 |

### EXPORT VOLTAGE ADAPTER (FIG. D)

Complete with cord plug and locking switch selecting operation from 105, 115, 125, 135, 150, 210, 230, 250, VAC, 42–60 Hz. Output voltage 115 VAC.

| UTC Type | Rating, Watts | Size, Inches | | | Mtg. Size, Inches | Wt., Lbs. | Net Ea., 1-4 |
|---|---|---|---|---|---|---|---|
| | | L. | W. | H. | | | |
| R-47 | 85 | 4⅝ | 3 | 3½ | 2¼ x 2¼ | 4½ | $28.87 |
| R-48 | 150 | 4¾ | 3¼ | 4 | 2½ x 2½ | 5½ | 29.45 |

### TV VOLTAGE REGULATOR (FIG. D)

With cord, plug and locking switching selecting 115 VAC, 50–60 Hz from 85, 90, 95, 100, 105, 110, 120, 125 VAC input.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| R-49 | 350 | 5 | 3¼ | 4 | 2½ x 2¾ | 5 | $31.05 |

### CHANNEL FRAME FILTER REACTORS (FIG. E)

Inductance shown is at rated mADC. Test V rms, 1,500.

| UTC Type | Induct. H | Cur. mA | Res., Ohms | Size, Inches | | | | Wt., Lbs. | Each, 1-4 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | W. | D. | H. | Mtg. | | |
| R-55 | 6 | 40 | 300 | 2⅜ | 1⅜ | 1⅜ | 2 | ½ | $10.80 |
| R-14 | 8 | 40 | 250 | 2⅞ | 1½ | 1¹¹⁄₁₆ | 2⅜ | ¾ | 4.78 |
| R-15 | 12 | 30 | 450 | 2⅞ | 1½ | 1¹¹⁄₁₆ | 2⅜ | ¾ | 10.80 |
| R-16 | 15 | 30 | 630 | 2⅞ | 1½ | 1¹¹⁄₁₆ | 2⅜ | ¾ | 10.80 |
| R-17 | 20 | 40 | 850 | 3⁵⁄₁₆ | 1⅝ | 2 | 2¹³⁄₁₆ | 1 | 14.40 |
| R-18 | 8 | 80 | 250 | 3⁹⁄₃₂ | 1⅝ | 2 | 2¹³⁄₁₆ | 1 | 16.20 |
| R-19 | 14 | 100 | 450 | 3¾ | 1⅞ | 2⁵⁄₁₆ | 3⅛ | 1½ | 7.77 |
| R-20 | 5 | 200 | 90 | 4⅛ | 2¼ | 2⅝ | 3⁹⁄₁₆ | 2½ | 9.16 |
| R-21 | 15/3 | 200 | 90 | 4⅛ | 2¼ | 2⅝ | 3⁹⁄₁₆ | 2½ | 20.70 |
| R-220 | 100/8*<br>25/2* | 2.5 A<br>5 A | .6<br>.16 | 3¾ | 2 | 2⁵⁄₁₆ | 3⅛ | 1½ | 9.56 |

*Millihenries.

### ISOLATION TRANSFORMERS (FIG. F)

Ideal for isolating line noise, AC-DC sets, etc. Excellent electrostatic shielding 1,500 volt breakdown test. Complete with 6′ cord and female receptacle, except UTC Type R-77. Primary, 110–120 VAC, 50/60 Hz. Secondary, 110–120 V, except UTC Type R-97, 220 VAC primary, 120 VAC secondary.

| UTC Type | Rating, Watts | Size, Inches | | | Mtg. Size, Inches | Wt., Lbs. | Net Ea., 1-4 |
|---|---|---|---|---|---|---|---|
| | | L. | W. | H. | | | |
| R-72 | 40 | 3⅛ | 2⅝ | 3⅛ | 2 x 1⅞ | 4 | $18.51 |
| R-73 | 100 | 3¾ | 3¼ | 3⅞ | 2¼ x 2⅜ | 6 | 21.90 |
| R-74 | 250 | 4⅞ | 3⅞ | 4⅝ | 3 x 3½ | 12 | 33.43 |
| R-75 | 600 | 7⅜ | 3⅞ | 4⅝ | 3 x 5⅞ | 20 | 61.72 |
| R-76 | 1200 | 8½ | 4½ | 6⅛ | 3⅝ x 6⅝ | 30 | 113.46 |
| R-77 | 2500 | 12 | 7 | 9 | 6 x 11 | 70 | 256.78 |
| R-97 | 250 | 4⅞ | 3⅞ | 4⅝ | 3 x 3½ | 12 | 31.65 |

### EXPERIMENTER/HOBBY CIRCUIT TRANSFORMERS

Hi-fi, low distortion, IC or transistor output to voice coil transformer. **Impedance:** Primary, 200/125 ohms CT; secondary, 4/3 ohms. **Frequency Response:** ±1 dB, 100 Hz to 10 kHz. **Max. Output:** 1 watt. **Size:** 2⅛″ w. x 1¼″ d. x 1¼″ h. Wt., .2 lb. **UTC Type HCA-308 Hobby Circuit Transformer**—Net Each, 1–4 .......................... **$10.76**

### LINE VOLTAGE ADJUSTERS WITH METER (FIG. G

Adjusts abnormal or fluctuating line voltages. Adjust switch that meter reads at red line and then the correct line voltage your equipment is provided. These units combine a tapped aut former, switch and meter in a rugged, compact assembly. Switc is nine-position type and adjusts for line voltages, 60–140 vo on 115 V output models and 160–240 V on 230 V output mod All units are designed for 50/60 Hz service and come compl with 6′ cord and plug and output receptacle.

| UTC Type | Primary Voltages | Second. Volts | Watts Rating | Size, Inches | | | Wt., Lbs. | Net Ea 1-4 |
|---|---|---|---|---|---|---|---|---|
| | | | | L. | W. | H. | | |
| R-78 | † | 115 | 150 | 7½ | 4¹⁄₁₆ | 4¾ | 6 | $51.7 |
| R-79 | † | 115 | 300 | 7½ | 4¹⁄₁₆ | 4¾ | 9 | 121.5 |
| R-80 | † | 115 | 600 | 10½ | 4¹⁄₁₆ | 4¾ | 13 | 70.4 |
| R-81 | † | 115 | 1200 | 10½ | 4¹⁄₁₆ | 4¾ | 21 | 95.5 |
| R-86 | ‡ | 230 | 1200 | 10½ | 4¹⁄₁₆ | 4¾ | 21 | 207.0 |

†60, 70, 80, 90, 100, 110, 120, 130, 140 volts. ‡160, 170, 180, 190 200, 210, 220, 230, 240 volts.

### PHOTOFLASH TRANSFORMERS

PF-6

Standard photoflash transformers that may be used with either standard Amglo type or Sylvania trigger type multiple flash tubes. Circuit details are included with the units.

**UTC Type PF-1**—Primary, 115 VAC, 50/60 Hz. Secondary, for power supply delivering 2,200 VDC to capacitor up to 100 μF. Units are compound-sealed in G-3 cases, 2⁵⁄₃₂″ x 2¾″ (3¾″ incl. flange) x 2½″ h. Weight, 2 lbs. Net Each, 1–4 ....... **$20.91**

**UTC Type PF-3**—Trigger transformer for use with above unit, 15 kV peak. Size: ⅞″ O.D. x 3″ lg. Weight, 2 oz Net Each, 1–4 .......................... **$12.54**

### TRANSISTOR PHOTOFLASH TRANSFORMERS

Miniaturized, lightweight units for use in transistorized photoflash circuits.

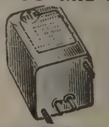
**UTC Type PF-5**—Primary, 115 VAC, 50/60 Hz or 4½ V battery switched by PF-6 inverter transformer. Output, 400 VDC when used in voltage doubler circuit to charge photoflash capacitor (40-watt-second rating). Case, G-1. Net Each, 1–4.... **$14.58**

**UTC Type PF-6**—Inverter transformer for use in transistor inverter circuit with PF-5 step-up transformer and 4.5 VDC battery. Size, ⅞″ dia. x 1³⁄₁₆″ l. Net Each, 1–4 ................ **$10.76**

**UTC Type PF-7**—Trigger transformer. Shorting .25 μF capacitor. (charged to approx. 225 VDC) across terminals 1-2 produces 6 kV pulse at terminal 3 for triggering flash tube. Size: ⅜″ dia. x ¹⁵⁄₁₆″ l. Weight, .5 oz. Net Each, 1–4 .......................... **$7.96**

### TUBE, TRANSISTOR FILTER INDUCTORS SUCCESSFULLY TESTED TO MIL-T-27C

The multiple ratings applied to "H" series of filter chokes and are also applicable to these units. Transistor supply units are swinging type to increase regulation. Terminals for H-79 are opposite mounting. Metal cased **TF4** Type, H-70 thru H-79, H-164 thru H-174. Lightweight molded type **MIL TF5SX04ZZ**, H-105 thru H-109. Type H-79 case, 7″ x 7″ x 8″.


TF4

MIL F5SX04ZZ

| UTC Type | Ind. at DC | | Res. Ohms | Max. VDC* Chk. Inp. | Test V rms | MIL Case | Ea., 1-4 |
|---|---|---|---|---|---|---|---|
| | H | mA | | | | | |
| H-70 | 20 | 20 | 925 | 350 | 1000 | AH | $14.73 |
| H-71 | 20 | 40 | 350 | 500 | 2500 | FB | 16.72 |
| H-72 | 13 | 70 | 215 | 500 | 2500 | GB | 20.30 |
| H-73 | 11 | 100 | 150 | 700 | 2500 | HB | 47.25 |
| H-74 | 11 | 150 | 135 | 700 | 2500 | JB | 55.35 |
| H-75 | 11 | 200 | 90 | 700 | 2500 | KB | 30.46 |
| H-76 | 11 | 200 | 85 | 1500 | 4500 | LB | 90.00 |
| H-77 | 10 | 300 | 60 | 2000 | 5500 | MB | 108.00 |
| H-78 | 7 | 400 | 48 | 2500 | 7000 | OA | 157.50 |
| H-79 | 7 | 800 | 20 | 3000 | 9000 | ..... | 378.00 |
| H-164†<br>♯ | 45‡<br>11.25‡ | 35<br>70 | 1.2<br>.295 | ............ | 500 | AG | 14.94 |
| H-166†<br>♯ | 125‡<br>31‡ | 50<br>100 | 1.2<br>.3 | ............ | 500 | AH | 14.94 |
| H-168†<br>♯ | 68‡<br>17‡ | 100<br>200 | .8<br>.2 | ............ | 750 | AJ | 19.10 |
| H-170†<br>♯ | 180‡<br>45‡ | 125<br>250 | .6<br>.15 | ............ | 1000 | GB | 21.49 |
| H-171†<br>♯ | 9‡<br>2.25‡ | .75 A<br>1.25 A | .03<br>.0075 | ............ | 1000 | JA | 32.84 |
| H-172†<br>♯ | 70‡<br>17.5‡ | .25 A<br>.5 A | .22<br>.055 | ............ | 1000 | HA | 26.28 |
| H-173†<br>♯ | 80‡<br>20‡ | .5 A<br>1 A | .15<br>.038 | ............ | 1000 | KA | 39.82 |
| H-174†<br>♯ | 50‡<br>12.5‡ | .65 A<br>1.3 A | .08<br>.02 | ............ | 1000 | MB | 117.00 |

| UTC Type | Ind. at DC | | DC Res. Ohms | Test Volts | Size, Inches | | | Wt., Lbs. | Ea., 1-4 |
|---|---|---|---|---|---|---|---|---|---|
| | H | mA | | | L. | W. | H. | | |
| H-105 | 2.5 | 25 | 225 | 1000 | 1¼ | ¹⁵⁄₁₆ | ¹⁵⁄₁₆ | .1 | $12.54 |
| H-106 | 2.25 | 60 | 110 | 1000 | 1⅝ | 1⁵⁄₁₆ | 1⅜ | .28 | 9.56 |
| H-107 | 2 | 120 | 55 | 2500 | 2⅛ | 1¾ | 1⁵⁵⁄₆₄ | .9 | 13.94 |
| H-108 | 2 | 220 | 35 | 2500 | 2⅞ | 2½ | 2¹⁷⁄₃₂ | 1.7 | 38.70 |
| H-109†<br>♯ | .2<br>.055 | 125<br>250 | .6<br>.15 | 750 | 2⅞ | 2½ | 2¹⁷⁄₃₂ | 1.7 | 23.88 |
| H-300<br>♯ | 1<br>.25 | 5<br>10 | 40<br>10 | 500 | 1 | ¾ | ²³⁄₃₂ | .5 | 26.55 |

*To ripple voltage in input circuit only. †Two windings, split in series. ‡In mH. ♯Two windings, split in parallel.

★UTC trademark. **SEE PREVIOUS PAGE OF UTC LISTING FOR MILITARY INFORMATION**

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# HMITE Variable Transformers

1, VT02,
VT3

VT4, VT8

VT02F

VT8-3

VT20

asic physical types meet most industrial requirements with maintenance-free life. Excellent regulation at any point n rated load; free from wave-form distortion. Direct-reading le (1 per side) dial supplied; CCW also available. The -saving low power types VT1, VT02 and VT3 have adjust- shaft independent of brush assembly, 3-way terminals, in- ly replaceable brush contacts and improved heat dissipation. **nting:** Easily replace other brands: VT2LN, VT1, VT02 and have ⅜-32 thd. bushing; VT8 and VT20, 4-hole bolt mount; 3-hole bolt mount convertible to 4-hole with adapter plate. **sed Types:** Gray hammertone cases. Units with suffix **B** have exposed terminal panel and mounting base; **E,** fixed type for table or panel mounting; **F,** portable with cord, outlet socket and fuse; **G,** deluxe portable with handle, circuit breaker and switch for overvoltage selection. Final suffix: **V** indicates with voltmeter; **VA,** volt/ammeter; **VW,** volt/wattmeter; all come with handle except VT8NF series. **Other Options:** All types except VT2LN offer shafts, extendable from brush or base side; ganged versions have thru-shaft with same flexibility. Final suffix **C** types come with 3-cond. cord and outlet, one cond. grounded to case. Most single cased and uncased VT4, VT8 and VT20 units for 120 volt operation are UL Recognized. Consult factory.

## SINGLE TRANSFORMERS

### UNCASED, SINGLE-PHASE TRANSFORMERS

| hmite umber | Input |  | Max. Output |  | Feature or Connection | Size, Inches W. x D.♦ x H. | Wt., Lbs.†† | Net Each, Lots of |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  | Volts | Hz* | Amps | Volts |  |  |  | 1-9 | 10-24 | 25-99 | 100 Up |
|  | 120 | 60† | 1.0 | 0–120/132 | Low power, space saver | 2⅞ dia. x 1¹³⁄₁₆ d. | 1.5 | $14.00 | $12.60 | $11.55 | $10.50 |
| N | 120 | 60 | 1.2 | 0–120 | Same, no overvoltage | 2⅞ dia. x 1¹³⁄₁₆ d. | 1.5 | 14.00 | 12.60 | 11.55 | 10.50 |
| 2 | 120 | 60† | 1.75 | 0–120/132 | Low power, space saver | 2⅞ dia. x 2⁵⁄₁₆ d. | 2.25 | 13.40 | 12.06 | 11.06 | 10.05 |
| 2N | 120 | 60 | 2.0 | 0–120 | Same, no overvoltage | 2⅞ dia. x 2⁵⁄₁₆ d. | 2.25 | 13.40 | 12.06 | 11.06 | 10.05 |
| LN | 40 | 60 | 5.0 | 0–40 | High amps, low volts | 2¹³⁄₁₆ dia. x 2⅛ d. | 2.4 | 15.00 | 13.50 | 12.38 | 11.25 |
|  | 120 | 60† | 2.6 | 0–120/132 | Low power, space saver | 2⅞ dia. x 2¹³⁄₁₆ d. | 3.0 | 13.90 | 12.51 | 11.47 | 10.43 |
| N | 120 | 60 | 3.0 | 0–120 | Same, no overvoltage | 2⅞ dia. x 2¹³⁄₁₆ d. | 3.0 | 13.90 | 12.51 | 11.47 | 10.43 |
|  | 120 | 50 | 3.5 | 0–120/140 | Basic, 3.5-amp model | 4⁵⁄₁₆ x 4¾ x 4¹³⁄₁₆ | 5.25 | 18.75 | 16.88 | 15.47 | 14.06 |
| N | 120 | 50 | 4.75 | 0–120 | Same, no overvoltage | 4⁵⁄₁₆ x 4¾ x 4¹³⁄₁₆ | 5.25 | 18.75 | 16.88 | 15.47 | 14.06 |
| LN | 40 | 50 | 12.0 | 0–40 | High amps, low volts | 4⁵⁄₁₆ x 4¾ x 4¹³⁄₁₆ | 5.25 | 21.50 | 19.35 | 17.74 | 16.13 |
|  | 120 | 50 | 7.5 | 0–120/140 | Basic 7.5-amp model | 4⅞ x 5⅝ x 5¹¹⁄₁₆ | 10.25 | 24.75 | 22.28 | 20.42 | 18.56 |
| N | 120 | 50 | 10.0 | 0–120 | Same, no overvoltage | 4⅞ x 5⅝ x 5¹¹⁄₁₆ | 10.25 | 25.00 | 22.50 | 20.63 | 18.75 |
| LN | 40 | 50 | 22.0 | 0–40 | High amps, low volts | 4⅞ x 5⅝ x 5¹¹⁄₁₆ | 10.25 | 27.50 | 24.75 | 22.69 | 20.63 |
| H | 240‡ | 50 | 3.0 | 0–240/280 | 240 V input, 120 V tap | 4⅞ x 5⅝ x 5¹¹⁄₁₆ | 10.25 | 27.50 | 24.75 | 22.69 | 20.63 |
| HN | 240‡ | 50 | 4.0 | 0–240 | Same, no overvoltage | 4⅞ x 5⅝ x 5¹¹⁄₁₆ | 10.25 | 27.50 | 24.75 | 22.69 | 20.63 |
| 0 | 120 | 50 | 20.0 | 0–120/140 | Basic 20-amp model | 7½ x 5⅝ x 8¹⁄₁₆ | 22.0 | 66.00 | 59.40 | 54.45 | 49.50 |
| 0N | 120 | 50 | 25.0 | 0–120 | Same, no overvoltage | 7½ x 5⅝ x 8¹⁄₁₆ | 22.0 | 66.00 | 59.40 | 54.45 | 49.50 |
| 0H | 240‡ | 50 | 9.0 | 0–240/280 | 240 V input, 120 V tap | 7½ x 5⅝ x 8¹⁄₁₆ | 22.0 | 68.00 | 61.20 | 56.10 | 51.00 |
| 0HN | 240‡ | 50 | 11.0 | 0–240 | Same, no overvoltage | 7½ x 5⅝ x 8¹⁄₁₆ | 22.0 | 68.00 | 61.20 | 56.10 | 51.00 |

### CASED, SINGLE-PHASE TRANSFORMERS

| hmite umber | Volts | Hz* | Amps | Volts | Feature or Connection | Size, Inches W. x D.♦ x H. | Wt., Lbs.†† | 1-9 | 10-24 | 25-99 | 100 Up |
|---|---|---|---|---|---|---|---|---|---|---|---|
| E | 120 | 60† | .8 | 0–120/132§ | Fixed mounting | 3⅜ x 2½ x 4¼ | 1.9 | $ 22.50 | $ 20.25 | $18.56 | $16.88 |
| NE | 120 | 60 | 1.0 | 0–120 | Fixed mounting | 3⅜ x 2½ x 4¼ | 1.9 | 22.50 | 20.25 | 18.56 | 16.88 |
| F | 120 | 60† | 1.0 | 0–132# | Portable | 3⅜ x 2½ x 4¼ | 2.3 | 26.00 | 23.40 | 21.45 | 19.50 |
| NF | 120 | 60 | 1.2 | 0–120 | Portable | 3⅜ x 2½ x 4¼ | 2.3 | 26.00 | 23.40 | 21.45 | 19.50 |
| 2E | 120 | 60† | 1.4 | 0–120/132§ | Fixed mounting | 3⅜ x 2½ x 4¼ | 2.8 | 20.00 | 18.00 | 16.50 | 15.00 |
| 2NE | 120 | 60 | 1.6 | 0–120 | Fixed mounting | 3⅜ x 2½ x 4¼ | 2.8 | 20.00 | 18.00 | 16.50 | 15.00 |
| 2F | 120 | 60† | 1.75 | 0–132# | Portable | 3⅜ x 2½ x 4¼ | 3.2 | 22.75 | 20.48 | 18.77 | 17.06 |
| 2NF | 120 | 60 | 2.0 | 0–120 | Portable | 3⅜ x 2½ x 4¼ | 3.2 | 22.75 | 20.48 | 18.77 | 17.06 |
| E | 120 | 50 | 2.8 | 0–120/140§ | Fixed mounting | 4½ x 4½ x 6³⁄₁₆ | 7.4 | 25.50 | 22.95 | 21.04 | 19.13 |
| NE | 120 | 50 | 3.8 | 0–120 | Fixed mounting | 4½ x 4½ x 6³⁄₁₆ | 7.4 | 25.50 | 22.95 | 21.04 | 19.13 |
| F | 120 | 50 | 3.5 | 0–140# | Portable | 4⅞ x 4½ x 6¼ | 7.8 | 28.00 | 25.20 | 23.10 | 21.00 |
| NF | 120 | 50 | 4.75 | 0–120 | Portable | 4⅞ x 4½ x 6¼ | 7.8 | 28.50 | 25.65 | 23.51 | 21.38 |
| FC | 120 | 50 | 3.5 | 0–140# | In/out grounded VT4F | 4⅞ x 4½ x 6¼ | 7.8 | 32.50 | 29.25 | 26.81 | 24.38 |
| NFC | 120 | 50 | 4.75 | 0–120 | In/out grounded VT4NF | 4⅞ x 4½ x 6¼ | 7.8 | 32.50 | 29.25 | 26.81 | 24.38 |
| E | 120 | 50 | 6.0 | 0–120/140§ | Fixed mounting | 5³⁄₁₆ x 5¼ x 7³⁄₁₆ | 13.5 | 32.50 | 29.25 | 26.81 | 24.38 |
| NE | 120 | 50 | 8.0 | 0–120 | Fixed mounting | 5³⁄₁₆ x 5¼ x 7³⁄₁₆ | 13.5 | 32.00 | 28.80 | 26.40 | 24.00 |
| F | 120 | 50 | 7.5 | 0–140# | Portable | 5¹⁷⁄₃₂ x 5¼ x 7⅜ | 13.8 | 34.50 | 31.05 | 28.46 | 25.88 |
| NF | 120 | 50 | 10.0 | 0–120 | Portable | 5¹⁷⁄₃₂ x 5¼ x 7⅜ | 13.8 | 34.50 | 31.05 | 28.46 | 25.88 |
| FC | 120 | 50 | 7.5 | 0–140# | In/out grounded VT8F | 5¹⁷⁄₃₂ x 5¼ x 7⅜ | 13.8 | 38.50 | 34.65 | 31.76 | 28.88 |
| NFC | 120 | 50 | 10.0 | 0–120 | In/out grounded VT8NF | 5¹⁷⁄₃₂ x 5¼ x 7⅜ | 13.8 | 38.50 | 34.65 | 31.76 | 28.88 |
| G | 120 | 50 | 6.0 | 0–120/140• | Deluxe portable, handle | 5³⁄₁₆▲x 5¼ x 7⅜■ | 14.2 | 38.50 | 34.65 | 31.76 | 28.88 |
| GC | 120 | 50 | 6.0 | 0–120/140• | In/out grounded VT8G | 5³⁄₁₆▲x 5¼ x 7⅜■ | 14.2 | 42.50 | 38.25 | 35.06 | 31.88 |
| 0B | 120 | 50 | 20.0 | 0–120/140 | Basic case model | 7⅝ x 8⅛ x 4⅞♦ | 22.5 | 72.00 | 64.80 | 59.40 | 54.00 |
| 0NB | 120 | 50 | 25.0 | 0–120 | No overvoltage | 7⅝ x 8⅛ x 4⅞♦ | 22.5 | 72.00 | 64.80 | 59.40 | 54.00 |
| 0E | 120 | 50 | 20.0 | 0–120/140§ | Fixed mounting | 7¾ x 5½ x 10¹⁵⁄₁₆ | 29.0 | 90.00 | 81.00 | 74.25 | 67.50 |
| 0NE | 120 | 50 | 25.0 | 0–120 | No overvoltage | 7¾ x 5½ x 10¹⁵⁄₁₆ | 29.0 | 90.00 | 81.00 | 74.25 | 67.50 |
| 0FC | 120 | 50 | 20.0 | 0–140 | Portable | 8¼ x 5½ x 11¼ | 31.0 | 101.00 | 90.90 | 83.33 | 75.75 |
| 0NFC | 120 | 50 | 25.0 | 0–120 | Portable | 8¼ x 5½ x 11¼ | 31.0 | 101.00 | 90.90 | 83.33 | 75.75 |
| 0GC | 120 | 50 | 20.0 | 0–120/140• | In/out grounded | 7¾ I x 5½ x 11¼■ | 31.0 | 116.00 | 104.40 | 95.70 | 87.00 |
| 0HB | 240‡ | 50 | 9.0 | 0–240/280 | Basic case model | 7⅝ x 8⅛ x 4⅞♦ | 21.5 | 77.00 | 69.30 | 63.53 | 57.75 |
| 0HNB | 240‡ | 50 | 11.0 | 0–240 | Same, no overvoltage | 7⅝ x 8⅛ x 4⅞♦ | 21.5 | 77.00 | 69.30 | 63.53 | 57.75 |
| 0HE | 240‡ | 50 | 9.0 | 0–240/280§ | Fixed mounting | 7¾ x 5½ x 10¹⁵⁄₁₆ | 28.0 | 92.00 | 82.80 | 75.90 | 69.00 |
| 0HNE | 240‡ | 50 | 11.0 | 0–240 | Same, no overvoltage | 7¾ x 5½ x 10¹⁵⁄₁₆ | 28.0 | 92.00 | 82.80 | 75.90 | 69.00 |
| 0HFC | 240‡ | 50 | 9.0 | 0–240/280 | Portable | 8¼ x 5½ x 11¼ | 30.0 | 103.00 | 92.70 | 84.98 | 77.25 |
| 0HNFC | 240‡ | 50 | 11.0 | 0–240 | Portable | 8¼ x 5½ x 11¼ | 30.0 | 103.00 | 92.70 | 84.98 | 77.25 |

### CASED WITH METERS, SINGLE-PHASE TRANSFORMERS

| hmite umber | Volts | Hz* | Amps | Volts | Feature or Connection | Size, Inches W. x D.♦ x H. | Wt., Lbs.†† | 1-9 | 10-24 | 25-99 | 100 Up |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GCV | 120 | 50 | 6.0 | 0–120/140• | Voltmeter, grnd. conn. | 7 x 5¼ x 10½■ | 15.2 | $ 81.00 | $ 72.90 | $ 66.83 | $ 60.75 |
| GCVA | 120 | 50 | 6.0 | 0–120/140• | Volt/ammeter, grounded | 7 x 5¼ x 10½■ | 15.5 | 121.00 | 108.90 | 99.83 | 90.75 |
| GCVW | 120 | 50 | 6.0 | 0–120/140• | Volt/wattmeter, grnd. | 7 x 5¼ x 10½■ | 15.5 | 163.00 | 146.70 | 134.48 | 122.25 |
| NFCV | 120 | 50 | 10.0 | 0–120 | Voltmeter, grnd. conn. | 7⅜ x 5¼ x 10½ | 14.8 | 76.00 | 68.40 | 62.75 | 57.00 |
| NFCVA | 120 | 50 | 10.0 | 0–120 | Volt/ammeter, grounded | 7⅜ x 5¼ x 10½ | 15.2 | 118.00 | 106.20 | 97.35 | 88.50 |
| NFCVW | 120 | 50 | 10.0 | 0–120 | Volt/wattmeter, grnd. | 7⅜ x 5¼ x 10½ | 15.2 | 158.00 | 142.20 | 130.35 | 118.50 |
| 0GCV | 120 | 50 | 20.0 | 0–120/140• | Voltmeter, grnd. conn. | 8¼ x 5½ x 14■ | 32.0 | 166.00 | 149.40 | 136.95 | 124.50 |
| 0GCVA | 120 | 50 | 20.0 | 0–120/140• | Volt/ammeter, grounded | 8¼ x 5½ x 14■ | 32.2 | 206.00 | 185.40 | 169.95 | 154.50 |
| 0GCVW | 120 | 50 | 20.0 | 0–120/140• | Volt/wattmeter, grnd. | 8¼ x 5½ x 14■ | 32.2 | 295.00 | 265.50 | 243.38 | 221.25 |
| 0NFCV | 120 | 50 | 25.0 | 0–120 | Voltmeter, grnd. conn. | 8¼ x 5½ x 14■ | 32.0 | 150.00 | 135.00 | 123.75 | 112.50 |
| 0NFCVA | 120 | 50 | 25.0 | 0–120 | Volt/ammeter, grounded | 8¼ x 5½ x 14■ | 32.2 | 189.00 | 170.10 | 155.93 | 141.75 |
| 0NFCVW | 120 | 50 | 25.0 | 0–120 | Volt/wattmeter, grnd. | 8¼ x 5½ x 14■ | 32.2 | 278.00 | 250.20 | 229.35 | 208.50 |

n.; may be used up to 1000 Hz. †Use also at 50 Hz if connected for no overvoltage output. ‡With 120 V input tap at which the . current output rating applies up to 120 volts, but reduces approx. 50% at max. output voltage shown. In tandem units, the use of voltage inputs would correspondingly derate current at higher output voltages. §User wires for desired output; dial normally cali- ed for overvoltage. #Factory-connected for overvoltage output; easily re-connected by user for no overvoltage. •Switch selects voltage or no overvoltage. ▲5¾" including handle. ■Case height only, excluding handle. ♦Depth behind panel; add 1" for knob kness for cased types VT8; ⅞" for VT1, VT02 or VT4; 1¼" for VT20. I9" including handle. ††Includes knob, dial and mtg. hardware.

# GENERAL ELECTRIC Variable Transformers

## GENERAL ELECTRIC VOLT-PAC® VARIABLE TRANSFORMERS

The GE Volt-Pac series of variable transformers includes many exclusive features for outstanding performance. Unique heat-sink ring, quick-transfer current collector and grain-oriented, carbon brush provide high current capacity and overload capability. Designed for operation at full rated load from −20° C to +40° C ambient, with very low voltage variation from no-load to full-load. Output voltage continuously variable from 0–100% of input voltage with line voltage connection, 0–117% of input voltage with overvoltage connection, with no waveform distortion. Simple, rugged construction, designed for easy installation on bench, floor or back-of-panel. Models available for manual, plug-in, motor or automatic operation, in a wide variety of voltage and current ratings, with or without cases. **Input Voltages:** 120, 240 or 480 volts. **Output Voltages:** 0–120/240 volts, 0–240/280 volts, and 0–480/560 volts. **Current Ratings:** Available from 2.5–360 amps. **Ordering Information:** Use GE Number shown to indicate uncased type with exposed terminals. Add suffix **G2** to GE Number to indicate cased type with exposed terminals; e.g., 9T92Y27**G2** is 120-volt input, manual single phase, cased with exposed terminals. Terminal enclosures kits available for cased models; full information and prices on request.

### ♦FRAME SIZES

Sizes listed are for uncased types; cased types slightly larger.

| Key | Size, In.<br>W. x D. x H. |
|---|---|
| A | 3 x 3 9/16 x 2 1/4 |
| B | 3 15/16 x 4 7/16 x 3 3/8 |
| C | 5 3/16 x 5 5/8 x 3 1/4 |
| D | 5 3/16 x 5 5/8 x 4 5/8 |
| E | 6 1/4 x 7 1/8 x 4 1/2 |
| F | 9 7/16 x 10 7/16 x 4 1/2 |
| G | 13 1/4 x 14 1/8 x 5 3/8 |
| H | 9 3/4 x 11 x 11 1/8 |
| I | 13 1/4 x 14 3/8 x 12 7/8 |
| J | 16 1/2 x 14 /8 x 19 |
| K | 16 1/2 x 14 5/8 x 25 |
| L | 16 1/2 x 14 5/8 x 31 |
| M | 16 1/2 x 14 5/8 x 37 |
| N | 6 1/16 x 6 3/16 x 10 15/16 |
| O | 6 7/8 x 7 1/2 x 15 1/2 |
| P | 6 7/8 x 7 1/2 x 9 7/8 |
| Q | 3 15/16 x 3 13/16 x 9 11/16 |
| R | 5 1/16 x 4 11/16 x 12 11/16 |
| S | 6 1/16 x 6 3/16 x 12 1/8 |
| T | 6 1/16 x 6 3/16 x 16 5/16 |
| U | 9 3/4 x 11 x 16 |
| V | 14 x 10 3/4 x 30 5/8 |

### MANUAL SINGLE PHASE, 50/60 HZ

#### 120-VOLT INPUT

Line voltage connection output, 0–120 V; overvoltage connection output, 0–140 V, except 9T92A1 and 9T92A7, 0–132 V.

| GE Number# | Line Voltage Output Amps | | Size ♦ | Net Each, Lots of | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Uncased | | | | Cased, Suffix G2 | | | |
| | Rated▲ | Max.ǂ | | 1 | 2-9 | 10-24 | 25-49 | 1 | 2-9 | 10-24 | 25-49 |
| 9T92A1 | 2.5 | 3.2 | A | $ 13.00 | $ 13.00 | $ 11.70 | $ 10.53 | ........ | ........ | ........ | ........ |
| 9T92A5 | 4.5 | 5.8 | B | 19.00 | 19.00 | 17.10 | 15.39 | ........ | ........ | ........ | ........ |
| 9T92A7 | 6.5* | 8.0 | C | 22.00 | 22.00 | 19.80 | 17.82 | $ 28.00 | $ 28.00 | $ 25.20 | $ 22.68 |
| 9T92A8 | 10.0 | 11.5 | D | 25.00 | 25.00 | 22.50 | 20.25 | 31.00 | 31.00 | 27.90 | 25.11 |
| 9T92A10 | 12.0† | 14.5‡ | D | 27.00 | 27.00 | 24.30 | 21.87 | 33.00 | 33.00 | 29.70 | 26.73 |
| 9T92Y27 | 15.0* | 19.0 | E | 45.00 | 45.00 | 40.50 | 36.45 | 51.00 | 51.00 | 45.90 | 41.31 |
| 9T92Y28 | 18.0* | 21.7 | E | 56.00 | 56.00 | 50.40 | 45.36 | 62.00 | 62.00 | 55.80 | 50.22 |
| 9T92Y37 | 30.0* | 34.0 | F | 111.00 | 111.00 | 99.90 | 89.91 | 118.00 | 118.00 | 106.20 | 95.58 |
| 9T92Y38 | 37.0* | 37.0 | F | 130.00 | 130.00 | 117.00 | 105.30 | 137.00 | 137.00 | 123.30 | 110.97 |
| 9T92Y49 | 50.0 | 55.0 | G | 162.00 | 162.00 | 145.80 | 131.22 | 170.00 | 170.00 | 153.00 | 137.70 |
| 9T92Y50 | 60.0 | 60.0 | G | 245.00 | 245.00 | 220.50 | 198.45 | 253.00 | 253.00 | 227.70 | 204.93 |
| 9T92Y41 | 74.0* | 74.0 | H■ | 241.20 | 227.80 | 214.40 | 214.40 | 253.80 | 239.70 | 225.60 | 225.60 |
| 9T92Y53 | 100.0 | 110.0 | I■ | 328.50 | 310.25 | 292.00 | 292.00 | 342.90 | 323.85 | 304.80 | 304.80 |
| 9T92Y54 | 120.0 | 120.0 | I⧗ | 496.80 | 469.20 | 441.60 | 441.60 | 511.20 | 482.80 | 454.40 | 454.40 |
| 9T92Y55 | 150.0 | 165.0 | J⧗ | 575.10 | 543.15 | 511.20 | 511.20 | 596.70 | 563.55 | 530.40 | 530.40 |
| 9T92Y56 | 180.0 | 180.0 | J⧗ | 761.40 | 719.10 | 676.80 | 676.80 | 783.00 | 739.50 | 696.00 | 696.00 |
| 9T92Y57 | 240.0 | 240.0 | K⧗ | 1042.20 | 984.30 | 926.40 | 926.40 | 1071.00 | 1011.50 | 952.00 | 952.00 |
| 9T92Y58 | 300.0 | 300.0 | L⧗ | 1226.70 | 1158.55 | 1090.40 | 1090.40 | 1262.70 | 1192.55 | 1122.40 | 1122.40 |
| 9T92Y59 | 360.0 | 360.0 | M⧗ | 1536.30 | 1450.95 | 1365.60 | 1365.60 | 1579.50 | 1491.75 | 1404.00 | 1404.00 |

#### 120/240-VOLT INPUT

Line voltage connection output, 0–240 V; overvoltage connection output, 0–280 V.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9T92A13 | 4.0 | 5.0 | D | $ 30.00 | $ 30.00 | $ 27.00 | $ 24.30 | $ 36.00 | $ 36.00 | $ 32.40 | $ 29.16 |
| 9T92A14 | 5.0‡§ | 6.8 | D | 32.00 | 32.00 | 28.80 | 25.92 | 38.00 | 38.00 | 34.20 | 30.78 |
| 9T92Y29 | 7.0* | 10.1 | E | 45.00 | 45.00 | 40.50 | 36.45 | 51.00 | 51.00 | 45.90 | 41.31 |
| 9T92Y30 | 8.5* | 11.0 | E | 56.00 | 56.00 | 50.40 | 45.36 | 62.00 | 62.00 | 55.80 | 50.22 |
| 9T92A23 | 12.0†§ | 14.5 | N⧗ | 72.00 | 68.00 | 64.00 | 64.00 | 82.80 | 78.20 | 73.60 | 73.60 |
| 9T92Y39 | 14.0* | 14.0 | F | 107.00 | 107.00 | 96.30 | 86.67 | 114.00 | 114.00 | 102.60 | 92.34 |
| 9T92Y40 | 16.0* | 16.0 | F | 122.00 | 122.00 | 109.80 | 98.82 | 129.00 | 129.00 | 116.10 | 104.49 |
| 9T92Y51 | 30.0 | 33.0 | G | 164.00 | 164.00 | 147.60 | 132.84 | 172.00 | 172.00 | 154.80 | 139.32 |
| 9T92Y52 | 35.0 | 35.0 | G | 245.00 | 245.00 | 220.50 | 198.45 | 253.00 | 253.00 | 227.70 | 204.93 |
| 9T92Y60 | 60.0 | 66.0 | I | 328.50 | 310.25 | 292.00 | 292.00 | 342.90 | 323.85 | 304.80 | 304.80 |
| 9T92Y61 | 70.0 | 70.0 | I■ | 495.00 | 467.50 | 440.00 | 440.00 | 509.40 | 481.10 | 452.80 | 452.80 |
| 9T92Y62 | 90.0 | 99.0 | J⧗ | 575.10 | 543.15 | 511.20 | 511.20 | 569.70 | 563.55 | 530.40 | 530.40 |
| 9T92Y63 | 105.0 | 105.0 | J⧗ | 760.50 | 718.25 | 676.00 | 676.00 | 782.10 | 738.65 | 695.20 | 695.20 |
| 9T92Y5021 | 120.0 | 132.0 | K⧗ | 830.70 | 784.55 | 738.40 | 738.40 | 859.50 | 811.75 | 764.00 | 764.00 |
| 9T92Y64 | 140.0 | 140.0 | K⧗ | 1044.00 | 986.00 | 928.00 | 928.00 | 1072.80 | 1013.20 | 953.60 | 953.60 |
| 9T92Y65 | 175.0 | 175.0 | L⧗ | 1226.70 | 1158.55 | 1090.40 | 1090.40 | 1262.70 | 1192.55 | 1122.40 | 1122.40 |
| 9T92Y66 | 210.0 | 210.0 | M⧗ | 1536.30 | 1450.95 | 1365.60 | 1365.60 | 1579.50 | 1491.75 | 1404.00 | 1404.00 |

#### 240/480-VOLT INPUT

Line voltage connection output, 0–480 volts; overvoltage connection output, 0–560 volts.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9T92A17 | 4.0* | 5.0 | N■ | $ 67.50 | $ 63.75 | $ 60.00 | $ 60.00 | $ 78.30 | $ 73.95 | $ 69.60 | $ 69.60 |
| 9T92A18 | 5.0• | 6.8 | N■ | 71.10 | 67.15 | 63.20 | 63.20 | 81.90 | 77.35 | 72.80 | 72.80 |
| 9T92Y31 | 7.0* | 10.1 | O■ | 92.70 | 87.55 | 82.40 | 82.40 | 103.50 | 97.75 | 92.00 | 92.00 |
| 9T92Y32 | 8.5* | 11.0 | P | 112.50 | 106.25 | 100.00 | 100.00 | 123.30 | 116.45 | 109.60 | 109.60 |
| 9T92Y42 | 14.0* | 14.0 | H■ | 207.00 | 195.50 | 184.00 | 184.00 | 219.60 | 207.40 | 195.20 | 195.20 |
| 9T92Y43 | 16.0* | 16.0 | H■ | 238.50 | 225.25 | 212.00 | 212.00 | 251.10 | 237.15 | 223.20 | 223.20 |
| 9T92Y67 | 30.0 | 33.0 | I | 313.20 | 295.80 | 278.40 | 278.40 | 327.60 | 309.40 | 291.20 | 291.20 |
| 9T92Y68 | 35.0 | 35.0 | I | 486.00 | 459.00 | 432.00 | 432.00 | 500.40 | 472.60 | 444.80 | 444.80 |
| 9T92Y69 | 60.0 | 66.0 | K■ | 819.00 | 773.50 | 728.00 | 728.00 | 847.80 | 800.70 | 753.60 | 753.60 |
| 9T92Y70 | 70.0 | 70.0 | K⧗ | 1030.50 | 973.25 | 916.00 | 916.00 | 1059.30 | 1000.45 | 941.60 | 941.60 |
| 9T92Y71 | 90.0 | 99.0 | M⧗ | 1207.80 | 1140.70 | 1073.60 | 1073.60 | 1251.00 | 1181.50 | 1112.00 | 1112.00 |
| 9T92Y72 | 105.0 | 105.0 | M⧗ | 1525.50 | 1440.75 | 1356.00 | 1356.00 | 1568.70 | 1481.55 | 1394.40 | 1394.40 |

### MANUAL THREE-PHASE, 50/60 HZ*

#### 240-VOLT (LINE TO LINE) INPUT

Line voltage connection output, 0–240 V; overvoltage connection output, 0–280 V, except 9T92A3 and 9T92A19, 0–264 V.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9T92A3 | 2.5 | 3.2 | Q | $ 53.10 | $ 50.15 | $ 47.20 | $ 47.20 | ........ | ........ | ........ | ........ |
| 9T92A6 | 4.5 | 5.8 | R | 76.50 | 72.25 | 68.00 | 68.00 | ........ | ........ | ........ | ........ |
| 9T92A19 | 6.5† | 8.0 | S | 78.30 | 73.95 | 69.60 | 69.60 | $ 94.50 | $ 89.25 | $ 84.00 | $ 84.00 |
| 9T92A21 | 10.0 | 11.5 | T | 84.60 | 79.90 | 75.20 | 75.20 | 100.80 | 95.20 | 89.60 | 89.60 |
| 9T92A22 | 12.0‡† | 14.5 | T | 89.10 | 84.15 | 79.20 | 79.20 | 105.30 | 99.45 | 93.60 | 93.60 |
| 9T92Y33 | 15.0 | 19.0 | O | 144.00 | 136.00 | 128.00 | 128.00 | 160.20 | 151.30 | 142.40 | 142.20 |
| 9T92Y34 | 18.0 | 21.7 | O | 175.50 | 165.75 | 156.00 | 156.00 | 191.70 | 181.05 | 170.40 | 170.40 |
| 9T92Y44 | 30.0 | 34.0 | U | 324.00 | 306.00 | 288.00 | 288.00 | 342.90 | 323.85 | 304.80 | 304.80 |
| 9T92Y45 | 37.0 | 37.0 | U | 405.00 | 382.50 | 360.00 | 360.00 | 423.90 | 400.35 | 376.80 | 376.80 |
| 9T92Y74 | 50.0 | 55.0 | J | 549.00 | 518.50 | 488.00 | 488.00 | 570.60 | 538.90 | 507.20 | 507.20 |
| 9T92Y75 | 60.0 | 60.0 | J■ | 738.00 | 697.00 | 656.00 | 656.00 | 759.60 | 717.40 | 675.20 | 675.20 |
| 9T92Y48 | 74.0 | 74.0 | V⧗ | 882.00 | 833.00 | 784.00 | 784.00 | 919.80 | 868.70 | 817.60 | 817.60 |
| 9T92Y78 | 100.0 | 110.0 | M⧗ | 1170.00 | 1105.00 | 1040.00 | 1040.00 | 1213.20 | 1145.80 | 1078.40 | 1078.40 |
| 9T92Y79 | 120.0 | 120.0 | M⧗ | 1514.70 | 1430.55 | 1346.40 | 1346.40 | 1557.90 | 1471.35 | 1384.80 | 1384.80 |

#### 240-VOLT OR 480-VOLT (LINE TO LINE) INPUT

Line voltage connection output, 0–480 volts; overvoltage connection output, 0–560 volts.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9T92A25 | 4.0 | 5.0 | T | $ 90.00 | $ 85.00 | $ 80.00 | $ 80.00 | $106.20 | $100.30 | $ 94.40 | $ 94.40 |
| 9T92A26 | 5.0†• | 6.8 | T | 93.60 | 88.40 | 83.20 | 83.20 | 109.80 | 103.70 | 97.60 | 97.60 |
| 9T92Y35 | 7.0 | 10.1 | O | 141.30 | 133.45 | 125.60 | 125.60 | 157.50 | 148.75 | 140.00 | 140.00 |
| 9T92Y36 | 8.5 | 11.0 | O | 171.00 | 161.50 | 152.00 | 152.00 | 187.20 | 176.80 | 166.40 | 166.40 |
| 9T92Y46 | 14.0 | 14.0 | U | 322.20 | 304.30 | 286.40 | 286.40 | 341.10 | 322.15 | 303.20 | 303.20 |
| 9T92Y47 | 16.0 | 16.0 | U | 382.50 | 361.25 | 340.00 | 340.00 | 401.40 | 379.10 | 356.80 | 356.80 |
| 9T92Y76 | 30.0 | 33.0 | J | 553.50 | 522.75 | 492.00 | 492.00 | 575.10 | 543.15 | 511.20 | 511.20 |
| 9T92Y77 | 35.0 | 35.0 | J | 741.60 | 700.40 | 659.20 | 659.20 | 763.20 | 720.80 | 678.40 | 678.40 |
| 9T92Y80 | 60.0 | 66.0 | M⧗ | 1197.00 | 1130.50 | 1064.00 | 1064.00 | 1240.20 | 1171.30 | 1102.40 | 1102.40 |
| 9T92Y81 | 70.0 | 70.0 | M⧗ | 1514.70 | 1430.55 | 1346.40 | 1346.40 | 1557.90 | 1471.35 | 1384.80 | 1384.80 |

*When using extended tap connections, operation is for 60 Hz only. †60 Hz only. ‡No overvoltage connection. §For 240 V input, 0–240 V output only. #To order cased models (exposed terminals) add final suffix **G2** to model number. •For 480 V input, 0–480 V, output only. ▲Rated current should not be exceeded when overvoltage connection is used. ■Cased types not normally stocked, but available on special order. ⧗Neither type normally stocked, but available on special order. ǂFor constant load impedance.

**LARGER QUANTITY PRICES AVAILABLE ON REQUEST**

## GENERAL ELECTRIC VOLT-PAC® VARIABLE TRANSFORMERS (CONT'D)

### MOTOR-OPERATED SINGLE PHASE, 50/60 HZ

### 120-VOLT INPUT

voltage connection output, 0–120 V; overvoltage connection output, 0–140 V, except 9T92A1 and A7, 0–132 V.

| GE nberI | Line Voltage Output Amps | | Size ♦ | Net Each, Lots of | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Uncased, Suffix G51 | | | | Cased, Suffix G54 | | | |
| | Rated▲ | Max.# | | 1 | 2-9 | 10-49 | 50-99 | 1 | 2-9 | 10-49 | 50-99 |
| A1* | 2.5 | 3.2 | AA | $115.20 | $108.80 | $102.40 | $ 96.00 | ........ | ........ | ........ | ........ |
| A5* | 4.5 | 5.8 | BB■ | 120.60 | 113.90 | 107.20 | 100.50 | ........ | ........ | ........ | ........ |
| A7* | 6.5* | 8.0 | CC■ | 127.80 | 120.70 | 113.60 | 106.50 | $135.00 | $127.50 | $120.00 | $112.50 |
| A9* | 10.0 | 11.5 | DD■ | 130.50 | 123.25 | 116.00 | 108.75 | 137.70 | 130.05 | 122.40 | 114.75 |
| A10* | 12.0†‡ | 14.5 | DD■ | 132.30 | 124.95 | 117.60 | 110.25 | 139.50 | 131.75 | 124.00 | 116.25 |
| Y27 | 15.0* | 19.0 | EE■ | 184.50 | 174.25 | 164.00 | 153.75 | 191.70 | 181.05 | 170.40 | 159.75 |
| Y28 | 18.0* | 21.7 | EE■ | 194.40 | 183.60 | 172.80 | 162.00 | 201.60 | 190.40 | 179.20 | 168.00 |
| Y37 | 30.0* | 34.0 | FF | 243.90 | 230.35 | 216.80 | 203.25 | 253.80 | 239.70 | 225.60 | 211.50 |
| Y38 | 37.0* | 37.0 | FF | 261.00 | 246.50 | 232.00 | 217.50 | 270.90 | 255.85 | 240.80 | 225.75 |
| Y49 | 50.0 | 55.0 | GG | 289.80 | 273.70 | 257.60 | 241.50 | 302.40 | 285.60 | 268.80 | 252.00 |
| Y50 | 60.0 | 60.0 | GG | 364.50 | 344.25 | 324.00 | 303.75 | 377.10 | 356.15 | 335.20 | 314.25 |
| Y41 | 74.0* | 74.0 | HH | 385.20 | 363.80 | 342.40 | 321.00 | 405.00 | 382.50 | 360.00 | 337.50 |
| Y53 | 100.0 | 110.0 | II | 472.50 | 446.25 | 420.00 | 393.75 | 497.70 | 470.05 | 442.40 | 414.75 |
| Y54 | 120.0 | 120.0 | II | 640.80 | 605.20 | 569.60 | 534.00 | 666.00 | 629.00 | 592.00 | 555.00 |
| Y55 | 150.0 | 165.0 | JJ | 719.10 | 679.15 | 639.20 | 599.25 | 756.90 | 714.85 | 672.80 | 630.75 |
| Y56 | 180.0 | 180.0 | JJ | 905.40 | 855.10 | 804.80 | 754.50 | 934.20 | 890.80 | 838.40 | 786.00 |
| Y57 | 240.0 | 240.0 | KK | 1186.20 | 1120.30 | 1054.40 | 988.50 | 1238.40 | 1169.60 | 1100.80 | 1032.00 |
| Y58 | 300.0 | 300.0 | LL | 1370.70 | 1294.55 | 1218.40 | 1142.25 | 1435.50 | 1355.75 | 1276.00 | 1196.25 |
| Y59 | 360.0 | 360.0 | MM | 1680.30 | 1586.95 | 1493.60 | 1400.25 | 1757.70 | 1660.05 | 1562.40 | 1464.75 |

### 120/240-VOLT INPUT

voltage connection output, 0–240 V; overvoltage connection output, 0–280 V.

| GE nberI | Rated▲ | Max.# | Size ♦ | Uncased 1 | Uncased 2-9 | Uncased 10-49 | Uncased 50-99 | Cased 1 | Cased 2-9 | Cased 10-49 | Cased 50-99 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A13* | 4.0 | 5.0 | DD■ | $135.00 | $127.50 | $120.00 | $112.50 | $142.20 | $134.30 | $126.40 | $118.50 |
| A14* | 5.0§ | 6.8 | DD | 136.80 | 129.20 | 121.60 | 114.00 | 144.00 | 136.00 | 128.00 | 120.00 |
| Y29 | 7.0* | 10.1 | EE | 184.50 | 174.25 | 164.00 | 153.75 | 191.70 | 181.05 | 170.40 | 159.75 |
| Y30 | 8.5* | 11.0 | EE | 194.40 | 183.60 | 172.80 | 162.00 | 201.60 | 190.40 | 179.20 | 168.00 |
| A23 | 12.0†§ | 14.5 | NN | 180.00 | 170.00 | 160.00 | 150.00 | 194.40 | 183.60 | 172.80 | 162.00 |
| Y39 | 14.0* | 14.0 | FF | 240.30 | 226.95 | 213.60 | 200.25 | 250.20 | 236.30 | 222.40 | 208.50 |
| Y40 | 16.0* | 16.0 | FF | 253.80 | 239.70 | 225.60 | 211.50 | 263.70 | 249.05 | 234.40 | 219.75 |
| Y51 | 30.0 | 33.0 | GG | 291.60 | 275.40 | 259.20 | 243.00 | 304.20 | 287.30 | 270.40 | 253.50 |
| Y52 | 35.0 | 35.0 | GG | 364.50 | 344.25 | 324.00 | 303.75 | 377.10 | 356.15 | 335.20 | 314.25 |
| Y60 | 60.0 | 66.0 | II | 472.50 | 446.25 | 420.00 | 393.75 | 497.70 | 470.05 | 442.40 | 414.75 |
| Y61 | 70.0 | 70.0 | II | 639.00 | 603.50 | 568.00 | 532.50 | 664.20 | 627.30 | 590.40 | 553.50 |
| Y62 | 90.0 | 99.0 | JJ | 719.10 | 679.15 | 639.20 | 599.25 | 756.90 | 714.85 | 672.80 | 630.75 |
| Y63 | 105.0 | 105.0 | JJ | 904.50 | 854.25 | 804.00 | 753.75 | 942.30 | 889.95 | 837.60 | 785.25 |
| Y5021 | 120.0 | 132.0 | KK■ | 974.70 | 920.55 | 866.40 | 812.25 | 1026.90 | 969.85 | 912.80 | 855.75 |
| Y64 | 140.0 | 140.0 | KK | 1188.00 | 1122.00 | 1056.00 | 990.00 | 1240.20 | 1171.30 | 1102.40 | 1033.50 |
| Y65 | 175.0 | 175.0 | LL | 1370.70 | 1294.55 | 1218.40 | 1142.25 | 1435.50 | 1355.75 | 1276.00 | 1196.25 |
| Y66 | 210.0 | 210.0 | MM | 1680.30 | 1586.95 | 1493.60 | 1400.25 | 1757.70 | 1660.05 | 1562.40 | 1464.75 |

### 240/480-VOLT INPUT

voltage connection output, 0–480 V; overvoltage connection output, 0–560 V.

| GE nberI | Rated▲ | Max.# | Size ♦ | Uncased 1 | Uncased 2-9 | Uncased 10-49 | Uncased 50-99 | Cased 1 | Cased 2-9 | Cased 10-49 | Cased 50-99 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A17* | 4.0 | 5.0 | NN | $175.50 | $165.75 | $156.00 | $146.25 | $189.90 | $179.35 | $168.80 | $158.25 |
| A18* | 5.0● | 6.8 | NN■ | 179.10 | 169.15 | 159.20 | 149.25 | 193.50 | 182.75 | 172.00 | 161.25 |
| Y31 | 7.0* | 10.1 | OO | 236.70 | 223.55 | 210.40 | 197.25 | 251.10 | 237.15 | 223.20 | 209.25 |
| Y32 | 8.5* | 11.0 | OO | 256.50 | 242.25 | 228.00 | 213.75 | 270.90 | 255.85 | 240.80 | 225.75 |
| Y42 | 14.0* | 14.0 | HH | 351.00 | 331.50 | 312.00 | 292.50 | 370.80 | 350.20 | 329.60 | 309.00 |
| Y43 | 16.0* | 16.0 | HH | 382.50 | 361.25 | 340.00 | 318.75 | 402.30 | 379.95 | 357.60 | 335.25 |
| Y67 | 30.0 | 33.0 | II■ | 457.20 | 431.80 | 406.40 | 381.00 | 482.40 | 455.60 | 428.80 | 402.00 |
| Y68 | 35.0 | 35.0 | II■ | 630.00 | 595.00 | 560.00 | 525.00 | 655.20 | 618.80 | 582.40 | 546.00 |
| Y69 | 60.0 | 66.0 | KK | 963.00 | 909.50 | 856.00 | 802.50 | 1015.20 | 958.80 | 902.40 | 846.00 |
| Y70 | 70.0 | 70.0 | KK | 1174.50 | 1109.25 | 1044.00 | 978.75 | 1226.70 | 1158.55 | 1090.40 | 1022.25 |
| Y71 | 90.0 | 99.0 | MM | 1351.80 | 1276.70 | 1201.60 | 1126.50 | 1429.20 | 1349.80 | 1270.40 | 1191.00 |
| Y72 | 105.0 | 105.0 | MM | 1669.50 | 1576.75 | 1484.00 | 1391.25 | 1746.90 | 1649.85 | 1552.80 | 1455.75 |
| Y73 | 140.0 | 140.0 | PP | 2297.70 | 2170.05 | 2042.40 | 1914.75 | 2401.20 | 2267.80 | 2134.40 | 2001.00 |

### MOTOR-OPERATED THREE-PHASE, 50/60 HZ*

### 240-VOLT (LINE TO LINE) INPUT

voltage connection output, 0–240 V; overvoltage connection output, 0–280 V, except 9T92A3 and A19, 0–264 V.

| GE nberI | Rated▲ | Max.# | Size ♦ | Uncased 1 | Uncased 2-9 | Uncased 10-49 | Uncased 50-99 | Cased 1 | Cased 2-9 | Cased 10-49 | Cased 50-99 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A3* | 2.5 | 3.2 | QQ | $156.60 | $147.90 | $139.20 | $130.50 | ........ | ........ | ........ | ........ |
| A6* | 4.5 | 5.8 | RR | 180.00 | 170.00 | 160.00 | 150.00 | ........ | ........ | ........ | ........ |
| A19* | 6.5† | 8.0 | SS | 186.30 | 175.95 | 165.60 | 155.25 | $207.90 | $196.35 | $184.80 | $173.25 |
| A21* | 10.0 | 11.5 | TT | 192.60 | 181.90 | 171.20 | 160.50 | 214.20 | 202.30 | 190.40 | 178.50 |
| A22* | 12.0†‡ | 14.5 | TT | 197.10 | 186.15 | 175.20 | 164.25 | 218.70 | 206.55 | 194.40 | 182.25 |
| Y33 | 15.0 | 19.0 | UU■ | 288.00 | 272.00 | 256.00 | 240.00 | 309.60 | 292.40 | 275.20 | 258.00 |
| Y34 | 18.0 | 21.7 | UU | 319.50 | 301.75 | 284.00 | 266.25 | 341.10 | 322.15 | 303.20 | 284.25 |
| Y44 | 30.0 | 34.0 | VV | 468.00 | 442.00 | 416.00 | 390.00 | 497.70 | 470.05 | 442.40 | 414.75 |
| Y45 | 37.0 | 37.0 | VV■ | 549.00 | 518.50 | 488.00 | 457.50 | 578.70 | 546.55 | 514.40 | 482.25 |
| Y74 | 50.0 | 55.0 | JJ | 693.00 | 654.50 | 616.00 | 577.50 | 730.80 | 690.20 | 649.60 | 609.00 |
| Y75 | 60.0 | 60.0 | JJ | 882.00 | 833.00 | 784.00 | 735.00 | 919.80 | 868.70 | 817.60 | 766.50 |
| Y48 | 74.0 | 74.0 | WW■ | 1026.00 | 969.00 | 912.00 | 855.00 | 1085.40 | 1025.10 | 964.80 | 904.50 |
| Y78 | 100.0 | 110.0 | MM | 1314.00 | 1241.00 | 1168.00 | 1095.00 | 1391.40 | 1314.10 | 1236.80 | 1159.50 |
| Y79 | 120.0 | 120.0 | MM | 1658.70 | 1566.55 | 1474.40 | 1382.25 | 1736.10 | 1639.65 | 1543.20 | 1446.75 |
| Y82 | 150.0 | 165.0 | XX | 2071.80 | 1956.70 | 1841.60 | 1726.50 | 2188.80 | 2067.20 | 1945.60 | 1824.00 |
| Y83 | 180.0 | 180.0 | XX | 2519.10 | 2379.15 | 2239.20 | 2099.25 | 2636.10 | 2489.65 | 2343.20 | 2196.75 |

### 240-VOLT OR 480-VOLT (LINE TO LINE) INPUT

voltage connection output, 0–480 V; overvoltage connection output, 0–560 V.

| GE nberI | Rated▲ | Max.# | Size ♦ | Uncased 1 | Uncased 2-9 | Uncased 10-49 | Uncased 50-99 | Cased 1 | Cased 2-9 | Cased 10-49 | Cased 50-99 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A25* | 4.0 | 5.0 | TT■ | $198.00 | $187.00 | $176.00 | $165.00 | $219.60 | $207.40 | $195.20 | $183.00 |
| A26* | 5.0†● | 6.8 | TT | 201.60 | 190.40 | 179.20 | 168.00 | 223.20 | 210.80 | 198.40 | 186.00 |
| Y35 | 7.0 | 10.1 | UU | 285.30 | 269.45 | 253.60 | 237.75 | 306.90 | 289.85 | 272.80 | 255.75 |
| Y36 | 8.5 | 11.0 | UU | 315.00 | 297.50 | 280.00 | 262.50 | 336.60 | 317.90 | 299.20 | 280.50 |
| Y46 | 14.0 | 14.0 | VV■ | 466.20 | 440.30 | 414.40 | 388.50 | 495.90 | 468.35 | 440.80 | 413.25 |
| Y47 | 16.0 | 16.0 | VV■ | 526.50 | 497.25 | 468.00 | 438.75 | 556.20 | 525.30 | 494.40 | 463.50 |
| Y76 | 30.0 | 33.0 | JJ■ | 697.50 | 658.75 | 620.00 | 581.25 | 735.30 | 694.45 | 653.60 | 612.75 |
| Y77 | 35.0 | 35.0 | JJ | 885.60 | 836.40 | 787.20 | 738.00 | 923.40 | 872.10 | 820.80 | 769.50 |
| Y80 | 60.0 | 66.0 | MM | 1341.00 | 1266.50 | 1192.00 | 1117.50 | 1418.40 | 1339.60 | 1260.80 | 1182.00 |
| Y81 | 70.0 | 70.0 | MM | 1658.70 | 1566.55 | 1474.40 | 1382.25 | 1736.10 | 1639.65 | 1543.20 | 1446.75 |
| Y84 | 90.0 | 99.0 | XX | 2071.80 | 1956.70 | 1841.60 | 1726.50 | 2188.80 | 2067.20 | 1945.60 | 1824.00 |
| Y85 | 105.0 | 105.0 | XX | 2519.10 | 2379.15 | 2239.20 | 2099.25 | 2636.10 | 2489.65 | 2343.20 | 2196.75 |

en using extended tap connections, operation is for 60 Hz only. †60 Hz only. ‡No overvoltage con-
on. §For 240 V input, 0–240 V output only. #For constant impedance load. ●For 480 V input, 0–480
tput only. ▲Rated current should not be exceeded when overvoltage connection is used. IFinal suffix
ates operation time in cased types with enclosed terminals or uncased with exposed terminals; add
opriate suffix to model number per tables at right. ■Stocked items (uncased only); other models are
able on special order only.

### ♦SIZE

#### UNCASED

| Key | Size, In. W. x D. x H. |
|---|---|
| AA | 5⅜ x 5⅞ x 6¾ |
| BB | 5 15/16 x 5⅛ x 8⅜ |
| CC | 6 1/16 x 6 3/16 x 8½ |
| DD | 6 1/16 x 6 3/16 x 9⅞ |
| EE | 7⅛ x 7½ x12½ |
| FF | 9¾ x11 x13¼ |
| GG | 13¼ x14⅜ x14¼ |
| HH | 9¾ x11 x18¼ |
| II | 16½ x14⅝ x21¼ |
| JJ | 16½ x14⅜ x27⅜ |
| KK | 16½ x14⅜ x33⅜ |
| LL | 16½ x14⅜ x39⅜ |
| MM | 16½ x14⅜ x45⅜ |
| NN | 6⅝ x 6½ x17½ |
| OO | 7⅛ x 7½ x17½ |
| PP | 16½ x14⅜ x57¾ |
| QQ | 5⅜ x 5⅞ x14½ |
| RR | 5⅛ x 5 15/16 x16¾ |
| SS | 6 1/16 x 6 3/16 x16½ |
| TT | 6⅝ x 6½ x22⅜ |
| UU | 7⅛ x 7½ x22⅜ |
| VV | 9¾ x11 x23¼ |
| WW | 11⅞ x10¾ x39 |
| XX | 16½ x14⅜ x63⅜ |

#### CASED

| Key | Size, In. W. x D. x H. |
|---|---|
| AA | ...................... |
| BB | ...................... |
| CC | 8⅝ x 9¾ x14 |
| DD | 8⅝ x 9¾ x14 |
| EE | 8⅝ x 9¾ x14 |
| FF | 15¾ x17⅛ x20 |
| GG | 15¾ x17⅛ x20 |
| HH | 15¾ x17⅛ x20 |
| II | 20⅞ x17⅛ x30 |
| JJ | 20⅞ x17⅛ x30 |
| KK | 20⅞ x17⅛ x48 |
| LL | 20⅞ x17⅛ x48 |
| MM | 20⅞ x17⅛ x48 |
| NN | 8½ x 8⅝ x24 |
| OO | 8½ x 8⅝ x24 |
| PP | 20⅞ x17⅛ x48 |
| QQ | ...................... |
| RR | ...................... |
| SS | 8⅝ x 9¾ x14 |
| TT | 8½ x 8⅝ x24 |
| UU | 8½ x 8⅝ x24 |
| VV | 15¾ x17⅛ x30 |
| WW | 15¾ x17⅛ x48 |
| XX | 20⅞ x17⅛ x67½ |

### NOTE ON VOLT-PAC MOTOR OPERATING TIME

Motor operating time refers to the number of seconds it takes for the motor to change voltage output of the variable transformer from 0 to 100%. Add appropriate suffix from table below to the GE Number.

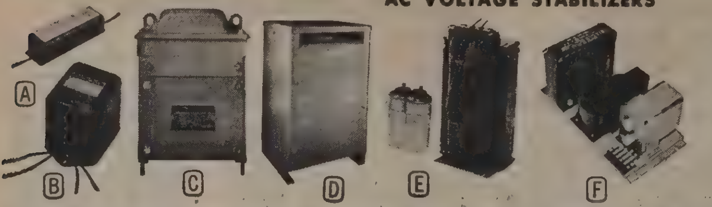
Prices listed are for **-G51** (*) and **-G54** (*); others available on request.

| Operation Time, Sec | | Final Suffix | |
|---|---|---|---|
| 60 Hz | 50 Hz | Cased | Uncased |
| 2.5 | 3.0 | -G71 | -G74 |
| 3.5 | 4.2 | -G21 | -G24 |
| 5.0 | 6.0 | -G21* | -G24* |
| 8.0 | 9.6 | -G31 | -G34 |
| 15.0 | 18.0 | -G41* | -G44* |
| 17.5 | 21.0 | -G41 | -G44 |
| 28.0 | 33.6 | -G51 | -G54 |
| 30.0 | 36.0 | -G51* | -G54* |
| 60.0 | 72.0 | -G61 | -G64 |
| 60.0 | 72.0 | -G61* | -G64* |

*Available **only** in GE types with star (*) in tables at left.

# GENERAL ELECTRIC AC Voltage Stabilizers

## AC VOLTAGE STABILIZERS



- Change Voltage Level Up or Down
- Low Maintenance • No Moving Part
- Completely Automatic
- Fast Response
- Isolate Line and Load
- Short Circuit Protection
- High Power Factor • Long Life
- Wide Input Voltage Range
- Small Size • Neat Appearance
- Easy to Install
- Choice of Many Standard Ratings an Construction Types

Static magnetic transformer-type products which provide voltage maintained within ±1% variation while input line voltage fluctuates ±15%. Operate by means of highly reliable, time-tested magnetic and capacitor circuitry, without moving parts. Units also isolate the line from the load, provide a voltage level other than line voltage, limit the cold filament starting current for large electronic tubes, and protect against major fault currents caused by load malfunctions. In addition, they help assure correct equipment performance, reduce operating losses, add to equipment life, and contribute to personnel safety.

Stabilizers are available in enclosed or open construction. **Enclose** models are completely metal-encased to provide for safe mountin within reach of unauthorized personnel; installation should b restricted to indoor environments. Integral wiring compartment included on units rated 250 VA and larger; lower rated model have insulated cable leads out of the enclosure for connection **Open-construction** models are lower priced, save space, and offe greater mounting flexibility. They are particularly suitable for us in enclosures with other electronic or electrical components.

### SINGLE-PHASE, 60 Hz ENCLOSED MODELS
### UNFILTERED OUTPUT TYPES

| GE No. | Fig. | VA Output Capacity | Input Voltage Range | Stabilized Output Voltage | Approx. Max. Size W. x D. x H., Inches | Mtg. Ctrs., Inches | Net Each, Lots of 1-9 | 10-49 | 50-99 |
|---|---|---|---|---|---|---|---|---|---|
| 9T91Y4070 | A | 15 | 95–130 | 118 | 9½ x 3⅛ x 2⅜ | 8⅞ | $ 18.39 | $ 15.85 | $ 13.95 |
| 9T91Y4090 | A | 30 | 95–130 | 118 | 9½ x 3⅛ x 2⅜ | 8⅞ | 21.05 | 18.15 | 15.97 |
| 9T91Y4110 | A | 60 | 95–130 | 118 | 9½ x 3⅛ x 2⅜ | 8⅞ | 27.78 | 23.95 | 21.08 |
| 9T91Y4130 | B | 120 | 95–130 | 118 | 6⅞ x 4⅝ x 5½ | 6 1/16 | 38.22 | 32.95 | 29.00 |
| 9T91Y4140 | C | 250 | 95–130 | 118 | 7 1/16 x 6⅛ x 10¼ | 9¼ x 5⅞ | 63.80 | 55.00 | 48.40 |
| 9T91Y4142 | C | 250 | 190–260 | 118 | 7 1/16 x 6⅛ x 10¼ | 9¼ x 5⅞ | 63.80 | 55.00 | 48.40 |
| 9T91Y4144 | C | 250 | 190–260/380–520 | 118/236 | 7 1/16 x 6⅛ x 10¼ | 9¼ x 5⅞ | 70.76 | 61.00 | 53.68 |
| 9T91Y4145 | C | 250 | 380–520 | 118 | 7 1/16 x 6⅛ x 10¼ | 9¼ x 5⅞ | 63.80 | 55.00 | 48.40 |
| 9T91Y4150 | C | 500 | 95–130 | 118 | 7 1/16 x 6⅛ x 11 9/16 | 10 7/16 x 5⅞ | 100.34 | 86.50 | 76.12 |
| 9T91Y4152 | C | 500 | 190–260 | 118 | 7 1/16 x 6⅛ x 11 9/16 | 10 7/16 x 5⅞ | 100.34 | 86.50 | 76.12 |
| 9T91Y4155 | C | 500 | 380–520 | 118 | 7 1/16 x 6⅛ x 11 9/16 | 10 7/16 x 5⅞ | 100.34 | 86.50 | 76.12 |
| 9T91Y4170 | C | 1,000 | 95–130 | 118 | 7 1/16 x 6⅛ x 15¾ | 14⅝ x 5⅞ | 153.70 | 132.50 | 116.66 |
| 9T91Y4172 | C | 1,000 | 190–260 | 118 | 7 1/16 x 6⅛ x 15¾ | 14⅝ x 5⅞ | 153.70 | 132.50 | 116.60 |
| 9T91Y4175 | C | 1,000 | 380–520 | 118 | 7 1/16 x 6⅛ x 15¾ | 14⅝ x 5⅞ | 153.70 | 132.50 | 116.60 |
| 9T91Y4183 | C | 2,000 | 95–130/175–235/190–260 | 118/236 | 9⅜ x 8 x 19 5/16 | 18⅛ x 7⅛ | 307.98 | 265.50 | 233.64 |
| 9T91Y4184 | C | 2,000 | 190–260/380–520 | 118/236 | 9⅜ x 8 x 19 5/16 | 18⅛ x 7⅛ | 303.34 | 261.50 | 230.12 |
| 9T91Y4186 | C | 2,000 | 380–520 | 236/472 | 9⅜ x 8 x 19 5/16 | 18⅛ x 7⅛ | 294.64 | 254.00 | 223.52 |
| 9T91Y4193 | C | 3,000 | 95–130/175–235/190–260 | 118/236 | 9⅜ x 8 x 25¼ | 24 x 7⅛ | 414.12 | 357.00 | 314.16 |
| 9T91Y4194 | C | 3,000 | 190–260/380–520 | 118/236 | 9⅜ x 8 x 25¼ | 24 x 7⅛ | 405.42 | 349.50 | 307.56 |
| 9T91Y4196 | C | 3,000 | 380–520 | 236/472 | 9⅜ x 8 x 25¼ | 24 x 7⅛ | 394.40 | 340.00 | 299.20 |
| 9T91Y4204 | C | 5,000 | 190–260/380–520 | 118/236 | 11¾ x 10⅛ x 25¾ | 24 11/16 x 9¼/4½ | 624.66 | 538.50 | 473.88 |
| 9T91Y4203 | C | 5,000 | 95–130/175–235/190–260 | 118/236 | 11¾ x 10⅛ x 25¾ | 24 11/16 x 9¼/4½ | 634.52 | 547.00 | 481.36 |
| 9T91Y4206 | C | 5,000 | 380–520 | 236/472 | 11¾ x 10⅛ x 25¾ | 24 11/16 x 9¼/4½ | 605.52 | 522.00 | 459.36 |
| 9T91Y4213 | C | 7,500 | 95–130/175–235/190–260 | 118/236 | 14½ x 12⅝ x 30⅛ | 28⅛ x 12¼ | 946.56 | 816.00 | 718.08 |
| 9T91Y4214 | C | 7,500 | 190–260/380–520 | 118/236 | 14½ x 12⅝ x 30⅛ | 28⅛ x 12¼ | 928.00 | 800.00 | 704.00 |
| 9T91Y4224 | D | 10,000 | 190–260/380–520 | 118/236 | 22¼ x 21 x 33 | 18¾ x 15 | 1212.20 | 1045.00 | 919.60 |
| 9T91Y4244 | D | 15,000 | 190–260/380–520 | 118/236 | 22⅞ x 26⅛ x 33 | 19 x 19 | 1779.44 | 1534.00 | 1349.92 |

### HARMONIC FILTERED OUTPUT TYPES

| GE No. | Fig. | VA Output Capacity | Input Voltage Range | Stabilized Output Voltage | Approx. Max. Size W. x D. x H., Inches | Mtg. Ctrs., Inches | Net Each, Lots of 1-9 | 10-49 | 50-99 |
|---|---|---|---|---|---|---|---|---|---|
| 9T91Y7140 | C | 250 | 95–130 | 118 | 7 1/16 x 6⅛ x 12 13/16 | 11 13/16 x 5⅞ | $ 66.12 | $ 57.00 | $ 50.16 |
| 9T91Y7150 | C | 500 | 95–130 | 118 | 7 1/16 x 6⅛ x 16½ | 15 7/16 x 5⅞ | 103.24 | 89.00 | 78.32 |
| 9T91Y7170 | C | 1,000 | 95–130 | 118 | 7 1/16 x 6⅛ x 22 1/16 | 21 x 5⅞ | 158.34 | 136.50 | 120.12 |
| 9T91Y7172 | C | 1,000 | 190–260 | 118 | 7 1/16 x 6⅛ x 22 1/16 | 21 x 5⅞ | 158.34 | 136.50 | 120.12 |
| 9T91Y7173 | C | 1,000 | 95–130/175–235/190–260 | 118/236 | 7 1/16 x 6⅛ x 22 1/16 | 21 x 5⅞ | 178.06 | 153.50 | 135.08 |
| 9T91Y7174 | C | 1,000 | 190–260/380–520 | 118/236 | 7 1/16 x 6⅛ x 22 1/16 | 21 x 5⅞ | 175.16 | 151.00 | 132.88 |
| 9T91Y7183 | C | 2,000 | 95–130/175–235/190–260 | 118/236 | 9⅜ x 8 x 29¼ | 28 1/16 x 7⅛ | 323.06 | 278.50 | 245.08 |
| 9T91Y7184 | C | 2,000 | 190–260/380–520 | 118/236 | 9⅜ x 8 x 29¼ | 28 1/16 x 7⅛ | 317.84 | 274.00 | 241.12 |
| 9T91Y7193 | C | 3,000 | 95–130/175–235/190–260 | 118/236 | 9⅜ x 8 x 34 11/16 | 27½ x 7⅛ | 435.00 | 375.00 | 330.00 |
| 9T91Y7203 | C | 5,000 | 95–130/175–235/190–260 | 118/236 | 11½ x 10⅛ x 34⅞ | 33 7/16 x 9¼/4½ | 671.06 | 578.50 | 509.08 |
| 9T91Y7204 | C | 5,000 | 190–260/380–520 | 118/236 | 11½ x 10⅛ x 34⅞ | 33 7/16 x 9¼/4½ | 658.88 | 568.00 | 499.84 |
| 9T91Y7214 | C | 7,500 | 190–260/380–520 | 118/236 | 14½ x 12⅝ x 38⅜ | 36½ x 12¼/6 | 1023.12 | 882.00 | 776.16 |
| 9T91Y7223 | D | 10,000 | 95–130/175–235/190–260 | 118/236 | 22¼ x 21 x 38 | 18¾ x 15 | 1356.62 | 1169.50 | 1029.16 |
| 9T91Y7224 | D | 10,000 | 190–260/380–520 | 118/236 | 22¼ x 21 x 38 | 18¾ x 15 | 1331.10 | 1147.50 | 1009.80 |
| 9T91Y7244 | D | 15,000 | 190–260/380–520 | 118/236 | 22⅞ x 26⅛ x 40¾ | 19 x 19 | 1963.30 | 1692.50 | 1489.40 |

### SINGLE-PHASE, 50 Hz ENCLOSED MODELS (FIG. C)

Dimensions and weights similar to equivalent 60 Hz models described above.

| VA Output Cap. | Input Voltage Range | Stabilized Output Voltage | Unfiltered Output GE Model No. | Net Each, Lots of 1-9 | 10-49 | 50-99 | GE Model No. | Net Each, Lots of 1-9 | 10-49 | 50-99 |
|---|---|---|---|---|---|---|---|---|---|---|
| 250 | 95–130 | 118 | 9T91Y4147 | $ 73.66 | $ 63.50 | $ 55.88 | 9T91Y7147 | $ 75.98 | $ 65.50 | $ 57.64 |
| 250 | 95–130/175–235/190–260 | 118/236 | 9T91Y4148 | 82.94 | 71.50 | 62.92 | 9T91Y7148 | 85.84 | 74.00 | 65.12 |
| 500 | 95–130/175–235/190–260 | 118/236 | 9T91Y4158 | 130.50 | 112.50 | 99.00 | 9T91Y7158 | 133.98 | 115.50 | 101.64 |
| 500 | 190–260/380–520 | 118/236 | 9T91Y4159 | 127.60 | 110.00 | 96.80 | 9T91Y7159 | 131.66 | 113.50 | 99.88 |
| 1000 | 95–130/175–235/190–260 | 118/236 | 9T91Y4178 | 199.52 | 172.00 | 151.36 | 9T91Y7178 | 205.90 | 177.50 | 156.20 |
| 2000 | 95–130/175–235/190–260 | 118/236 | 9T91Y4188 | 354.38 | 305.50 | 268.84 | 9T91Y7188 | 371.78 | 320.50 | 282.04 |
| 3000 | 95–130/175–235/190–260 | 118/236 | 9T91Y4198 | 476.18 | 410.50 | 361.24 | 9T91Y7198 | 499.38 | 430.50 | 378.84 |
| 5000 | 95–130/175–235/190–260 | 118/236 | 9T91Y4208 | 730.80 | 630.00 | 554.40 | 9T91Y7208 | 767.34 | 661.50 | 582.12 |
| 7500 | 95–130/175–235/190–260 | 118/236 | 9T91Y4218 | 1086.34 | 936.50 | 824.12 | 9T91Y7218 | 1194.80 | 1030.00 | 906.48 |
| 7500 | 190–260/380–520 | 118/236 | 9T91Y4219 | 1068.36 | 921.00 | 810.48 | 9T91Y7219 | 1175.66 | 1013.50 | 891.88 |

### THREE-PHASE DELTA-DELTA ENCLOSED MODELS (FIG. D)

| GE No. | Freq., Hz | VA | Input Voltage Range | Stabilized Output Voltage† | Approx. Size W. x D. x H., In. (Max.) | Mtg. Ctrs., In. | Net Each, Lots of 1-9 | 10-49 | 50-99 |
|---|---|---|---|---|---|---|---|---|---|
| 9T91Y3506 | 60 | 6,000* | 190–260/380–520 delta | 230/236 delta | 12⅝ x 44 x 23 | 11 x 36/18 | $1337.48 | $1153.00 | $1014.64 |
| 9T91Y3501G2 | 60 | 10,000* | 190 to 260 delta | 236 delta | 21 x 45⅛ x 29 | 19⅜ x | 1927.92 | 1662.00 | 1462.56 |
| 9T91Y3510 | 50 | 10,000* | 190 to 260 delta | 236 delta | 21 x 45⅛ x 29 | 33¼/16⅝ | 2107.14 | 1816.50 | 1598.52 |

*Minimum recommended load, 20% of rated. †Maximum harmonic content, 5%.

# GENERAL ELECTRIC Voltage Control Devices

## AUTOMATIC VOLT-PAC® VOLTAGE REGULATORS

de closely regulated output voltages while input voltage, ency, load current, and other circuit conditions vary. Feature loop regulation, no waveform distortion, and solid state ack circuitry. The voltage regulator is governed auto-ally by a deadband-type voltage-sensitive control. TYPI- SPECIFICATIONS. **Regulation Accuracy:** ±1.0%. **Fre-y:** 60 Hz, except as indicated. **Load Range:** Zero to full **Efficiency:** Up to 99%. **Power Factor Range:** 0 to 100%. **Wave Form Distortion:** None. **Output Voltmeter:** Built in. **Ambient Temperature Operating Range:** −20° C to +40° C. **Protection:** Magnetic circuit breaker in power input line; control circuitry fused. Only cabinet-mounted dimensions are shown; rack-mounted dimensions are somewhat smaller.

**Ordering Information:** Use GE No. followed by suffix **G3** for rack-mounted model, no suffix for cabinet-mounted model.

### SINGLE-PHASE MODELS

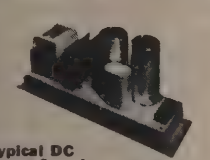
| GE nber# | Input Voltage | | Output Volts | | | Correction Rate | Load | | Cabinet-Mounted Dimensions W. x D. x H., Inches | Suffix G3 Rack-Mounted Net Each, Lots of | | | No Suffix Cabinet-Mounted Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Min. | Max. | Nom. | Adjustable* Min. | Adjustable* Max. | V/sec | Max. Amps | kVA | | 1 | 2-9 | 10-49* | 1 | 2-9 | 10-49* |
| 100§• | 95 | 135 | 115 | 110 | 120 | 8.0 | 7.5 | 0.86 | 10⅝x11¼ x16⅛ | ........ | ........ | ........ | $ 477.00 | $450.50 | $424.00 |
| 101§• | 95 | 135 | 115 | 110 | 120 | 8.0 | 10.0 | 1.15 | 20¾x19¹¹⁄₁₆x 9⅝ | $459.00 | $433.50 | $408.00 | 490.50 | 463.25 | 436.00 |
| 102§• | 95 | 135 | 115 | 110 | 120 | 8.0 | 14.8 | 1.70 | 20¾x19¹¹⁄₁₆x 9⅝ | 477.00 | 450.50 | 424.00 | 504.00 | 476.00 | 448.00 |
| 103§• | 95 | 135 | 115 | 110 | 120 | 8.0 | 20.0 | 2.30 | 20¾x19¹¹⁄₁₆x 9⅝ | 490.50 | 463.25 | 436.00 | 522.00 | 493.00 | 464.00 |
| 132• | 95 | 135 | 115 | 110 | 120 | 10.4 | 50.0 | 5.75 | 22½x17 x10⅞ | 549.00 | 518.50 | 488.00 | 576.00 | 544.00 | 512.00 |
| 133• | 95 | 135 | 115 | 110 | 120 | 10.4 | 100.0 | 11.5 | 22½x19⁹⁄₁₆ x14 | 666.00 | 629.00 | 592.00 | 693.00 | 654.50 | 616.00 |
| 134• | 95 | 135 | 115 | 110 | 120 | 10.4 | 150.0 | 17.2 | 21½x18¼ x20 | ........ | ........ | ........ | 742.50 | 701.25 | 660.00 |
| 108§ | 190 | 260 | 230# | 220 | 240 | 16.0 | 7.5 | 1.70 | 10⅝x11¼ x16⅛ | ........ | ........ | ........ | 549.00 | 518.50 | 488.00 |
| 109§ | 190 | 260 | 230‡ | 220 | 240 | 12.0 | 12.0 | 2.75 | 20¾x19¹¹⁄₁₆x 9⅝ | 544.50 | 514.25 | 484.00 | 571.50 | 539.75 | 508.00 |
| 136• | 190 | 260 | 230‡ | 220 | 240 | 17.2 | 32.5 | 7.5 | 22½x17 x10⅞ | 607.50 | 573.75 | 540.00 | 634.50 | 599.25 | 564.00 |
| 137 | 190 | 260 | 230‡ | 220 | 240 | 17.2 | 52.0 | 12.0 | 22½x19⁹⁄₁₆ x14 | 702.00 | 663.00 | 624.00 | 729.00 | 688.50 | 648.00 |
| 138 | 190 | 260 | 230‡ | 220 | 240 | 17.2 | 130.0 | 30.0 | 22½x18¼ x20 | ........ | ........ | ........ | 846.00 | 799.00 | 752.00 |
| 114§ | 400 | 520 | 460 | 440 | 480 | 24.0 | 12.0 | 5.50 | 25¾x19⁵⁄₁₆ x16⅝ | 621.00 | 586.50 | 552.00 | 648.00 | 612.00 | 576.00 |
| 140 | 400 | 520 | 460 | 440 | 480 | 34.4 | 32.5 | 15.0 | 22½x19¾ x10½ | 787.50 | 743.75 | 700.00 | 814.50 | 769.25 | 724.00 |
| 141 | 400 | 520 | 460 | 440 | 480 | 34.4 | 52.0 | 24.0 | 21¾x18¼ x20 | ........ | ........ | ........ | 945.00 | 892.50 | 840.00 |
| 142 | 400 | 520 | 460 | 440 | 480 | 34.4 | 130.0 | 60.0 | 25¾x18½ x30⅜ | ........ | ........ | ........ | 1179.00 | 1113.50 | 1048.00 |

### THREE-PHASE MODELS

| GE nber# | Input Min. | Input Max. | Output Nom. | Adjustable* Min. | Adjustable* Max. | Correction Rate V/sec | Max. Amps | kVA | Cabinet-Mounted Dimensions W. x D. x H., Inches | G3 Rack 1 | G3 Rack 2-9 | G3 Rack 10-49* | Cabinet 1 | Cabinet 2-9 | Cabinet 10-49* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 120§• | 200 | 260 | 230‡ | 220 | 240 | 12.0 | 14.0 | 5.00 | 25¾x19⁵⁄₁₆ x16⅝ | $1017.00 | $960.50 | $904.00 | $1044.00 | $986.00 | $928.00 |
| 121§ | 200 | 260 | 230‡ | 220 | 240 | 12.0 | 20.8 | 8.30 | 25¾x19⁵⁄₁₆ x16⅝ | 1071.00 | 1011.50 | 952.00 | 1098.00 | 1037.00 | 976.00 |
| 122§• | 200 | 260 | 230‡ | 220 | 240 | 12.0 | 28.5 | 11.50 | 27 x16⅜ x15¼ | ........ | ........ | ........ | 1143.00 | 1079.50 | 1016.00 |
| 145• | 200 | 260 | 230‡ | 220 | 240 | 17.2 | 68.0 | 27.0 | 25¾x17¼ x13⅝ | ........ | ........ | ........ | 1404.00 | 1326.00 | 1248.00 |
| 146• | 200 | 260 | 230‡ | 220 | 240 | 17.2 | 136.0 | 54.0 | 20¾x18½ x30⅜ | ........ | ........ | ........ | 1863.00 | 1759.50 | 1656.00 |
| 147 | 200 | 260 | 230‡ | 220 | 240 | 7.5 | 170.0 | 67.5 | 25¾x18½ x30⅜ | ........ | ........ | ........ | 2070.00 | 1955.00 | 1840.00 |
| 127§ | 400 | 520 | 460 | 440 | 480 | 24.0 | 12.0 | 9.60 | 27 x16⅜ x15¼ | ........ | ........ | ........ | 1147.50 | 1083.75 | 1020.00 |
| 149• | 400 | 520 | 460 | 440 | 480 | 34.4 | 32.5 | 26.0 | 25¾x17¼ x13⅝ | ........ | ........ | ........ | 1314.00 | 1241.00 | 1168.00 |
| 150 | 400 | 520 | 460 | 440 | 480 | 34.4 | 52.0 | 41.5 | 20¾x18½ x30⅜ | ........ | ........ | ........ | 1701.00 | 1606.50 | 1512.00 |
| 151 | 400 | 520 | 460 | 440 | 480 | 34.4 | 100.0 | 80.0 | 25¾x18½ x30⅜ | ........ | ........ | ........ | 2043.00 | 1929.50 | 1816.00 |
| 152 | 400 | 520 | 460 | 440 | 480 | 15.0 | 130.0 | 104.0 | 28⅜x18½ x30⅜ | ........ | ........ | ........ | 2169.00 | 2048.50 | 1928.00 |

suffix **G3** to GE No. for rack-mounted model; no suffix for et-mounted model. *Specified input voltage range is appli- for nominal output voltage; when operating at any other t voltage within specified range, input voltage range changes rtionately with the change in output voltage level selected. l kVA based on nominal output voltage at midpoint in output range. ‡Can be used for 199–217 V output and 181–236 V input by changing connections; diagram included with instructions. §50/60 Hz. #Suitable for wider input voltage range, i.e., 190–270 V; connection diagram available on request. •Cabinet-mounted normally stocked only. *Larger quantities available on request.

## REGULATED DC POWER SUPPLIES



Typical DC Power Supply

Economically priced power supplies furnishing fixed DC output voltage within ±1% tolerance while input AC voltage fluctuates ±15%. Ideal for computers, process control equipment, measuring devices and similar applications requiring constant regulation of voltage. All units feature rugged magnetic and semiconductor circuitry, and are designed for chassis as well as standard 19″ rack mounting. For protection of supply and load equipment, short circuit current is limited to approximately 200% of rated value. Can be installed with either plus or minus grounded. **Input Range:** 97–130 VAC, 60 Hz, at 40° C ambient. **Output Ripple Level:** 1% rms max. **Efficiency:** 70% to 85% for normal output voltage levels; efficiency may decrease for unusually low output voltages or low power ratings.

### 60 HERTZ

| GE No. | DC Output V | DC Output A | Load Regulation* 100% to 50% Load | Load Regulation* 100% to 20% Load | Overall Size, W. x D. x H., Inches | Mounting Ctrs., In. Chassis W. x D. | Mounting Ctrs., In. Rack W. x D. | Net Each, Lots of 1-4 | 5-9 | 10-24 |
|---|---|---|---|---|---|---|---|---|---|---|
| Y8 | 10 | 16 | 5% | 8% | 19 x 7 x 6⅝ | 16¼ x 6¼ | 18⅜ x 4 | $173.25 | $155.10 | $138.60 |
| Y51 | 12 | 5 | 5% | 6% | 19 x 3½ x 7⅝ | 16¼ x 2¾ | 18⅜ x 3 | 147.00 | 131.60 | 117.60 |
| Y53 | 12 | 15 | 5% | 7% | 19 x 5¼ x 8 | 16¼ x 4½ | 18⅜ x 2¼ | 178.50 | 159.80 | 142.80 |
| Y978 | 12 | 20 | 5% | 7% | 19 x 7 x 8 | 16¼ x 6¼ | 18⅜ x 4 | 194.25 | 173.90 | 155.40 |
| Y61 | 18 | 5 | 4% | 5% | 19 x 3½ x 7⅝ | 16¼ x 2¾ | 18⅜ x 3 | 134.40 | 120.32 | 107.52 |
| Y966 | 18.5 | 6 | 4% | 5% | 19 x 5¼ x 7 | 16¼ x 4½ | 18⅜ x 2¼ | 139.65 | 125.02 | 111.72 |
| Y967 | 18.5 | 12 | 5% | 7% | 19 x 5¼ x 7¾ | 16¼ x 4½ | 18⅜ x 2¼ | 165.90 | 148.52 | 132.72 |
| Y965 | ±18.5 | 24 | 5% | 8% | 19 x 8¾ x 7 | 16¼ x 8 | 18⅜ x 5¾ | 391.65 | 350.62 | 313.32 |
| Y987 | 24 | 2.5 | 4% | 6% | 19 x 3½ x 6⅛ | 16¼ x 2¾ | 18⅜ x 3 | 127.05 | 113.74 | 101.64 |
| Y988 | 24 | 6 | 3% | 5% | 19 x 5¼ x 6½ | 16¼ x 4½ | 18⅜ x 2¼ | 150.15 | 134.42 | 120.12 |
| Y989 | 24 | 10 | 3% | 5% | 19 x 5¼ x 8 | 16¼ x 4½ | 18⅜ x 2¼ | 174.30 | 156.04 | 139.44 |
| Y990 | 24 | 20 | 3% | 5% | 19 x 7 x 9⅜ | 16¼ x 6¼ | 18⅜ x 4 | 227.85 | 203.98 | 182.28 |
| Y991 | 24 | 50 | 3% | 5% | 19 x 10½ x 11⅜ | 16¼ x 9¾ | 18⅜† | 402.15 | 360.02 | 321.72 |
| Y83 | 28 | 8 | 3% | 5% | 19 x 5¼ x 8 | 16¼ x 4½ | 18⅜ x 2¼ | 166.95 | 149.46 | 133.56 |
| Y85 | 28 | 20 | 3% | 5% | 19 x 7 x 9⅜ | 16¼ x 6¼ | 18⅜ x 4 | 247.80 | 221.84 | 198.24 |
| Y6 | 28 | 50 | 3% | 5% | 19 x 10½ x 12⅛ | 17½ x 10½ | 18⅜ x 10½ | 450.45 | 403.26 | 360.36 |
| Y93 | 48 | 4 | 3% | 5% | 19 x 5¼ x 8 | 16¼ x 4½ | 18⅜ x 2¼ | 139.65 | 125.02 | 111.72 |
| Y94 | 48 | 10 | 2% | 4% | 19 x 5¼ x 8 | 16¼ x 4½ | 18⅜ x 2¼ | 191.10 | 171.08 | 152.88 |
| Y69 | 90 | 1 | 2% | 3% | 19 x 3½ x 7⅛ | 16¼ x 2⅝ | 18⅜ x 3 | 120.75 | 108.10 | 96.60 |
| Y985 | 90 | 10 | 3% | 4% | 20⅞ x 7⅜ x 7 | 20 x 6⅛ | ‡ | 265.65 | 237.82 | 212.52 |
| Y980 | 125 | 2 | 2% | 3% | 19 x 5¼ x 6½ | 16¼ x 4½ | 18⅜ x 2¼ | 150.15 | 134.42 | 120.12 |
| Y970 | 125 | 4 | 2% | 3% | 19 x 7 x 7⅝ | 16¼ x 6½ | 18⅜ x 4 | 194.25 | 173.90 | 155.40 |
| Y981 | 150 | 2 | 2% | 3% | 19 x 5¼ x 6½ | 16¼ x 4½ | 18⅜ x 2¼ | 158.55 | 141.94 | 126.84 |
| Y982 | 200 | 1 | 2% | 3% | 19 x 5¼ x 6½ | 16¼ x 4½ | 18⅜ x 2¼ | 140.70 | 125.96 | 112.56 |

### 50 HERTZ

| GE No. | DC Output V | DC Output A | Load Regulation* 100% to 50% Load | Load Regulation* 100% to 20% Load | Overall Size, W. x D. x H., Inches | Mounting Ctrs., In. Chassis W. x D. | Mounting Ctrs., In. Rack W. x D. | Net Each, Lots of 1-4 | 5-9 | 10-24 |
|---|---|---|---|---|---|---|---|---|---|---|
| Y53G5 | 12 | 15 | 5% | 7% | 19 x 5¼ x 6½ | 16¼ x 4½ | 18⅜ x 2¼ | $187.95 | $168.26 | $150.36 |
| Y989G5 | 24 | 10 | 3% | 5% | 19 x 5¼ x 8 | 16¼ x 4½ | 18⅜ x 2¼ | 182.70 | 163.56 | 146.16 |
| Y990G5 | 24 | 20 | 3% | 5% | 19 x 7 x 8½ | 16¼ x 6½ | 18⅜ x 4 | 239.40 | 214.32 | 191.52 |
| Y83G5 | 28 | 8 | 2% | 5% | 19 x 5¼ x 8 | 16¼ x 4½ | 18⅜ x 2¼ | 175.35 | 156.98 | 140.28 |
| Y94G5 | 48 | 10 | 2% | 4% | 19 x 5½ x 9 | 16¼ x 4½ | 18⅜ x 2¼ | 200.55 | 179.54 | 160.44 |
| Y93G5 | 48 | 4 | 3% | 5% | 19 x 4¼ x 8 | 16¼ x 4½ | 18⅜ x 2¼ | 147.00 | 131.60 | 117.60 |
| Y980G5 | 125 | 2 | 2% | 3% | 19 x 5¼ x 7⅜ | 16¼ x 4½ | 18⅜ x 2¼ | 157.50 | 141.00 | 126.00 |

ates approx. percent increase in output voltage due to decrease of load current from full load. †Plate has four mtg. slots on each wo outer slots on 7½″ ctrs., two inner slots on 3″ ctrs. ‡Model not suitable for rack mounting.

# General Radio Autotransformers

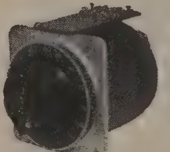
## VARIAC® MANUALLY OPERATED AUTOTRANSFORMERS

The General Radio Variac autotransformer is a continuously variable unit used to control AC voltage. Features the Duratrak® contact surface, a uniform silver-alloy coating to prevent injurious high-temperature oxidation and resultant brush-track deterioration—track will show no significant wear after 1,000,000 cycles of brush operation. Variac autotransformers are highly efficient, have high thermal capacity, can withstand very high short-term overloads, and do not affect waveform or power factor. Other features: Good regulation; smooth control; long life; linear output voltage; low maintenance; easy installation. All necessary mounting hardware is included with each unit. Portable types, indicated by T in Model No., have an overload protection reset switch, line switch, convenience outlet, and a 6-ft. two- or thre wire line cord. Manually operated and motor-driven Variacs a available in a wide variety of voltage and current ratings, wit or without cases. All except portable units can be equipped wit ball bearings at slightly higher prices; ball bearings, indicated b BB in Model No. of manually operated units, are included with 4 and 6-gang types at prices shown. **Angle of Rotation:** 320°. **Lin Frequency:** 50 and/or 60 Hz unless otherwise specified. **Inpu Voltages:** 120, 208, 240 or 280 volts. **Output Voltages:** 0–120/14 0–208, 0–240/280, 0–480 or 0–560 volts, continuously adjustable **Current Ratings:** 2 to 300 amps.

W30 Basic
Uncased Unit

W2 Basic
Uncased Unit

W5M
Single Unit
Cased



W10G2
2-Gang
Uncased

## SINGLE-PHASE VARIACS

### MANY MODELS, AS NOTED, LISTED UNDER UL RE-EXAMINATION SERVICE AND CSA

### 120-VOLT INPUT UNITS

Line voltage connection output, 0–120 volts; overvoltage connection output, 0–140 volt

| Model No. | Output Amps | | kVA* | Description | Size, Inches | | | Shpg. Lbs. | Net Each* |
|---|---|---|---|---|---|---|---|---|---|
| | Rated | Max. | | | W. | D.♦ | H. | | |
| **U2‡** | 2.25‡ | 3.0‡ | 0.36 | Uncased | 3 | 2⅞ | 3¾ | 5 | $ 13.0 |
| **W2M** | 2.0 | 2.6 | 0.31 | Cased† | 4⅛ | 4⅜ | 5 9/16 | 9 | 28.7 |
| **W2** | 2.4 | 3.1 | 0.37 | Uncased† | 3¼ | 3 15/16 | 3¼ | 6 | 18.2 |
| **W5M** | 5.0 | 6.5 | 0.78 | Cased†§ | 4⅞ | 4⅜ | 6 9/16 | 13 | 32.5 |
| **W5** | 6.0 | 7.8 | 0.94 | Uncased†§ | 4½ | 3 15/16 | 4½ | 12 | 22.0 |
| **W5LM** | 7.1 | 9.2 | 1.1 | Cased# | 4⅞ | 4⅜ | 6 9/16 | 13 | 32.7 |
| **W5L** | 8.5 | 11.0 | 1.32 | Uncased§# | 4½ | 3 15/16 | 4½ | 12 | 22.0 |
| **W8** | 8.5 | 11.0 | 1.32 | Uncased | 4½ | 4 7/16 | 4½ | 15 | 24.2 |
| **W8L** | 10.0 | 13.0 | 1.56 | Uncased# | 4½ | 4 7/16 | 4½ | 15 | 24.2 |
| **W10** | 10.0 | 13.0 | 1.56 | Uncased†§ | 5¾ | 4 11/16 | 5¾ | 18 | 40.0 |
| **W10M** | 10.0 | 13.0 | 1.56 | Cased†§ | 6¾ | 5¼ | 9 15/32 | 21 | 57.7 |
| **W20** | 20.0 | 26.0 | 3.12 | Uncased†§ | 7½ | 4⅝ | 7½ | 27 | 59.0 |
| **W20M** | 20.0 | 26.0 | 3.12 | Cased† | 8⅝ | 5⅜ | 11 15/16 | 27 | 77.8 |
| **W30M** | 28.0 | 32.0 | 3.84 | Cased | 11 | 5¾ | 14¾ | 46 | 124.0 |
| **W30** | 30.0 | 36.0 | 4.32 | Uncased | 10 | 4 3/32 | 10¾ | 36 | 101.0 |
| **W50M** | 40.0 | 45.0 | 5.40 | Cased†§ | 13 7/16 | 7¼ | 16 27/32 | 74 | 190.0 |
| **W50** | 50.0 | 50.0 | 6.00 | Uncased†§ | 12½ | 6 7/32 | 12½ | 65 | 156.0 |
| **W30G2M** | 56.0 | 64.0 | 7.7 | 2-Gang W30M▴ | 11⅜ | 11½ | 14 15/16 | 83 | 269.0 |
| **W30G2** | 60.0 | 72.0 | 8.6 | 2-Gang W30▴ | 10 | 11 5/16 | 10¾ | 77 | 222.0 |
| **W50G2M** | 80.0 | 90.0 | 10.8 | 2-Gang W50M▴ | 13 13/16 | 16⅛ | 17 1/16 | 160 | 392.0 |
| **W30G3M** | 84.0 | 96.0 | 11.5 | 3-Gang W30M▴ | 11⅜ | 16⅛ | 14 15/16 | 115 | 374.0 |
| **W50G2** | 100.0 | 100.0 | 12.0 | 2-Gang W50▴ | 12½ | 15 15/16 | 12½ | 147 | 334.0 |
| **W30G3** | 90.0 | 108.0 | 13.0 | 3-Gang W30▴ | 10 | 15 15/16 | 10¾ | 108 | 328.0 |
| **W50G3M** | 120.0 | 135.0 | 16.2 | 3-Gang W50M▴ | 13 13/16 | 22½ | 17 1/16 | 221 | 555.0 |
| **W50G3** | 150.0 | 150.0 | 18.0 | 3-Gang W50▴ | 12½ | 22 5/16 | 12½ | 206 | 497.0 |
| **W50G4BBM** | 160.0 | 180.0 | 21.6 | 4-Gg. W50BBM▴ | 13 13/16 | 28⅞ | 17 1/16 | 313 | 777.0 |
| **W50G4BB** | 200.0 | 200.0 | 24.0 | 4-Gang W50BB▴ | 12½ | 28 11/16 | 12½ | 288 | 696.0 |
| **W50G6BBM** | 240.0 | 270.0 | 32.4 | 6-Gg. W50BBM▴ | 13 13/16 | 41⅝ | 17 1/16 | 430 | 1150.0 |
| **W50G6BB** | 300.0 | 300.0 | 36.0 | 6-Gang W50BB▴ | 12½ | 41 7/16 | 12½ | 400 | 1050.0 |

### 240-VOLT INPUT UNITS

Line voltage connection output, 0–240 volts; overvoltage connection output, 0–280 volt All types except portable units can also use a 120-volt input.

| Model No. | Output Amps | | kVA* | Description | Size, Inches | | | Shpg. Lbs. | Net Each* |
|---|---|---|---|---|---|---|---|---|---|
| | Rated | Max. | | | W. | D.♦ | H. | | |
| **W5H** | 2.0 | 2.6 | 0.62 | Uncased† | 4½ | 3 15/16 | 4½ | 10 | $ 25.2 |
| **W5HM** | 2.0 | 2.6 | 0.62 | Cased† | 4⅞ | 4⅜ | 6 9/16 | 13 | 35.7 |
| **W10H** | 4.0 | 5.2 | 1.25 | Uncased† | 5¾ | 4 11/16 | 5¾ | 18 | 41.0 |
| **W10HM** | 4.0 | 5.2 | 1.25 | Cased† | 6¾ | 5¼ | 9 15/32 | 21 | 59.0 |
| **W20H** | 8.0 | 10.4 | 2.50 | Uncased†§ | 7½ | 4⅝ | 7½ | 27 | 61.0 |
| **W20HM** | 8.0 | 10.4 | 2.50 | Cased† | 8⅝ | 5⅜ | 11 15/16 | 31 | 79.0 |
| **W30H** | 12.0 | 15.6 | 3.74 | Uncased | 10 | 4 3/32 | 10¾ | 36 | 101.0 |
| **W30HM** | 12.0 | 15.6 | 3.74 | Cased | 11 | 5¾ | 14¾ | 46 | 124.0 |
| **W50HM** | 20.0 | 31.0 | 7.45 | Cased†§ | 13 7/16 | 7¼ | 16 27/32 | 76 | 190.0 |
| **W50H** | 25.0 | 32.5 | 7.80 | Uncased†§ | 12½ | 6 7/32 | 12½ | 67 | 156.0 |
| **W30HG2** | 24.0 | 31.2 | 7.50 | 2-Gang W30H▴ | 10 | 11 5/16 | 10¾ | 75 | 222.0 |
| **W30HG2M** | 24.0 | 31.2 | 7.50 | 2-Gang W30HM▴ | 11⅜ | 11½ | 14 15/16 | 81 | 269.0 |
| **W30G2M** | 28.0 | 32.0 | 7.70 | 2-Gang W30M•■ | 11⅜ | 11½ | 14 15/16 | 83 | 269.0 |
| **W30G2** | 30.0 | 36.0 | 8.60 | 2-Gang W30•■ | 10 | 11 5/16 | 10¾ | 77 | 222.0 |
| **W50HG2M** | 40.0 | 62.0 | 14.90 | 2-Gang W50HM▴ | 13 13/16 | 16⅛ | 17 1/16 | 165 | 392.0 |
| **W50HG2** | 50.0 | 65.0 | 15.60 | 2-Gang W50H▴ | 12½ | 15 15/16 | 12½ | 153 | 334.0 |
| **W50HG3M** | 60.0 | 93.0 | 22.30 | 3-Gang W50HM▴ | 13 13/16 | 22½ | 17 1/16 | 230 | 555.0 |
| **W50HG3** | 75.0 | 97.5 | 23.4 | 3-Gang W50H▴ | 12½ | 22 5/16 | 12½ | 214 | 437.0 |
| **W50HG4BBM** | 80.0 | 124.0 | 29.8 | 4-Gg. W50HBBM▴ | 13 13/16 | 28⅞ | 17 1/16 | 328 | 777.0 |
| **W50HG4BB** | 100.0 | 130.0 | 31.2 | 4-Gang W50HBB▴ | 12½ | 28 11/16 | 12½ | 300 | 696.0 |
| **W50HG6BBM** | 120.0 | 186.0 | 44.6 | 6-Gg. W50HBBM▴ | 13 13/16 | 41⅝ | 17 1/16 | 458 | 1150.0 |
| **W50HG6BB** | 150.0 | 195.0 | 46.8 | 6-Gang W50HBB▴ | 12½ | 41 7/16 | 12½ | 428 | 1050.0 |

*kVA ratings—normal input line voltage times maximum current; maximum current ca be drawn at maximum voltage for line voltage connection only. †CSA Approved. ‡Mod U2 is interchangeable with competing models. Listed ratings are for metal panel mountin ratings in air, 2.0 and 2.5 amps respectively. §Listed under Re-examination Service of U #For 60 Hz only; no overvoltage connection supplied. •Series-connected windings; do n use with grounded load. ▴Parallel-connected windings; one or more W50-P1 chok required (see below). ■Also can be used at 120-volt input with 2x the output ratin shown. ♦Depth behind panel except cased types (excluding knobs).

### MODEL W50-P1 CHOKE FOR PARALLEL COMBINATIONS

When windings of identical Variacs are paralleled to obtain higher load ratings, it recommended to use one or more chokes to limit excessive circulating current in the eve that brushes accidentally get out of line. Use 1 choke for 2 Variacs in parallel; 3 chok for 3 Variacs; 4 chokes for 4 Variacs; 6 chokes for 6 Variacs. Parallel operation of uni smaller than Model W30 is not recommended since the next larger unit is more economic For W50 Series Variacs, the choke can be mounted directly on the terminal plates.

**Model No. W50-P1 Choke**—Net Each........................................**$16.0**

### ★QUANTITY DISCOUNTS

| Lots of | Discount | Multiplier | Lots of | Discount | Multiplie |
|---|---|---|---|---|---|
| 1–9 | None | 1.0 | 20–49 | 13% | .87 |
| 10–19 | 10% | .90 | 50–99 | 17% | .83 |

## ACCESSORIES FOR VARIACS

### REPLACEMENT BRUSHES

| Model No. | For Variac Model | Net Each* |
|---|---|---|
| **VB-1** | M2, U2, V2, W2, W5H | $ 1.40 |
| **VB-2** | M5, V5, W5, W5L | 1.25 |
| **VB-3** | W8, W8L | 2.20 |
| **VBT-6†** | W50 | 13.00 |
| **VBT-7†** | W50H | 9.85 |
| **VBT-8†** | M20, W20 | 3.95 |
| **VBT-10** | M10, W10 | 2.10 |
| **VBT-11** | W10H | 2.00 |
| **VBT-12†** | W20H | 3.70 |
| **VBT-13†** | W30 | 6.30 |
| **VBT-14†** | W30H | 5.35 |

†Brush set.

# General Radio Autotransformers

## VARIAC® MANUALLY OPERATED AUTOTRANSFORMERS

### W-TYPE MANUAL THREE-PHASE GANGED VARIACS

#### 240-VOLT INPUT GANGED UNITS

nits listed require an input of 240 volts except W5LG3M, W5LG3, and W8LG3, n require 208 volts. All have an output range of 0–240 volts except types with H in el No., 0–280 volts, and types with L in Model No., 0–208 volts. Ball bearings are ded with 4- and 6-gang types at prices shown; available for other types at extra cost.

| Model No. | Output Amps Rated | Output Amps Max. | kVA* | Description | Size, Inches W. | Size, Inches D.♦ | Size, Inches H. | Shpg. Lbs. | Net Each* |
|---|---|---|---|---|---|---|---|---|---|
| G3M | 7.1 | 9.2 | 3.31 | 3-Gang W5LM†‡ | 5⅛ | 13 3/32 | 6¾ | 32 | $ 96.50 |
| G3 | 8.5 | 11.0 | 3.96 | 3-Gang W5L†‡ | 4½ | 12 15/16 | 4½ | 30 | 75.50 |
| G3 | 10.0 | 13.0 | 4.68 | 3-Gang W8L†‡ | 4½ | 14¾ | 4½ | 36½ | 80.75 |
| G2 | 2.0 | 2.6 | 1.08 | 2-Gang W5H§ | 4½ | 8 13/16 | 4½ | 21 | 58.75 |
| G2M | 2.0 | 2.6 | 1.08 | 2-Gang W5HM§ | 5⅛ | 8 31/32 | 6¾ | 23 | 79.95 |
| 3M | 2.0 | 2.6 | 1.08 | 3-Gang W2M†# | 4⅝ | 12 15/16 | 5¾ | 21 | 84.75 |
| 3 | 2.4 | 3.1 | 1.29 | 3-Gang W2†# | 3¼ | 12 3/16 | 3¼ | 19 | 63.75 |
| HG2 | 4.0 | 5.2 | 2.16 | 2-Gang W10H§ | 5¾ | 10 7/16 | 5¾ | 33 | 90.50 |
| HG2M | 4.0 | 5.2 | 2.16 | 2-Gang W10HM§ | 7⅛ | 10⅝ | 9 11/16 | 37 | 125.00 |
| 3M | 5.0 | 6.5 | 2.70 | 3-Gang W5M†# | 5⅛ | 13 3/32 | 6¾ | 32 | 96.50 |
| 3 | 6.0 | 7.8 | 3.24 | 3-Gang W5†# | 4½ | 12 15/16 | 4½ | 30 | 75.50 |
| 3 | 8.5 | 11.0 | 4.57 | 3-Gang W8†# | 4½ | 14¾ | 4½ | 36 | 81.00 |
| HG2 | 8.0 | 10.4 | 4.32 | 2-Gang W20H§‡ | 7½ | 10 5/16 | 7½ | 55 | 133.00 |
| HG2M | 8.0 | 10.4 | 4.32 | 2-Gang W20HM§‡ | 9 | 10½ | 12 1/16 | 59 | 168.00 |
| G3 | 10.0 | 13.0 | 5.40 | 3-Gang W10†# | 5¾ | 15⅛ | 5¾ | 48 | 129.00 |
| G3M | 10.0 | 13.0 | 5.40 | 3-Gang W10M†# | 7⅛ | 15 5/16 | 9 11/16 | 54 | 164.00 |
| HG2 | 12.0 | 15.6 | 6.48 | 2-Gang W30H§‡ | 10 | 11 5/16 | 10¾ | 75 | 222.00 |
| HG2M | 12.0 | 15.6 | 6.48 | 2-Gang W30HM§‡ | 11⅜ | 11½ | 14 15/16 | 81 | 269.00 |
| G3 | 20.0 | 26.0 | 10.80 | 3-Gang W20†#‡ | 7½ | 14⅞ | 7½ | 78 | 191.00 |
| G3M | 20.0 | 26.0 | 10.80 | 3-Gang W20M†#‡ | 9 | 15 1/16 | 12 1/16 | 84 | 227.00 |
| HG2M | 20.0 | 31.0 | 12.90 | 2-Gang W50HM§‡ | 13 13/16 | 16⅛ | 17 1/16 | 165 | 392.00 |
| G3M | 28.0 | 32.0 | 13.30 | 3-Gang W30M†#‡ | 11⅜ | 16⅛ | 14 15/16 | 115 | 374.00 |
| HG2 | 25.0 | 32.5 | 13.50 | 2-Gang W50H§‡ | 12½ | 15 15/16 | 12½ | 153 | 334.00 |
| G3 | 30.0 | 36.0 | 15.00 | 3-Gang W30†#‡ | 10 | 15 15/16 | 10¾ | 108 | 328.00 |
| G3M | 40.0 | 45.0 | 18.70 | 3-Gang W50M†#‡ | 13 13/16 | 22½ | 17 1/16 | 221 | 555.00 |
| G3 | 50.0 | 50.0 | 20.80 | 3-Gang W50†#‡ | 12½ | 22 5/16 | 12½ | 206 | 497.00 |
| HG4BBM | 40.0 | 62.0 | 25.80 | 4-Gang W50HBBM§‡ | 13 13/16 | 28⅞ | 17 1/16 | 328 | 777.00 |
| HG4BB | 50.0 | 65.0 | 27.00 | 4-Gang W50HBB§‡ | 12½ | 28 11/16 | 12½ | 300 | 696.00 |
| G6BBM | 80.0 | 90.0 | 37.40 | 6-Gang W50BBM†#‡▲ | 13 13/16 | 41⅝ | 17 1/16 | 430 | 1150.00 |
| G6BB | 100.0 | 100.0 | 41.60 | 6-Gang W50BB†#‡▲ | 12½ | 41 7/16 | 12½ | 400 | 1050.00 |

#### 480-VOLT INPUT GANGED UNITS

ariacs listed are "Y" connected. Overvoltage circuits are not recommended. Ball ngs are included with 6-gang types at prices shown; available for remaining types at cost. Output voltage range, 0–480 volts.

| Model No. | Output Amps Rated | Output Amps Max. | kVA* | Description | Size, Inches W. | Size, Inches D.♦ | Size, Inches H. | Shpg., Lbs. | Net Each* |
|---|---|---|---|---|---|---|---|---|---|
| G3 | 2.0 | 2.6 | 2.16 | 3-Gang W5H | 4½ | 12 15/16 | 4½ | 29 | $ 85.00 |
| G3M | 2.0 | 2.6 | 2.16 | 3-Gang W5HM | 5⅛ | 13 3/32 | 6¾ | 31 | 106.00 |
| HG3 | 4.0 | 5.2 | 4.32 | 3-Gang W10H | 5¾ | 15⅛ | 5¾ | 46 | 132.00 |
| HG3M | 4.0 | 5.2 | 4.32 | 3-Gang W10HM | 7⅛ | 15 5/16 | 9 11/16 | 52 | 167.00 |
| HG3 | 8.0 | 10.4 | 8.65 | 3-Gang W20H | 7½ | 14⅞ | 7½ | 73 | 197.00 |
| HG3M | 8.0 | 10.4 | 8.65 | 3-Gang W20HM | 9 | 15 1/16 | 12 1/16 | 81 | 233.00 |
| HG3 | 12.0 | 15.6 | 13.00 | 3-Gang W30H | 10 | 15 15/16 | 10¾ | 107 | 328.00 |
| HG3M | 12.0 | 15.6 | 13.00 | 3-Gang W30HM | 11⅜ | 16⅛ | 14 15/16 | 113 | 374.00 |
| HG3M | 20.0 | 31.0 | 25.80 | 3-Gang W50HM | 13 13/16 | 22½ | 17 1/16 | 230 | 555.00 |
| HG3 | 25.0 | 32.5 | 27.00 | 3-Gang W50H | 12½ | 22 5/16 | 12½ | 214 | 497.00 |
| HG6BBM | 40.0 | 62.0 | 51.50 | 6-Gang W50HBBM▲ | 13 13/16 | 41⅝ | 17 1/16 | 458 | 1150.00 |
| HG6BB | 50.0 | 65.0 | 54.00 | 6-Gang W50HBB▲ | 12½ | 41 7/16 | 12½ | 428 | 1050.00 |

A ratings—normal input line voltage times maximum current; maximum current can awn at maximum voltage for line voltage connection only. †"Y"-circuit connected. 60 Hz only; no overvoltage connection. §Open-delta circuit connected. #Overvoltage ection not recommended. ▲See previous page for W50-P1 Choke for parallel combina- . ♦Depth behind panel except cased types (excluding knobs). ‡Also for single-phase volts input.

### SINGLE-PHASE PORTABLE VARIACS

able, metered, cased Variacs with 2-wire or 3-wire cord and receptacle, and convenient ing handle. Meter accuracy is 3% of full scale except 5% for ammetered Model HMT3A. Power switch disconnects both sides of line. Meters are switchable under Types MT and MT3 have overvoltage connections and corresponding dial scales; voltage connections and dial scales on special order.

#### 120-VOLT INPUT

nits have max. output voltage range of 0–140 volts except W5LMT3 which has 0–120 . Models W5MT and W10MT come in 2-wire version; all others in 3-wire version.

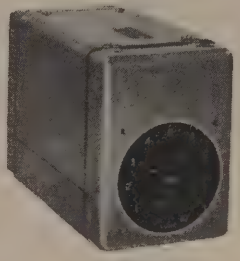
| Model No. | Rated Output, Amps | Meter Range (full-scale) Amps | Meter Range (full-scale) Watts | Meter Range (full-scale) V | Size, Inches W. | Size, Inches D. | Size, Inches H. | Shpg. Wt., Lbs. | Net Each* |
|---|---|---|---|---|---|---|---|---|---|
| IT*† | 5.0 | ...... | .......... | ...... | 4⅞ | 4⅜ | 6 9/16 | 15 | $ 40.00 |
| IT3*† | 5.0 | ...... | .......... | ...... | 4⅞ | 4⅜ | 6 9/16 | 15 | 40.00 |
| IT3VM | 5.0 | ...... | .......... | 150 | 4⅞ | 4⅜ | 6 9/16 | 19 | 74.50 |
| IT3A | 5.0 | 1/5 | .......... | 150 | 6¾ | 5¼ | 9½ | 19 | 121.00 |
| IT3W | 5.0 | ...... | 150/750 | 150 | 6¾ | 5¼ | 9½ | 19 | 149.00 |
| IT3AW | 5.0 | 1/5 | 150/750 | 150 | 11 15/16 | 5⅜ | 8⅝ | 21 | 190.00 |
| MT3§ | 7.1 | ...... | .......... | ...... | 4⅞ | 4⅜ | 6 9/16 | 18 | 41.00 |
| IT3 | 10.0 | ...... | .......... | ...... | 5⅜ | 6⅛ | 7 | 16 | 46.50 |
| IT3VM | 10.0 | ...... | .......... | 150 | 5⅜ | 6⅛ | 7 | 16 | 80.00 |
| MT† | 10.0 | ...... | .......... | ...... | 6¾ | 5¼ | 9½ | 24 | 71.50 |
| MT3† | 10.0 | ...... | .......... | ...... | 6¾ | 5¼ | 9½ | 24 | 71.50 |
| MT3A | 10.0 | 2/10 | .......... | 150 | 8⅝ | 5⅜ | 11 15/16 | 30 | 143.00 |
| MT3W | 10.0 | ...... | 300/1500 | 150 | 8⅝ | 5⅜ | 11 15/16 | 30 | 177.00 |
| MT3A | 18.0 | 20 | .......... | 150 | 8⅝ | 5⅜ | 11 15/16 | 34 | 166.00 |
| MT3† | 18.0 | ...... | .......... | ...... | 8⅝ | 5⅜ | 11 15/16 | 23 | 113.00 |

#### 240-VOLT INPUT

nits have max. output voltage range of 0–280 volts. Models W5HMT and W10HMT in 2-wire cord and receptacle; all others in 3-wire cord and receptacle.

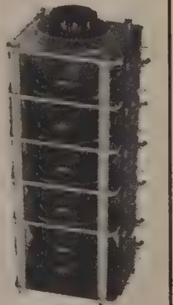
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| MT† | 2.0 | ...... | .......... | ...... | 4⅞ | 4⅜ | 6 9/16 | 15 | $ 43.00 |
| HMT | 4.0 | ...... | .......... | ...... | 6¾ | 5¼ | 9½ | 24 | 72.50 |
| HMT3 | 4.0 | ...... | .......... | ...... | 6¾ | 5¼ | 9½ | 24 | 72.50 |
| HMT3† | 8.0 | ...... | .......... | ...... | 8⅝ | 5⅜ | 11 15/16 | 35 | 116.00 |
| HMT3A | 8.0 | 10 | .......... | 300 | 8⅝ | 5⅜ | 11 15/16 | 31 | 168.00 |

ted under UL Re-examination Service. †CSA Approved. §60 Hz only.



W10G3M
3-Gang
Cased

W5G3
3-Gang
Uncased



W50G6BB
6-Gang
Uncased

W8MT3VM

W8MT3

### ★QUANTITY DISCOUNTS

| Lots of | Discount | Multiplier |
|---|---|---|
| 1–9 | None | 1.0 |
| 10–19 | 10% | .90 |
| 20–49 | 13% | .87 |
| 50–99 | 17% | .83 |

# General Radio AUTOTRANSFORMERS AND REGULATORS

## VARIAC® MANUAL AND MOTOR-DRIVEN AUTOTRANSFORMERS

### M-TYPE MANUAL VARIACS FOR 350-1200 Hz OPERATION

For use at line frequencies between 350 and 1200 Hz. Equivalent to their Type-W counterparts, but smaller and lighter, and provide better regulation at 400 Hz than 60 Hz models. Conform to most military specifications for shock, vibration, salt spray, tropicalization, altitude, humidity and temperature.

### SINGLE-PHASE 120-VOLT INPUT UNITS

Line voltage connection output, 0–120 volts; overvoltage connection output, 0–140 volts.

| Model No. | Output Amps | | kVA* | Description | Shpg. Wt., Lbs. | Net Each* |
|---|---|---|---|---|---|---|
| | Rated | Max. | | | | |
| M2 | 2.4 | 3.1 | 0.37 | Uncased | 4 | $21.00 |
| M5 | 6.0 | 7.8 | 0.94 | Uncased | 6 | 25.50 |
| M10 | 10.0 | 13.0 | 1.56 | Uncased | 11 | 45.00 |
| M20 | 20.0 | 26.0 | 3.12 | Uncased | 18 | 67.00 |

*kVA ratings—normal input line voltage times maximum current; maximum current can be drawn at maximum voltage for line voltage connection only.

### SINGLE-PHASE 240-VOLT INPUT UNITS

Line voltage connection output, 0–240 volts; overvoltage connection output, 0–280 volts.

| Model No. | Output Amps | | kVA* | Description | Shpg. Wt., Lbs. | Net Each* |
|---|---|---|---|---|---|---|
| | Rated | Max. | | | | |
| M2G2 | 2.4 | 3.1 | 0.74 | 2-Gang M2 | 6 | $ 50.50 |
| M5G2 | 6.0 | 7.8 | 1.88 | 2-Gang M5 | 12 | 59.00 |
| M10G2 | 10.0 | 13.0 | 3.12 | 2-Gang M10 | 18 | 99.00 |
| M20G2 | 20.0 | 26.0 | 6.24 | 2-Gang M20 | 34 | 143.00 |

### THREE-PHASE 240-VOLT INPUT UNITS

Line voltage connection output, 0–240 volts; overvoltage connection not recommended.

| Model No. | Rated | Max. | kVA* | Description | Shpg. Wt., Lbs. | Net Each* |
|---|---|---|---|---|---|---|
| M2G3 | 2.4 | 3.1 | 1.29 | 3-Gang M2 | 9 | $ 71.50 |
| M5G3 | 6.0 | 7.8 | 3.24 | 3-Gang M5 | 14 | 85.00 |
| M10G3 | 10.0 | 13.0 | 5.40 | 3-Gang M10 | 27 | 145.00 |
| M20G3 | 20.0 | 26.0 | 10.80 | 3-Gang M20 | 48 | 211.00 |

### MOTOR-DRIVEN VARIACS

All W- and M-type Variac autotransformers, both single and ganged, can be supplied with motor drives. Motors are fully enclosed, two-phase gear-reduction servo types having very low moments of inertia; the motor mounting plate is attached to the base end of the autotransformer by means of four heavy corner posts. Gear coupling is used to facilitate precise alignment, eliminate phase shift problems, and permit a number of drive speeds by simple change of gears. Three basic internal-geared motor speeds are available which, with a selection of standard coupling gears, makes possible the assembly of units having nominal full-traverse (320°) speeds of 2, 4, 8, 16, 32, 64 or 128 seconds at 60 Hz (approximately 20% slower at 50 Hz). The 2- and 4-second units are intended for high-speed servo applications; slower speed models are primarily for remote positioning. Cases are available for most models as indicated. **All motor-driven Variacs are furnished complete with ball bearings, a 120-volt phase-shift capacitor, and an adjustable microswitch for setting traverse limits.**

**HOW TO ORDER**

**W 5 H G 3 D 8 C K M**

Ⓐ Ⓑ Ⓒ

Ⓐ **Basic Unit Prefix:** Select from table below the desired basic Variac unit, as described elsewhere in these pages.

Ⓑ **Motor Indicator Suffix:** Add appropriate suffix for each Variac as indicated by an X in columns below. Suffix indicates seconds for 320° traverse.

Ⓒ **Case Suffix:** Add final Suffix **M** if case available and desired, and Price Adder from table. Case fully encloses both motor and Variac.

| Variac Prefix No. | Motor Indicator: D ( ) CK | | | | | | | | Net Each | Add for Case |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | 4 | 8 | 16 | 32 | 32 | 64 | 128 | | |
| M2 | X | X | X | X | .... | X | X | .... | $137.00 | ...... |
| M2G2 | X | X | X | X | .... | X | X | .... | 172.00 | ...... |
| M2G3 | .... | X | X | X | .... | X | X | .... | 196.00 | ...... |
| M5 | X | X | X | X | .... | X | X | .... | 141.00 | ...... |
| M5G2 | X | X | X | X | .... | X | X | .... | 181.00 | ...... |
| M5G3 | .... | X | X | X | .... | X | X | .... | 209.00 | ...... |
| M10 | X | X | X | X | X | .... | X | X | 186.00 | ...... |
| M10G2 | .... | X | X | X | X | .... | X | X | 246.00 | ...... |
| M10G3 | .... | .... | X | X | X | .... | X | X | 295.00 | ...... |
| M20 | .... | X | X | X | X | .... | X | X | 213.00 | ...... |
| M20G2 | .... | .... | X | X | X | .... | X | X | 295.00 | ...... |
| M20G3 | .... | .... | X | X | X | .... | X | X | 367.00 | ...... |
| W2 | X | X | X | X | .... | X | X | .... | 134.00 | $34.00 |
| W2G2 | X | X | X | X | .... | X | X | .... | 166.00 | 44.00 |
| W2G3 | .... | X | X | X | .... | X | X | .... | 187.00 | 44.00 |
| W5 | X | X | X | X | .... | X | X | .... | 138.00 | 34.00 |
| W5G2 | X | X | X | X | .... | X | X | .... | 174.00 | 44.00 |
| W5G3 | .... | X | X | X | .... | X | X | .... | 200.00 | 44.00 |
| W5H | X | X | X | X | .... | X | X | .... | 141.00 | 34.00 |
| W5HG2 | X | X | X | X | .... | X | X | .... | 181.00 | 44.00 |
| W5HG3 | .... | X | X | X | .... | X | X | .... | 209.00 | 44.00 |
| W5L | X | X | X | X | .... | X | X | .... | 138.00 | 34.00 |
| W5LG2 | X | X | X | X | .... | X | X | .... | 174.00 | 44.00 |
| W5LG3 | .... | X | X | X | .... | X | X | .... | 200.00 | 44.00 |
| W8 | X | X | X | X | .... | X | X | .... | 129.00 | ...... |
| W8G2 | X | X | X | X | .... | X | X | .... | 166.00 | ...... |
| W8G3 | .... | X | X | X | .... | X | X | .... | 193.00 | ...... |
| W8L | X | X | X | X | .... | X | X | .... | 129.00 | ...... |
| W8LG2 | X | X | X | X | .... | X | X | .... | 166.00 | ...... |

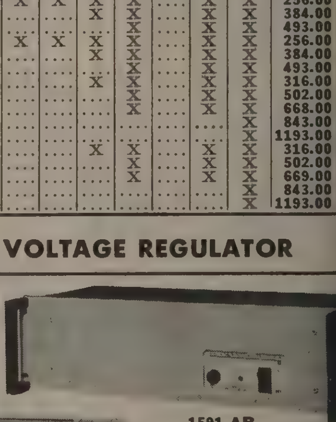
| Variac Prefix No. | Motor Indicator: D ( ) CK | | | | | | | | Net Each | Add for Case |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2 | 4 | 8 | 16 | 32 | 32 | 64 | 128 | | |
| W8LG3 | .... | X | X | X | .... | X | X | .... | $193.00 | ...... |
| W10 | X | X | X | X | X | .... | X | X | 169.00 | $41.00 |
| W10G2 | .... | X | X | X | X | .... | X | X | 223.00 | 58.00 |
| W10G3 | .... | .... | X | X | X | .... | X | X | 268.00 | 58.00 |
| W10H | X | X | X | X | X | .... | X | X | 170.00 | 41.00 |
| W10HG2 | .... | X | X | X | X | .... | X | X | 226.00 | 58.00 |
| W10HG3 | .... | .... | X | X | X | .... | X | X | 270.00 | 58.00 |
| W20 | .... | X | X | X | X | .... | X | X | 193.00 | 41.00 |
| W20G2 | .... | .... | X | X | X | .... | X | X | 271.00 | 58.00 |
| W20G3 | .... | .... | X | X | X | .... | X | X | 335.00 | 58.00 |
| W20H | .... | X | X | X | X | .... | X | X | 195.00 | 41.00 |
| W20HG2 | .... | .... | X | X | X | .... | X | X | 275.00 | 58.00 |
| W20HG3 | .... | .... | X | X | X | .... | X | X | 342.00 | 58.00 |
| W30 | .... | X | X | X | X | .... | X | X | 256.00 | 46.00 |
| W30G2 | .... | .... | .... | X | X | .... | X | X | 384.00 | 69.00 |
| W30G3 | .... | .... | .... | .... | X | .... | X | X | 493.00 | 69.00 |
| W30H | .... | X | X | X | X | .... | X | X | 256.00 | 46.00 |
| W30HG2 | .... | .... | .... | X | X | .... | X | X | 384.00 | 69.00 |
| W30HG3 | .... | .... | .... | .... | X | .... | X | X | 493.00 | 69.00 |
| W50 | .... | .... | .... | X | X | .... | X | X | 316.00 | 58.00 |
| W50G2 | .... | .... | .... | .... | X | .... | X | X | 502.00 | 81.00 |
| W50G3 | .... | .... | .... | .... | X | .... | X | X | 668.00 | 81.00 |
| W50G4 | .... | .... | .... | .... | .... | .... | .... | X | 843.00 | 104.00 |
| W50G6 | .... | .... | .... | .... | .... | .... | .... | X | 1193.00 | 127.00 |
| W50H | .... | .... | .... | X | X | .... | X | X | 316.00 | 58.00 |
| W50HG2 | .... | .... | .... | .... | X | .... | X | X | 502.00 | 81.00 |
| W50HG3 | .... | .... | .... | .... | X | .... | X | X | 669.00 | 81.00 |
| W50HG4 | .... | .... | .... | .... | .... | .... | .... | X | 843.00 | 104.00 |
| W50HG6 | .... | .... | .... | .... | .... | .... | .... | X | 1193.00 | 127.00 |

## MODEL 1591 1kVA VARIAC AUTOMATIC VOLTAGE REGULATOR

Low cost, small size model is mechanically rugged and withstands severe vibration and shock tests. Output voltage is controlled by a servo-driven Variac adjustable autotransformer so the regulator has the same ability to handle 1000% transient overloads as the Variac. True rms detection and no distortion. Power factor is 0 to 1, leading or lagging. **Operating Frequency:** 57 to 63 Hz. **Output Current:** 8.7 amps. **Input Voltage Range:** 100 to 130 volts. **Output Voltage Range:** Adjustable, 105 to 125 volts. **Max. Correction:** ±15 volts. **Correction Time (Cycles):** 6 cycles plus 1.5 c/V. **Accuracy:** ±0.2%. **Size:** Portable, 12¾" w. x 5⅜" d. x 9½" h.; rack, 19" w. x 6⅜" d. x 5¼" h. Shpg. Wt., portable, 25 lbs.; rack, 31 lbs.

**General Radio Model 1591-A Automatic Voltage Regulator**—115 volts portable model. Net Each.................. **$365.00***

**General Radio Model 1591-AR Automatic Voltage Regulator**—115 volts rack model. Net Each.................. **$405.00***



**1591-AR**

**1591-A**

### ★QUANTITY DISCOUNTS

| Lots of | Discount | Multiplier | Lots of | Discount | Multiplier |
|---|---|---|---|---|---|
| 1–9 | None | 1.0 | 20–49 | 13% | .87 |
| 10–19 | 10% | .90 | 50–99 | 17% | .83 |

# General Radio POTENTIOMETERS AND PARTS

## POTENTIOMETERS

cost, high-quality potentiometers can be used at DC, throughout the audio and ultrasonic frequency
s, and in many applications at low radio frequencies.

| Effective Electrical Rotation | Total Mechanical Rotation | Standard Resis. Tol. | Torque Oz.-In. | Independent Linearity % | Power Rating* Mtd. on Alum. Panel | Power Rating* Suspended in Air | Size, In. Dia. x L. | Shaft Dia., In. | Wt., Oz. |
|---|---|---|---|---|---|---|---|---|---|
| 315° ± 5° | 330° ± 5° | ±5% | 1¾ | ±2 | 5.6 | 3.5 | 1¼ x ⅝ | ¼ | ½ |
| 320° ± 5° | 330° ± 5° | ±5% | 2½ | ±1 | 8.4 | 5.9 | 1¾ x 13/16 | ⅜ | 1 |
| 320° ± 2° | 330° ± 5° | ±2% | 4 | ±0.5 | 13.4 | 10.7 | 2¾ x 1⅛ | ⅜ | 3 |

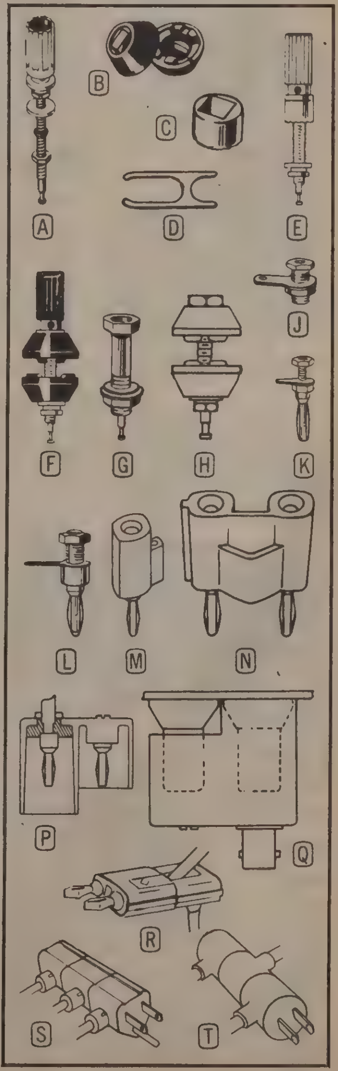
° C in watts; decreases linearly to zero at 100° C ambient temperature.

| sistance Ohms | GR Type | Resolution % less than | Net Each | GR Type | Resolution % less than | Net Each | GR Type | Resolution % less than | Net Each |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 971-B* | 1 | $10.50 | ........ | ........ | ........ | ........ | ........ | ........ |
| 5 | 971-C* | 1 | 10.50 | 973-C* | 0.5 | $11.00 | ........ | ........ | ........ |
| 10 | 971-D | 1 | 10.50 | 973-D* | 0.5 | 11.00 | ........ | ........ | ........ |
| 20 | 971-E | 1 | 10.50 | 973-E | 0.5 | 11.00 | ........ | ........ | ........ |
| 50 | 971-F | 0.5 | 10.50 | 973-F | 0.5 | 11.00 | ........ | ........ | ........ |
| 100 | 971-G | 0.5 | 10.50 | 973-G | 0.5 | 11.00 | ........ | ........ | ........ |
| 200 | 971-H | 0.5 | 10.50 | 973-H | 0.5 | 11.00 | ........ | ........ | ........ |
| 500 | 971-J | 0.5 | 10.50 | 973-J | 0.2 | 11.00 | 975-J | 0.2 | $13.00 |
| 1000 | 971-K | 0.5 | 10.50 | 973-K | 0.2 | 11.00 | 975-K | 0.2 | 13.00 |
| 2000 | 971-L | 0.5 | 10.50 | 973-L | 0.2 | 11.00 | 975-L | 0.2 | 13.00 |
| 5000 | 971-M | 0.2 | 10.50 | 973-M | 0.2 | 11.00 | 975-M | 0.2 | 13.00 |
| 10,000 | 971-N | 0.2 | 10.50 | 973-N | 0.1 | 11.00 | 975-N | 0.1 | 13.00 |
| 20,000 | 971-P | 0.2 | 10.50 | 973-P | 0.1 | 11.00 | 975-P | 0.1 | 13.00 |
| 50,000 | ........ | ........ | ........ | 973-Q | 0.1 | 11.00 | 975-Q | 0.05 | 14.00 |
| 00,000 | ........ | ........ | ........ | ........ | ........ | ........ | 975-R | 0.05 | 14.00 |

perature Coefficient of Resistance, ±0.07%; all others, ±0.002%.

## BINDING POSTS, ASSEMBLIES

ng posts provide all properties needed for electronic instruments. Connects wires, lugs, alligator clips and 274 plugs. Available in two styles: Nickel-plated brass for my and gold-plated copper for high conductivity. Both styles available with either or insulated tops designed for easy hand-tightening or ⅜", 12-point wrenches can ed for more permanent connections. Can be mounted on metal or insulating panels 5/16" thick. Insulators are available in red or black color coding. **Ratings:** 30 amps 4 kV peak. **Breakdown Voltage:** 10 kV peak.



| ype | Fig. | Description | Net | Qty. |
|---|---|---|---|---|
| | A | Metal-top binding post, brass | $0.50 | $48.00 |
| | A | Black-top binding post, brass | .70 | 54.00 |
| | A | Red-top binding post, brass | .70 | 54.00 |
| | A | Metal-top binding post, gold-plated copper | 1.05 | 83.00 |
| | A | Black-top binding post, gold-plated copper | 1.05 | 83.00 |
| | A | Red-top binding post, gold-plated copper | 1.05 | 83.00 |
| B | B | Black insulators, pair | .10 | 6.00 |
| R | B | Red insulators, pair | .10 | 6.00 |
| B | ..... | Black double insulators, permit mounting on thin panels | .15 | 12.00 |
| | C | Spacer, nickel-plated brass | .10 | 6.00 |
| | D | Shorting link, nickel-plated brass, for 2 binding posts | .10 | 6.00 |
| | E | Assembly of 938-A, 938-F | .75* | 6.00† |
| V | F | Assembly of 938-A, 938-BB | .75* | 6.00† |
| | F | Assembly of 938-A, 938-BR | .75* | 6.00† |
| VB | F | Assembly of 938-C, 938-BB | .90* | 7.00† |
| VR | F | Assembly of 938-D, 938-BR | .90* | 7.00† |

## JACKS AND PLUGS

| | | | | |
|---|---|---|---|---|
| | G | Jack, fits type 274 plugs, has long unthreaded shank; mounts in types 938-BB, 938-BR, 938-BG insulators or type 938-F spacers | $0.55 | $42.00 |
| B | H | Jack assembly, black, consists of 938-J and 938-BB | .65* | 5.50† |
| R | H | Jack assembly, red, consists of 938-J and 938-BR | .65* | 5.50† |
| | J | Jack, nickel-plated brass, fits type 274 plugs | .15 | 12.00 |
| | K | Plug, nickel-plated brass stud and beryllium copper springs, fits types 274 and 938 jacks. | .25 | 18.50 |
| | L | Plug, same as above but bigger in size | .55 | 42.00 |
| B1 | M | Black styrene-insulated plug with a jack top. A set screw clamp is provided on the plug end | .75 | 6.00 |
| B2 | M | Same as above, except red color | .75 | 6.00 |

Each, 1–9; all others 1–99. †Quantity pack of 10; all others pack of 100.

**ype 274-MB Insulated Double Plug** N)—Completely insulated, molded e double-plug fits Type 938 binding or Type 274 jacks on std. ¾" spacing. top permits stacking. Formed side provides strain relief for cables up to .

ach, 1–9 . . **$1.15;** Pack of 10 . . **$8.50**

**ype 274-NK Shielded Double Plug** P)—Plug, in aluminum case for com- y shielded connections to Type 938 g posts. Accepts cable with .2" O.D. ed case permits the use of 938-L(G) ing link without interfering with r shielding. High terminal remains shielded. Can be locked to binding turning a screw expands one pin body of binding post. Terminates L, 776-A and 874-R34 patch cords.

ach, 1–9 . . **$3.00;** Pack of 10 . . **$24.00**

**ype 274-QBJ Adapter** (**Fig. Q**)— ed banana plugs in the adapter pro- onnection from std. ¾" spaced bind- sts to a type BNC plug. Locks on to inding posts providing semi-perma- daption to BNC.

ach, 1–9 . . **$4.50;** Pack of 10 . . **$36.00**

**ype 777-Q3 Adapter**—Provides fully ed connection from GR874® coaxial ctors to Type 938 binding posts with acing. Constructed like GR 274-NK, locked to binding posts by a turn of for semi-permanent conversion to 4.

ach, 1–9 . . **$8.90;** Pack of 10 . . **$71.00**

**GR Type 776-A Patch Cord**—3-ft., 50 ohms shielded cable fitted with a BNC male plug and a GR 274-NK shielded double plug.

Net Each, 1–9 . . **$8.90;** Pack of 10 . . **$71.00**

**GR Type 776-B Patch Cord**—3-ft., 50 ohms shielded cable fitted with a BNC male plug and a GR874 coaxial connector.

Net Ea., 1–9 . . **$11.25;** Pack of 10 . . **$90.00**

**GR Type 776-C Patch Cord**—3-ft., 50 ohms shielded cable has a BNC male plug on each end.

Net Each, 1–9 . . **$8.90;** Pack of 10 . . **$71.00**

**GR Type 274-NQ Double-Plug Patch Cord** (**Fig. R**)—3-ft. long cord has connectors in such a way that any double plug can be connected to any other.

Net Each, 1–9 . . **$6.00;** Pack of 10 . . **$48.00**

**GR Type CAP-35 2-Wire Power Cord** (**Fig. S**)—Made of plastic-covered #18 conductor. Plug and connector bodies are molded integrally with the cord and permit stacking. Type SVT cord rated by UL at 7 amps and 300 volts rms. Female connector fits either 2-wire or 3-wire plug. Cord 7 ft. lg.

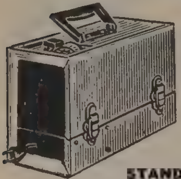
Net Each, 1–9 . . **$3.00;** Pack of 10 . . **$27.00**

**GR Type CAP-22 3-Wire Power Cord** (**Fig. T**)—Same as above, except 3-wire grounding type. Connectors designed for 125 volts operation conform to the Standard for Grounding Type Attachment Plug Caps and Receptacles, ANSI C73.11-1963. Cord length, 7 ft.

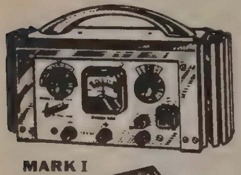
Net Each, 1–9 . . **$3.00;** Pack of 10 . . **$27.00**

# Inverters, Power Supplies

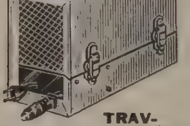
## TERADO CHARGER, INTERCEPTOR, VOLTAGE ADJUSTERS



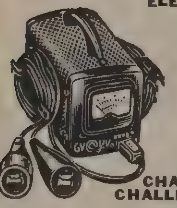
STANDBY ELECTRIC POWER



MARK I



TRAV-ELECTRIC



SUPER CHARGER, CHALLENGER

### INTERCEPTOR

### "STANDBY" ELECTRIC POWER

Automatically provides 117 VAC when power fails. Capacity up to 175 watts, 60 Hz, 117 VAC. Operates test equipment, monitors, recorders, lights, alarms, thermostats, electric tools, portable TV, electric cameras etc. Complete with rechargeable storage battery, high and low battery charger.
**Terado No. 50-168**—Net Each..... $\$117^{90}$

### INVERTER-BATTERY CHARGERS

### MARK I

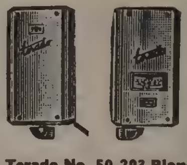
Solid state, transistorized unit changes battery voltage to 117 V or charges 12 V storage battery at 20 amps, 10 amps or trickle. AC capacity, 450 to 500 watts. Built-in charge meter. Copper baked enamel case. Size: 12½" w. x 6" d. x 6" h. Shipping Weight, 21 lbs.
**Terado No. 50-131 Mark I**—Net.... $\$108^{50}$

**Terado No. 50-132 Mark II**—As above but 275–300 watt capacity. Net Each........ **$89.50**

### TRAV-ELECTRIC

Changes battery current to 110 VAC, 60 Hz, ± ½ Hz, regardless of load; 50 Hz adaptable. Operates anything using 117 VAC, 60 Hz from 25 amps rechargeable wet storage battery enclosed. Capacity, 175 watts; 125 watts continuous. Frequency stable within ½ Hz with load change. Plugs into AC outlet or car cigarette lighter to recharge battery. Charger has automatic overcharge protection. Meter shows charge rate and hours of anticipated output. **Size:** 12" x 5½" x 8". **Wt.:** Net, 30 lbs. including battery; shpg., 36 lbs.
**Terado No. 50-160**—Net Each....... $\$78^{79}$

### VOLTAGE ADJUSTERS



For TV, hi-fi and AC motorized equipment. Change high or low voltage over range of 95–135 V to normal. Input: 110 VAC line. Size: 5½" x 3" x 2¼". **Terado No. 50-20 Polaris**—Cap., 300 W cont., 500 W int. Wt. 3 lbs.
Net Each.... $\$12^{24}$

**Terado No. 50-203 Planet**—Same as Polaris, but with 150 W cont., and 300 W int. Wt., 2 lbs. Net Each.............................. **$9.63**

**Terado No. 50-172 Saturn**—Same as Polaris, but with accurate AC voltmeter. Net Each. **$18.77**

**Terado No. 50-141 Appolio**—Similar to Polaris but 1200 W cont., 1500 W int. Increases voltage in 10 and 15 V steps. Size: 4" x 3½" x 6½". Wt. 8 lbs. Net Each...................... **$24.75**

### AUTOMATIC CROSSOVER CHARGER

Automatically operates vital equipment when power fails. Intercepts 117 VAC power failure. Instantly switches from failing line current to inverter. System may be installed in minutes. Automatic crossover charger comes with built-in 10 amps charger and handles 117 VAC equipment to 1200 watts. Operates with any standard inverter and prevents storage, battery overcharge. Features heavy-duty solenoid switches, solid state electronic circuitry. Operates clocks, timers, burglar alarms, closed circuit TV, cash registers, office equipment, exit lights and many other electronic equipments.
**Terado No. 50-143**—Net Each..... $\$155^{50}$

### BATTERY CHARGERS

**Taperite** has low position causing charge automatically to taper to zero; won't overcharge battery. **Challenger** has ventilated steel case and brackets for coiling wire. **Super Charger** similar but has color-coded meter to show battery condition and charge rate.

Charge rates listed in table are for both 6 and 12 volts.

| Terado Model | | Charge Rate | Charge Meter | Size, Inches | Wt., Lbs. | Net Each |
|---|---|---|---|---|---|---|
| **No.** | **Name** | | | | | |
| 50-186 | Dyn-A-Mite | 1 A | No | 1¾ x 1¾ x 3¼ | 1 | $ 7.19 |
| 50-192 | Taperite | 6 A | Yes | 4 x 5 x 6 | 7½ | 28.42 |
| 50-189 | Challenger | 6 A | Yes | 4 x 5 x 6 | 5 | 23.92 |
| 50-181 | Super Charger | 10 A | Yes | 4 x 5 x 6 | 7½ | 29.69 |

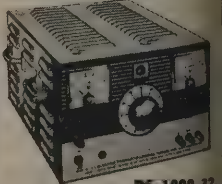
## ELECTRO PRODUCTS LABS DC POWER SUPPLIES

Reliable source of filtered DC voltage for commercial, industrial, research, educational and service applications. Smooth action controls and DC meters permit adjustment to exacting requirements. Silicon and selenium rectifiers patented conduction cooling to provide greater output. Special filters improve regulation and hold AC ripple to a minimum. All output ratings, as listed, are extremely conservative. All units equipped with on-off switch, primary fuse, 6 ft. rubber-covered power cord and plug.

EFBR, NFBR, GFLR, PS-5R

EF, EFB

NFB, GFL, PS-5



PS-1000-32, PS-1000-55, PS-1000-125

| Electro Model | Output | | Regulation‡ V/A† | Max. Ripple | Meters§ | DC Imped., Ohms‡ | Size, Inches W. x D. x H. | Net Wt., Lbs. | Net Each |
|---|---|---|---|---|---|---|---|---|---|
| | Volts* | Amps | | | | | | | |
| **EF** | 0–28<br>0–14 | 0–6<br>0–6 | 1.9 (1–5 A)<br>0.6 (1–5 A) | 1.0%<br>1.0% | 0–50 V; 0–6 A | 0.9 (1–5 A)<br>0.6 (1–5 A) | 12 x 8½ x 7 | 25 | $137.5 |
| **EFB** | 0–32<br>0–16 | 0–4<br>0–8 | 1.25<br>1.0 | 0.1%<br>0.1% | 0–40/20 V; 0–10 A | 1.25<br>1.0 | 12 x 8½ x 7 | 36 | 192.5 |
| **EFBR** | 0–32<br>0–16 | 0–4<br>0–8 | 1.25<br>1.0 | 0.1%<br>0.1% | 0–40/20 V, 0–10 A | 1.25<br>1.0 | 19 x 8½ x 8¾ | 47 | 225.0 |
| **GFL** | 0–125 | 0–5 | 1.5 | 0.5% | 0–150 V; 0–5 A | 1.5 | 14¼ x 14¼ x 9¾ | 88 | 350.0 |
| **GFLR** | 0–125 | 0–5 | 1.5 | 0.5% | 0–150 V; 0–5 A | 1.5 | 19 x 14¼ x 10½ | 100 | 385.0 |
| **NFB** | 0–32 | 0–15 | 0.4 | 0.75% | 0–50 V; 0–25 A | 0.4 | 14¼ x 14¼ x 9¾ | 84 | 310.0 |
| **NFBR** | 0–32 | 0–15 | 0.4 | 0.75% | 0–50 V; 0–25 A | 0.4 | 19 x 14¼ x 10½ | 97 | 345.0 |
| **PS-5** | 0–55 | 0–10 | 0.8 | 0.5% | 0–75 V; 0–15 A | 0.8 | 14¼ x 14¼ x 9¾ | 70 | 355.0 |
| **PS-5R** | 0–55 | 0–10 | 0.8 | 0.5% | 0–75 V; 0–15 A | 0.8 | 19 x 14¼ x 10½ | 89 | 385.0 |
| **PS-1000-32** | 0–32 | 0–30 | 0.2 | 0.75% | 0–50 V; 0–30 A | 0.2 | 14¼ x 19¼ x 9¾ | 103 | 460.0 |
| **PS-1000-55** | 0–55 | 0–20 | 0.5 | 0.5% | 0–75 V; 0–30 A | 0.5 | 14¼ x 19¼ x 9¾ | 113 | 465.0 |
| **PS-1000-125** | 0–125 | 0–8 | 1.0 | Less than 1% | 0–150 V; 0–10 A | 1.0 | 14¼ x 19¼ x 9¾ | 120 | 465.0 |

*Continuously variable unless otherwise noted. †Voltage change for each ampere of output current change % applies for either line or load. ‡No-load to full load unless otherwise specified. §Accuracy 2%.

# erado DC-AC Chargers, Inverters

**CHANGES BATTERY CURRENT TO 110 VAC, 60 HERTZ, ± ½ HERTZ, REGARDLESS OF LOAD***

**CAN BE ADAPTED FOR 50 Hz USE†**

## INVERTERS

### QUAD CONTINENTAL

**Transistorized, 1200 watts**

verts 12 VDC to 117 VAC, 60 Hz, 1100 to
watts. Frequency stable within ¼ Hz, not
cted by change in input or load. Filtered for
itive electronic equipment. Operates small
gerators, lights, tape recorders, video cam-
and recording tapes, electric tools, lab test
pment, televisions including color, and por-
hospital equipment. Adjustable output con-
and accurate AC output meter. Sophisticated
state design. Variable control head may be
lled from main unit with four optional plug-
tension cables. Size: 12″ w. x 12″ d. x 15″ h.
ping Weight, 140 lbs.
**do No. 50-110**—Net Each..... **$610.05**

### DUAL CONTINENTAL-3

**Transistorized, 600 watts**

a fine frequency stable inverter converts 12
to 110 VAC, 60 Hz, 550 to 600 watts. Fre-
cy variation within ¼ Hz with changing
t and load. Ideal for operation of fine or
cal video-tape equipment and instruments.
udes battery cables, remote control and vari-
AC output. Size: 10¾″ w. x 13″ d. x 6″ h.
ping Weight, 60 lbs.
**do No. 50-202-3**—Net Each.... **417.64**

### CONTINENTAL-3

**Transistorized, 300 watts**

e as DUAL CONTINENTAL-3 except: 275–
watts capacity. Size: 10¾″ w. x 6″ d. x 6″ h.
ping Weight, 30 lbs.
**do No. 50-191-3**—Net Each.... **$233.40**

### DUAL CONTINENTAL-24 VOLT

**Transistorized, 800 watts**

a fine frequency inverter converts 24 VDC
10 VAC, 60 Hz, 700 to 800 watts. Frequency
le within ¼ Hz with changing inupt and
. Designed for duty in aircraft or other 24
applications. Includes battery cables, re-
control and variable AC output. Size:
″ w. x 13″ d. x 7¼″ h. Shipping Weight,
os.
**do No. 50-152**—Net Each..... **$621.23**

### CONTINENTAL-24 VOLT

**Transistorized, 400 watts**

e as DUAL CONTINENTAL above, except:
-400 watts capacity. Size: 10¾″ w. x 6″ d. x
. Shipping Weight, 30 lbs.
**do No. 50-190**—Net Each..... **$305.35**

### DUAL CONTINENTAL*†

**Transistorized, 600 watts**

verts 12 VDC to 117 V, 60 hertz, 550 to 600
s. Filtered for tape recorders. Frequency
le within ¼ hertz with changing input volt-
load. Includes battery cables, remote control,
able AC output. Size: 10¾″ w. x 13″ d. x
. Shpg. Wt., 60 lbs.
**do No. 50-202**—Net Each..... **$327.74**

### CONTINENTAL*†

**Transistorized, 300 watts**

e as DUAL CONTINENTAL except: 275–
watts capacity. Size: 10¾″ w. x 6″ d. x 6″ h.
. Wt., 30 lbs.
**do No. 50-191**—Net Each..... **$158.40**

### ATLAS*†

**Transistorized, 200 watts**

e as DUAL CONTINENTAL except: 175–
watts capacity. Size: 10¾″ w. x 6″ d. x 6″ h.
. Wt., 20 lbs.
**do No. 50-200**—Net Each..... **$116.50**

### TITAN*†

**Transistorized, 175 watts**

e as DUAL CONTINENTAL except: less
ote control; 150–175 watts capacity; on-off
ch; AC receptacle. Size: 10¾″ w. x 6″ d. x
. Shpg. Wt., 20 lbs.
**do No. 50-201**—Net Each..... **$100.51**

### SUPREME*†

-transistorized. Converts 12 VDC to AC.
er output, 175–200 W, filtered. Remote con-
has variable AC output switch and signal
. Size: 10¾″ w. x 6″ d. x 6″ h. Shpg. Wt.,
os.
**do No. 50-153**—Net Each....... **$89.70**

### RECORDER*†

-175 watt version of SUPREME, less remote
rol. Plugs into cigarette lighter. Size: 10¾″
6″ d. x 6″ h. Shpg. Wt., 21 lbs.
**do No. 50-175**—Net Each....... **$78.00**

### AUTOMATIC*†

Operates automatically from 6 or 12 VDC without vibrator change or switching (6 V, 55–75 watts; 12 V, 85–110 watts). Easy installation into cigarette lighter. For dictation machines, radios, tape recorders, phonographs, heating pads, etc. Steel case. Seal brown baked enamel. Size: 3½″ w. x 6½″ d. x 4″ h. Shpg. Wt., 8 lbs.
**Terado No. 50-134**—Net Each....... **$50.52**

### SUPER*†

Single input version of AUTOMATIC at left. Size: 3½″ w. x 6½″ d. x 4″ h. Shpg. Wt., 8 lbs.

**Terado No. 50-126**—Input, 6 V; AC power output, 60–75 watts. Net Each.. **$42.90**

**Terado No. 50-127**—Input, 12 V; AC power output, 75–100 watts. Net Each......... **$42.90**

### MASTER*†

Voltage input, 12 V; AC power output, 60–75 watts. Size: 3½″ w. x 6½″ d. x 4″ h. Wt., 6 lbs.
**Terado No. 50-122**—
Net Each......................... **$39.90**

### CHIEF*†

Operates tape recorders, power tools, dictation machines, mixers, blenders, etc. Front AC receptacle connects direct to battery. Toggle switch output control. Ventilated steel case. Size: 3½″ w. x 6½″ d. x 4″ h. Shpg. Wt., 8 lbs.

**Terado No. 50-137**—Input, 6 V; AC power output, 75–100 watts. Net Ea... **$53.90**

**Terado No. 50-138**—Input, 12 V; AC power output, 100–125 watts. Net Each........ **$53.90**

### ELECTRAL*

Glove compartment size inverter, available in 12 volt input. Easy installation into cigarette lighter. Vinyl coated steel case with leatherette appearance. Size: 3″ w. x 2¼″ d. x 5½″ h. Shipping Weight, 3 lbs.

**Terado No. 50-167**—Voltage input, 12 V; AC power output, 42–52 watts. Net. **$21.30**

### SENIOR*

Operates radios, lights, phonographs and small tape recorders. Available in 6 V or 12 V input. Simple to install into cigarette lighter. Aluminum case. Seal brown baked enamel. Size: 2½″ w. x 4½″ d. x 2¼″ h. Shipping Weight, 3 lbs.

**Terado No. 50-115**—Voltage input, 6 V; AC power output, 35–40 watts. Net. **$20.16**

**Terado No. 50-116**—Voltage input, 12 V; AC power output, 40–50 watts. Net Ea... **$20.16**

### DYNAMO*

Permits operating AC radios and electric shavers on 12 VDC battery. Power output, 25–30 watts. Size: 2″ x 2″ x 3¾″. Shpg. Wt., 2 lbs.
**Terado No. 50-197**—Net Each....... **$16.47**

### AUTO SHAVER*

Operates all electric shavers. Available in 6 V (10–15 W) or 12 V (15–20 W) input. Plugs into cigarette lighter. Polyethylene non-breakable case. Size: 3⅝″ w. x 2¼″ d. x 4¼″ h. Shipping Weight, 2 lbs.

**Terado No. 50-102**—6 V. Net Each... **$11.85**

**Terado No. 50-103**—12 V. Net Each.. **11.85**

### GEMINI

Transistorized, 12 VDC to 110 VAC. Capacity, 450–500 watts. Frequency not stabilized. Size: 12½″ x 6″ x 6″. Shpg. Wt., 20 lbs.

**Terado No. 50-128**—Net Each........ **$97.17**

**Terado No. 50-128-3**—Same as above but with 750 watts int. capacity. Operates up to ½″ electric drill, drills pole crossarms with ease, hot tip knives, etc. Net Each................ **$124.50**

### FALCON

Same as Gemini above, but 275–300 watts.

**Terado No. 50-129**—Net Each........ **$78.15**

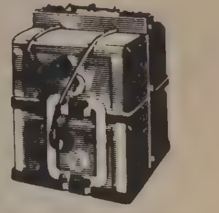
**Terado No. 50-130 Remote Control**—For Gemini or Falcon inverters. Net Each........ **$14.37**

### GALAXY

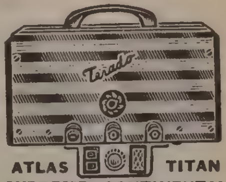
Transistorized 12 VDC to 110 VAC, 140–175 watts filtered. Adjustable voltage and frequency. Ideal where frequency is not critical. Size: 10¾″ w. x 6″ d. x 6″ h. Shpg. Wt., 9½ lbs.
**Terado No. 50-205**—Net Each....... **$51.50**

### TEMPEST

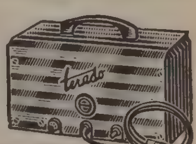
Transistorized 12 VDC to 110 VAC, 125–150 watts. Ideal where frequency is not important. Size: 10¾″ w. x 6″ d. x 6″ h. Shpg. Wt., 9½ lbs.
**Terado No. 50-170**—
Net Each......................... **$45.45**



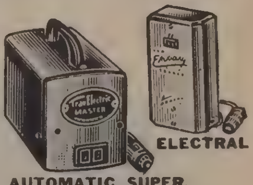
QUAD CONTINENTAL



ATLAS TITAN
SUPREME, CONTINENTAL

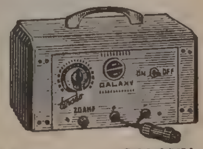


RECORDER

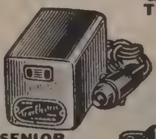


ELECTRAL

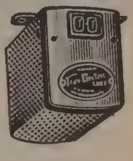
AUTOMATIC, SUPER,
AND MASTER



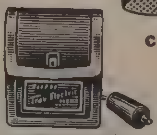
GALAXY,
TEMPEST



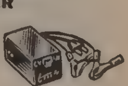
SENIOR,
DYNAMO



CHIEF



AUTOSHAVER



DYN-A-MITE

**WANLASS**
DIVISION OF **AMBAC**

# PARAFORMER™ REGULATORS

## PARAFORMER—A NEW CONCEPT IN AC POWER CONDITIONING

The Paraformer is a line voltage regulator and line power filter that prevents line voltage fluctuations (noise, distortion, etc.) from reaching the load. Provides voltage regulation and noise attenuation of over 50 dB, over frequency range of 0 to 1 MHz. Operates exclusively on the basis of parametric coupling, with flux coupling or mutual inductance equal to zero. Other passive devices (transformers and ferroresonant transformers) depend almost exclusively on the flux coupling term of the electromotive force equation below; the Paraformer transfers energy by the i dL/dt term of the equation. The comparison chart illustrates the advantages of the Paraformer over conventional regulation methods.

$$E=\frac{d}{dt}(Li)=\underbrace{L\frac{di}{dt}}_{\substack{\text{Flux}\\ \text{Coupling}\\ \text{Term}}}+\underbrace{i\frac{dL}{dt}}_{\substack{\text{Parametric}\\ \text{Coupling}\\ \text{Term}}}$$

**COMPARISON CHART**

| Function | Transformer | Ferroresonant Transformer | Paraformer |
|---|---|---|---|
| Line voltage regulation | None | ± 1% | ± ½% |
| Line filtering (noise) | No | Slight | Over 50 dB |
| Load filtering (noise) | No | Slight | Over 50 dB |
| Overload protection | No | Partial | Yes |
| Low line protection | None | None | Yes |

### HOW IT WORKS

As shown in Figure 1, the Paraformer consists only of a primary winding, a secondary winding, a magnetic core and an AC capacitor. No other components are used. Since the Paraformer is not a ferroresonant transformer, the mechanism for energy transfer is entirely different and most of its basic characteristics are entirely different.

The Paraformer geometry, as shown in Figure 2, is such that the primary flux does not link the secondary winding and the secondary flux does not link the primary winding. Accordingly, the classical flux coupling is zero. However, the primary flux does modulate the reluctance associated with the secondary flux; hence, the primary does modulate the inductance of the secondary. This modulation can be achieved only by transferring electrical power from the primary to the secondary. This power in turn sustains the secondary conditions and delivers power to the load. It is this unique parametric power transfer mechanism that makes the Paraformer a revolutionary new component.

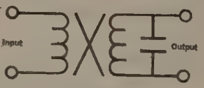


Figure 1

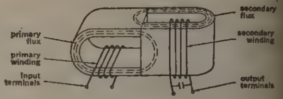


Figure 2

Ⓐ

## PARAX® AC VOLTAGE REGULATORS (FIG. A)

AC line regulators using Paraformer principle described above. For 60 Hz, in ratings from 60 VA to 1000 VA. **AC Input:** 115 VAC, ±10% (nominal), 60 Hz; 50–150 VAC permissible. **AC Output:** 117 VAC, 60 Hz, single-phase. **Regulation:** ±0.5% line, ±2.0% load.

**60 Hz PARAX REGULATORS**

| Wanlass Model | Power Rating | Size, Inches W. x D. x H. | Wt., Lbs. | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|
| | | | | 1-9 | 10-24 | 25-49 | 50-99 |
| **PEC-60** | 60 VA | 9 x 4 x 4½ | 10 | $ 95.00 | $ 90.25 | $ 85.50 | $ 80.75 |
| **PEC-150** | 150 VA | 12 x 4 x 6 | 21 | 150.00 | 142.50 | 135.00 | 127.50 |
| **PEC-500** | 500 VA | 17 x 5 x 7½ | 50 | 225.00 | 213.75 | 202.50 | 191.25 |
| **PEC-1000** | 1000 VA | 17 x 10¼ x 7½ | 85 | 425.00 | 401.75 | 382.50 | 361.30 |

Ⓑ

## PARAX® PRECISION AC/DC POWER SUPPLY (FIG. B)

This test instrument combines a variable AC regulated power conditioner with a highly regulated variable DC power supply. Variable AC is a standard Parax circuit, while variable DC is a highly precise transistor series-regulator with Parax filtering advantages. Extensive capabilities include testing high line and low line limits, as well as providing a DC range of voltage for testing integrated circuits. **Input Voltage:** Fixed, 105–125 VAC, single phase nom.; variable, 50–150 VAC; variable, 50–150 VDC. **Output Voltage:** Fixed, 118 VAC; variable, 0–140 VAC; variable, 0–8 VDC. **Noise Attenuation:** 50 dB (up to 1 MHz) for AC. **Output Capacity:** Fixed and variable AC, 500 VA; 0–15 ADC. **Size:** 19″ w. x 19″ d. x 5¼″ h. Weight, 80 lbs.

**Wanlass Model P-5505 Parax Precision AC/DC Power Supply**—Net Each . . . **$875.00**

Ⓒ

## PHASAC® SINGLE TO 3-PHASE CONVERTER (FIG. C)

Static single to three-phase AC converter rated 1 kVA, with all passive components utilizing inherent phase shift phenomenon of the Paraformer. For all applications where static conversion from single to three-phase line is necessary. **AC Input:** 105–125 VAC, single phase. **AC Output:** 120 VAC line to neutral; 208 VAC line to line; 240 VAC at 1 kVA (333 VA per phase), three phase. **Output Connector:** 4-wire wye or 3-wire delta. **Size:** 8⁹⁄₁₆″ w. x 17⅛″ d. x 6⅝″ h. Weight, 60 lbs.

**Wanlass Model P-2410 Phasac Single to 3-Phase Converter**—
Net Each, Lots of 1–9 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$475.00**

**FOR REALLY FAST SERVICE IN MAJOR EAST-COAST CITIES,**
**CHECK YOUR LOCAL DIRECTORY FOR**
**cramer TOLL-FREE TELEPHONE SERVICE**

**WANLASS**
DIVISION OF AMBAC

# CLIP-AC™ REGULATORS

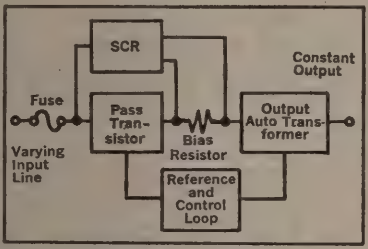
## THE CLIP-AC PRINCIPLE OF VOLTAGE REGULATION

AC type AC voltage regulators are the logical successors e ferroresonant transformer for the bulk of AC regulation rements, at up to 1 kVA. Regulation is achieved by sym- eally clipping (dissipating) the peaks of the incident sinus- waveform. Except for these peaks, the Clip-AC output form is identical to the input waveform. The comparison below illustrates the advantages over conventional regula- using the ferroresonant principle. The Clip-AC principle ed in both peak and rms AC regulation, and in regulated ower supplies.

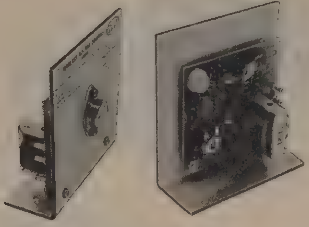
### COMPARISON CHART

| Function | Ferroresonant Principle | Clip-AC Principle |
|---|---|---|
| t frequency<br>e regulation | Single frequency<br>1–3% typical | 47–420 Hz typical<br>−0.1 to 1% typical |
| d regulation | 5–7% typical (no compensation) | 1% typical (compensation) |
| er factor<br>se shift<br>ponse time | Shifts output voltage<br>Appreciable<br>25,000 μsec typ. | No problem<br>None<br>10–50 μsec typical |
| t, size and eight | | Typically 50% less |

### HOW IT WORKS



k diagram above shows how regulation is achieved. Output ge is continuously monitored by a sensor, which uses a diode as reference. The associated control circuitry in adjusts the clipping level of the pass transistor, to maintain desired constant output. Economical design with floated ence and a diode bridge makes it possible for the same transistor to be used on both halves of the AC cycle. An is used to accommodate short duration surge currents, as those encountered in charging capacitors, starting motors, arting lamp loads. Under such conditions, the bias resistor ers the SCR and the excessive current surge is bypassed nd the pass transistor. Should these excessive conditions st, the input fuse would be blown, protecting the unit. er normal operating conditions, the SCR is inoperative.

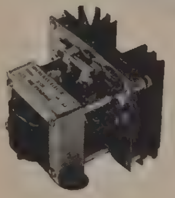


A

## MODEL CVR-120 PEAK REGULATOR (FIG. A)

Solid-state, economical AC voltage regulators, rated 120 VA, featuring fast response using the Clip-AC principle described at left. Lightweight and compact, an ideal replacement for ferroresonant-type regulators, offering response time of 10 to 50 μsec. Insensitive to frequency and power factor. Model CVR-120 provides peak regulation for DC power supplies or peak-sensitive devices. **Line Regulation:** ±1%. **Load Regulation:** ±1%. **Power Factor Regulation:** CVR-120, ±1%. **AC Input:** CVR-120, 100–130 VAC, 47–420 Hz, single-phase. **AC Output:** CVR-120, 135 VAC peak at 120 VA. **Ambient Operating Temperature:** 0° to 40° C; up to 71° C with proper derating. **Temperature Coefficient:** ±0.025%/° C. **Size:** 4″ w. x 2½″ d. x 4½″ h.

| Wanlass Model | Type | Net Each, Lots of | | | |
|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50-99 |
| CVR-120 | Peak | $26.50 | $25.00 | $24.00 | $21.75 |



B

C

## SERIES C-3000 TRUE RMS AC VOLTAGE REGULATORS (FIG. B)

AC rms line and load voltage regulators, using Clip-AC iple described above. Regulation is achieved through unique ing circuit which senses rms and clips output voltage at ed rms level. No phase shift. Ideal for photo-optical applica- where light intensity must be held constant, as well as other applications requiring regulated rms AC power. **AC Input:** 100–130 V, 47–420 Hz. **Line and Load Regulation:** ±0.5. **Power Factor Regulation:** ±0.5% from +0.7 to −0.7. **Response Time:** 10 to 50 μsec. **Ambient Operating Temperature:** 0° to 50° C.

| Wanlass Model | AC Input | Power Rating | Size, Inches W. x D. x H. | Wt., Lbs. | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | 1-9 | 10-24 | 25-49 | 50-99 |
| C-3003 | 100–130 V | 30 VA | 4 x 2.80 x 1.93 | 1.5 | $ 39.00 | $ 37.00 | $ 35.00 | $ 33.00 |
| C-3006 | 100–130 V | 60 VA | 4.12 x 3.75 x 3.00 | 2.5 | 46.00 | 43.75 | 41.50 | 39.00 |
| C-3012 | 100–130 V | 120 VA | 4.15 x 4.50 x 3.00 | 3.2 | 51.00 | 48.50 | 46.00 | 43.50 |
| C-3025 | 100–130 V | 250 VA | 9.50 x 6.12 x 5.50 | 6.5 | 89.50 | 85.00 | 80.50 | 76.00 |
| C-3050 | 100–130 V | 500 VA | 10.88 x 6.12 x 7.25 | 10.25 | 125.00 | 118.75 | 112.00 | 106.00 |
| C-3100 | 100–130 V | 1000 VA | 16.00 x 6.12 x 7.25 | 17.5 | 210.00 | 199.50 | 184.00 | 178.50 |

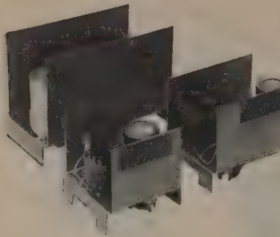
## SCR (SILICON CONTROLLED RECTIFIER) REGULATED DC POWER SUPPLIES (FIG. C)

current, low cost DC power supplies utilize phase-control ciple with ±0.2% or 50 mV line and load regulation. DC ut voltage is adjustable either 5–50 volts or 2–25 volts (re- ectable) at 300, 600 or 1200 watts. Operate from 105/130 or 210/260 VAC, 1-phase, 47-63 Hz; frequency insensitive. Ripple 1% rms or 500 mV; ½% when optional ripple reduction kit is employed.

| Vanlass Model | DC Output | | Size, Inches W. x D. x H. | Wt., Lbs. | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|---|
| | Volts | Amps | | | 1-9 | 10-24 | 25-49 | 50-99 |
| rute I | 5-50/2-25 | 6/12 | 8 x 11.5 x 6.75 | 20 | $148.00 | $141.00 | $133.00 | $126.00 |
| rute II | 5-50/2-25 | 12/24 | 8 x 12 x 6.75 | 30 | 195.00 | 185.00 | 176.00 | 166.00 |
| rute III | 5-50/2-25 | 25/50 | 11.2 x 14 x 10 | 50 | 315.00 | 299.00 | 284.00 | 268.00 |

**lass Option K1**—Ten-turn potentiometer for finer resolution of output voltage adjustment control. Net Each..........$20.00
**lass Option K2-I**—Ripple reduction kit for Brute I; provides for ½% rms ripple. Net Each.......... 25.00
**lass Option K2-II**—As above, but for Brute II. Net Each.......... 25.00
**lass Option K2-III**—As above, but for Brute III. Net Each.......... 52.00
**lass Option K3**—Overvoltage protection unit, OVP-1, for all Brutes; may be used for any DC supply within range 6–60V and 0 A. Net Each..........$52.00

# WANLASS DIVISION OF AMBAC DC Power Supplies


A

### REGULATED DC POWER SUPPLIES (FIG. A)

DC power supplies in ratings of 30, 60 or 120 watts. Featu
automatic short circuit protection, floating output groundi
(either positive or negative may be grounded), open chass
type construction. Choice of four models in each power ratin
with transformer taps and voltage adjustment potentiomete
for selection of output voltages from 3.6 to 60 VDC. **AC Input**
105–125 V, 57–63 Hz, single-phase (47 to 440 Hz with derating
**Regulation:** ±1% for ±10% line change; ±1% for no-load
full load. **Ripple:** 0.1% rms (+10 mV). **Size:** Model 30-OEM
5″ x 5″ x 5″; 60-OEM, 6″ x 5″ x 7″; 120-OEM, 7″ x 5″ x 10
Shipping Weight: 30-OEM, 5 lbs.; 60-OEM, 7 lbs.; 120-OEM
12 lbs.

| Wanlass Model | Voltage Range | Net Each, Lots of | | | |
|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50-99 |
| 30-OEM-1 | 3.6–9 VDC | $46.00 | $43.75 | $41.50 | $39.00 |
| 30-OEM-2 | 9–17 VDC | 46.00 | 43.75 | 41.50 | 39.00 |
| 30-OEM-3 | 17–30 VDC | 46.00 | 43.75 | 41.50 | 39.00 |
| 30-OEM-4 | 30–60 VDC | 46.00 | 43.75 | 41.50 | 39.00 |
| 60-OEM-1 | 3.6–9 VDC | 57.50 | 54.50 | 51.75 | 49.00 |
| 60-OEM-2 | 9–17 VDC | 57.50 | 54.50 | 51.75 | 49.00 |
| 60-OEM-3 | 17–30 VDC | 57.50 | 54.50 | 51.75 | 49.00 |
| 60-OEM-4 | 30–60 VDC | 57.50 | 54.50 | 51.75 | 49.00 |
| 120-OEM-1 | 3.6–9 VDC | 86.25 | 82.00 | 77.75 | 73.50 |
| 120-OEM-2 | 9–17 VDC | 86.25 | 82.00 | 77.75 | 73.50 |
| 120-OEM-3 | 17–30 VDC | 86.25 | 82.00 | 77.75 | 73.50 |
| 120-OEM-4 | 30–60 VDC | 86.25 | 82.00 | 77.75 | 73.50 |

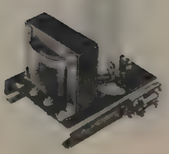
B

### SERIES IC ALL-SILICON DC POWER SUPPLIES (FIG. B)

All silicon solid state power supplies, specially designed fo
powering integrated circuits, operational amplifiers and MO
circuits. Available in ratings from 3.6 to 60 volts, 1 to 25 amp
Output voltage is adjustable, ±5% minimum from nomin
output. Features "foldback" current limiting and remote sensin
**AC Input:** 100–130 VAC, 47–63 Hz, single-phase. **Ripple:** 5 m
rms maximum. **Recovery Time:** 50–100 μsec. **Line and Lo**
**Regulation:** ±0.25%. **Size:** 60-IC, 11.5″ w. x 5.2″ d. x 6.0″ h
120-IC, 15.5″ w. x 5.2″ d. x 6.3″ h.; 200-IC, 17.0″ w. x 6.2″ d.
8.0″ h. Weight: 60-IC, 9 lbs.; 120-IC, 14 lbs.; 200-IC, 19 lb
For **Overvoltage Protection Crowbar**, add **$20.00** to price.

| Wanlass Model | DC Output Volts | Output Watts | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|
| | | | 1-9 | 10-24 | 25-49 | 50-9 |
| 60-IC-1 | 3.6–6.3 | 7.5 A* | $125.00 | $118.75 | $112.50 | $106.5 |
| 60-IC-2 | 12–15–18 | 60 | 125.00 | 118.75 | 112.50 | 106.5 |
| 60-IC-3 | 24–28–36 | 60 | 125.00 | 118.75 | 112.50 | 106.5 |
| 60-IC-4 | 48–60 | 60 | 125.00 | 118.75 | 112.50 | 106.5 |
| 120-IC-1 | 3.6–6.3 | 15 A* | 170.00 | 161.50 | 153.00 | 144.5 |
| 120-IC-2 | 12–15–18 | 120 | 170.00 | 161.50 | 153.00 | 144.5 |
| 120-IC-3 | 24–28–36 | 120 | 170.00 | 161.50 | 153.00 | 144.5 |
| 120-IC-4 | 48–60 | 120 | 170.00 | 161.50 | 153.00 | 144.5 |
| 200-IC-1 | 3.6–6.3 | 25 A* | 225.00 | 213.50 | 202.50 | 191.5 |
| 200-IC-2 | 12–15–18 | 200 | 225.00 | 213.50 | 202.50 | 191.5 |
| 200-IC-3 | 24–28–36 | 200 | 225.00 | 213.50 | 202.50 | 191.5 |
| 200-IC-4 | 48–60 | 200 | 225.00 | 213.50 | 202.50 | 191.5 |

*Maximum output current.


C

### MODEL C214-OEM DC SUPPLY (FIG. C)

Specially designed for driving relays, solenoids, motors an
other surge-type loads. Provides DC output of 28 volts at 2.
amps. **AC Input:** 115/230 VAC (±10%), single-phase, 50/6
Hz. **Line and Load Regulation:** ±2%. **Ripple:** 0.1% rms +1
mV. **Operating Temperature:** 0° to 40° C; can be used up t
70° C with derating. **Size:** 6″ w. x 5″ d. x 6.5″ h. Weight, 5.5 lb

| Wanlass Model | Output Volts | Net Each, Lots of | | | |
|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50-99 |
| C214-OEM | 28 VDC | $46.00 | $43.50 | $41.50 | $39.00 |

D

E

### III-OEM PRECISION REGULATED ECONOMY DC SUPPLIES (FIGS. D AND E)

Economy DC power supplies feature excellent regulation and ripple, plus: Adjustable automatic current limiting; overload and short circuit protection; adjustable overvoltage crowbar. Available in nominal DC outputs of 5, 6, 12, 15, 18, 24 and 28 volts; adjustable ±2% from nominal rating without derating; ±10% with derating. Input and output are through a terminal strip on the open-type chassis, with clear anodized finish. **AC Input:** 115/230 VAC (±10%), single-phase, 57–63 Hz. **Line Regulation:** ±0.1% or 10 mV. **Load Regulation:** ±0.1%. **Ripple:** 0.01% rms or 1 mV. **Size:** OEM5-10, 12-10 and 24-5, 12″ w. x 5″ d. x 6.5″ h.; all others, 6″ w. x 5″ d. x 5.5″ h. Weight: OEM5-10, 12-10 and 24-5, 14.5 lbs.; all others, 5.5 lbs.

| Wanlass Model | DC Output | Net Each, Lots of | | | |
|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50-9 |
| III-OEM5-5* | 5 V at 5 A | $ 89.50 | $ 85.00 | $ 80.50 | $ 76.0 |
| III-OEM6-5 | 6 V at 5 A | 89.50 | 85.00 | 80.50 | 76.0 |
| III-OEM12-5* | 12 V at 5 A | 89.50 | 85.00 | 80.50 | 76.0 |
| III-OEM15-4 | 15 V at 4 A | 89.50 | 85.00 | 80.50 | 76.0 |
| III-OEM18-3 | 18 V at 3 A | 89.50 | 85.00 | 80.50 | 76.0 |
| III-OEM24-2.5* | 24 V at 2.5 A | 89.50 | 85.00 | 80.50 | 76.0 |
| III-OEM28-2 | 28 V at 2 A | 89.50 | 85.00 | 80.50 | 76.0 |
| III-OEM5-10*† | 5 V at 10 A | 137.50 | 130.60 | 123.75 | 116.8 |
| III-OEM12-10*† | 12 V at 10 A | 137.50 | 130.60 | 123.75 | 116.8 |
| III-OEM24-5*† | 24 V at 5 A | 137.50 | 130.60 | 123.75 | 116.8 |

*Stock items. †Fig D; all others Fig. E.

WANLASS DIVISION OF AMBAC

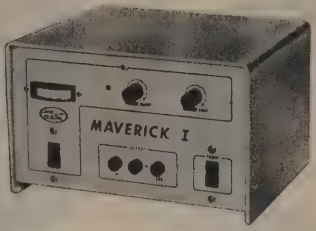
# Varax™ Regulators

## THE WANLASS VARAX VARIABLE INDUCTOR

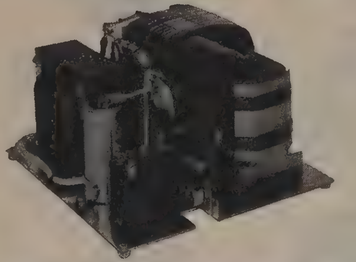
l-new magnetic component invented by Wanlass Electric. n electrically variable inductor which can be controlled over wide range of inductance, through the application of a small C control current. Similar in design to the Wanlass Paraformer, ith a basic core consisting of two C-cores rotated at 90° relative one another.

ffers many advantages over conventional saturable reactors, cluding: Smaller size, lighter weight, higher reliability, less aveform distortion, and lower cost. Limited waveform distoron is the result of the relatively linear variation of AC inducnce as a function of DC control current.

articularly well suited to AC line voltage regulation, by adding ly a sensor and control circuit plus a boost transformer or utotransformer (Models VVR-1500, VVR-1501 and VVR-1502, sted below, are for AC regulation).



A



B

### HOW IT WORKS

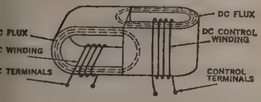
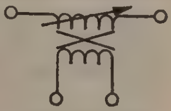


Figure 1



Varax Symbol

s shown in Figure 1 above, the AC inductor winding is wound n one of the core halves, and the DC control winding is on e other. AC flux does not link the control winding; DC flux oes not link the AC winding. AC power is highly decoupled om entering the DC control circuitry, making it possible to ercise control by means of a control winding consisting of a eat many turns carrying a relatively small current.

nce this decoupling is achieved without special care, the anlass Variable Inductor provides overall simplicity with high liability in many applications, including: Voltage regulation r photocopiers, regulation for locally-generated power in mote communication sites, as an electrically tunable variable ductor for remotely tuned automobile radios, as a regulation element for automatic battery chargers, and for general-purpose multi-frequency 0.5% line voltage regulators.

Application of DC current to control winding increases the effective reluctance associated with AC winding, decreasing the effective inductance of the AC winding. Maximum inductance occurs with zero control current and decreases with increasing control current, reaching a minimum at maximum control current.

## VARIABLE INDUCTOR STATIC AC VOLTAGE REGULATORS (FIG. B)

atic, frequency insensitive AC voltage regulators offer high liability, ideal for remote and unattended locations. Provides ne and load regulation; true rms regulation by rms sensor nd all silicon semiconductor closed-loop control circuit, with w power level. No silicon controlled rectifiers or other solid ate components are used in power circuits. Excellent source r high starting current loads such as motors, lamps or heaters; ombinations of high current loads; and all lagging power factor ads. Provides line transient suppression by inherent characeristics or series inductor in the line; produces no spikes or onducted RF interference. Makes a sensible replacement for ferroresonant constant-voltage transformers or silicon-controlled rectifier type AC regulators. Features include: Short circuit protection; suppression of 200 volt transients, protecting both the regulator and the load. **AC Input:** 105–130 VAC, 47–63 Hz, single-phase. **AC Output:** 120 V rms; 1500 or 2000 VA. **Load Regulation:** ±1% for 400 to 1500 watt load change (±1%, zero to full-load with optional BI-1500 ballast inductor). **Line Regulation:** ±1%. **Operating Temperature:** 0° to 55° C; up to 85° C with 200 cfm forced-air cooling. **Efficiency:** Over 90% at full load. **Size:** 9″ w. x 9.3″ d. x 4.8″ h. Weight, 32 lbs.

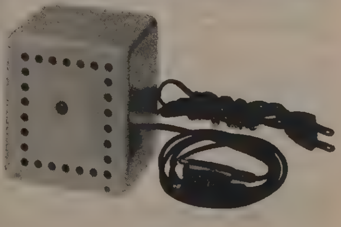
| Wanlass Model | Power Rating | Inductive Load Required | Motor Load, HP* | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|
| | | | | 1-9 | 10-24 | 25-49 | 50-99 |
| **VVR-1500** | 1500 VA | 1.8 to 3.6 amps | 1/12 to ⅙ | **$172.50** | **$164.00** | **$155.25** | **$146.50** |
| **VVR-1501** | 1500 VA | 3.6 to 5.4 amps | ⅙ to ¼ | **172.50** | **164.00** | **155.25** | **146.50** |
| **VVR-1502** | 2000 VA | 5.3 to 8.0 amps | ¼ to ½ | **172.50** | **164.00** | **155.25** | **146.50** |
| **BI-1500** | Ballast inductor for VVR-1500 | | | **25.00** | **23.75** | **22.50** | **21.25** |

## MAVERICK I AND MAVERICK II VARIABLE REGULATED BENCH-TYPE DC POWER SUPPLIES (FIG. A)

esigned for integrated circuit, MOS and operational amplifier ads in lab and system equipment. Maverick I provides output 0 to 7 VDC at 0 to 5 amps; Maverick II provides dual output 0 to 18 VDC at 0 to 1.25 amps. Each protected by adjustable utomatic recovery current limiting for overloads and short cirits; circuit breaker for AC input protection. Remote sensing utomatically reverts to local sensing in the event of a broken r accidentally disconnected sense lead. Bench mount construcon, with clear anodized aluminum finish. **AC Input:** 105–125 AC, 60 Hz single phase. **Load and Line Regulation:** ±0.1% r ±5 mV. **Ripple:** Less than 1 mV rms. **Output Impedance:** Less han 10 milliohms, DC to 1 MHz. **Operating Temperature:** ° to 45° C; natural convection cooling. **Controls:** Voltage; Current Limit; Meter Switch; On-Off Switch; Dual Meter (0–7 V/0–7 amps DC). **Front Panel Terminals:** Positive and negative output; ground. **Rear Panel Terminals:** Positive and negative output; ground; remote sense. **Input Cord:** 5-ft. 3-wire utility cord with grounded 3-prong plug. **Size:** 8.50″ w. x 5.22″ h. x 7.50″ l. Weight, 9 lbs.

| Wanlass Model | DC Output Volts | Net Each, Lots of | | | |
|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50-99 |
| **Maverick I** | 0 to 7 | **$ 89.00** | **$ 84.50** | **$ 80.00** | **$ 75.50** |
| **Maverick II** | Dual 0–18 | **125.00** | **118.75** | **112.50** | **106.25** |

C



D

## ECONOMY, ALL-PURPOSE 10- AND 20-WATT SOLID STATE OEM DC POWER SUPPLY (FIG. C)

Operate from 115 VAC, ±10%, 1-phase, 60 Hz. Regulated ±1% for line and load; filtered to 1% rms ripple; protected by automatic recovery current limiting overload and short circuit protection. Self-cooled. Size, 4″ w. x 3″ d. x 4½″ h., max.

| Wanlass Model | DC Output | | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|
| | Volts | Amps | 1-9 | 10-24 | 25-49 | 50-99 |
| **DPS-1** | 5/6 | 3.0 | **$24.95** | **$23.70** | **$22.50** | **$21.25** |
| **DPS-2** | 12/15 | 1.5 | **24.95** | **23.70** | **22.50** | **21.25** |
| **DPS-3** | 24 | 1.0 | **24.95** | **23.70** | **22.50** | **21.25** |
| **DPS-4** | 180/220 | 0.1 | **36.00** | **34.20** | **32.40** | **30.60** |
| **DPS-5** | 5/6 | 1.5 | **19.95** | **18.95** | **17.95** | **16.95** |
| **DPS-6** | 12/15 | 0.75 | **19.95** | **18.95** | **17.95** | **16.95** |
| **DPS-7** | 24 | 0.4 | **19.95** | **18.95** | **17.95** | **16.95** |
| **OVP-2** | Overvoltage prot. | | **9.00** | **8.50** | **8.13** | **7.65** |

*Regulation, ±2% for line; ripple, 2% maximum.

## "ELIMINATOR" ALL SILICON SOLID STATE 12 VDC POWER SUPPLY (FIG. D)

liminates need for 12-volt batteries to power DC devices. pecially protected against inadvertent overloads and dead short ircuits. Operates from 105/125 VAC, 1-phase, 60 Hz; ideal for riving all 12-volt devices including auto radios, stereos, tape ecks and cassettes. Regulated and filtered. Comes with UL Recognized 3-wire cord and grounded plug for AC input; output leads have alligator clips to DC load.

| Wanlass Model | DC Output | | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|
| | Volts | Amps | 1-9 | 10-24 | 25-49 | 50-99 |
| **BE-12** | 12 | 2.0 | **$19.95** | **$18.95** | **$17.95** | **$16.95** |

# TRW® GLOBE AC and DC Motors

A

B

C

D

E

F

G

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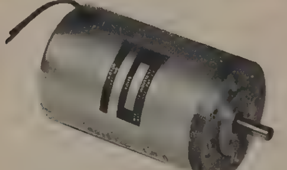

P

R

## AIR COMPRESSOR (FIG. R)

Produces 1 cfm circulation at 5 psi. For 115 VAC, 60 Hz, single-phase. Size, 4″ high x 3″ wide x 6″ long. Weight, 3.5 lbs. maximum including cord, exhaust tube assembly and fitting.
**TRW/Globe Air Compressor**—Net Ea., Lots of 1–3 . . . . **$98.50***

TRW/Globe AC and DC motors are available with a wide variet of voltage requirements, speeds and ratings, within the price rang shown for each type. Write or call for complete specifications an quantity pricing on motors to meet your specific requirement Most types are also available with integral gearing (listed o following page).

## AC HYSTERESIS-SYNCHRONOUS AND INDUCTION MOTORS

### TYPE MC (FIG. A)

Miniature AC motor rated 0.9 oz.-in. maximum sync torque Voltage ratings up to 200 VAC; 2, 4 or 6 poles. Size, 1¼″ dia. x 2¼″ long. Weight, 6.5 oz.
**TRW/Globe Type MC**—Net, Lots 1–10 . . **$70.00 to $80.00***

### TYPE FC (FIG. B)

Small in size, rated 1.2 oz-in. maximum sync torque. Powered by up to 200 VAC; 2, 4 or 6 poles, Size, 1 11/16″ dia. x 2¼″ long Weight, 11.5 oz.
**TRW/Globe Type FC**—Net, Lots 1–10 . . **$70.00 to $80.00***

### TYPE SC (FIG. C)

Miniature AC motor rated 0.2 oz.-in. maximum sync torque Voltage ratings up to 200 VAC; 2, 4 or 6 poles. Size, 1 1/16″ dia. x 1 5/16″ long. Weight, 2.4 oz.
**TRW/Globe Type SC**—Net Each, Lots of 1–10 . . . . . . . **$70.00***

### TYPE CFC (FIG. D)

Small size motor rated 2.0 oz.-in. maximum sync torque. Voltage ratings up to 230 VAC; 2, 4 or 6 poles. Size, 1 19/32″ dia. x 2⅞″ long. Weight, 13 oz.
**TRW/Globe Type CFC**—Net Each, Lots of 1–10 . . . . . **$58.00***

### TYPE CMC (FIG. E)

Miniature 60 Hz commercial motor rated up to 0.75 oz.-in. maximum sync torque at 1800 or 3600 rpm. Voltage to 115 VAC, 2 or 4 poles. Size, 1 43/64″ dia. x 2 21/32″ long. Weight, 7.2 oz.
**TRW/Globe Type CMC**—Net Each, Lots of 1–10 . . . . **$52.00***

### TYPE UC (FIG. F)

Small size motor rated up to 6 oz.-in. maximum torque at 3000 rpm in long stack version. Induction or hysteresis synchronous types available. Powered by up to 230 VAC; 2, 4 or 6 poles. Size, 2 5/16″ dia. x 1⅞″, 2⅜″ or 3⅜″ long. Weight, up to 34.5 oz.
**TRW/Globe Type UC**—Net Each . . . . . . . **$56.00 to $74.00***

## PERMANENT MAGNET DC MOTORS

Produce very high starting torques; can provide characteristics tailored to your application. Integral or separate radio noise filters can be added.

### TYPES BD AND BL (FIG. G)

Rated .022 hp (Type BD) or .033 hp (Type BL) in 6,000 to 12,000 rpm range. Voltage ratings to 115 VDC. Size, 1½″ dia. x 2 15/16″ long maximum. Weight, 11.3 oz. maximum.
**TRW/Globe Type BD or BL—**
Net Each, Lots of 1–10 . . . . . . . . . . . . . . . **$80.00 to $130.00***

### TYPES MM AND LL (FIG. H)

**Type MM** rated .01 hp over 8,000 to 18,000 rpm range. Open or enclosed style. Voltage rating to 50 VDC. Size, 1¼″ dia. x 2 1/32″ long. Weight, 5 oz. **Type LL** rated .015 hp, 6,000 to 14,000 rpm. Available in open or enclosed style. Voltage rating to 75 VDC. Size, 1¼″ dia. x 2⅜″ long. Weight, 6.5 oz.
**TRW/Globe Type MM or LL—**
Net Each, Lots of 1–10 . . . . . . . . . . . . . . . . **$50.00 to $60.00***

### TYPE SS (FIG. J)

Subminiature motor rated .004 hp in the 8,000 to 18,000 rpm range. Voltage rating up to 50 VDC. Size, ⅞″ dia. x 1⅜″ long. Weight, 2 oz.
**TRW/Globe Type SS**—Net, Lots 1–10 . . . **$50.00 to $65.00***

### TYPE SD (FIG. K)

Subminiature motor rated .003 hp in the 8,000 to 18,000 rpm range. Voltage rating up to 50 VDC. Size, ¾″ dia. x 1⅜″ long. Weight, 1.75 oz.
**TRW/Globe Type SD**—Net, Lots 1–10 . . **$60.00 to $100.00***

### TYPE VS (FIG. L)

Compact flat motor rated .0025 hp in 8,000–17,000 rpm range. For up to 50 VDC. Size, ⅞″ x 7/16″ x 1⅞″. Weight, 1.7 oz.
**TRW/Globe Type VS**—Net, Lots 1–10 . . . **$60.00 to $68.00***

### TYPES CMM AND CLL (FIG. M)

Miniature commercial motors. **Type CMM** rated 1/100 hp continuous duty at 8,000–18,000 rpm. Voltage from 6 to 50 VDC. Size, 1.260″ dia. x 1¾″ long. Weight, 3.5 oz. **Type CLL** rated 1/75 hp continuous duty at 6,000–15,000 rpm. Voltage rating from 6 to 75 VDC. Size, 1.250″ dia. x 2 3/32″ long. Weight, 5.2 oz.
**TRW/Globe Type CMM or CLL—**
Net Each, Lots of 1–10 . . . . . . . . . . . . . . . **$38.00 to $40.00***

### TYPE JM (FIG. N)

Miniature motor rated .015 hp in the 6,000–12,000 rpm range. For up to 115 VDC. Size, 1¼″ dia. x 2 1/32″ long. Weight, 5 oz.
**TRW/Globe Type JM**—Net, Lots 1–10 . . **$80.00 to $100.00***

### TYPE GRP (FIG. P)

Small motor rated 0.1 hp in the 6,000–10,000 rpm range. Voltage to 115 VDC. Size, 2¼″ dia. x 3¾″ long. Weight, 40 oz.
**TRW/Globe Type GRP—**
Net Each, Lots 1–10 . . . . . . . . . . . . . . . . **$110.00 to $120.00***

## ★ORDERING INFORMATION AND QUANTITY PRICING

Space does not permit listing the wide variety of voltage ratings, motor speeds and specifications available within each TRW/Globe type. Prices shown indicate the price range for each series.

Write, call or wire for complete specifications and full quantity pricing information on specific models to meet your own motor requirements.

# TRW® GLOBE Motors and Blowers

## AC AND DC MOTORS WITH INTEGRAL GEARS

nsist of AC and DC motors listed on preceding page, with egral planetary or spur gearing. Available in a variety of voltage d speed ratings; write for full information and prices.

### TYPE MC PLANETARY (FIG. A)

ovides 83 even gear ratios, or 18 odd ratios, using Type MC 4" dia. AC motor. Maximum length, 4 3/16". Square flange tional. Max. continuous output torque, to 1000 oz.-in.
**W/Globe Type MC—**
t Each, Lots of 1–10..............**$114.00 to $166.00***

### TYPE FC PLANETARY (FIG. B)

ovides 18 odd and 83 even gear ratios using Type FC 1 11/16" a. AC motor. Maximum length, 4 3/32". Maximum continuous tput torque, to 1250 oz.-in.
**W/Globe Type FC—**
t Each, Lots of 1–10..............**$124.00 to $176.00***

### TYPE SC PLANETARY (FIG. C)

ovides 21 gear ratios, using Type SC 1 1/16" dia. AC motor. aximum length, 3 7/32". Maximum continuous output torque, 300 oz.-in.
**W/Globe Type SC**
et Each, Lots of 1–10..............**$134.00 to $178.00***

### TYPE CFC PLANETARY (FIG. D)

rovides 83 standard ratios for Type CFC motors. Standard ared speeds from 900 rpm down to 0.1 rpm; to 60 lb.-in. continuous torque.
**W/Globe Type CFC**—Net, Lots 1–10. .**$91.00 to $99.00***

### TYPES BD AND BL PLANETARY (FIG. E)

as 1⅞" flange; provides 18 ratios using Type BD or Type BL 2" dia. DC motor. Maximum length, 4 21/32". Maximum continuous output torque, to 100 lb.-in.
**RW/Globe Type BD or BL—**
et Each, Lots of 1–10..............**$220.00 to $322.00***

### TYPES MM AND LL PLANETARY (FIG. F)

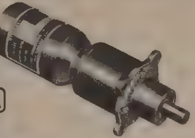
ovides 18 ratios using Type MM or LL 1¼" dia. DC motor. ax. length, 4 9/64". Square flange optional. Maximum continuous tput torque, to 1000 oz.-in.
**RW/Globe Type MM or LL—**
et Each, Lots of 1–10..............**$94.00 to $145.00***

### TYPE SS PLANETARY (FIG. G)

ovides 21 ratios using Type SS ⅞" dia. DC motor. Max. length, 1/64". Continuous output torque, to 300 oz.-in.
**RW/Globe Type SS—**
et Each, Lots of 1–10... ..........**$114.00 to $160.00***

### TYPE SD PLANETARY (FIG. H)

rovides 19 ratios using Type SD ¾" dia. DC motor. Maximum ntinuous output torque, to 300 oz.-in.
**RW/Globe Type SD—**
et Each, Lots of 1–10..............**$128.00 to $170.00***

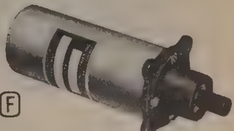

A

B

C

D

E


F

G

H

J

### TYPE VS SPUR (FIG. J)

Provides 62 ratios using Type VS 7/16" x ⅞" DC motor. Maximum length, 3¾". Maximum output torque, to 35 oz.-in. Side-by-side version is ⅞" x ⅞" x 2¼" long.
**TRW/Globe Type VS—**
Net Each, Lots of 1–10..............**$220.00 to $350.00***

## AC AND DC BLOWERS AND FANS

WR/Globe's extensive line of air moving devices for electronics oling applications include multi-stage, vaneaxial, tubeaxial, and ntrifugal blowers and fans for AC, DC or universal AC/DC peration. High altitude and high ambient temperature units are specialty; MIL specs are routine. Globe designs and produces s own motors, so we can provide prototype or production units ith optimum characteristics for your specific applications. Available with a variety of motors and ratings, within the price ranges own for each type. Write for full information and quantity ricing.

### OPEN TYPE FANS (FIG. K)

vailable with a variety of AC, DC or AC/DC motors, delivering p to 195 cfm at zero inches of water. Power requirements from to 120 VDC; or up to 200 VAC, 1-, 2-, or 3-phase, 60 or 400 Hz. eight, 2.3 oz. minimum.
**RW/Globe Open Type Fans—**
et Each, Lots 1–10......................**$57.00 to $97.00***

### TYPE PAX-3 PROPAXIAL FAN (FIG. L)

" fan delivers 120 cfm at zero inches water, using Type MCS -pole motor; or 62 cfm using Type MCS 4-pole motor. Power equirements up to 200 VAC, 3-phase, 400 Hz.
**RW/Globe Type PAX-3**—Net Each, Lots of 1–3....**$65.00***

### AXIAL BLOWERS (FIG. M)

eliver up to 62 cfm free air. Available with AC or DC motors. ower requirements from 4 to 70 VDC; or 27 to 200 VAC, 1-, 2-, r 3-phase. 60 or 400 Hz. Weight, 5 to 9½ oz.
**RW/Globe Axial Blowers—**
et Each, Lots of 1–10..................**$70.00 to $95.00***

### CENTRIFUGAL BLOWERS (FIG. N)

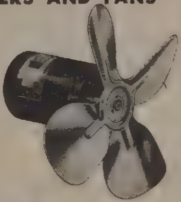
eft-hand or right-hand scroll blowers, for AC or DC power, ith round or rectangular outlet, in 1" to 2½" size. Produce up o 50 cfm free air. AC types powered by 115 to 200 VAC, 60 or 00 Hz. DC types powered by 27 VDC. Weight, 4–18 oz.
**RW/Globe Centrifugal Blowers—**
et Each, Lots of 1–10..................**$70.00 to $95.00***

### TYPE VAX-3 3" VANEAXIAL BLOWER (FIG. P)

vailable for AC, DC or universal AC/DC operation. AC blower elivers 105 cfm at 3.3" water; powered by 115 or 200 VAC, -phase, 400 Hz; weight, 14 oz. DC blower delivers 70 cfm at 1.5" ater; powered by 4 to 115 VDC; weight, 16 oz. AC/DC blower elivers 68 cfm at 1.5" water; powered by 115 VAC, single-phase, 0 Hz, or 115 VDC; weight, 16 oz.
**RW/Globe Type VAX-3—**
et Each, Lots of 1–10..................**$65.00 to $130.00***

### TYPE VAX-1 VANEAXIAL 1⅛" BLOWERS (FIG. R)

C blower delivers 10 cfm at 0.6" water; powered by 26 VAC, ingle-phase, 400 Hz; weight, 1.5 oz. DC blower delivers 8.5 cfm t 0.5" water; powered by 26 VDC; weight, 1.4 oz.
**RW/Globe Type VAX-1—**
et Each, Lots of 1–10..................**$90.00 to $110.00***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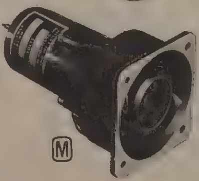
L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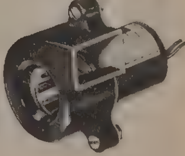

N

P

R

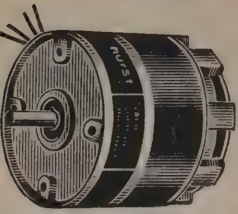
S

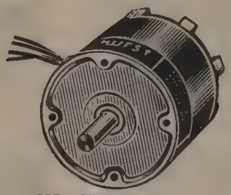
### TYPE VAX-2 VANEAXIAL 2" BLOWERS (FIG. S)

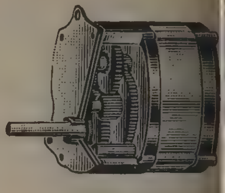
Available for AC or DC power. AC blower delivers 50 cfm at 2.1" water; powered by 115 VAC, 1- or 3-phase, 400 Hz; or by 200 VAC, 3-phase, 400 Hz; weight, 5 oz. DC blower delivers 37 cfm at 1.5" water; powered by 26 or 50 VDC. Weight, 5 oz.
**TRW/Globe Type VAX-2—**
Net Each, Lots of 1–10..................**$50.00 to $100.00***

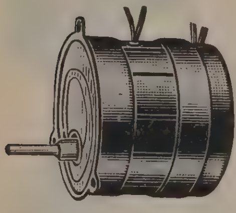
**★SEE PRECEDING PAGE FOR ORDERING AND PRICING INFORMATION**

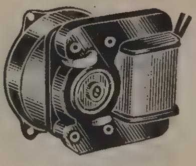
# hurst Synchronous Motors


HB "Honey Bee"


MB "Mini-Bee"


GA


CA


EA

DA, SM

AR-DA, AR-SM, PC-DA, PC-SM

## MODEL HB "HONEY BEE" 1/35 HP MOTOR

Heavy duty hysteresis synchronous motor for video recording, instrumentation, data handling, tape recording, telemetering and turntable applications. High torque rating in small size, with 1800 rpm speed and 1/35 hp power. Inverted rotor design for reduced flutter. Dynamically balanced rotor. Sealed ball bearings; lifetime lubrication. Reversible. **Starting Torque:** 23.5 oz.-in. **Pull-in Torque:** 16.8 oz.-in. **Pull-out Torque:** 17.0 oz.-in. **Temperature Rise:** 40° C full load. **Power Rating:** 1/35 hp. **Speed:** 1800 rpm. **Watts:** 70. **Power Required:** 115 VAC, 60 Hz. **Shaft:** 5/16" dia. x 1" stainless steel. **Leads:** 12" long. **Capacitor:** Included. **Size:** 3½" dia. x 3 9/16". Four 10-32-2B tapped mtg. holes on 2.625" dia. bolt circle.

## MODEL MB "MINI-BEE" 1/100 HP MOTOR

Smaller version of the Honey Bee, for digital cassette drives, video and audio recording, data handling, instrumentation, telemetering, turntables, and many other direct drive applications. Hysteresis synchronous reversible motor features inverted rotor design for superior angular velocity characteristics. The resulting "flywheel" effect greatly reduces flutter in magnetic tape applications. Sealed ball bearings. **Starting Torque:** 6 oz.-in. at 1800 rpm. **Pull-in Torque:** 5.25 oz.-in. **Pull-out Torque:** 5.50 oz.-in. **Temperature Rise:** 40° C full load. **Power Rating:** 1/100 hp. **Speed:** 1800 rpm. **Power Required:** 115 VAC, 60 Hz. **Shaft:** 5/16" dia. x 1" stainless steel. **Leads:** 12" long. **Capacitor:** 2.0 μF, 330 VAC (included). **Size:** 2 13/32" dia. x 2⅝". Four 8-32 UNC-2B tapped mtg. holes, equally spaced on 2.000" dia. bolt circle.

## SERIES GA 600 INCH-OUNCE REVERSIBLE

Hysteresis reversible synchronous motor with heavy-duty gearing. Shaft ¼" dia. x 1" lg. except 3600 rpm, ⅛" dia. **Capacitor:** 1.25 μF. **Torque:** 600 in.-oz. at 1 rpm. **Output Speeds:** (In rpm) 1, 2, 3, 4, 5, 6, 10, 18, 30, 60, 100, 120, 150, 180, 225, 300, 3600. **Case:** 2¾" dia. x 3" lg. Shipping Weight, 2 lbs. 4 oz.

## SERIES CA 100 INCH-OUNCE REVERSIBLE

Instantly reversible, using SPDT switch; accurate clockwise and counter-clockwise. **Capacitor:** 0.50 μF. **Torque:** 100 in.-oz. at 1 rpm. **Rotor Speed:** 1200 rpm. **Case:** 2½" dia. x 2⅛" d. Shipping Weight, 1 lb. 2 oz.

### OUTPUT SPEEDS (IN rpm)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ⅙ | 2 | 5 | 12 | 24 | 33⅓ | 60 | 120 | 240 | 1000 |
| ⅓ | 2½ | 6 | 15 | 25 | 40 | 64 | 150 | 400 | |
| 1 | 3 | 8 | 16 | 30 | 48 | 80 | 160 | 600 | |
| 1⅓ | 4 | 10 | 20 | 32 | 50 | 100 | 200 | 800 | |

## SERIES EA 150 INCH-OUNCE UNIDIRECTIONAL

Open frame, shaded pole for accurate clockwise rotation only. Extremely cool running. Output shaft, 3/32" dia. x 1" long for 3600 rpm only. **Torque:** 150 in.-oz. at 1 rpm. **Output Speed:** (In rpm) 1, 2, 4, 6, 8, 10, 12, 20, 30, 60, 120 (3600 direct drive). **Case:** 2⅝" w. x 3 5/16" lg. x 1⅝" h. Shipping Weight, 1 lb. 3 oz.

## SERIES DA 150 INCH-OUNCE REVERSIBLE

Instantly reversible, using SPDT switch; accurate both clockwise and counter-clockwise. **Capacitor:** 0.50 μF. **Torque:** 150 in-oz. at 1 rpm. **Output Speeds:** (In rpm) 1, 2, 4, 6, 8, 10, 12, 20, 30, 60, 120. **Case:** 2½" dia. x 1¾" d. Shpg. Wt., 1 lb. 1 oz.

## SERIES AR-DA AUTOMATIC RESET

Automatic reset type DA motor, 100 in.-oz. reversible, when return spring is attached to output shaft. Shaft free for manual or automatic reset when clutch is de-energized. For heavy duty applications up to full torque rating. Accurate within 1/5 second at 1 rpm; greater accuracy at higher speeds. Lubricated, enclosed clutch mechanism. **Max. Error:** (In seconds) .15625/rpm. **Output Speeds:** (In rpm) 1, 4, 6, 10, 30, 60. **Case:** 2½" dia. x 2" d.; clutch actuator, 1 3/16" w. x ⅞" h. Shipping Weight, 1 lb. 6 oz.

## SERIES PC-DA 120 INCH-OUNCE POSITIVE CLUTCH

Consists of basic type DA motor with positive clutch and instantaneous brake. Starts in 20 millisecs; stops 60 rpm shaft in 12°; 1 rpm in 1/5°. **Output Speeds:** (In rpm) 1, 2, 4, 6, 8, 10, 12, 20, 30, 60, 120. Shipping Weight, 1 lb. 5 oz.

## SERIES SM 40 INCH-OUNCE UNIDIRECTIONAL

Clockwise rotation only. Shaded pole. Instant start at full torque of 40 in.-oz. at 1 rpm. **Output Speeds:** (In rpm) ½, 1, 2, 3, 4, 5, 6, 10, 15, 30, 60. **Case:** 2½" dia. x 1¾" d. Shipping Weight, 1 lb.

## SERIES AR-SM AUTOMATIC RESET

Automatic reset type SM motor, 40 in.-oz. clockwise, when return spring is attached to output shaft. Other specifications and operation same as Series AR-DA.

## SERIES PC-SM POSITIVE CLUTCH

Consists of basic type SM motor with positive clutch and instantaneous brake. Starts in 20 millisecs; stops 60 rpm shaft in 12°, 1 rpm in 1/5°. **Output speeds:** (In rpm) ⅓, 1, 2, 3, 4, 5, 6, 10, 15, 30, 60. Shipping Weight, 1 lb. 4 oz.

## PRICES

### HB "HONEY BEE" AND MB "MINI-BEE"

| Hurst Model | Net Each, Lots of 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|
| HB "Honey Bee" | $65.00 | $62.00 | $57.50 | $48.84 | $45.39 | $43.24 |
| MB "Mini-Bee" | 50.00 | 48.00 | 47.50 | 42.89 | 39.45 | 37.37 |

### SERIES GA

| Output Speeds | Net Each, Lots of* 1-9 | 10-24 | 25-49 | 50-74 | 75-99 | 100-249 |
|---|---|---|---|---|---|---|
| 1–10 rpm | $36.91 | $35.07 | $33.23 | $31.38 | $29.55 | $25.86 |
| 18–30 rpm | 34.67 | 32.93 | 31.21 | 29.48 | 27.74 | 24.29 |
| 60–300 rpm | 32.01 | 30.40 | 28.81 | 27.21 | 25.62 | 22.41 |
| 3600 rpm | 24.68 | 23.45 | 22.22 | 20.98 | 19.75 | 17.28 |

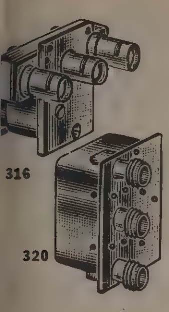
### ALL OTHERS

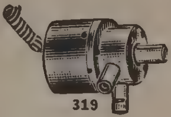
| Hurst Series | Description | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|
| EA | Any speed | $11.32 | $10.18 | $ 9.67 | $ 9.19 | $ 8.72 |
| EA | 3600 rpm† | 8.38 | 7.55 | 7.17 | 6.81 | 6.48 |
| CA | Any speed* | 15.14 | 13.63 | 12.95 | 12.31 | 11.70 |
| DA | Any speed* | 17.67 | 15.90 | 15.10 | 14.36 | 13.64 |
| PC-DA | Any speed* | 24.42 | 21.98 | 20.88 | 19.83 | 18.84 |
| AR-DA | Any speed* | 28.80 | 26.02 | 24.63 | 23.39 | 22.22 |
| SM | Any speed | 14.86 | 13.38 | 12.71 | 12.08 | 11.47 |
| PC-SM | Any speed | 21.62 | 19.45 | 18.48 | 17.55 | 16.68 |
| AR-SM | Any speed | 26.02 | 23.42 | 22.24 | 21.13 | 20.08 |

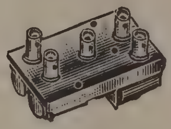
*Includes capacitor. †Direct drive.

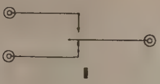
**PRICES SUBJECT TO CHANGE WITHOUT NOTICE**

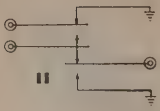
# UNKER RAMO AMPHENOL Coax Relay Switches

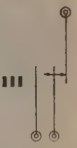


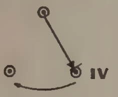


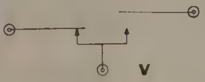


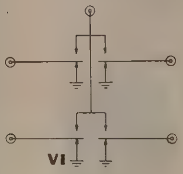


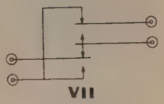












mphenol coaxial switches, manufactured to the highest quality andards; operate and release in a max. time of 20 msec. or faster. ontacts are gold over fine silver plate. Switches rated at 100 watts F power are supplied with ³⁄₃₂" dia. contacts; switches rated 500 watts use bifurcated contacts of ⅛" dia. Switches provide eak-before-make operation. Terminations are jack type RF nnectors of BNC, N, C, MB or UHF type. These DK coaxial switches meet applicable portions of MIL-S-3928B. Minimum expected life is 1,000,000 cycles at speeds of less than 10 cycles per second. Coils are vacuum impregnated to withstand high humidity and operate continuously over a temperature range of −65° C to +85° C. Coil input power at nominal voltage is as follows: DC operated 100 W RF switches, 2½ W; DC operated 500 W RF switches, 3¼ W; AC operated switches, all types, 6 VA.

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**5 Series**—Small, compact, low cost switch with non-shorting rmination of the disengaged connector. Connectors and actuator e mounted on a common plate. For DC remote operation only.

**6 Series**—Rugged, two-position switch with a break-before-ake action. The disengaged connector is shorted to ground. pecifically designed for bulkhead mount with all three connectors the opposite side from actuator.

**7 Series**—Highly reliable switch with the disengaged connector ther resistor terminated or shorted to ground for better cross-lk. Designed for panel mount, the common or input connector on one side with the two outputs and actuator on the other.

**8 Series**—Supplied as standard with either shorting, non-short-g or resistor terminations. Two-position type. Designed for flat ount with all three connectors and actuator on the same side.

**9 Series**—Standard rotary type switch in manual and remote perated versions. Non-shorting contacts. The ¼" dia. turn shaft manual types bears a ⅛₄" mounting flat for control knob.

**0 Series**—High power (1 kW) switch utilizing twin contacts ith double make and break action in each position. Designed for anel or bulkhead mount. All three connectors are on the same side. andard unit is supplied with dust cover over actuator.

**1 Series**—Rugged, flat-mounting switch in manual or remote perated version. VSWR is low up to 100 MHz. Non-shorting con-cts offer less circuit isolation and more crosstalk than shorting pes.

**2 Series**—Small rotary switch for the inter-connection of the mmon output connector to any of four inputs. Manual opera-on with non-shorting contacts. Excellent crosstalk and VSWR.

**323 Series**—Individual actuator for each input. The actuator connects the associated input to the common output when energized. Any one or more inputs may be simultaneously connected to the common output, or any input may be connected to any other input through the common output. Supplied as standard with either shorting or non-shorting contacts, the former offering better crosstalk. Operating time, 10 msec.

**325 Series**—Compact monitoring switch. Energizing the actuator associated with each input connects this input to the common output. Any one or more inputs may be simultaneously connected to the common output, or any input may be connected to any other input through the common output. Crosstalk for non-shorting types averages about 20 dB. less than for shorting types. Operating time, 10 msec.

**326 Series**—Compact high density designed for complex switching. Four mounting studs allow flat mount. Shorting contacts. VSWR varies with position of inputs used with respect to common output. Operating time, 10 msec.

**327 Series**—Transfer or crossover switch for panel mount. Three connectors and actuator on one side, and the fourth connector on the opposite side. Circuits are connected through two isolated pairs. Energizing the actuator opens these circuits and provides a crossover to the opposite pairs.

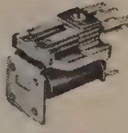
**328 Series**—Transfer or crossover switch with all four connectors in the same plane for convenient panel mount. A dust cover protects balanced armature actuator. Circuits are connected through two isolated pairs. Energizing the actuator opens these circuits and provides a crossover to the opposite pairs.

| mphenol Number | Circuits■ | Function | Conn. | Freq. Range * | Typ. Crosstalk dB | Remote or Manual | Power Watts | Coil Volts | Coil Resist. Ohms | Max. Dim. In. | Wt. Oz. | Net Each, Lots of 1-4 | 5-9 | 10-24 | 25-49 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5-010002-3 | I | SPDT | BNC | 1000 | 30 | Remote | 100 | 26 VDC | 280 | 1⅜ | 4 | $ 25.62 | $ 21.35 | $ 18.30 | $ 16.23 |
| 5-010022-3 | I | SPDT | MB | 800 | 30 | Remote | 100 | 26 VDC | 280 | 1⅜ | 4 | 27.83 | 23.19 | 19.88 | 17.62 |
| 6-010082-3 | II | SPDT | BNC | 2750 | 35 | Remote | 100 | 26 VDC | 280 | 2 | 4.5 | 31.50 | 26.25 | 22.50 | 19.95 |
| 6-010082-6 | II | SPDT | BNC | 2750 | 35 | Remote | 100 | 120 VDC | 6000 | 2 | 4.5 | 32.55 | 27.13 | 23.25 | 20.62 |
| 6-010102-8 | II | SPDT | BNC | 2750 | 35 | Remote | 100 | 115 VAC | 550 | 2 | 6.5 | 33.60 | 28.00 | 24.00 | 21.28 |
| 6-010732-8 | II | SPDT | N | 2500 | 40 | Remote | 500 | 115 VAC | 550 | 2⅝ | 12 | 39.90 | 33.25 | 28.50 | 25.27 |
| 6-010744-3 | II | SPDT | N | 2500 | 40 | Remote | 500 | 26 VDC | 200 | 2⅝ | 12 | 37.80 | 31.50 | 27.00 | 23.94 |
| 7-010202-3 | II | SPDT | BNC | 2750 | 40 | Remote | 100 | 26 VDC | 280 | 2 | 4.5 | 29.93 | 24.94 | 21.38 | 18.95 |
| 7-010215-8 | II | SPDT | BNC | 2750 | 40 | Remote | 100 | 115 VAC | 550 | 2 | 6.5 | 32.03 | 26.69 | 22.88 | 20.28 |
| 7-010242-3 | II | SPDT | N | † | 30/40 | Remote | 100/500 | 26 VDC | 280 | 2⅝ | 5 | 32.55 | 27.13 | 23.25 | 20.62 |
| 7-010242-4 | II | SPDT | N | † | 30/40 | Remote | 100/500 | 48 VDC | 1200 | 2⅝ | 5 | 33.60 | 28.00 | 24.00 | 21.28 |
| 7-010255-8 | II | SPDT | N | † | 30/40 | Remote | 100/500 | 115 VAC | 550 | 2⅝ | 7 | 34.65 | 28.88 | 24.75 | 21.95 |
| 7-010303-3 | II | SPDT | C | 4000 | 30 | Remote | 100 | 26 VDC | 280 | 2 3/16 | 5 | 34.13 | 28.44 | 24.38 | 21.61 |
| 7-010363-8 | II | SPDT | UHF | ...... | ...... | Remote | 100 | 115 VAC | 550 | 2 3/16 | 7 | 34.65 | 28.88 | 24.75 | 21.95 |
| 7-010538-3 | II | SPDT | N | † | 30/40 | Remote | 100/500 | 26 VDC | 200 | 2⅝ | 12 | 36.75 | 30.63 | 26.25 | 23.28 |
| 7-011092-3 | II, **a** | SPDT | BNC | 2750 | 40 | Remote | 100 | 26 VDC | 280 | 2 | 4.5 | 36.23 | 30.19 | 25.88 | 22.94 |
| 8-010381-0 | II, **b** | SPDT | BNC | 2750 | 40 | Manual | 100 | Manual | ...... | 2 | 4.5 | 32.03 | 26.69 | 22.88 | 20.28 |
| 8-010382-3 | II | SPDT | BNC | 2750 | 40 | Remote | 100 | 26 VDC | 280 | 2 | 4.5 | 29.82 | 24.85 | 21.30 | 18.89 |
| 8-010395-8 | II | SPDT | BNC | 2750 | 40 | Remote | 100 | 115 VAC | 550 | 2 | 6.5 | 32.03 | 26.69 | 22.88 | 20.28 |
| 8-010407-3 | III | SPDT | BNC | 2750 | 40 | Remote | 100 | 26 VDC | 280 | 2 | 4.5 | 29.82 | 24.85 | 21.30 | 18.89 |
| 8-010407-4 | III | SPDT | BNC | 2750 | 40 | Remote | 100 | 48 VDC | 1200 | 2 | 4.5 | 30.87 | 25.73 | 22.05 | 19.55 |
| 8-010662-0 | II, **b** | SPDT | BNC | 2500 | 40 | Manual | 500 | Manual | ...... | 2⅝ | 12 | 40.95 | 34.13 | 29.25 | 25.94 |
| 8-011165-3 | II, **a** | SPDT | BNC | 2750 | 40 | Remote | 100 | 26 VDC | 280 | 2 | 4.5 | 37.59 | 31.33 | 26.85 | 23.81 |
| 8-011576-8 | II, **a** | SPDT | BNC | 2750 | 40 | Remote | 100 | 115 VAC | 550 | 2 | 6.5 | 39.69 | 33.08 | 28.35 | 25.14 |
| 9-011131-3 | IV | SPDT | BNC | 1700 | 40 | Remote | 100 | 26 VDC | 75 | 2⅝ | 8 | 81.27 | 67.73 | 58.05 | 51.47 |
| 9-011141-0 | IV, **b** | SPDT | BNC | 1700 | 40 | Manual‡ | 100 | Manual | ...... | 2⅝ | 4.5 | 51.98 | 43.31 | 37.13 | 32.92 |
| 20-010931-3 | V | SPDT | N | 1500 | 80 | Remote§ | 1000 | 26 VDC | 100 | 3½ | 20 | 77.49 | 64.58 | 55.35 | 49.08 |
| 21-011062-0 | I, **b**, **c** | DPDT | BNC | 1000 | 25 | Manual | 100 | Manual | ...... | 2⅞ | 8 | 43.47 | 36.23 | 31.05 | 27.53 |
| 21-011064-3 | I, **c** | DPDT | BNC | 1000 | 25 | Remote | 100 | 26 VDC | 200 | 2⅞ | 10 | 40.95 | 34.13 | 29.25 | 25.94 |
| 22-011431-0 | IV, **b**, **d** | 1P4T | BNC | 2750 | 40 | Manual‡ | 100 | Manual | ...... | 2 | 11 | 70.35 | 58.63 | 50.25 | 44.56 |
| 23-011506-3 | VI | 1P4T | BNC | 1250 | 30 | Remote | 100 | 26 VDC | 280 | 3 | 14 | 57.75 | 48.13 | 41.25 | 36.58 |
| 23-011651-3 | VI, **e** | 1P4T | BNC | 1250 | 30 | Remote | 100 | 26 VDC | 280 | 3 | 14 | 57.75 | 48.13 | 41.25 | 36.58 |
| 25-011635-3 | VI, **f** | 1P6T | BNC | 500 | 40 | Remote | 100 | 26 VDC | 280 | 3 | 21 | 73.92 | 61.60 | 52.80 | 46.82 |
| 25-011641-3 | VI, **e**, **f** | 1P6T | BNC | 500 | 40 | Remote | 100 | 26 VDC | 280 | 3 | 21 | 73.92 | 61.60 | 52.80 | 46.82 |
| 26-011507-3 | VI, **g** | 1P12T | BNC | 200 | 50 | Remote | 100 | 26 VDC | 280 | 5⅝ | 43 | 155.40 | 129.50 | 111.00 | 98.42 |
| 27-010562-3 | VII | Transfer | N | 1000 | 30 | Remote | 100 | 26 VDC | 280 | 2½ | 11.5 | 42.53 | 35.44 | 30.38 | 26.93 |
| 27-010582-3 | VII | Transfer | BNC | 1000 | 30 | Remote | 100 | 26 VDC | 280 | 2½ | 10.5 | 41.48 | 34.56 | 29.63 | 26.27 |
| 28-011005-3 | VII | Transfer | N | 1000 | 30 | Remote | 100 | 26 VDC | 143 | 2⅞ | 12 | 57.23 | 47.69 | 40.88 | 36.24 |

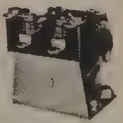
In MHz, at 1.3 VSWR.†4000/2500. ‡Rotary. §High power. ■**a**—Two 75-ohm resistors terminated. **b**—Manual. **c**—Two Circuit I circuits. —Four inputs instead of two. **e**—Non-shorting contacts. **f**—Two more inputs. **g**—Eight more inputs.

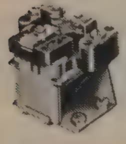
# Allied Control Relays, Accessories

Series AS


Series TAT

Series TF154 and T154

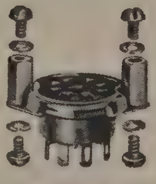

Series BO


Series CNA

Series PO-9

Series PO-12

Series 30055 Socket


Series 16000 Socket (16479-1)

## RELAY SOCKETS

### SERIES 16000

Mica-filled phenolic body with cadmium plated saddle, spacers, screws and washers. Beryllium copper contacts are silver-plated and tin dipped. Recommended chassis thickness, .062".

#### ABOVE CHASSIS MOUNTING

| Allied Type | For Relay | Hole Dia. | Mtg. Hole, Dia. | Mtg. Hole, Ctrs. |
|---|---|---|---|---|
| 16188-1 | MHUO-12 | 1 1/32" | .166" | 1.406" |
| 16189-1 | MHUO-18 | 1.140" | .166" | 1.562" |
| 16479-1 | MHO-6D | 21/32" | .136" | .875" |

#### BELOW CHASSIS MOUNTING

| Allied Type | For Relay | Hole Dia. | Mtg. Hole, Dia. | Mtg. Hole, Ctrs. |
|---|---|---|---|---|
| 16185-1 | MHLO-12D | 1 3/32" | .219" | 1.531" |
| 16187-1 | MHLO-18D | 1 7/32" | .219" | 1.687" |

| Allied Type | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-499 |
|---|---|---|---|---|
| 16185-1 | $1.42 | $1.28 | $1.07 | $0.99 |
| 16187-1 | 1.64 | 1.48 | 1.23 | 1.15 |
| 16188-1 | 1.42 | 1.28 | 1.07 | .99 |
| 16189-1 | 1.64 | 1.48 | 1.23 | 1.15 |
| 16479-1 | 1.25 | 1.13 | .94 | .88 |

### SERIES 30055

Black phenolic body per MIL-P-14D CFG, for above chassis mounting. Gold-plated beryllium copper contacts and terminals. Includes ground wire and stainless steel 18-8 type 302 retainer. Recommended chassis thickness, .062". For types T154 and TF154 relays. **Size:** -1, 3/4" x 31/32" x 11/32"; -2, 3/4" x 1 13/64" x 11/32"; -20, 3/4" x 1 13/32" x 11/32", less terminals.

| Allied Type | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-499 |
|---|---|---|---|---|
| 30055-1 | 55c | 50c | 43c | 38c |
| 30055-2 | 60c | 55c | 46c | 42c |
| 30055-20 | 95c | 86c | 73c | 66c |

## GENERAL PURPOSE RELAYS

**SERIES AS**—Compact, medium power design for single hole mounting. Terminal board on front, contacts on top for easy inspection. Standard silver contacts. Hook type terminals, .078" x .107". One 6-32 NC-2B mtg. hole, 7/32" deep. Max. Size: 1 11/16" x 1" x 1 19/64". Max. Weight, 2 oz.

**SERIES TAT**—Subminiature relay offers the performance of a miniature combined with long life expectancy. Elongated terminal holes, .080" x .040". Four 4-48 NF-2B tapped mounting holes. Max. Size: -2C, 1 5/16" x 41/64" x 1 1/32"; -4C, 1 5/16" x 41/64" x 1 17/64". Max. Weight: -2C, 0.70 oz.; -4C, 0.75 oz.

**SERIES TF154**—No internal wiring, with contact arms extended to form combination solder and plug-in terminals. Elongated terminal holes, .080" x .040". Dust cover enclosure. Mount in Allied Series 30055 sockets. Socket Type: -2C, type 30055-1 socket; -4C, type 30055-2; -6C, type 30055-20. Max. Size: -2C, 1 3/16" x 47/64" x 15/16"; -4C, 1 3/16" x 47/64" x 1 11/64"; -6C, 1 3/16" x 47/64" x 1 3/8". Max. Weight: -2C, 0.80 oz.; -4C, 0.95 oz.; -6C, 1.0 oz.

**SERIES TFMDO**—Enclosed in transparent polycarbonate dust cover, rigidly secured to base. Mounts in any standard RETMA or EIA octal socket. Max. Size: 1 13/32" sq. x 2 31/64" h. overall. Max. Weight, 2.5 oz.

**TELEPHONE SERIES T154**—Same construction, size and features as Series TF154, but for telephone type service.

## POWER RELAYS

**SERIES BO**—Compact, rugged power relay meets many military and commercial requirements. Contacts and terminals mounted on top for easy accessibility. Four 6-32 elastic stop nuts for mounting. Tin dipped terminals with .096" dia. holes. Ambient Temperature: −55° C to +71.5° C. Max. Size: 1 5/8" x 1 1/2" x 1 15/16". Max. Weight, 5.5 oz.

**SERIES CNA**—Compact, heavy duty relay uses double break contact arrangement to eliminate pigtails. Coil terminals have 3/32" dia. holes; contact terminals are 10-32 screw type. Four 6-32 elastic stop nuts for mounting. Normally open contacts. Type CNA uses solid silver contacts; type CNAS uses silver tungsten contacts. Max. Size: 2 9/32" x 2 3/32" x 2 13/32". Max. Weight, 9.5 oz.

**SERIES PO**—Compact, inexpensive, multipole power relay uses standard silver contacts. Tin dipped hook terminals, .079" x .164". Four 6-32 tapped mtg. holes. Max. Size: PO-9, 1 23/32" x 2 9/32" x 1 29/32"; PO-12, 2 9/32" x 2 9/32" x 1 29/32". Max. Weight: PO-9, 7.5 oz.; PO-12, 8.0 oz.

**SERIES BOHR**—Hermetically sealed. Type BOHR uses three 8-32 NC-2A threaded mounting studs with solder terminals. Type BOHRO mounts in any standard RETMA or EIA octal socket. Vibration: 10–55 Hz at .062" double amplitude. Shock: 30 G operational. Ambient Temperature: −55° C to +71.5° C. Max. Size: BOHR, 1 51/64" x 1 43/64" x 2 11/16"; BOHRO, 1 51/64" x 1 43/64" x 2 5/8". Max. Weight, 9.5 oz.

| Allied Type | Coil Voltage | Contacts Type | Contacts Amps | Coil Power 25° C | Coil Resist.§ Ohms | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-499 |
|---|---|---|---|---|---|---|---|---|---|
| AS-3A | 115 v. AC | SPDT | 5 | 3.5 VA | 850 | $5.40 | $4.86 | $4.05 | $3.78 |
| AS-3D | 26.5 v. DC | SPDT | 5 | 1.3 w. | 528 | 4.60 | 4.14 | 3.45 | 3.22 |
| TAT-2C | 6 v. DC | DPDT | 2 | 700 mw | 52 | 2.96 | 2.66 | 2.22 | 2.07 |
| TAT-2C | 12 v. DC | DPDT | 2 | 700 mw | 185 | 2.96 | 2.66 | 2.22 | 2.07 |
| TAT-2C | 24 v. DC | DPDT | 2 | 700 mw | 700 | 2.96 | 2.66 | 2.22 | 2.07 |
| TAT-2C | 48 v. DC | DPDT | 2 | 700 mw | 2500 | 2.96 | 2.66 | 2.22 | 2.07 |
| TAT-2C | 115 v. DC | DPDT | 2 | 700 mw | 15,000 | 4.66 | 4.19 | 3.49 | 3.26 |
| TAT-4C | 6 v. DC | 4PDT | 2 | 700 mw | 52 | 3.34 | 3.01 | 2.51 | 2.34 |
| TAT-4C | 12 v. DC | 4PDT | 2 | 700 mw | 185 | 3.34 | 3.01 | 2.51 | 2.34 |
| TAT-4C | 24 v. DC | 4PDT | 2 | 700 mw | 700 | 3.34 | 3.01 | 2.51 | 2.34 |
| TAT-4C | 48 v. DC | 4PDT | 2 | 700 mw | 2500 | 3.34 | 3.01 | 2.51 | 2.34 |
| TAT-4C | 115 v. DC | 4PDT | 2 | 700 mw | 15,000 | 5.04 | 4.54 | 3.78 | 3.53 |
| TF154-2C | 6 v. DC | DPDT | 5 | 700 mw | 52 | 3.37 | 3.03 | 2.53 | 2.36 |
| TF154-2C | 12 v. DC | DPDT | 5 | 700 mw | 185 | 3.37 | 3.03 | 2.53 | 2.36 |
| TF154-2C | 24 v. DC | DPDT | 5 | 700 mw | 700 | 3.37 | 3.03 | 2.53 | 2.36 |
| TF154-2C | 48 v. DC | DPDT | 5 | 700 mw | 2500 | 3.37 | 3.03 | 2.53 | 2.36 |
| TF154-2C | 115 v. DC | DPDT | 5 | 700 mw | 15,000 | 5.07 | 4.56 | 3.80 | 3.55 |
| TF154-4C | 6 v. DC | 4PDT | 5 | 700 mw | 52 | 3.87 | 3.48 | 2.90 | 2.71 |
| TF154-4C | 12 v. DC | 4PDT | 5 | 700 mw | 185 | 3.87 | 3.48 | 2.90 | 2.71 |
| TF154-4C | 24 v. DC | 4PDT | 5 | 700 mw | 700 | 3.87 | 3.48 | 2.90 | 2.71 |
| TF154-4C | 48 v. DC | 4PDT | 5 | 700 mw | 2500 | 3.87 | 3.48 | 2.90 | 2.71 |
| TF154-4C | 115 v. DC | 4PDT | 5 | 700 mw | 15,000 | 5.57 | 5.01 | 4.17 | 3.90 |
| TF154-6C | 6 v. DC | 6PDT | 5 | 1.5 w. | 25 | 5.02 | 4.52 | 3.76 | 3.51 |
| TF154-6C | 12 v. DC | 6PDT | 5 | 1.5 w. | 90 | 5.02 | 4.52 | 3.76 | 3.51 |
| TF154-6C | 24 v. DC | 6PDT | 5 | 1.5 w. | 430 | 5.02 | 4.52 | 3.76 | 3.51 |
| TF154-6C | 48 v. DC | 6PDT | 5 | 1.5 w. | 1550 | 5.02 | 4.52 | 3.76 | 3.51 |
| TF154-6C | 115 v. DC | 6PDT | 5 | 1.5 w. | 9000 | 5.92 | 5.33 | 4.44 | 4.14 |
| TFMDO-2C | 6 v. DC | DPDT | 5 | 700 mw | 52 | 6.02 | 5.42 | 4.51 | 4.21 |
| | 12 v. DC | DPDT | 5 | 700 mw | 185 | 6.02 | 5.42 | 4.51 | 4.21 |
| | 24 v. DC | DPDT | 5 | 700 mw | 700 | 6.02 | 5.42 | 4.51 | 4.21 |
| | 115 v. DC | DPDT | 5 | 700 mw | 15,000 | 7.72 | 6.95 | 5.78 | 5.40 |
| T154-2C | 6 v. DC | DPDT | 2 | 700 mw | 52 | 3.25 | 2.92 | 2.44 | 2.27 |
| T154-2C | 12 v. DC | DPDT | 2 | 700 mw | 185 | 3.25 | 2.92 | 2.44 | 2.27 |
| T154-2C | 24 v. DC | DPDT | 2 | 700 mw | 700 | 3.25 | 2.92 | 2.44 | 2.27 |
| T154-2C | 48 v. DC | DPDT | 2 | 700 mw | 2500 | 3.25 | 2.92 | 2.44 | 2.27 |
| T154-2C | 115 v. DC | DPDT | 2 | 700 mw | 15,000 | 4.95 | 4.45 | 3.71 | 3.46 |
| T154-4C | 6 v. DC | 4PDT | 2 | 700 mw | 52 | 3.63 | 3.27 | 2.72 | 2.54 |
| T154-4C | 12 v. DC | 4PDT | 2 | 700 mw | 185 | 3.63 | 3.27 | 2.72 | 2.54 |
| T154-4C | 24 v. DC | 4PDT | 2 | 700 mw | 700 | 3.63 | 3.27 | 2.72 | 2.54 |
| T154-4C | 48 v. DC | 4PDT | 2 | 700 mw | 2500 | 3.63 | 3.27 | 2.72 | 2.54 |
| T154-4C | 115 v. DC | 4PDT | 2 | 700 mw | 15,000 | 5.33 | 4.80 | 3.99 | 3.73 |
| T154-6C | 6 v. DC | 6PDT | 2 | 1.5 w. | 25 | 4.66 | 4.19 | 3.49 | 3.26 |
| T154-6C | 12 v. DC | 6PDT | 2 | 1.5 w. | 90 | 4.66 | 4.19 | 3.49 | 3.26 |
| T154-6C | 24 v. DC | 6PDT | 2 | 1.5 w. | 430 | 4.66 | 4.19 | 3.49 | 3.26 |
| T154-6C | 48 v. DC | 6PDT | 2 | 1.5 w. | 1550 | 4.66 | 4.19 | 3.49 | 3.26 |
| T154-6C | 115 v. DC | 6PDT | 2 | 1.5 w. | 9000 | 5.56 | 5.00 | 4.17 | 3.89 |
| BO-6A | 6 v. AC | DPDT | 15 | 5 VA | 1.07 | 5.80 | 5.22 | 4.35 | 4.06 |
| BO-6A | 24 v. AC | DPDT | 15 | 5 VA | 17 | 5.80 | 5.22 | 4.35 | 4.06 |
| BO-6A | 115 v. AC | DPDT | 15 | 5 VA | 445 | 5.80 | 5.22 | 4.35 | 4.06 |
| BO-6A | 230 v. AC | DPDT | 15 | 5 VA | 1700 | 5.92 | 5.33 | 4.44 | 4.14 |
| BO-6D | 6.3 v. DC | DPDT | 15 | 2.5 w. | 14.2 | 5.12 | 4.61 | 3.84 | 3.58 |
| BO-6D | 13.2 v. DC | DPDT | 15 | 2.5 w. | 70 | 5.12 | 4.61 | 3.84 | 3.58 |
| BO-6D | 26.5 v. DC | DPDT | 15 | 2.5 w. | 230 | 5.12 | 4.61 | 3.84 | 3.58 |
| BO-6D | 110 v. DC | DPDT | 15 | 2.5 w. | 5000 | 5.70 | 5.13 | 4.27 | 3.99 |
| CNA-13A | 115 v. AC | SPST* | 25 | 10.5 VA | 145 | 8.60 | 7.74 | 6.45 | 6.02 |
| CNAS-13A | 115 v. AC | SPST* | 50 | 10.5 VA | 145 | 10.60 | 9.54 | 7.95 | 7.42 |
| PO-9A | 24 v. AC | 3PDT | 15 | 10.5 VA | 8 | 7.03 | 6.33 | 5.27 | 4.92 |
| PO-9A | 115 v. AC | 3PDT | 15 | 10.5 VA | 145 | 7.03 | 6.33 | 5.27 | 4.92 |
| PO-9D | 13.2 v. DC | 3PDT | 15 | 2.5 w. | 70 | 6.71 | 6.04 | 5.03 | 4.70 |
| PO-9D | 24 v. DC | 3PDT | 15 | 2.5 w. | 230 | 6.71 | 6.04 | 5.03 | 4.70 |
| PO-9D | 110 v. DC | 3PDT | 15 | 2.5 w. | 5000 | 7.38 | 6.64 | 5.53 | 5.17 |
| PO-12A | 115 v. AC | 4PDT | 15 | 10.5 VA | 145 | 7.90 | 7.11 | 5.92 | 5.53 |
| PO-12D | 13.2 v. DC | 4PDT | 15 | 2.5 w. | 70 | 7.44 | 6.70 | 5.58 | 5.21 |
| PO-12D | 24 v. DC | 4PDT | 15 | 2.5 w. | 230 | 7.44 | 6.70 | 5.58 | 5.21 |
| BOHR-6A | 115 v. AC | DPDT | 10 | 5 VA | 445 | 11.33 | 10.20 | 8.50 | 7.93 |
| BOHR-6D | 26.5 v. DC | DPDT | 10 | 2.5 w. | 230 | 10.88 | 9.79 | 8.16 | 7.62 |
| BOHRO-6† | 115 v. AC | DPDT | 15 | 5 VA | 445 | 11.33 | 10.20 | 8.50 | 7.93 |
| BOHRO-6‡ | 26.5 v. DC | DPDT | 15 | 2.5 w. | 230 | 10.88 | 9.79 | 8.16 | 7.62 |

*NO, double break. †Add suffix **A** (e.g., BOHRO-6A), ‡Add suffix **D**. § ±10% tol.

# Allied Control Relays, Accessories

## MINIATURE HERMETICALLY SEALED RELAYS

**:RIES CH**—Hook type solder terminals with three 6-32 NC-2A thd. studs for mounting. bration: 20 G to 2000 Hz. Shock: 50 G operational. Operate Time: 15 msec. Release me: 10 msec. Temperature: −65° C to +125° C. Size: $1\frac{23}{32}$" x $1\frac{7}{16}$" x $1\frac{1}{2}$" max. less rminals. Max. Weight, 5 oz.

**:RIES MH**—Type -6D has two 0.125" dia. mounting holes. Types -12D and -18D use ree 6-32 NC-2A threaded studs. Vibration: 15 G to 1000 Hz. Shock: 50 G operational. perate Time: -6D, 8 msec; -12D and -18D, 10 msec. Release Time: 5 msec. Temperature: ries MH, −55° C to +85° C; MHB, −65° C to +125° C. Max. Size: Type -6D, $\frac{1}{16}$" x $1\frac{1}{16}$" x .712"; -12D, $1\frac{3}{4}$" x $1\frac{21}{32}$" x $1\frac{1}{8}$"; -18D, $1\frac{3}{4}$" x $1\frac{13}{16}$" x $1\frac{17}{64}$". Max. Weight: D, 2 oz.; -12D, 3 oz.; -18D, 4.2 oz.

**:RIES MHUO**—Same specifications as Series MH-12D, but mount in Allied Series 100 sockets. Mounting: -12D, two 0.144" dia. holes; -18D, two 0.144" dia. holes. Socket ype: -12D, 16188-1 No.; -18D, No. 16189-1. Max. Size: -12D, $1\frac{23}{32}$" x $1\frac{21}{32}$" x $1\frac{1}{8}$"; 8D, $1\frac{23}{32}$" x $1\frac{13}{16}$" x $1\frac{5}{16}$". Max. Weight: -12D, 3 oz.; -18D, 4.2 oz.

**:RIES MHY**—Similar in appearance to Series MH, but with solder lug terminals. wo 6-32 NC-2A thd. studs. Vibration: 20 G to 500 Hz: Shock: 50 G operational. Operate me: 10 msec. Release Time: 5 msec. Temperature: −65° C to +125° C. Max. Size: $1\frac{61}{64}$" $1\frac{13}{16}$" x $1\frac{17}{64}$". Max. Weight, 4.2 oz.

| Allied Type | Coil Voltage | Contacts Type | Contacts Amps | Coil Power 25° C | Coil Resis., Ohms | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|---|---|---|
| H-12D | 26.5 VDC | 4PDT | 10 | 4.0 W | 180 | $30.00 | $24.00 | $22.50 | $21.00 |
| H-6D | 26.5 VDC | DPDT | 5 | 1.75 W | 400 | 14.25 | 11.40 | 10.69 | 9.98 |
| H-12D | 26.5 VDC | 4PDT | 5 | 2.5 W | 300 | 20.90 | 16.72 | 15.68 | 14.63 |
| H-18D | 26.5 VDC | 6PDT | 5 | 3.0 W | 240 | 23.75 | 19.00 | 17.81 | 16.63 |
| HB-6D | 26.5 VDC | DPDT | 5 | 1.25 W | 325 | 14.25 | 11.40 | 10.69 | 9.98 |
| HB-12D | 26.5 VDC | 4PDT | 5 | 3.0 W | 250 | 20.90 | 16.72 | 15.68 | 14.63 |
| HB-18D | 26.5 VDC | 6PDT | 5 | 3.5 W | 200 | 23.75 | 19.00 | 17.81 | 16.63 |
| HUO-12D | 26.5 VDC | 4PDT | 5 | 2.5 W | 300 | 20.90 | 16.72 | 15.68 | 14.63 |
| HUO-18D | 26.5 VDC | 6PDT | 5 | 3.0 W | 240 | 23.75 | 19.00 | 17.81 | 16.63 |
| HY-12D | 26.5 VDC | 4PDT | 10 | 3.5 W | 200 | 25.41 | 20.33 | 19.06 | 17.79 |

## WELDED SUBMINIATURE HERMETICALLY SEALED RELAYS

**ERIES WKJ**—Hook type solder terminals with two 0.120" dia. mounting holes. Type KJO (not illustrated) plugs into Armel type HRC-1 socket or equivalent. Vibration: G to 2000 Hz. Shock: 100 G operational. Operate Time: 5 msec. Release Time: 3 sec. Temperature: −65° C to +125° C. Max. Size, 1.320" x .400" x .875", less terminals. ax. Weight, 0.5 oz.

**ERIES WKY**—Hook type solder terminals with four 0.096" dia. mounting holes. Type KYO (not illustrated) mounts in Armel type HRK-1 socket or equivalent. Vibration: G to 2000 Hz. Shock: 50 G operational. Operate Time: 5 msec. Release Time: 3 sec. Temperature: −65° C to +125° C. Max. Size, .400" x $1\frac{11}{64}$" x .875", less terminals. ax. Weight, 0.5 oz.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| KJ-6D | 6 VDC | DPDT | 3 | 1.5 W | 40 | $ 8.25 | $ 7.42 | $6.19 | $5.77 |
| KJ-6D | 12 VDC | DPDT | 3 | 1.5 W | 150 | 8.25 | 7.42 | 6.19 | 5.77 |
| KJ-6D | 26.5 VDC | DPDT | 3 | 1.5 W | 600 | 8.25 | 7.42 | 6.19 | 5.77 |
| KJ-6D | 48 VDC | DPDT | 3 | 1.5 W | 2320 | 8.75 | 7.87 | 6.56 | 6.12 |
| KJ-6D | 115 VDC | DPDT | 3 | 1.5 W | 10,000 | 10.17 | 9.15 | 7.63 | 7.12 |
| KJO-6D | 26.5 VDC | DPDT | 3 | 1.5 W | 600 | 8.25 | 7.42 | 6.19 | 5.77 |
| KY-6D | 6 VDC | DPDT | 3 | 1.5 W | 40 | 10.08 | 9.07 | 7.56 | 7.06 |
| KY-6D | 12 VDC | DPDT | 3 | 1.5 W | 150 | 10.08 | 9.07 | 7.56 | 7.06 |
| KY-6D | 26.5 VDC | DPDT | 3 | 1.5 W | 600 | 10.08 | 9.07 | 7.56 | 7.06 |
| KY-6D | 48 VDC | DPDT | 3 | 1.5 W | 2320 | 10.58 | 9.52 | 7.94 | 7.41 |
| KY-6D | 115 VDC | DPDT | 3 | 1.5 W | 10,000 | 11.80 | 10.62 | 8.85 | 8.26 |
| KYO-6D | 26.5 VDC | DPDT | 3 | 1.5 W | 600 | 10.08 | 9.07 | 7.56 | 7.06 |

## SENSITIVE AND PLATE CIRCUIT RELAYS

**ERIES WJS**—Hermetically sealed with welded construction; two .125" dia. mtg. holes. ype WJSO mounts in Armel type HRC-1 socket or equivalent; two .120" dia. mtg. holes. ibration: 15 G to 2000 Hz. Shock: 50 G operational. Operate Time: 15 msec. Release ime: 10 msec. Temperature: −65° C to +125° C. Max. Size: $1\frac{29}{64}$" w. x .400" d. x 1.281" . less terminals; WJSO same but 1.32" w. Max. Weight, 1.0 oz.

**ERIES TFMDO**—Enclosed in transparent polycarbonate dust cover, rigidly secured to ase. Mount in any standard RETMA or EIA octal socket. Max. Size: $2\frac{3}{64}$" x $1\frac{13}{32}$" x $\frac{13}{32}$". Max. Weight, 2.5 oz.

**ERIES TFT**—Subminiature, open relay with small size moving parts resulting in quick elease and exceptional contact rating. Mounts in four 4-48 NF-2B tapped holes on .375" trs. Terminals have elongated holes .080" x .040". Max. Size: $1\frac{5}{16}$" x $1\frac{1}{32}$" x $\frac{41}{64}$". Max. Veight, 0.7 oz.

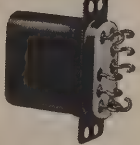
**ERIES TS154**—Plastic case enclosed design features no internal wiring. Contact arms xtend to form combination solder and plug-in terminals (printed circuit type TSP-154 lso available); elongated terminal holes .080" x .040"; use with Allied Series 30055 ockets. Max. Size: $1\frac{3}{16}$" x $\frac{47}{64}$" x $\frac{15}{16}$", type -2C; $1\frac{3}{16}$" x $\frac{47}{64}$" x $1\frac{11}{64}$", -4C. Max. Weight: .8 oz. -2C; 0.95 oz., -4C.

| Allied Type | Coil Current | Contacts Type | Contacts Amps | Coil Power 25° C | Coil Resis., Ohms | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-499 |
|---|---|---|---|---|---|---|---|---|---|
| VJS-3D | 3.2 mADC | SPDT | 3 | 25 mV | 2500 | $11.57 | $10.41 | $ 8.68 | $8.10 |
| VJS-3D | 2.2 mADC | SPDT | 3 | 25 mV | 5000 | 11.57 | 10.41 | 8.68 | 8.10 |
| VJS-3D | 1.6 mADC | SPDT | 3 | 25 mV | 10,000 | 13.50 | 12.15 | 10.13 | 9.45 |
| VJS-6D | 4.0 mADC | DPDT | 3 | 40 mW | 2500 | 11.83 | 10.65 | 8.87 | 8.28 |
| VJS-6D | 2.8 mADC | DPDT | 3 | 40 mW | 5000 | 11.83 | 10.65 | 8.87 | 8.28 |
| VJS-6D | 2.0 mADC | DPDT | 3 | 40 mW | 10,000 | 13.83 | 12.45 | 10.37 | 9.68 |
| VJSO-6D | 2.8 mADC | DPDT | 3 | 40 mW | 5000 | 11.83 | 10.65 | 8.87 | 8.28 |
| VJSO-6D | 2.0 mADC | DPDT | 3 | 40 mW | 10,000 | 13.83 | 12.45 | 10.37 | 9.68 |
| FMDO-2C | 9.5 mADC | DPDT | 5 | 220 mW | 2500 | 6.32 | 5.69 | 4.74 | 4.42 |
| FMDO-2C | 7.0 mADC | DPDT | 5 | 250 mW | 5000 | 6.83 | 6.15 | 5.13 | 4.78 |
| FMDO-2C | 5.5 mADC | DPDT | 5 | 300 mW | 10,000 | 7.22 | 6.50 | 5.42 | 5.05 |
| FT-2C | 9.5 mADC | DPDT | 5 | 220 mW | 2500 | 3.39 | 3.05 | 2.54 | 2.37 |
| FT-2C | 7.0 mADC | DPDT | 5 | 250 mW | 5000 | 3.89 | 3.50 | 2.92 | 2.72 |
| FT-2C | 5.5 mADC | DPDT | 5 | 300 mW | 10,000 | 4.29 | 3.86 | 3.22 | 3.00 |
| S154-2C | 5.8 mADC | DPDT | 1 | 85 mW | 2500 | 3.55 | 3.19 | 2.66 | 2.48 |
| S154-2C | 4.1 mADC | DPDT | 1 | 85 mW | 5000 | 4.05 | 3.64 | 3.04 | 2.83 |
| S154-2C | 3.1 mADC | DPDT | 1 | 85 mW | 10,000 | 4.45 | 4.00 | 3.34 | 3.11 |
| S154-4C | 8.4 mADC | 4PDT | 1 | 175 mW | 2500 | 3.96 | 3.57 | 2.97 | 2.77 |
| S154-4C | 6.2 mADC | 4PDT | 1 | 175 mW | 5000 | 4.46 | 4.02 | 3.35 | 3.12 |
| S154-4C | 4.5 mADC | 4PDT | 1 | 175 mW | 10,000 | 4.86 | 4.38 | 3.65 | 3.40 |

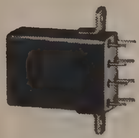
Series MH

Series MHUO

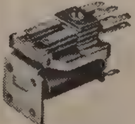
Series WKJ

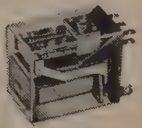

Series WKY

Series WJS


Series WJSO

Series TFMDO

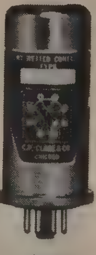

Series TFT

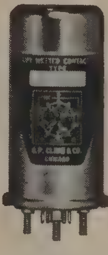

Series TS154

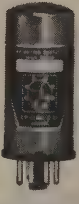
# PLUG-IN MERCURY-WETTED CONTACT RELAY

HG

HGP


HG2A, HG3A


HG4A


HGS

**BASE/WIRING DIAGRAMS**

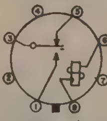


Fig. S4

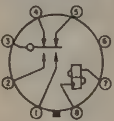


Fig. 1

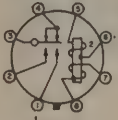


Fig. 2

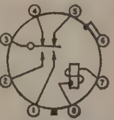


Fig. 4

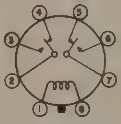


Fig. 2A1

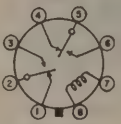


Fig. 2A2

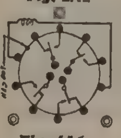


Fig. 4A1

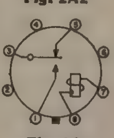


Fig. S1

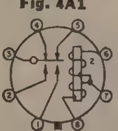


Fig. 3

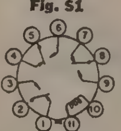


Fig. 3A1

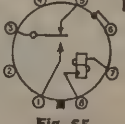


Fig. S5

## HG SERIES PLUG-IN MERCURY-WETTED CONTACT RELAYS

Type **HG** relays have SPDT make-before-break form D contacts rated 5 amps, 500 volt 250 VA maximum; operating time as short as 2 milliseconds. Type **HG2A** relays hav two switch capsules for DPDT operation, with operating time as short as 2¼ millisecond Type **HG3A** relays utilize three capsules for 3PDT operation, with operating time short as 2½ milliseconds. Type **HG4A** relays use four capsules for 4PDT, with operatin time as short as 3¾ milliseconds. Life expectancy, 22 x $10^9$ at specified ratings. Oct plug-in base, except HG4A relays which have 10-pin glass-to-metal plug and three 6-3 mounting studs. Size (not including pins): HG, 1.105" dia. x 2.636" high; HG2A an HG3A, 1$^{17}/_{32}$" dia. x 3$^{27}/_{64}$" high; HG4A, 1$^{11}/_{16}$" dia. x 3⅜" high.

| C. P. Clare Number | Coil Resis., Ohms | Must mADC Oper-ate | Must mADC Re-lease | Must Oper. VDC | Max. VDC | Base Fig-ure | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100 Up |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HG-1015 | 40 | 67 | 30 | 2.9 | 11 | 4 | $17.10 | $12.83 | $11.97 | $11.12 | $10.26 |
| HG-1012 | 130 | 37 | 16 | 5.4 | 20 | 4 | 17.10 | 12.83 | 11.97 | 11.12 | 10.26 |
| HG-1026 | 500 | 20 | 8.7 | 11 | 39 | 1 | 17.10 | 12.83 | 11.97 | 11.12 | 10.26 |
| HG-1004 | 700 | 19 | 8.3 | 15 | 45 | 1 | 17.10 | 12.83 | 11.97 | 11.12 | 10.26 |
| HG-1043 | 1000 | 15 | 6.6 | 17 | 55 | 1 | 17.10 | 12.83 | 11.97 | 11.12 | 10.26 |
| HG-1001 | 2500 | 10 | 4.4 | 28 | 87 | 1 | 17.45 | 14.83 | 12.22 | 11.34 | 10.47 |
| HG-1002 | 4000 | 7.5 | 3.3 | 33 | 110 | 1 | 10.45 | 7.84 | 7.32 | 6.79 | 6.27 |
| HG-1017 | 4000 | 7.5 | 3.3 | 33 | 110 | 4 | 18.00 | 13.50 | 12.60 | 11.70 | 10.80 |
| HG-1009 | 7000 | 5.8 | 2.6 | 45 | 145 | 1 | 18.00 | 13.50 | 12.60 | 11.70 | 10.80 |
| HG-1011 | 11,000 | 5.0 | 2.2 | 61 | 180 | 1 | 18.00 | 13.50 | 12.60 | 11.70 | 10.80 |
| HG-1024 | 25,000 | 3.4 | 1.5 | 94 | 275 | 1 | 18.00 | 13.50 | 12.60 | 11.70 | 10.80 |
| HG-1003† | 700/3300 | 32/13 | 14/4.9 | 25/47 | 46/99 | 2 | 19.75 | 14.81 | 13.83 | 12.84 | 11.85 |
| HG2A-1042 | 140 | 67 | 28 | 10 | 24 | 2A1 | 27.75 | 20.81 | 19.43 | 18.04 | 16.65 |
| HG2A-1003 | 315 | 44 | 19 | 15 | 36 | 2A2 | 27.75 | 20.81 | 19.43 | 18.04 | 16.65 |
| HG2A-1017 | 500 | 35 | 15 | 19 | 45 | 2A2 | 27.75 | 20.81 | 19.43 | 18.04 | 16.65 |
| HG2A-1009 | 700 | 31 | 13 | 24 | 53 | 2A1 | 27.75 | 20.81 | 19.43 | 18.04 | 16.65 |
| HG2A-1002 | 700 | 31 | 13 | 24 | 53 | 2A2 | 27.75 | 20.81 | 19.43 | 18.04 | 16.65 |
| HG2A-1015 | 1250 | 22 | 9.3 | 30 | 71 | 2A2 | 27.75 | 20.81 | 19.43 | 18.04 | 16.65 |
| HG2A-1068 | 2500 | 17 | 7.0 | 46 | 100 | 2A1 | 27.75 | 20.81 | 19.43 | 18.04 | 16.65 |
| HG2A-1001 | 5000 | 11 | 4.7 | 62 | 142 | 2A1 | 27.75 | 20.81 | 19.43 | 18.04 | 16.65 |
| HG2A-1004 | 5000 | 11 | 4.7 | 62 | 142 | 2A2 | 27.75 | 20.81 | 19.43 | 18.04 | 16.65 |
| HG2A-1013 | 10,000 | 8.6 | 3.6 | 94 | 200 | 2A2 | 27.75 | 20.81 | 19.43 | 18.04 | 16.65 |
| HG3A-1004 | 315 | 44 | 19 | 15 | 36 | 2A1 | 36.00 | 27.00 | 25.20 | 23.40 | 21.60 |
| HG3A-1006 | 500 | 35 | 15 | 19 | 45 | 2A2 | 36.00 | 27.00 | 25.20 | 23.40 | 21.60 |
| HG3A-1002 | 700 | 31 | 13 | 24 | 53 | 3A1 | 36.00 | 27.00 | 25.20 | 23.40 | 21.60 |
| HG3A-1008 | 1250 | 22 | 9.3 | 30 | 71 | 3A1 | 36.00 | 27.00 | 25.20 | 23.40 | 21.60 |
| HG3A-1005 | 2500 | 17 | 7.0 | 46 | 100 | 3A1 | 36.00 | 27.00 | 25.20 | 23.40 | 21.60 |
| HG3A-1003 | 5000 | 11 | 4.7 | 62 | 142 | 3A1 | 36.00 | 27.00 | 25.20 | 23.40 | 21.60 |
| HG3A-1010 | 10,000 | 8.6 | 3.6 | 94 | 200 | 3A1 | 36.00 | 27.00 | 25.20 | 23.40 | 21.60 |
| HG4A-1011 | 390 | 42 | 18 | 18 | 40 | 4A1 | 46.30 | 34.73 | 32.41 | 30.95 | 27.78 |
| HG4A-1001 | 700 | 35 | 15 | 27 | 53 | 4A1 | 46.30 | 34.73 | 32.41 | 30.95 | 27.78 |
| HG4A-1007 | 1400 | 23 | 9.9 | 35 | 75 | 4A1 | 46.30 | 34.73 | 32.41 | 30.95 | 27.78 |
| HG4A-1003 | 4000 | 16 | 6.7 | 69 | 126 | 4A1 | 46.30 | 34.73 | 32.41 | 30.95 | 27.78 |
| HG4A-1006 | 10,000 | 8.6 | 3.7 | 94 | 200 | 4A1 | 46.30 | 34.73 | 32.41 | 30.95 | 27.78 |

## HGP SERIES OCTAL-BASED MERCURY-WETTED RELAYS

Similar to HG series, but with permanent magnets making a slight increase in height Single side stable, except as indicated. SPDT make-before-break contacts rated 5 amps 500 volts, 250 VA max. with operating time as short as 2 milliseconds. Life expectancy 22 x $10^9$ at specified ratings. Size, 1.105" dia. x 3.105" high (not incl. pins).

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HGP-1001 | 90 | 16 | 1.3 | 1.6 | 16 | 1 | $18.55 | $13.91 | $12.99 | $12.06 | $11.13 |
| HGP-1005 | 1000 | 5.6 | 0.4 | 6.2 | 55 | 1 | 18.55 | 13.91 | 12.99 | 12.06 | 11.13 |
| HGP-1002 | 4000 | 3.0 | 0.24 | 13 | 110 | 1 | 19.90 | 14.93 | 13.93 | 12.94 | 11.94 |
| HGP-1008 | 4000 | 4.7 | 1.7 | 21 | 110 | 1 | 19.90 | 14.93 | 13.93 | 12.94 | 11.94 |
| HGP-1055 | 7000 | 2.2 | 0.19 | 17 | 145 | 1 | 19.90 | 14.93 | 13.93 | 12.94 | 11.94 |
| HGP-1052 | 11,000 | 1.9 | 0.21 | 23 | 180 | 1 | 19.90 | 14.93 | 13.93 | 12.94 | 11.94 |
| HGP-1050 | 25,000 | 1.3 | 0.15 | 36 | 275 | 1 | 19.90 | 14.93 | 13.93 | 12.94 | 11.94 |
| HGP-1006† | 700/3300 | 14/5.7 | 2.8 | 11/21 | 46/99 | 1 | 21.60 | 16.20 | 15.12 | 14.04 | 12.96 |
| HGP-1047* | 600 | ±3.4 | ..... | ±2.2 | 43 | 1 | 18.55 | 13.91 | 12.99 | 12.06 | 11.13 |
| HGP-1003* | 4000 | ±1.5 | ..... | ±6.6 | 110 | 1 | 19.90 | 14.93 | 13.93 | 12.94 | 11.94 |
| HGP-1012† | 700/3300 | 6.0/2.4 | ..... | 4.6/3.7 | 46/99 | 3 | 21.60 | 16.20 | 15.12 | 14.04 | 12.96 |
| HGP-1031*† | 7500/7500 | ±1.7/1.7 | ..... | ±14/14 | 150/150 | 3 | 21.60 | 16.20 | 15.12 | 14.04 | 12.96 |
| HGP-1028 | 500 | ..... | ..... | 6.3# | ..... | 4 | 19.20 | 14.40 | 13.44 | 12.48 | 11.52 |
| HGP-1009 | 4000 | ..... | ..... | 18.5# | ..... | 4 | 20.50 | 15.38 | 14.35 | 13.33 | 12.30 |

## HGS SERIES OCTAL-BASED MERCURY-WETTED RELAYS

Plug-in relays offering increased speed and reliability, with high sensitivity. **HGS-100** series have SPDT make-before-break contacts; **HGS-5000** series have SPDT break-before-make contacts. All contacts rated 2 amps, 500 volts, 100 VA maximum. Operate time as fast as 1 millisecond. Single element assemblies (Single side stable, except a indicated). Life expectancy, 22 x $10^9$ at specified ratings. Size, 1.312" max. dia. x 2.650" high (not including pins).

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HGS-1015 | 90 | 6.3 | 1.1 | .63 | 13 | S1 | $14.15 | $10.61 | $ 9.91 | $9.20 | $8.49 |
| HGS-1045 | 350 | 3.6 | 0.61 | 1.4 | 26 | S1 | 14.15 | 10.61 | 9.91 | 9.20 | 8.49 |
| HGS-1018 | 500 | 2.9 | 0.50 | 1.6 | 31 | S1 | 14.15 | 10.61 | 9.91 | 9.20 | 8.49 |
| HGS-1009 | 600 | 2.9 | 0.69 | 1.9 | 34 | S1 | 14.15 | 10.61 | 9.91 | 9.20 | 8.49 |
| HGS-1046 | 700 | 2.9 | 0.49 | 2.2 | 37 | S1 | 14.15 | 10.61 | 9.91 | 9.20 | 8.49 |
| HGS-1014 | 1000 | 2.2 | 0.38 | 2.4 | 44 | S1 | 14.15 | 10.61 | 9.91 | 9.20 | 8.49 |
| HGS-1006 | 2500 | 1.4 | 0.17 | 3.9 | 70 | S1 | 14.50 | 10.88 | 10.15 | 9.43 | 8.70 |
| HGS-1005 | 4000 | 1.25 | 0.25 | 5.5 | 90 | S1 | 15.10 | 11.33 | 10.57 | 9.82 | 9.06 |
| HGS-1048 | 4000 | 1.25 | 0.25 | 5.5 | 90 | S4 | 15.10 | 11.33 | 10.57 | 9.82 | 9.06 |
| HGS-1016 | 7000 | 0.87 | 0.14 | 6.7 | 118 | S1 | 15.10 | 11.33 | 10.57 | 9.82 | 9.06 |
| HGS-1017 | 11,000 | 0.72 | 0.12 | 8.7 | 148 | S1 | 15.10 | 11.33 | 10.57 | 9.82 | 9.06 |
| HGS-1113* | 1000 | ‡1.2 | ..... | 1.4 | 45 | S1 | 14.15 | 10.61 | 9.91 | 9.20 | 8.49 |
| HGS-1114* | 2500 | ‡0.82 | ..... | 2.3 | 70 | S1 | 14.50 | 10.88 | 10.15 | 9.43 | 8.70 |
| HGS-1026* | 4000 | ‡0.48 | ..... | 2.1 | 90 | S1 | 15.10 | 11.33 | 10.57 | 9.82 | 9.06 |
| HGS-1056* | 7000 | ‡0.48 | ..... | 3.7 | 118 | S1 | 15.10 | 11.33 | 10.57 | 9.82 | 9.06 |
| HGS-1096* | 25,000 | ‡0.29 | ..... | 3.0 | 223 | S1 | 15.10 | 11.33 | 10.57 | 9.82 | 9.06 |
| HGS-1004§ | 600 | ..... | ..... | 6.3# | ..... | S1 | 14.75 | 11.06 | 10.33 | 9.59 | 8.85 |
| HGS-5011 | 350 | 3.6 | 0.61 | 1.4 | 26 | S1 | 14.15 | 10.61 | 9.91 | 9.20 | 8.49 |
| HGS-5015 | 1000 | 2.2 | 0.38 | 2.4 | 44 | S1 | 14.15 | 10.61 | 9.91 | 9.20 | 8.49 |
| HGS-5003 | 2500 | 1.4 | 0.17 | 3.9 | 70 | S1 | 14.50 | 10.88 | 10.15 | 9.43 | 8.70 |
| HGS-5008 | 4000 | 1.25 | 0.25 | 5.5 | 90 | S5 | 15.10 | 11.33 | 10.57 | 9.82 | 9.06 |
| HGS-5047 | 11,000 | 0.72 | 0.12 | 8.7 | 148 | S1 | 15.10 | 11.33 | 10.57 | 9.82 | 9.06 |
| HGS-5016 | 25,000 | 0.52 | 0.09 | 14.3 | 224 | S1 | 15.10 | 11.33 | 10.57 | 9.82 | 9.06 |
| HGS-5006* | 1000 | 1.2 | ..... | 1.4 | 45 | S1 | 14.15 | 10.61 | 9.91 | 9.20 | 8.49 |
| HGS-5004* | 4000 | 0.4[illegible] | ..... | 2.1 | 90 | S1 | 15.10 | 11.33 | 10.57 | 9.82 | 9.06 |
| HGS-5017§ | 600 | ..... | ..... | 6.3# | ..... | S1 | 14.75 | 11.06 | 10.33 | 9.59 | 8.85 |

*Bi-stable. †Double wound. ‡Single side stable. §Chopper. #VAC.

CLARE

# MODULAR MERCURY-WETTED CONTACT RELAYS

## HGM SERIES MODULAR MERCURY-WETTED RELAYS

nsist of standard HG switch capsules in module form, with plated steel covers for ellent mechanical protection and magnetic shielding. Standard HG switch is not arity sensitive. SPDT make-before-break contacts rated 5 amps, 500 volts, 250 VA ximum. Life expectancy, 22 x 10⁹ at specified ratings. Size, ¾" x ¾" x 3¹³⁄₆₄".

| . P. Clare Number | Coil Resis., Ohms | Must mADC | | Must Oper. VDC | Max. DC Volts | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Operate | Release | | | 1-9 | 10-24 | 25-49 | 50-99 | 100 Up |
| GM-1005 | 40 | 119 | 52 | 5.24 | 12.6 | $13.30 | $9.98 | $9.31 | $8.65 | $7.98 |
| GM-1008 | 150 | 53 | 23 | 8.75 | 24 | 13.30 | 9.98 | 9.31 | 8.65 | 7.98 |
| GM-1002 | 450 | 32.9 | 14.5 | 16.3 | 42 | 13.30 | 9.98 | 9.31 | 8.65 | 7.98 |
| GM-1001 | 750 | 18.6 | 8.2 | 15.4 | 55 | 13.30 | 9.98 | 9.31 | 8.65 | 7.98 |
| GM-1012 | 1100 | 21.6 | 9.5 | 26.2 | 66 | 13.30 | 9.98 | 9.31 | 8.65 | 7.98 |

## HG2M SERIES DPDT MODULAR RELAYS

ne characteristics as HGM series, but contains two capsules for DPDT make-before-eak configuration. Contacts rated 5 amps, 500 volts, 100 VA maximum with life ectancy of 22 x 10⁹. Size, ¾" x 1³⁄₃₂" x 3¹³⁄₆₄" max.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| G2M-1007 | 90 | 82.2 | 28.6 | 8.2 | 19 | $18.65 | $13.99 | $13.06 | $12.12 | $11.19 |
| G2M-1008 | 350 | 42.0 | 14.6 | 16.2 | 37 | 18.65 | 13.99 | 13.06 | 12.12 | 11.19 |
| G2M-1020 | 580 | 32.5 | 11.2 | 20.7 | 48 | 18.65 | 13.99 | 13.06 | 12.12 | 11.19 |
| G2M-1026 | 1250 | 23.0 | 8.0 | 31.8 | 70 | 18.65 | 13.99 | 13.06 | 12.12 | 11.19 |

## HGSM SERIES PRINTED CIRCUIT MODULE RELAYS

ercury-wetted relays for printed circuit board mounting. **HGSM-1000** series have DT make-before-break contacts; **HGSM-5000,** break-before-make. Contacts rated mps, 500 volts, 100 VA max. at rated load. Max. dissipation, 2 watts continuous at C. Temperature rise, 30° C per watt at 25° C ambient. Life expectancy, 22 x 10⁹. gle side stable, except as indicated. Size, ⅝" x ⅝" x 2¹⁄₁₆" max.

| . P. Clare Number | Coil Resis., Ohms | Must mADC | | Must Oper. VDC | Max. VDC | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Operate | Release | | | 1-9 | 10-24 | 25-49 | 50-99 | 100 Up |
| GSM-1005 | 65 | 37.4 | 6.2 | 2.7 | 11.4 | $11.45 | $8.59 | $8.02 | $7.44 | $6.87 |
| GSM-1007 | 90 | 37.7 | 6.3 | 3.8 | 13.4 | 11.45 | 8.59 | 8.02 | 7.44 | 6.87 |
| GSM-1009 | 275 | 17.0 | 2.8 | 5.2 | 23.4 | 11.45 | 8.59 | 8.02 | 7.44 | 6.87 |
| GSM-1010 | 450 | 12.9 | 2.1 | 6.4 | 30.0 | 11.45 | 8.59 | 8.02 | 7.44 | 6.87 |
| GSM-1011 | 675 | 11.6 | 1.9 | 8.6 | 36.7 | 11.45 | 8.59 | 8.02 | 7.44 | 6.87 |
| GSM-1002 | 940 | 10.1 | 1.7 | 10.5 | 43.3 | 11.45 | 8.59 | 8.02 | 7.44 | 6.87 |
| GSM-1001 | 1425 | 8.3 | 1.4 | 13 | 53.4 | 11.45 | 8.59 | 8.02 | 7.44 | 6.87 |
| GSM-1003 | 2400 | 7.35 | 1.2 | 20.6 | 69.2 | 11.45 | 8.59 | 8.02 | 7.44 | 6.87 |
| GSM-1063* | 460/ 460 | ±7.8/ 7.8 | ..... | ±3.95/ 3.95 | 30.3/ 30.3 | 12.20 | 9.15 | 8.54 | 7.93 | 7.32 |
| GSM-1016* | 1100/ 1100 | 7.25/ 5.7 | ..... | 8.77/ 6.9 | 46.9/ 46.9 | 12.20 | 9.15 | 8.54 | 7.93 | 7.32 |
| GSM-5021 | 65 | 37.4 | 6.2 | 2.7 | 11.4 | 11.45 | 8.59 | 8.02 | 7.44 | 6.87 |
| GSM-5035 | 275 | 17.0 | 2.8 | 5.2 | 23.4 | 11.45 | 8.59 | 8.02 | 7.44 | 6.87 |
| GSM-5009 | 450 | 12.9 | 2.1 | 6.4 | 30.0 | 11.45 | 8.59 | 8.02 | 7.44 | 6.87 |
| GSM-5010 | 675 | 11.6 | 1.9 | 8.6 | 36.7 | 11.45 | 8.59 | 8.02 | 7.44 | 6.87 |
| GSM-5011 | 940 | 10.1 | 1.7 | 10.5 | 43.3 | 11.45 | 8.59 | 8.02 | 7.44 | 6.87 |
| GSM-5001 | 1425 | 8.3 | 1.4 | 13 | 53.4 | 11.45 | 8.59 | 8.02 | 7.44 | 6.87 |
| GSM-5002 | 1950 | 7.5 | 1.2 | 17.6 | 62.4 | 11.45 | 8.59 | 8.02 | 7.44 | 6.87 |
| GSM-5064 | 2400 | 7.35 | 1.2 | 20.6 | 69.2 | 11.45 | 8.59 | 8.02 | 7.44 | 6.87 |
| GSM-5003* | 1100/ 1100 | ±7.25/ 5.7 | ..... | ±8.77/ 6.9 | 46.9/ 46.9 | 12.20 | 9.15 | 8.54 | 7.93 | 7.32 |

i-stable double wound.

## HGS2MT SERIES MERCURY-WETTED CONTACT RELAYS

pable of handling input switching functions for any type of reasonable high speed, w level data acquisition system. Contacts rated 2 amps, 500 volts, 100 VA maximum. PDT, Form C break-before-make. Life expectancy, 22 x 10⁹. Size, ¾" x 1³⁄₃₂" x 2¹⁄₁₆" max.

| C. P. Clare Number | Nom. VDC | Coil Resis. Ohms | Must VDC | | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Operate | Release | 1-9 | 10-24 | 25-49 | 50-99 | 100 Up |
| GS2MT-5001 | 6 | 130 | 3.0 | 0.5 | $22.15 | $16.61 | $15.51 | $14.40 | $13.29 |
| GS2MT-5008 | 12 | 520 | 5.3 | 1.1 | 26.25 | 19.69 | 18.38 | 17.06 | 15.75 |
| GS2MT-5009 | 24 | 2200 | 11.0 | 2.2 | 26.25 | 19.69 | 18.38 | 17.06 | 15.75 |

## HGJM SERIES MERCURY-WETTED CONTACT RELAYS

oise is only 15 μV at 4 ms after coil energization with 10 kHz bandwidth; less than 5 μV 5 ms. Fast response time approaches 1 ms; ultra-stable to 250 Hz. SPDT contacts ted 2 amps at 500 volts max.; 100 VA max. AC or DC.

### 0.350" LOW PROFILE SINGLE SIDE STABLE

| C. P. Clare Number | Nom. VDC | Coil Resis. Ohms | Must VDC | | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Operate | Release | 1-9 | 10-24 | 25-49 | 50-99 | 100 Up |
| GJM-51131J00 | 5.0 | 68 | 2.7 | 0.57 | $13.20 | $9.95 | $9.24 | $8.58 | $7.92 |
| GJM-51131N00 | 12.0 | 400 | 6.4 | 1.5 | 13.20 | 9.95 | 9.24 | 8.58 | 7.92 |
| GJM-51131R00 | 24.0 | 1425 | 12.5 | 2.65 | 13.20 | 9.95 | 9.24 | 8.58 | 7.92 |
| GJM-51131V00 | 48.0 | 6100 | 24.5 | 5.4 | 13.20 | 9.95 | 9.24 | 8.58 | 7.92 |

### 0.400" HIGH SENSITIVITY SINGLE SIDE STABLE

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| GJM-51111K00 | 5.0 | 125 | 2.81 | 0.61 | $12.60 | $9.60 | $8.82 | $8.19 | $7.56 |
| GJM-51111P00 | 12.0 | 685 | 7.25 | 1.88 | 12.60 | 9.60 | 8.82 | 8.19 | 7.56 |
| GJM-51111T00 | 24.0 | 2680 | 13.9 | 3.05 | 12.60 | 9.60 | 8.82 | 8.19 | 7.56 |
| GJM-51111W00 | 48.0 | 9850 | 27.1 | 6.15 | 12.60 | 9.60 | 8.82 | 8.19 | 7.56 |

## HGJ2MT SERIES MERCURY-WETTED CONTACT RELAYS

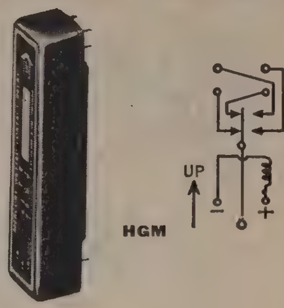
me as HGJM Series except two capsules for DPDT configurations.

### 0.350" LOW PROFILE SINGLE SIDE STABLE

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| GJ2MT-51231E00 | 5.0 | 27 | 2.6 | .54 | $25.40 | $19.15 | $17.78 | $16.51 | $15.24 |
| GJ2MT-51231K00 | 12.0 | 230 | 6.0 | 1.36 | 25.40 | 19.15 | 17.78 | 16.51 | 15.24 |
| GJ2MT-51231N00 | 24.0 | 800 | 12.0 | 2.4 | 25.40 | 19.15 | 17.78 | 16.51 | 15.24 |
| GJ2MT-51231R00 | 48.0 | 2850 | 23.0 | 4.65 | 25.40 | 19.15 | 17.78 | 16.51 | 15.24 |

### 0.400" HIGH SENSITIVITY SINGLE SIDE STABLE

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| GJ2MT-51211G00 | 5.0 | 55 | 2.60 | 0.55 | $24.35 | $18.35 | $17.05 | $15.83 | $14.61 |
| GJ2MT-51211L00 | 12.0 | 370 | 6.65 | 1.41 | 24.35 | 18.35 | 17.05 | 15.83 | 14.61 |
| GJ2MT-51211P00 | 24.0 | 1370 | 12.8 | 2.80 | 24.35 | 18.35 | 17.05 | 15.83 | 14.61 |
| GJ2MT-51211T00 | 48.0 | 5300 | 25.5 | 5.55 | 24.35 | 18.35 | 17.05 | 15.83 | 14.61 |



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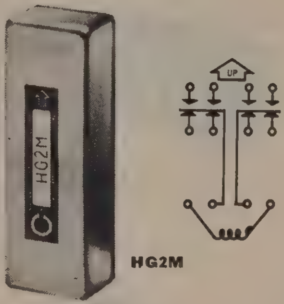
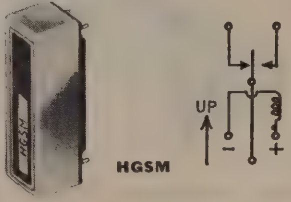
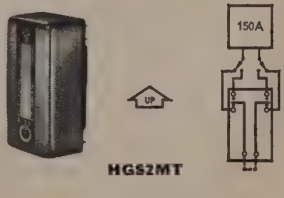


HG2M



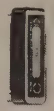
HGSM



HGS2MT

Standard

HGJM



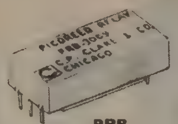
Low Profile

Standard

HGJ2MT

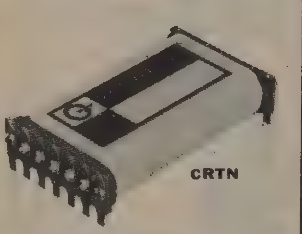
Low Profile

# CLARE Reed Relays



PRB

MRME



CRTN

## SERIES PRB PICOREED® RELAYS

A state-of-the-art advancement in sealed contact reed relays; small in size, ultra-fast operation. Response time, physical size, sensitivity and reliability characteristics combi to provide complete electrical and packaging compatibility with integrated circuit devic Ideal for economical and reliable solid-state input-output isolation buffering applicatio High speed operation, with operate time as low as 500 µsec., including bounce, at norm coil power. Contacts rated 0.5 amp max., 100 volts max., 10 VA max.; 1.0 amp maximu carry load. Life expectancy: 100 million operations at low-level loads; 5 million operatio at 28 VDC, 0.125 amp. Series 3000 five-volt Picoreed relays are specially designed compatibility with standard 5-volt DTL and TTL logic families; have must opera voltage value of 3.75 volts at 25° C. PRB low profile Series have straight pin termina permits PC board mounting on .375″ centers. Suffix **H** indicates high sensitivity units th allow .500″ mtg. centers; others are low-profile types. All types are .800″ long (width a height shown in table).

| C. P. Clare Number | Nom. V | Coil Resis., Ohms | Contact Form | Size, Inches | | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | W. | H. | 1-24 | 25-99 | 100-249 | 250 Up |
| PRB-2510 | 6 | 387 | 1A | .275 | .187 | $2.75 | $2.48 | $2.20 | $2.07 |
| PR2B-2007 | 6 | 136 | 2A | .375 | .225 | 4.00 | 3.60 | 3.20 | 3.00 |
| PR3B-2006 | 6 | 117 | 3A | .475 | .225 | 5.25 | 4.73 | 4.20 | 3.94 |
| PR4B-2005 | 6 | 88 | 4A | .575 | .225 | 6.50 | 5.85 | 5.20 | 4.88 |
| PRB-2513 | 12 | 1200 | 1A | .275 | .187 | 2.75 | 2.48 | 2.20 | 2.07 |
| PR2B-2011 | 12 | 740 | 2A | .375 | .225 | 4.00 | 3.60 | 3.20 | 3.00 |
| PR3B-2009 | 12 | 483 | 3A | .475 | .225 | 5.25 | 4.73 | 4.20 | 3.94 |
| PR4B-2008 | 12 | 351 | 4A | .575 | .225 | 6.50 | 5.85 | 5.20 | 4.88 |
| PR5B-2008 | 12 | 419 | 5A | .675 | .225 | 7.75 | 6.98 | 6.20 | 5.81 |
| PRB-2516 | 24 | 5380 | 1A | .275 | .187 | 3.05 | 2.75 | 2.44 | 2.29 |
| PR2B-2014 | 24 | 3042 | 2A | .375 | .225 | 4.30 | 3.87 | 3.44 | 3.23 |
| PR3B-2013 | 24 | 2254 | 3A | .475 | .225 | 5.55 | 5.09 | 4.44 | 4.17 |
| PR4B-2012 | 24 | 1856 | 4A | .575 | .225 | 6.80 | 6.12 | 5.44 | 5.10 |
| PR5B-2011 | 24 | 1424 | 5A | .675 | .225 | 8.05 | 7.25 | 6.44 | 6.04 |
| PRB-2009H | 6 | 535 | 1A | .400 | .350 | 3.00 | 2.70 | 2.40 | 2.25 |
| PR2B-2007H | 6 | 297 | 2A | .500 | .350 | 4.25 | 3.83 | 3.40 | 3.19 |
| PR3B-2006H | 6 | 228 | 3A | .600 | .350 | 5.50 | 4.95 | 4.40 | 4.13 |
| PR4B-2005H | 6 | 155 | 4A | .700 | .350 | 6.75 | 6.08 | 5.40 | 5.07 |
| PR5B-2005H | 6 | 180 | 5A | .800 | .350 | 8.00 | 7.20 | 6.40 | 6.00 |
| PRB-2013H | 12 | 2870 | 1A | .400 | .350 | 3.00 | 2.70 | 2.40 | 2.25 |
| PR2B-2010H | 12 | 1180 | 2A | .500 | .350 | 4.25 | 3.83 | 3.40 | 3.19 |
| PR3B-2009H | 12 | 877 | 3A | .600 | .350 | 5.50 | 4.95 | 4.40 | 4.13 |
| PR4B-2008H | 12 | 663 | 4A | .700 | .350 | 6.75 | 6.08 | 5.40 | 5.07 |
| PR5B-2008H | 12 | 771 | 5A | .800 | .350 | 8.00 | 7.20 | 6.40 | 6.00 |
| PRB-2016H | 24 | 11900 | 1A | .400 | .350 | 3.40 | 3.06 | 2.72 | 2.55 |
| PR2B-2013H | 24 | 3780 | 2A | .500 | .350 | 4.65 | 4.19 | 3.72 | 3.49 |
| PR3B-2013H | 24 | 4700 | 3A | .600 | .350 | 5.90 | 5.31 | 4.72 | 4.43 |
| PR4B-2012H | 24 | 3620 | 4A | .700 | .350 | 7.15 | 6.44 | 5.72 | 5.37 |
| PR5B-2011H | 24 | 3150 | 5A | .800 | .350 | 8.40 | 7.56 | 6.72 | 6.30 |
| PRB-3510 | 5 | 387 | 1A | .275 | .187 | 3.05 | 2.75 | 2.44 | 2.29 |
| PR2B-3007 | 5 | 136 | 2A | .375 | .225 | 4.30 | 3.87 | 3.44 | 3.23 |
| PR3B-3006 | 5 | 117 | 3A | .475 | .225 | 5.55 | 5.00 | 4.44 | 4.17 |
| PR4B-3005 | 5 | 88 | 4A | .575 | .225 | 6.80 | 6.12 | 5.44 | 5.10 |
| PR5B-3005 | 5 | 105 | 5A | .675 | .225 | 8.05 | 7.25 | 6.44 | 6.04 |
| PRB-3009H | 5 | 535 | 1A | .400 | .350 | 3.40 | 3.06 | 2.72 | 2.55 |
| PR2B-3007H | 5 | 297 | 2A | .500 | .350 | 4.65 | 4.19 | 3.72 | 3.49 |
| PR3B-3006H | 5 | 228 | 3A | .600 | .350 | 5.90 | 5.31 | 4.72 | 4.43 |
| PR4B-3005H | 5 | 155 | 4A | .700 | .350 | 7.15 | 6.44 | 5.72 | 5.37 |
| PR5B-3005H | 5 | 180 | 5A | .800 | .350 | 8.40 | 7.56 | 6.72 | 6.30 |

## SERIES MRME MICRO-CLAREED RELAYS

Same high performance standards as regular Clareed relays (listed below), in only one fifth the size. Provide isolation between coil and contacts. Immune to false operation by the type of transients that affect solid state devices; insensitive to overload transients that would damage solid state devices. Offer switching speed as fast as 500 microseconds, fully compatible with other mechanics of process control. Designed for PC board use. Contacts are rated 15 VA max., ¾ amp max. In molded epoxy module.

| C. P. Clare Number | Nom. V | Coil Resis., Ohms | Contact Form | Size, Inches W. x D. x H. | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | 1-24 | 25-99 | 100-249 | 250 Up |
| MRME-1540 | 5 | 130 | 1A | 1 19/64 x 13/32 x .385 | $3.50 | $3.15 | $2.80 | $2.63 |
| MR2ME-1540 | 5 | 100 | 2A | 1 19/64 x 33/64 x .385 | 4.75 | 4.28 | 3.80 | 3.56 |
| MR3ME-1540 | 5 | 80 | 3A | 1 19/64 x 39/64 x .385 | 6.00 | 5.40 | 4.80 | 4.50 |
| MR4ME-1540 | 5 | 60 | 4A | 1 19/64 x 45/64 x .385 | 7.25 | 6.53 | 5.80 | 5.44 |
| MRME-1041 | 6 | 218 | 1A | 1 19/64 x 13/32 x .385 | 3.50 | 3.15 | 2.80 | 2.63 |
| MR2ME-1041 | 6 | 168 | 2A | 1 19/64 x 33/64 x .385 | 4.75 | 4.28 | 3.80 | 3.56 |
| MR3ME-1041 | 6 | 125 | 3A | 1 19/64 x 39/64 x .385 | 6.00 | 5.40 | 4.80 | 4.50 |
| MR4ME-1041 | 6 | 95 | 4A | 1 19/64 x 45/64 x .385 | 7.25 | 6.53 | 5.80 | 5.44 |
| MRME-1042 | 12 | 790 | 1A | 1 19/64 x 13/32 x .385 | 3.50 | 3.15 | 2.80 | 2.63 |
| MR2ME-1042 | 12 | 635 | 2A | 1 19/64 x 33/64 x .385 | 4.75 | 4.28 | 3.80 | 3.56 |
| MR3ME-1042 | 12 | 510 | 3A | 1 19/64 x 39/64 x .385 | 6.00 | 5.40 | 4.80 | 4.50 |
| MR4ME-1042 | 12 | 410 | 4A | 1 19/64 x 45/64 x .385 | 7.25 | 6.53 | 5.80 | 5.44 |
| MRME-1043 | 24 | 3060 | 1A | 1 19/64 x 13/32 x .385 | 4.00 | 3.60 | 3.20 | 3.00 |
| MR2ME-1043 | 24 | 2580 | 2A | 1 19/64 x 33/64 x .385 | 5.25 | 4.73 | 4.20 | 3.94 |
| MR3ME-1043 | 24 | 1950 | 3A | 1 19/64 x 39/64 x .385 | 6.50 | 5.85 | 5.20 | 4.88 |
| MR4ME-1043 | 24 | 1500 | 4A | 1 19/64 x 45/64 x .385 | 7.75 | 6.93 | 6.20 | 5.82 |

## SERIES CRTN CLAREED RELAYS

Ultra-reliable reed relays for printed circuit board mounting. Reed contacts are sealed in an inert gas atmosphere, within a glass tube. Coils are wound on molded bobbins capable of accepting up to six Clareed switch capsules. Standard Clareed relays have 1, 2, 4 and 6 Form A contacts rated 15 VA maximum, non-inductive; 1 amp maximum, 250 volts maximum; with carry load of 5 amps maximum (not switched). Life expectancy, over 20 million operations at rated load. Insulation resistance, 500K megohms minimum. Breakdown voltage, 500 V rms, 60 Hz minimum. Available for 6, 12, 24 or 48 volts.

| C. P. Clare Number | V | Coil Resis., Ohms | Contact Form | Maximum Size | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | 1-24 | 25-99 | 100-249 | 250 Up |
| CRTN-1007 | 6 | 160 | 1A | 5/8″ x 9/16″ x 2 21/32″ | $ 3.50 | $3.15 | $2.80 | $2.63 |
| CR2TN-1004 | 6 | 88 | 2A | 27/32″ x 9/16″ x 2 21/32″ | 4.50 | 4.05 | 3.60 | 3.38 |
| CR4TN-1104 | 6 | 56 | 4A | 1 9/32″ x 9/16″ x 2 21/32″ | 6.50 | 5.85 | 5.20 | 4.88 |
| CR6TN-1003 | 6 | 31 | 6A | 1 49/64″ x 9/16″ x 2 21/32″ | 8.50 | 7.65 | 6.80 | 6.38 |
| CRTN-1010 | 12 | 600 | 1A | 5/8″ x 9/16″ x 2 21/32″ | 3.50 | 3.15 | 2.80 | 2.63 |
| CR2TN-1007 | 12 | 235 | 2A | 27/32″ x 9/16″ x 2 21/32″ | 4.50 | 4.05 | 3.60 | 3.38 |
| CR4TN-1107 | 12 | 136 | 4A | 1 9/32″ x 9/16″ x 2 21/32″ | 6.50 | 5.85 | 5.20 | 4.88 |
| CR6TN-1006 | 12 | 120 | 6A | 1 49/64″ x 9/16″ x 2 21/32″ | 8.50 | 7.65 | 6.80 | 6.38 |
| CRTN-1013 | 24 | 2500 | 1A | 5/8″ x 9/16″ x 2 21/32″ | 4.50 | 4.05 | 3.60 | 3.38 |
| CR2TN-1010 | 24 | 1400 | 2A | 27/32″ x 9/16″ x 2 21/32″ | 5.50 | 4.95 | 4.40 | 4.13 |
| CR4TN-1110 | 24 | 835 | 4A | 1 9/32″ x 9/16″ x 2 21/32″ | 7.50 | 6.75 | 6.00 | 5.63 |
| CR6TN-1009 | 24 | 510 | 6A | 1 49/64″ x 9/16″ x 2 21/32″ | 9.50 | 8.55 | 7.60 | 7.13 |
| CRTN-1016 | 48 | 9450 | 1A | 5/8″ x 9/16″ x 2 21/32″ | 6.00 | 5.40 | 4.80 | 4.50 |
| CR2TN-1013 | 48 | 5400 | 2A | 27/32″ x 9/16″ x 2 21/32″ | 7.00 | 6.30 | 5.60 | 5.25 |
| CR4TN-1113 | 48 | 2195 | 4A | 1 9/32″ x 9/16″ x 2 21/32″ | 9.00 | 8.10 | 7.20 | 6.75 |
| CR6TN-1012 | 48 | 1900 | 6A | 1 49/64″ x 9/16″ x 2 21/32″ | 11.00 | 9.90 | 8.80 | 8.25 |

CLARE

# General Purpose Relays

## GP1 SERIES GENERAL PURPOSE RELAYS

niature 4PDT relays, complete with dust cover that meets U/L recognition. Contacts fine silver-gold flashed, rated 3 amps at 30 VDC or 120 VAC resistive. Life, over 100 llion operations (AC). Solder term. Size, 1.109″ x .859″ x 1.281″ max.

| C. P. Clare Number | Volts | Coil Resis., Ohms | Contacts Form | A | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500 Up |
|---|---|---|---|---|---|---|---|---|---|---|
| 1R-11A0000 | 6 AC | 10.5 | 4PDT | 3 | $4.55 | $4.32 | $4.10 | $3.19 | $2.96 | $2.62 |
| 1R-11A1000 | 12 AC | 43 | 4PDT | 3 | 4.55 | 4.32 | 4.10 | 3.19 | 2.96 | 2.62 |
| 1R-11A2000 | 24 AC | 160 | 4PDT | 3 | 4.55 | 4.32 | 4.10 | 3.19 | 2.96 | 2.62 |
| 1R-11A6000 | 120 AC | 3900 | 4PDT | 3 | 4.85 | 4.61 | 4.37 | 3.40 | 3.15 | 2.79 |
| 1R-11D0000 | 6 DC | 40 | 4PDT | 3 | 4.30 | 4.09 | 3.87 | 3.01 | 2.80 | 2.47 |
| 1R-11D1000 | 12 DC | 160 | 4PDT | 3 | 4.30 | 4.09 | 3.87 | 3.01 | 2.80 | 2.47 |
| 1R-11D2000 | 24 DC | 650 | 4PDT | 3 | 4.30 | 4.09 | 3.87 | 3.01 | 2.80 | 2.47 |
| 1R-11D3000 | 48 DC | 2600 | 4PDT | 3 | 4.40 | 4.18 | 3.96 | 3.08 | 2.86 | 2.53 |
| 1R-11D4000 | 90 DC | 9000 | 4PDT | 3 | 4.60 | 4.37 | 4.14 | 3.22 | 2.99 | 2.65 |
| 1R-11D5000 | 110 DC | 11000 | 4PDT | 3 | 4.85 | 4.61 | 4.37 | 3.40 | 3.15 | 2.79 |
| S-1001 | Socket (.375″ solder lug) | | | | .60 | .57 | .54 | .42 | .39 | .35 |
| S-1002 | Socket (.187″ solder lug) | | | | .60 | .57 | .54 | .42 | .39 | .35 |
| S-1003 | PC board socket | | | | .60 | .57 | .54 | .42 | .39 | .35 |

## GP2 AND GP3 GENERAL PURPOSE RELAYS

2 (open) and GP3 (Lexan* dust cover) relays are designed to meet UL bulletin 508 quirements. Rugged AC or DC relays are available in SPDT, DPDT and 3PDT con- urations. Contacts gold flashed silver cadmium oxide rated 10 amps at 28 VDC resistive 120/130 VAC, 0.8 power factor. GP2 and GP3 plain case models are available with atching molded nylon sockets for plug-in applications. GP3 bracket case model is avail- le for direct chassis mounting only. Mechanical life expectancy is 100 million operations; ectrical life is 100,000 operations minimum at rated load. The 0.187″ quick connect rminals are standard. Size, 2.20″ x 1.282″ x 1.468″, GP2; 1.531″ x 1.906″ x 1.406″, GP3 ain case. Many optional features available; complete data on request.

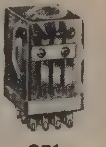
egistered General Electric trademark.

### GP2 OPEN RELAYS

| C. P. Clare Number | Voltage | Action | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500 Up |
|---|---|---|---|---|---|---|---|---|
| P2R-211AA0000 | 6 VAC | SPDT | $3.00 | $2.85 | $2.70 | $2.10 | $1.95 | $1.73 |
| P2R-211AA1000 | 12 VAC | SPDT | 3.00 | 2.85 | 2.70 | 2.10 | 1.95 | 1.73 |
| P2R-211AA2000 | 24 VAC | SPDT | 3.00 | 2.85 | 2.70 | 2.10 | 1.95 | 1.73 |
| P2R-211AA6000 | 120 VAC | SPDT | 3.00 | 2.85 | 2.70 | 2.10 | 1.95 | 1.73 |
| P2R-211AA7000 | 240 VAC | SPDT | 3.40 | 3.23 | 3.06 | 2.38 | 2.21 | 1.96 |
| P2R-211AD0000 | 6 VDC | SPDT | 2.85 | 2.71 | 2.57 | 2.00 | 1.85 | 1.64 |
| P2R-211AD1000 | 12 VDC | SPDT | 2.85 | 2.71 | 2.57 | 2.00 | 1.85 | 1.64 |
| P2R-211AD2000 | 24 VDC | SPDT | 2.85 | 2.71 | 2.57 | 2.00 | 1.85 | 1.64 |
| P2R-211AD5000 | 110 VDC | SPDT | 3.35 | 3.18 | 3.02 | 2.35 | 2.18 | 1.93 |
| P2R-221AA0000 | 6 VAC | DPDT | 3.60 | 3.42 | 3.24 | 2.52 | 2.34 | 2.08 |
| P2R-221AA1000 | 12 VAC | DPDT | 3.60 | 3.42 | 3.24 | 2.52 | 2.34 | 2.08 |
| P2R-221AA2000 | 24 VAC | DPDT | 3.60 | 3.42 | 3.24 | 2.52 | 2.34 | 2.08 |
| P2R-221AA6000 | 120 VAC | DPDT | 3.60 | 3.42 | 3.24 | 2.52 | 2.34 | 2.08 |
| P2R-221AA7000 | 240 VAC | DPDT | 3.95 | 3.75 | 3.56 | 2.77 | 2.57 | 2.28 |
| P2R-221AD0000 | 6 VDC | DPDT | 3.25 | 3.09 | 2.93 | 2.28 | 2.11 | 1.87 |
| P2R-221AD1000 | 12 VDC | DPDT | 3.25 | 3.09 | 2.93 | 2.28 | 2.11 | 1.87 |
| P2R-221AD2000 | 24 VDC | DPDT | 3.25 | 3.09 | 2.93 | 2.28 | 2.11 | 1.87 |
| P2R-221AD5000 | 110 VDC | DPDT | 3.70 | 3.52 | 3.33 | 2.59 | 2.41 | 2.13 |
| P2R-231AA0000 | 6 VAC | 3PDT | 4.05 | 3.85 | 3.65 | 2.84 | 2.63 | 2.33 |
| P2R-231AA1000 | 12 VAC | 3PDT | 4.05 | 3.85 | 3.65 | 2.84 | 2.63 | 2.33 |
| P2R-231AA2000 | 24 VAC | 3PDT | 4.05 | 3.85 | 3.65 | 2.84 | 2.63 | 2.33 |
| P2R-231AA6000 | 120 VAC | 3PDT | 4.05 | 3.85 | 3.65 | 2.84 | 2.63 | 2.33 |
| P2R-231AA7000 | 240 VAC | 3PDT | 4.30 | 4.09 | 3.87 | 3.01 | 2.80 | 2.47 |
| P2R-231AD0000 | 6 VDC | 3PDT | 3.70 | 3.52 | 3.33 | 2.59 | 2.41 | 2.13 |
| P2R-231AD1000 | 12 VDC | 3PDT | 3.70 | 3.52 | 3.33 | 2.59 | 2.41 | 2.13 |
| P2R-231AD2000 | 24 VDC | 3PDT | 3.70 | 3.52 | 3.33 | 2.59 | 2.41 | 2.13 |
| P2R-231AD5000 | 110 VDC | 3PDT | 4.05 | 3.85 | 3.65 | 2.84 | 2.63 | 2.33 |

### GP3 PLAIN CASE AND BRACKET CASE

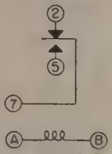
| C. P. Clare Number Plain Case GP3R- | Bracket Case GP3R- | Voltage | Action | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500 Up |
|---|---|---|---|---|---|---|---|---|---|
| 211AA0000 | 211NA0000 | 6 VAC | SPDT | $3.15 | $2.99 | $2.84 | $2.21 | $2.05 | $1.82 |
| 211AA1000 | 211NA1000 | 12 VAC | SPDT | 3.15 | 2.99 | 2.84 | 2.21 | 2.05 | 1.82 |
| 211AA2000 | 211NA2000 | 24 VAC | SPDT | 3.15 | 2.99 | 2.84 | 2.21 | 2.05 | 1.82 |
| 211AA6000 | 211NA6000 | 120 VAC | SPDT | 3.15 | 2.99 | 2.84 | 2.21 | 2.05 | 1.82 |
| 211AA7000 | 211NA7000 | 240 VAC | SPDT | 3.45 | 3.28 | 2.11 | 2.42 | 2.24 | 1.99 |
| 211AD0000 | 211ND0000 | 6 VDC | SPDT | 3.00 | 2.85 | 2.70 | 2.10 | 1.95 | 1.73 |
| 211AD1000 | 211ND1000 | 12 VDC | SPDT | 3.00 | 2.85 | 2.70 | 2.10 | 1.95 | 1.73 |
| 211AD2000 | 211ND2000 | 24 VDC | SPDT | 3.00 | 2.85 | 2.70 | 2.10 | 1.95 | 1.73 |
| 211AD5000 | 211ND5000 | 110 VDC | SPDT | 3.50 | 3.33 | 3.15 | 2.45 | 2.28 | 2.02 |
| 221AA0000 | 221NA0000 | 6 VAC | DPDT | 3.80 | 3.61 | 3.42 | 2.66 | 2.47 | 2.19 |
| 221AA1000 | 221NA1000 | 12 VAC | DPDT | 3.80 | 3.61 | 3.42 | 2.66 | 2.47 | 2.19 |
| 221AA2000 | 221NA2000 | 24 VAC | DPDT | 3.80 | 3.61 | 3.42 | 2.66 | 2.47 | 2.19 |
| 221AA6000 | 221NA6000 | 120 VAC | DPDT | 3.80 | 3.61 | 3.42 | 2.66 | 2.47 | 2.19 |
| 221AA7000 | 221NA7000 | 240 VAC | DPDT | 4.15 | 3.94 | 3.74 | 2.91 | 2.70 | 2.39 |
| 221AD0000 | 221ND0000 | 6 VDC | DPDT | 3.40 | 3.23 | 3.06 | 2.38 | 2.21 | 1.99 |
| 221AD1000 | 221ND1000 | 12 VDC | DPDT | 3.40 | 3.23 | 3.06 | 2.38 | 2.21 | 1.96 |
| 221AD2000 | 221ND2000 | 24 VDC | DPDT | 3.40 | 3.23 | 3.06 | 2.38 | 2.21 | 1.96 |
| 221AD5000 | 221ND5000 | 110 VDC | DPDT | 3.90 | 3.71 | 3.51 | 2.73 | 2.54 | 2.25 |
| 231AA0000 | 231NA0000 | 6 VAC | 3PDT | 4.25 | 4.04 | 3.83 | 2.98 | 2.76 | 2.44 |
| 231AA1000 | 231NA1000 | 12 VAC | 3PDT | 4.25 | 4.04 | 3.83 | 2.98 | 2.76 | 2.44 |
| 231AA2000 | 231NA2000 | 24 VAC | 3PDT | 4.25 | 4.04 | 3.83 | 2.98 | 2.76 | 2.44 |
| 231AA6000 | 231NA6000 | 120 VAC | 3PDT | 4.25 | 4.04 | 3.83 | 2.98 | 2.76 | 2.44 |
| 231AA7000 | 231NA7000 | 240 VAC | 3PDT | 4.55 | 4.32 | 4.10 | 3.19 | 2.96 | 2.62 |
| 231AD0000 | 231ND0000 | 6 VDC | 3PDT | 3.90 | 3.71 | 3.51 | 2.73 | 2.54 | 2.25 |
| 231AD1000 | 231ND1000 | 12 VDC | 3PDT | 3.90 | 3.71 | 3.51 | 2.73 | 2.54 | 2.25 |
| 231AD2000 | 231ND2000 | 24 VDC | 3PDT | 3.90 | 3.71 | 3.51 | 2.73 | 2.54 | 2.25 |
| 231AD5000 | 231ND5000 | 110 VDC | 3PDT | 4.25 | 4.04 | 3.83 | 2.98 | 2.76 | 2.44 |
| GPS-3001 | Solder terminal socket | | | .69 | .66 | .62 | .48 | .45 | .40 |
| GPS-3002 | Quick connect terminal socket | | | .79 | .75 | .71 | .55 | .51 | .45 |
| GPS-3003 | PCB terminal socket | | | .79 | .75 | .71 | .55 | .51 | .45 |


GP1

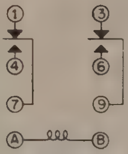
GP2

GP3

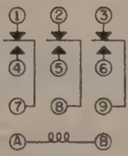
### CIRCUIT DIAGRAMS



1 FORM C



2 FORM C



3 FORM C

### DC COILS

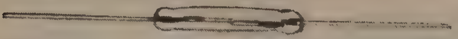
| Nominal Voltage Volts | Resistance at 25° C Ohms ±10% | Nominal Current mA |
|---|---|---|
| 6 | 32.0 | 188 |
| 12 | 120 | 100 |
| 24 | 470 | 51 |
| 48 | 1800 | 26.6 |
| 90 | 6800 | 13.0 |
| 110 | 10000 | 11.0 |

### AC COILS 50/60 HZ

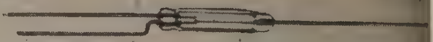
| Nom. Voltage V | Resistance at 25° C Ohms ±10% 1 Form C 2 Form C | 3 Form C | Nominal Current mA 1 Form C 2 Form C | 3 Form C |
|---|---|---|---|---|
| 6 | 6.0 | 4.2 | 335 | 460 |
| 12 | 21 | 18 | 168 | 230 |
| 24 | 75 | 72 | 84 | 115 |
| 48 | 330 | 290 | 42 | 58 |
| 120 | 2250 | 1700 | 17.5 | 24 |
| 240 | 9110 | 7200 | 8.75 | 12 |

# HAMLIN INC.

# MAGNETIC REED SWITCHE



Form A (SPST-NO)



Form C (SPDT)

Hamlin Inc. has been the world leader in the design and manufacture of Magnetic Reed Switches since they first introduced them to the industry in 1957. HAMLIN switches have met every conceivable test in the broad range of environmental and electrical applications. As the pioneer in the development of Magnetic Reed Switches, Hamlin Inc. offers the finest selection of Magnetic Reed Switches in the world.

Hamlin switches may be actuated by either permanent or electromagnets. They are hermetically sealed for safe reliable use u any atmosphere, wet or dry, even under explosive conditi Sealed contacts insure against contact contamination. Ha switches are unaffected by extremely high or low temperature pressures. Their small size, high sensitivity, rapid cycling rate long life make these units ideal for position indicators, typewr keyboards, counting instruments, liquid level switches, bur alarms, computers, flow meters, limit switches and a wide vari of other applications. **A** refers to SPST-NO; **C** refers to SPDT

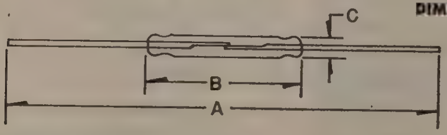
## SPECIAL FEATURES

| Hamlin No. | Special Features |
|---|---|
| MMRR-2-185 | The Grain of Wheat |
| MINI-2-115 | The Mini-Reed |
| MINI-DT-125 | Low Profile Form C |
| MTRR-2-185 | Moderate Current/Voltage |
| MTHG-2-327 | No Contact Bounce Reed Switch |
| MLC-DT-186 | Low-Cost Commercial |
| MRG-DT-175 | Moderate Current/Voltage |
| MSRR-2-185 | Moderate Current/Voltage |
| MSRR-2CD-155 | Close Differential |
| MRR-2-185 | Moderate Current/Voltage |
| MLC-2-186 | Low-Cost Commercial |
| MRH-15-186 | High Insulation Resistance |
| MRC-3-387 | Hg-Wetted Contacts |
| SRR-2-425 | Moderate Current/Voltage |

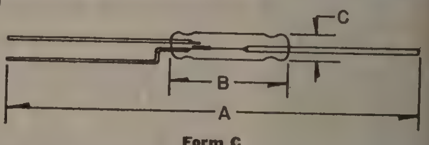
| Hamlin No. | Special Features |
|---|---|
| DLC-DT-327 | Low-Cost Commercial |
| DRR-DTH-445 | High-Breakdown Form C |
| DRT-DTH-445 | Inductive Loads |
| DRG-2-425 | Low-Cost Commercial |
| DRR-1-425 | Moderate Current/Voltage |
| DRR-5-425 | High Breakdown Voltage |
| DRT-5-425 | Inductive Loads |
| HRC-1-535 | Hg-Wetted Contacts |
| DRVT-5-658 | High Voltage Breakdown |
| DRVT-10-658 | High Voltage Breakdown |
| DRVT-15-979 | High Voltage Breakdown |
| DRVT-20-979 | High Voltage Breakdown |
| DRAC-5-999 | 3-Amp AC Power Switch |
| DRDC-6-999 | 3-Amp DC Power Switch |

| Hamlin No. | Size | Form | DC Contact Rating Watts | Maximum Amps | Maximum VDC | Maximum Init. Cont. Ohms | Min. Break-down, VDC | Stock Amp-Turn Pull-in Range | Actuating Magnet | Net Each, Lots of 1-24 | 25-99 | 100-999 | 1000-4999 | 5000 Up |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MMRR-2-185 | 1 | A | .3 | .010 | 28 | .200 | 250 | 30 ± 7.5 | H-31 | $ 1.84 | $ 1.31 | $ 1.05 | $0.95 | $0.7 |
| MINI-2-115 | 2 | A | 3 | .110 | 28 | .200 | 200 | 20 ± 7.5 | H-31 | 2.10 | 1.85 | 1.70 | 1.00 | .6 |
| MINI-DT-125 | 3 | C | .1 | .010 | 10 | .200 | 200 | 27.5 ± 7.5 | H-31 | 6.30 | 5.00 | 4.75 | 4.50 | 4.2 |
| MTRR-2-185 | 4 | A | 10 | .250 | 100 | .150 | 300 | 30 ± 7.5 | H-33 | 1.32 | .95 | .75 | .69 | .5 |
| MTHG-2-327 | 4 | A | 1 | .100 | 10 | .100 | 500 | 55 ± 15 | H-33 | 3.15 | 2.75 | 2.55 | 2.00 | 1.3 |
| MLC-DT-186 | 5 | C | 3 | .250 | 28 | .150 | 250 | 30 ± 10 | H-33 | 2.10 | 1.70 | 1.33 | 1.20 | .90 |
| MRG-DT-175 | 5 | C | 3 | .250 | 28 | .150 | 250 | 27.5 ± 7.5 | H-33 | 4.20 | 3.00 | 2.40 | 2.25 | 1.80 |
| MSRR-2-185 | 6 | A | 10 | .500 | 200 | .100 | 300 | 30 ± 7.5 | H-33 | 1.15 | .83 | .66 | .50 | .35 |
| MSRR-2CD-155 | 6 | A | 3 | .500 | 200 | .200 | 300 | 25 ± 7.5 | H-33 | 1.32 | 1.12 | 1.06 | .83 | .56 |
| MRR-2-185 | 7 | A | 10 | .500 | 200 | .100 | 300 | 30 ± 7.5 | H-33 | 1.15 | .83 | .66 | .50 | .35 |
| MLC-2-186 | 12 | A | 10 | .500 | 100 | .250 | 300 | 30 ± 10 | H-33 | 1.05 | .70 | .55 | .35 | .25 |
| MRH-15-186 | 7 | A | 10 | .500 | 50 | .150 | 300 | 30 ± 7.5 | H-33 | 2.10 | 1.80 | 1.70 | 1.33 | .90 |
| MRC-3-387 | 7 | A | 28 | 1.000 | 100 | .050 | 1,000 | 65 ± 15 | H-33 | 4.20 | 3.00 | 2.40 | 2.50 | 1.75 |
| SRR-2-425 | 8 | A | 15 | 1.000 | 400 | .060 | 500 | 70 ± 7.5 | H-32 | .89 | .64 | .51 | .39 | .31 |
| DLC-DT-327 | 9 | C | 10 | .500 | 200 | .100 | 350 | 55 ± 15 | H-32 | 1.32 | 1.12 | 1.06 | .83 | .56 |
| DRR-DTH-445 | 9 | C | 10 | .500 | 250 | .075 | 1,000 | 72.5 ± 7.5 | H-32 | 2.63 | 1.88 | 1.50 | 1.35 | 1.10 |
| DRT-DTH-445 | 9 | C | 20 | 1.500 | 500 | .150 | 1,000 | 72.5 ± 7.5 | H-34 | 4.20 | 3.65 | 3.40 | 2.66 | 1.60 |
| DRG-2-425 | 10 | A | 15 | 1.000 | 250 | .075 | 500 | 70 ± 7.5 | H-34 | .79 | .56 | .45 | .35 | .30 |
| DRR-1-425 | 10 | A | 15 | 1.000 | 400 | .060 | 500 | 70 ± 7.5 | H-34 | .89 | .65 | .51 | .39 | .31 |
| DRR-5-425 | 10 | A | 25 | 1.000 | 1,000 | .060 | 1,500 | 70 ± 7.5 | H-34 | 1.58 | 1.35 | 1.10 | 1.00 | .70 |
| DRT-5-425 | 10 | A | 50 | 3.000 | 1,000 | .100 | 1,500 | 70 ± 7.5 | H-34 | 2.10 | 1.50 | 1.20 | 1.10 | .90 |
| HRC-1-535 | 10 | A | 50 | 3.000 | 400 | .050 | 1,000 | 80 ± 7.5 | H-34 | 2.10 | 1.50 | 1.20 | 1.00 | 1.00 |
| DRVT-5-658 | 10 | A | 50 | 3.000 | 3,500 | .080 | 5,000 | 120 ± 20 | H-34 | 3.15 | 2.50 | 2.25 | 2.00 | 1.50 |
| DRVT-10-658 | 10 | A | 50 | 3.000 | 7,500 | .080 | 10,000 | 120 ± 20 | H-34 | 4.20 | 3.00 | 2.40 | 2.25 | 2.00 |
| DRVT-15-979 | 10 | A | 50 | 3.000 | 12,500 | .100 | 15,000 | 200 max. | H-34 | 8.40 | 7.25 | 6.80 | 5.32 | 4.00 |
| DRVT-20-979 | 10 | A | 50 | 3.000 | 17,500 | .100 | 20,000 | 200 max. | H-34 | 12.60 | 11.00 | 10.20 | 7.98 | 6.00 |
| DRAC-5-999 | 11 | A | 700 | 3.000 | 240 | — | 700 | 250 max. | H-34 | 5.25 | 4.60 | 4.10 | 3.60 | 3.10 |
| DRDC-6-999 | 11 | A | 85 | 3.000 | 110 | — | 2,000 | 250 max. | H-34 | 5.25 | 4.60 | 4.10 | 3.60 | 3.10 |

## DIMENSIONS



Form A

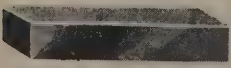


Form C

| Size Code (See Above) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **A** Overall Length—Nominal Inches | 2.000 | 2.000 | 1.385 | 2.125 | 2.125 | 2.250 | 2.250 | 3.375 | 3.375 | 3.250 | 3.465 | 2.250 |
| **B** Glass Length—Maximum Inches | .375 | .500 | .475 | .560 | .610 | .800 | .800 | 1.610 | 1.562 | 2.100 | 1.640 | .800 |
| **C** Glass Diameter—Maximum Inches | .090 | .070 | .110 x .072* | .092 | .130 | .090 | .130 | .195 | .218 | .218 | .212 | .105 |

*Oval envelope.

## MAGNETS



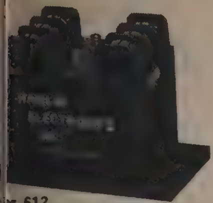
| Hamlin No. | Size, Inches | Net Each | Hamlin No. | Size, Inches | Net Each |
|---|---|---|---|---|---|
| H-31-604 | ½ w. x 1/16 h. x 1/16 | 30c | H-33-606 | ¾ w. x ⅛ h. x ⅛ | 30c |
| H-32-605 | 1 w. x 3/16 h. x 3/16 | 35c | H-34-607 | 1 w. x ¼ h. x ¼ d. | 40c |

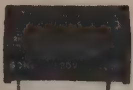
## CONSIDER THESE HAMLIN REED SWITCH ADVANTAGES:

**Reliability**—Hermetically-sealed contacts in a clean atmosphere are unaffected by dust, corrosion or oxidation; and, design allows no opportunity for sticking, binding or wearing of hinged joints.
**Long Life**—With proper circuitry, magnetic reed switches can offer a life span in excess of 100 million operations.
**Speed of Operation**—Although slower than transistorized logic, it is sufficiently faster than conventional relays to allow use in high speed switching applications.
**Packaging**—Provides package density which approaches that of its solid state counterpart, but is far greater than is available with conventional relays.
**Price Advantage**—When compared to transistorized logic, the necessary coupling circuitry between the logic and input and output devices is less complicated and less expensive.

# HAMLIN
ELECTRONICS, INC.

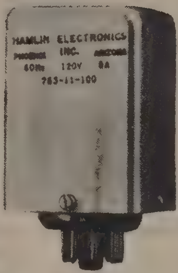
# SOLID STATE AC CONTROLLERS


es 612


Series 701

Series 723

Series 733



Series 763

Series 773

- IGH RELIABILITY
- XCELLENT SHOCK AND VIBRATION IMMUNITY
- ERO VOLTAGE-POINT SWITCHING
- EXCELLENT SURGE HANDLING CAPABILITY
- LONG LIFE—NO CONTACTS TO BOUNCE OR WEAR

s broad line of solid state AC controllers has been carefully neered by Hamlin Electronics, Inc. for switching resistive inductive loads up to 25 amps. The most complete selection C controllers available in the industry, it offers a Control-Pak every switching problem, regardless of its complexity. All s feature rapid response in a rugged, self-contained unit. izing basic triad circuitry, these controllers are adapted to -volt 3-phase, proportional temperature control; and, to lamp trollers in addition to all the options of on-off and zero-point switching. Small and rugged, these solid state devices are humidity resistant; designed to withstand any environment. For added convenience, they mount in any position. Connections for load circuit are rugged brass studs. **Inrush Capability:** Will withstand 80 amps, 1-cycle inrush currents. **Operate Time:** 1 msec typical. **Release Time:** No longer than ½ cycle. **Operating Temperature:** Up to 25° C without additional heat sink. **Life:** More than 100 million operations.

## 2½-AMP, 3-PHASE MOTOR CONTROLLERS, SERIES 612

| Hamlin Number | Current, Amps | 60 Hz Line Volts | Contact Form | Input Control | | Size, Inches W. x D. x H. | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Volts | Cur., mA | | 1-9 | 10-24 | 25-49 | 50-99 |
| 12-11-100 | 2.5 | 208 | 3A | 6 VDC | 52 | 2.60 x 1.50 x 1.827 | $37.70 | $33.90 | $32.00 | $30.90 |
| 12-11-300 | 2.5 | 208 | 3A | 12 VDC | 31 | 2.60 x 1.50 x 1.827 | 37.70 | 33.90 | 32.00 | 30.90 |
| 12-11-500 | 2.5 | 208 | 3A | 24 VAC | 16 | 2.60 x 1.50 x 1.827 | 37.70 | 33.90 | 32.00 | 30.90 |
| 12-11-600 | 2.5 | 208 | 3A | 208 VAC | 6 | 2.60 x 1.50 x 1.827 | 37.70 | 33.90 | 32.00 | 30.90 |

## 1½-AMP PRINTED CIRCUIT BOARD CONTROLLERS, SERIES 701

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 01-11-000 | 1.5 | 120 | 1A | * | * | 1.40 x .850 x .50 | $5.90 | $5.25 | $4.95 | $4.80 |
| 01-11-100 | 1.5 | 120 | 1A | 6 VDC | 28 | 1.40 x .850 x .50 | 6.40 | 5.70 | 5.35 | 5.20 |
| 01-11-200 | 1.5 | 120 | 1A | 12 VDC | 17 | 1.40 x .850 x .50 | 6.40 | 5.70 | 5.35 | 5.20 |
| 01-11-300 | 1.5 | 120 | 1A | 24 VDC | 8.5 | 1.40 x .850 x .50 | 6.40 | 5.70 | 5.35 | 5.20 |
| 01-11-400 | 1.5 | 120 | 1A | 48 VDC | 4 | 1.40 x .850 x .50 | 7.05 | 6.25 | 5.90 | 5.70 |
| 01-11-500 | 1.5 | 120 | 1A | 2.5 VDC | 4 | 1.40 x .850 x .50 | 7.05 | 6.25 | 5.90 | 5.70 |
| 01-12-000 | 1.5 | 240 | 1A | * | * | 1.40 x .850 x .50 | 7.65 | 6.80 | 6.45 | 6.20 |
| 01-12-100 | 1.5 | 240 | 1A | 6 VDC | 28 | 1.40 x .850 x .50 | 8.15 | 7.25 | 6.85 | 6.60 |
| 01-12-200 | 1.5 | 240 | 1A | 12 VDC | 17 | 1.40 x .850 x .50 | 8.15 | 7.25 | 6.85 | 6.60 |
| 01-12-300 | 1.5 | 240 | 1A | 24 VDC | 8.5 | 1.40 x .850 x .50 | 8.15 | 7.25 | 6.85 | 6.60 |
| 01-12-400 | 1.5 | 240 | 1A | 48 VDC | 4 | 1.40 x .850 x .50 | 8.95 | 7.95 | 7.50 | 7.25 |
| 01-12-500 | 1.5 | 240 | 1A | 2.5 VDC | 4 | 1.40 x .850 x .50 | 8.95 | 7.95 | 7.50 | 7.25 |

## 6-AMP, ZERO-VOLTAGE SWITCHING CONTROLLERS, SERIES 723

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 23-21-000 | 6.0 | 120 | 1A | * | * | 2.60 x 1.50 x 1.50 | $20.50 | $18.50 | $17.40 | $16.40 |
| 23-21-100 | 6.0 | 120 | 1A | 6 VDC | 28 | 2.60 x 1.50 x 1.50 | 23.00 | 20.70 | 19.60 | 18.40 |
| 23-21-300 | 6.0 | 120 | 1A | 12 VDC | 17 | 2.60 x 1.50 x 1.50 | 23.00 | 20.70 | 19.60 | 18.40 |
| 23-22-000 | 6.0 | 240 | 1A | * | * | 2.60 x 1.50 x 1.50 | 23.00 | 20.70 | 19.60 | 18.40 |
| 23-22-100 | 6.0 | 240 | 1A | 6 VDC | 28 | 2.60 x 1.50 x 1.50 | 25.50 | 23.00 | 21.75 | 20.40 |
| 23-22-300 | 6.0 | 240 | 1A | 12 VDC | 8.5 | 2.60 x 1.50 x 1.50 | 25.50 | 23.00 | 21.75 | 20.40 |

## 6-AMP LATCHING CONTROLLERS, SERIES 733

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 33-31-100 | 6.0 | 120 | 1A | 6 VAC/DC | 33 | 2.60 x 1.50 x 1.00 | $10.60 | $ 9.55 | $ 9.00 | $ 8.70 |
| 33-31-300 | 6.0 | 120 | 1A | 24 VAC/DC | 10 | 2.60 x 1.50 x 1.00 | 10.60 | 9.55 | 9.00 | 8.70 |
| 33-32-100 | 6.0 | 240 | 1A | 6 VAC/DC | 33 | 2.60 x 1.50 x 1.00 | 15.05 | 13.55 | 12.80 | 12.35 |
| 33-32-300 | 6.0 | 240 | 1A | 24 VAC/DC | 10 | 2.60 x 1.50 x 1.00 | 15.05 | 13.55 | 12.80 | 12.35 |

## 5-AMP OCTAL BASE CONTROLLERS, SERIES 763

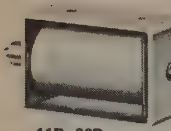
| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 63-11-000 | 5.0 | 120 | 1A | * | * | 1.37 x 1.37 x 2.75† | $ 8.75 | $ 7.75 | $ 7.35 | $ 7.05 |
| 63-11-100 | 5.0 | 120 | 1A | 6 VDC | 40 | 1.37 x 1.37 x 2.75† | 10.10 | 9.00 | 8.45 | 8.15 |
| 63-11-500 | 5.0 | 120 | 1A | 2.5 VDC | 4 | 1.37 x 1.37 x 2.75† | 11.10 | 9.85 | 9.30 | 8.95 |
| 63-11-700 | 5.0 | 120 | 1A | 120 VAC | 8.6 | 1.37 x 1.37 x 2.75† | 12.20 | 10.85 | 10.25 | 9.85 |
| 63-11-120 | 2.5 | 120 | 1D | 6 VDC | 40 | 1.37 x 1.37 x 2.75† | 11.10 | 9.90 | 9.30 | 8.95 |
| 63-11-320 | 2.5 | 120 | 1D | 24 VDC | 10 | 1.37 x 1.37 x 2.75† | 11.10 | 9.95 | 9.30 | 8.95 |
| 63-11-620 | 2.5 | 120 | 1D | 24 VAC | 10 | 1.37 x 1.37 x 2.75† | 13.40 | 11.90 | 11.20 | 10.85 |
| 63-11-720 | 2.5 | 120 | 1D | 120 VAC | 8.6 | 1.37 x 1.37 x 2.75† | 13.40 | 11.90 | 11.20 | 10.85 |
| 63-11-130 | 2.5 | 120 | 2A | 6 VDC | 60 | 1.37 x 1.37 x 2.75† | 12.20 | 10.80 | 10.20 | 9.85 |
| 63-11-330 | 2.5 | 120 | 2A | 24 VDC | 15 | 1.37 x 1.37 x 2.75† | 12.20 | 10.80 | 10.20 | 9.85 |
| 63-11-630 | 2.5 | 120 | 2A | 24 VAC | 15 | 1.37 x 1.37 x 2.75† | 13.40 | 11.90 | 11.20 | 10.85 |
| 63-11-730 | 2.5 | 120 | 2A | 120 VAC | 15 | 1.37 x 1.37 x 2.75† | 13.40 | 11.90 | 11.20 | 10.85 |

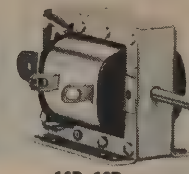
## 6-AMP SOLID STATE CONTROLLERS, SERIES 773

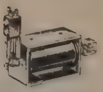
| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 773-11-030 | 6.0 | 120 | 1A | * | * | 2.50 x 1.25 x 1.11 | $ 8.95 | $ 8.00 | $ 7.50 | $ 7.25 |
| 773-11-130 | 6.0 | 120 | 1A | 6 VDC | 28 | 2.50 x 1.25 x 1.11 | 10.75 | 9.75 | 9.25 | 8.80 |
| 773-11-330 | 6.0 | 120 | 1A | 24 VDC | 8.5 | 2.50 x 1.25 x 1.11 | 10.75 | 9.75 | 9.25 | 8.80 |
| 773-12-030 | 6.0 | 240 | 1A | * | * | 2.50 x 1.25 x 1.11 | 10.05 | 9.50 | 8.55 | 8.25 |
| 773-12-130 | 6.0 | 240 | 1A | 6 VDC | 28 | 2.50 x 1.25 x 1.11 | 13.80 | 12.45 | 11.75 | 11.35 |
| 773-12-330 | 6.0 | 240 | 1A | 24 VDC | 8.5 | 2.50 x 1.25 x 1.11 | 13.80 | 12.45 | 11.75 | 11.35 |

xternal contact. †Overall height; case height (less octal plug), 2.0″.

# GUARDIAN® Solenoids


11P, 28P

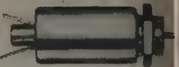

16P, 18P


11S

24S

28S

Pull Type Tubular


Push Type Tubular

Intermittent types should not be energized for more than 5 consecutive minutes, or be permitted to rise more than 85° C above 24° C ambient without sufficient cooling time between operation cycles or periods of energization. Continuous type have high coil resistance and will not rise more than 85° C above 24° ambient temperature when operated within maximum lift an stroke ratings. **To Order, Specify:** Solenoid number; voltage an AC or DC; continuous or intermittent.

## PUSH TYPE AC AND DC SOLENOIDS

Push versions of popular solenoids. Types 11P and 28P are box frame design. 16P and 18P are laminated AC types. Push rods are equal to maximum stroke length. (I) indicates intermittent dut type, (C) indicates continuous duty.

| Guardian No. | Duty | Coil Voltage | Ohms | Lifts and Strokes | | Body Size, Inches L. x W. x H. | Shpg. Wt., Oz. | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Minimum | Maximum | | | 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500 Up |
| 11P | I | 24 AC | 3.5 | 20 oz. at 1/8″ | 4.8 oz. at 1″ | 1 5/16 x 1 27/32 x 1 3/16 | 7.5 | $4.17 | $3.75 | $3.54 | $2.92 | $2.71 | $2.50 |
| 11P | C | 24 AC | [illegible] | 9.6 oz. at 1/8″ | 0.8 oz. at 1″ | 1 5/16 x 1 27/32 x 1 3/16 | 7.5 | 4.17 | 3.75 | 3.54 | 2.92 | 2.71 | 2.50 |
| 11P | I | 120 AC | 85 | 20 oz. at 1/8″ | 4.8 oz. at 1″ | 1 5/16 x 1 27/32 x 1 3/16 | 7.5 | 4.17 | 3.75 | 3.54 | 2.92 | 2.71 | 2.50 |
| 11P | C | 120 AC | 200 | 9.6 oz. at 1/8″ | 0.8 oz. at 1″ | 1 5/16 x 1 27/32 x 1 3/16 | 7.5 | 4.17 | 3.75 | 3.54 | 2.92 | 2.71 | 2.50 |
| 11P | I | 6 DC | 2 | 32 oz. at 1/8″ | 1.6 oz. at 3/4″ | 1 5/16 x 1 27/32 x 1 3/16 | 7.5 | 4.17 | 3.75 | 3.54 | 2.92 | 2.71 | 2.50 |
| 11P | C | 6 DC | 4.5 | 20 oz. at 1/8″ | 0.8 oz. at 3/4″ | 1 5/16 x 1 27/32 x 1 3/16 | 7.5 | 4.17 | 3.75 | 3.54 | 2.92 | 2.71 | 2.50 |
| 11P | I | 24 DC | 31 | 32 oz. at 1/8″ | 1.6 oz. at 3/4″ | 1 5/16 x 1 27/32 x 1 3/16 | 7.5 | 4.17 | 3.75 | 3.54 | 2.92 | 2.71 | 2.50 |
| 11P | C | 24 DC | 72 | 20 oz. at 1/8″ | 0.8 oz. at 3/4″ | 1 5/16 x 1 27/32 x 1 3/16 | 7.5 | 4.17 | 3.75 | 3.54 | 2.92 | 2.71 | 2.50 |
| 16P | I | 120 AC | 41 | 90 oz. at 1/8″ | 30 oz. at 3/4″ | 1 5/8 x 1 1/4 x 1 1/2 | 7.5 | 4.78 | 4.30 | 4.06 | 3.35 | 3.11 | 2.87 |
| 16P | C | 120 AC | 85 | 50 oz. at 1/8″ | 10 oz. at 3/4″ | 1 5/8 x 1 1/4 x 1 1/2 | 7.5 | 4.78 | 4.30 | 4.06 | 3.35 | 3.11 | 2.87 |
| 18P | I | 120 AC | 8.8 | 280 oz. at 1/8″ | 80 oz. at 1″ | 2 1/2 x 1 13/16 x 2 1/16 | 16.5 | 6.29 | 5.66 | 5.35 | 4.40 | 4.09 | 3.77 |
| 18P | C | 120 AC | 19.7 | 145 oz. at 1/8″ | 40 oz. at 1″ | 2 1/2 x 1 13/16 x 2 1/16 | 16.5 | 6.29 | 5.66 | 5.35 | 4.40 | 4.09 | 3.77 |
| 28P | I | 24 AC | 7.5 | 28 oz. at 1/16″ | 4 oz. at 1/2″ | 1 1/8 x 15/16 x 1 3/16 | 3.5 | 4.17 | 3.75 | 3.54 | 2.92 | 2.71 | 2.50 |
| 28P | C | 24 AC | 17.4 | 16 oz. at 1/16″ | 2 oz. at 1/2″ | 1 1/8 x 15/16 x 1 3/16 | 3.5 | 4.17 | 3.75 | 3.54 | 2.92 | 2.71 | 2.50 |
| 28P | I | 120 AC | 220 | 28 oz. at 1/16″ | 4 oz. at 1/2″ | 1 1/8 x 15/16 x 1 3/16 | 3.5 | 4.46 | 4.01 | 3.79 | 3.12 | 2.90 | 2.68 |
| 28P | C | 120 AC | 400 | 16 oz. at 1/16″ | 2 oz. at 1/2″ | 1 1/8 x 15/16 x 1 3/16 | 3.5 | 4.46 | 4.01 | 3.79 | 3.12 | 2.90 | 2.68 |
| 28P | I | 6 DC | 3.3 | 28 oz. at 1/16″ | 1.6 oz. at 1/2″ | 1 1/8 x 15/16 x 1 3/16 | 3.5 | 3.92 | 3.53 | 3.33 | 2.74 | 2.55 | 2.35 |
| 28P | C | 6 DC | 7.7 | 19 oz. at 1/16″ | 0.8 oz. at 3/8″ | 1 1/8 x 15/16 x 1 3/16 | 3.5 | 3.92 | 3.53 | 3.33 | 2.74 | 2.55 | 2.35 |
| 28P | I | 12 DC | 13 | 28 oz. at 1/16 | 1.6 oz. at 1/2″ | 1 1/8 x 15/16 x 1 3/16 | 3.5 | 3.92 | 3.53 | 3.33 | 2.74 | 2.55 | 2.35 |
| 28P | C | 12 DC | 27 | 19 oz. at 1/16″ | 0.8 oz. at 3/8″ | 1 1/8 x 15/16 x 1 3/16 | 3.5 | 3.92 | 3.53 | 3.33 | 2.74 | 2.55 | 2.35 |
| 28P | I | 24 DC | 50 | 28 oz. at 1/16″ | 1.6 oz. at 1/2″ | 1 1/8 x 15/16 x 1 3/16 | 3.5 | 3.92 | 3.53 | 3.33 | 2.74 | 2.55 | 2.35 |
| 28P | C | 24 DC | 104 | 19 oz. at 1/16″ | 0.8 oz. at 3/8″ | 1 1/8 x 15/16 x 1 3/16 | 3.5 | 3.92 | 3.53 | 3.33 | 2.74 | 2.55 | 2.35 |

## AC AND DC SOLENOID SWITCHES

Guardian Box-Frame solenoids 11 and 28 as well as U-Frame 24 have been functionally enhanced by the addition of a SPDT switch actuated by a push rod affixed to the plunger. Respective solenoid switches are 11S, 28S and 24S. All switches are rated 10 amps a 120 VAC. **To Order, Specify:** Solenoid switch number; voltag and AC or DC; continuous or intermittent.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11S | I | 120 AC | 85 | 25 oz. at 1/8″ | 6 oz. at 1″ | 2 7/16 x 15/16 x 2 15/64 | 7.5 | $4.79 | $4.31 | $4.07 | $3.35 | $3.11 | $2.87 |
| 11S | C | 120 AC | 200 | 12 oz. at 1/8″ | 1 oz. at 1″ | 2 7/16 x 15/16 x 2 15/64 | 7.5 | 4.79 | 4.31 | 4.07 | 3.35 | 3.11 | 2.87 |
| 11S | I | 24 DC | 31 | 40 oz. at 1/8″ | 2 oz. at 3/4″ | 2 7/16 x 15/16 x 2 15/64 | 7.5 | 4.79 | 4.31 | 4.07 | 3.35 | 3.11 | 2.87 |
| 11S | C | 24 DC | 72 | 25 oz. at 1/8″ | 1 oz. at 3/4″ | 2 7/16 x 15/16 x 2 15/64 | 7.5 | 4.79 | 4.31 | 4.07 | 3.35 | 3.11 | 2.87 |
| 24S | I | 120 AC | 310 | 16 oz. at 1/16″ | 3 oz. at 5/8″ | 1 11/16 x 27/32 x 2 9/64 | 3 | 5.09 | 4.58 | 4.33 | 3.56 | 3.31 | 3.05 |
| 24S | C | 120 AC | 500 | 10.5 oz. at 1/16″ | 2 oz. at 5/8″ | 1 11/16 x 27/32 x 2 9/64 | 3 | 5.09 | 4.58 | 4.33 | 3.56 | 3.31 | 3.05 |
| 24S | I | 24 DC | 52 | 35 oz. at 1/16″ | 3 oz. at 1/2″ | 1 11/16 x 27/32 x 2 9/64 | 3 | 5.09 | 4.58 | 4.33 | 3.56 | 3.31 | 3.05 |
| 24S | C | 24 DC | 114 | 18 oz. at 1/16″ | 0.5 oz. at 1/2″ | 1 11/16 x 27/32 x 2 9/64 | 3 | 5.09 | 4.58 | 4.33 | 3.56 | 3.31 | 3.05 |
| 28S | I | 24 DC | 50 | 35 oz. at 1/16″ | 2 oz. at 1/2″ | 1 9/16 x 15/16 x 2 15/16 | 3.5 | 4.55 | 4.10 | 3.87 | 3.19 | 2.96 | 2.73 |
| 28S | C | 24 DC | 104 | 24 oz. at 1/16″ | 1 oz. at 3/8″ | 1 9/16 x 15/16 x 2 15/16 | 3.5 | 4.55 | 4.10 | 3.87 | 3.19 | 2.96 | 2.73 |

## TUBULAR SOLENOIDS

Choice of either pull or push types with Class "A" (105° C) insulation material and 6″ leads. All except T2X4 and TP2X4 supplie with mounting bracket.

### 24 VDC PULL TYPE

Life, 10 million operations min. at rated load.

| Guardian Number | Ohms | Watts | Lift, Oz.† | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500 Up |
| T2X4• | 200 | 3 | 1.2 | $5.64 | $5.08 | $4.79 | $3.95 | $3.67 | $3.38 |
| T3.5X9* | 57 | 10 | 11 | 3.26 | 2.93 | 2.77 | 2.60 | 2.28 | 2.11 |
| T3.5X9 | 260 | 2 | 4.5 | 3.36 | 3.02 | 2.86 | 2.70 | 2.35 | 2.18 |
| T4X7* | 80 | 7 | 10 | 4.41 | 3.97 | 3.75 | 3.53 | 3.09 | 2.87 |
| T4X7 | 240 | 2.4 | 4 | 4.52 | 4.06 | 3.83 | 3.61 | 3.16 | 2.94 |
| T4X12* | 38 | 15 | 15 | 4.73 | 4.25 | 4.02 | 3.78 | 3.31 | 3.07 |
| T4X12 | 160 | 3.5 | 8 | 4.83 | 4.35 | 4.11 | 3.86 | 3.38 | 3.20 |
| T4X16* | 24 | 20 | 17 | 5.04 | 4.54 | 4.28 | 4.03 | 3.53 | 3.28 |
| T4X16 | 145 | 4 | 10 | 5.15 | 4.63 | 4.36 | 4.12 | 3.60 | 3.34 |
| T6X12* | 25 | 22 | 30 | 5.25 | 4.73 | 4.46 | 4.20 | 3.68 | 3.41 |
| T6X12 | 165 | 3.5 | 16 | 5.36 | 4.82 | 4.55 | 4.28 | 3.75 | 3.48 |
| T8X9* | 30 | 19 | 50 | 5.41 | 4.87 | 4.60 | 3.79 | 3.52 | 3.25 |
| T8X9 | 145 | 4 | 13 | 5.46 | 4.91 | 4.64 | 3.82 | 3.55 | 3.28 |
| T8X16* | 15 | 38 | 80 | 5.67 | 5.10 | 4.82 | 4.54 | 3.97 | 3.69 |
| T8X16 | 105 | 5.5 | 32 | 5.78 | 5.20 | 4.88 | 4.62 | 4.04 | 3.75 |
| T12X13* | 14 | 40 | 150 | 6.83 | 6.14 | 5.80 | 5.46 | 4.78 | 4.43 |
| T12X13 | 85 | 7 | 48 | 7.04 | 6.33 | 5.97 | 5.63 | 4.92 | 4.57 |
| T12X19* | 9.5 | 60 | 165 | 7.46 | 6.71 | 6.33 | 5.96 | 5.22 | 4.84 |
| T12X19 | 59 | 10 | 80 | 7.56 | 6.80 | 6.43 | 6.05 | 5.29 | 4.91 |

### 12 VDC PULL TYPE

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| T3.5X9* | 14 | 10 | 11 | $3.26 | $2.93 | $2.77 | $2.60 | $2.28 | $2.11 |
| T3.5X9 | 80 | 2 | 4 | 3.36 | 3.02 | 2.86 | 2.70 | 2.35 | 2.18 |
| T4X16* | 6 | 20 | 17 | 5.04 | 4.54 | 4.28 | 4.03 | 3.53 | 3.28 |
| T4X16 | 36 | 4 | 10 | 5.15 | 4.63 | 4.36 | 4.12 | 3.60 | 3.34 |
| T6X12* | 6.5 | 22 | 30 | 5.25 | 4.73 | 4.46 | 4.20 | 3.68 | 3.41 |
| T6X12 | 41 | 3.5 | 16 | 5.36 | 4.82 | 4.55 | 4.28 | 3.75 | 3.48 |
| T8X16* | 2.7 | 38 | 80 | 5.67 | 5.10 | 4.82 | 4.54 | 3.97 | 3.69 |
| T8X16 | 26 | 5.5 | 32 | 5.78 | 5.20 | 4.88 | 4.62 | 4.04 | 3.75 |

*Intermittent duty; all others continuous duty type. †At min. stroke: 0.010″, T2; 1/32″, T3 and T4; 1/16″, T6 and T8; 1/8″, T12 types: Maximum lift and stroke ratings on request. •Pulse type solenoid.

### 24 VDC PUSH TYPE

Non-magnetic metal push rod length equals max. stroke length

| Guardian Number | Ohms | W | Lift, Oz.‡ | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500 Up |
| TP2X4• | 200 | 3 | 1 | $5.64 | $5.08 | $4.79 | $3.95 | $3.67 | $3.38 |
| TP3.5X9* | 57 | 10 | 9 | 3.78 | 3.45 | 3.30 | 3.13 | 2.80 | 2.64 |
| TP3.5X9 | 260 | 2 | 3.5 | 3.89 | 3.55 | 3.38 | 3.22 | 2.88 | 2.71 |
| TP4X7* | 80 | 7 | 5 | 4.91 | 4.47 | 4.25 | 4.08 | 3.59 | 3.37 |
| TP4X7 | 240 | 2.4 | 1.5 | 5.02 | 4.56 | 4.33 | 4.11 | 3.66 | 3.44 |
| TP4X12* | 38 | 15 | 12 | 5.25 | 4.73 | 4.46 | 4.20 | 3.68 | 3.41 |
| TP4X12 | 160 | 3.5 | 6 | 5.36 | 4.82 | 4.55 | 4.28 | 3.75 | 3.48 |
| TP4X16* | 24 | 20 | 14 | 5.57 | 5.06 | 4.81 | 4.56 | 4.05 | 3.80 |
| TP4X16 | 145 | 4 | 8 | 5.67 | 5.16 | 4.89 | 4.64 | 4.13 | 3.86 |
| TP6X12* | 25 | 22 | 25 | 5.78 | 5.25 | 4.99 | 4.73 | 4.20 | 3.94 |
| TP6X12 | 165 | 3.5 | 13 | 5.88 | 5.34 | 5.07 | 4.81 | 4.27 | 4.06 |
| TP8X9* | 30 | 19 | 40 | 5.91 | 5.32 | 5.02 | 4.14 | 3.84 | 3.55 |
| TP8X9 | 145 | 4 | 11 | 5.96 | 5.36 | 5.06 | 4.17 | 3.87 | 3.58 |
| TP8X16* | 15 | 38 | 65 | 6.17 | 5.60 | 5.32 | 5.04 | 4.47 | 4.19 |
| TP8X16 | 105 | 5.5 | 26 | 6.28 | 5.70 | 5.38 | 5.12 | 4.54 | 4.25 |
| TP12X13* | 14 | 40 | 120 | 7.33 | 6.64 | 6.30 | 5.96 | 5.28 | 4.93 |
| TP12X13 | 85 | 7 | 48 | 7.54 | 6.83 | 6.47 | 6.13 | 5.42 | 5.07 |
| TP12X19* | 9.5 | 60 | 130 | 7.96 | 7.21 | 6.83 | 6.46 | 5.72 | 5.34 |
| TP12X19 | 59 | 10 | 65 | 8.06 | 7.30 | 6.93 | 6.55 | 5.79 | 5.41 |

*Intermittent duty; others continuous duty. •Pulse type solenoid.

### ‡STROKE LENGTH

Lift given is for min. stroke; lift for max. stroke on request.

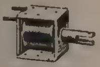
| Type TP- | Min. | Max. | Type TP- | Min. | Max. | Type TP- | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| 2X4 | .010″ | .090″ | 4X16* | 1/32″ | 1 1/8″ | 8X16 | 1/16″ | 5/8″ |
| 3.5X9* | 1/32″ | 1/2″ | 4X16 | 1/32″ | 3/4″ | 12X13* | 1/8″ | 7/8″ |
| 3.5X9 | 1/32″ | 1/4″ | 6X12* | 1/16″ | 7/8″ | 12X13 | 1/8″ | 3/4″ |
| 4X7* | 1/16″ | 1/4″ | 6X12 | 1/16″ | 1/2″ | 12X19* | 1/8″ | 1 1/2″ |
| 4X7 | 1/16″ | 1/8″ | 8X9* | 1/16″ | 9/16″ | 12X19 | 1/8″ | 1″ |
| 4X12* | 1/32″ | 3/4″ | 8X9 | 1/16″ | 3/8″ | | | |
| 4X12 | 1/32″ | 5/16″ | 8X16* | 1/16″ | 1 1/4″ | | | |

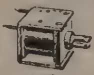
# GUARDIAN® Solenoids

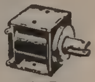
lenoids for intermittent or continuous duty. Intermittent types ould not be energized for over 5 consecutive minutes, or be rmitted to rise more than 85° C above 24° C ambient without fficient cooling time. Plunger has slotted end with ⅛" dia. hole · coupling. In charts, (I) indicates intermittent duty type, (C) indicates continuous duty. **To Order, Specify:** Solenoid number; voltage and AC or DC; continuous or intermittent (for intermittent give cycle of operation, length of time current will pass through coil, etc.); max. stroke and pull required.

## PULL TYPE AC AND DC SOLENOIDS

1A1


2 and 4


2HD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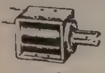
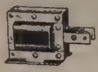

4HD

11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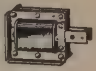
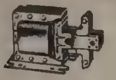
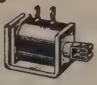

14

16


18

22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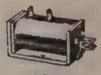
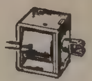
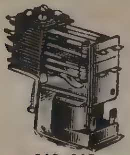

26


28

| uar- dian No. | Duty | Coil Volt- age | Ohms | Lifts and Strokes | | Body Size, Inches L. x W. x H. | Shpg. Wt., Oz. | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Minimum | Maximum | | | 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500 Up |
| 1A1 | I | 120 AC | 300 | 8 oz. at ⅛" | 2 oz. at ½" | 1¾ x 15/16 x 1 1/16 | 4.5 | $ 3.64 | $3.28 | $3.10 | $2.55 | $2.37 | $2.18 |
| 1A1 | C | 120 AC | 675 | 3 oz. at ⅛" | 0.5 oz. at ⅜" | 1¾ x 15/16 x 1 1/16 | 4.5 | 3.64 | 3.28 | 3.10 | 2.55 | 2.37 | 2.18 |
| 1A1 | I | 24 DC | 42.6 | 5 oz. at ⅛" | 1 oz. at ⅜" | 1¾ x 15/16 x 1 1/16 | 4.5 | 3.35 | 3.00 | 2.84 | 2.34 | 2.17 | 2.01 |
| 1A1 | C | 24 DC | 74.4 | 2 oz. at ⅛" | 0.5 oz. at ¼" | 1¾ x 15/16 x 1 1/16 | 4.5 | 3.35 | 3.00 | 2.84 | 2.34 | 2.17 | 2.01 |
| 1A1 | I | 115 DC | 803 | 5 oz. at ⅛" | 1 oz. at ⅜" | 1¾ x 15/16 x 1 1/16 | 4.5 | 3.94 | 3.55 | 3.35 | 2.76 | 2.56 | 2.36 |
| 1A1 | C | 115 DC | 2070 | 2 oz. at ⅛" | 0.5 oz. at ¼" | 1¾ x 15/16 x 1 1/16 | 4.5 | 3.94 | 3.55 | 3.35 | 2.76 | 2.56 | 2.36 |
| 2 | I | 120 AC | 60 | 33 oz. at ⅛" | 9 oz. at ⅞" | 1 9/16 x 1 7/16 x 1⅝ | 10 | 4.25 | 3.83 | 3.61 | 2.98 | 2.76 | 2.55 |
| 2 | C | 120 AC | 166 | 10.5 oz. at ⅛" | 3 oz. at ⅞" | 1 9/16 x 1 7/16 x 1⅝ | 10 | 4.25 | 3.83 | 3.61 | 2.98 | 2.76 | 2.55 |
| 2HD | I | 120 AC | 36 | 38 oz. at ⅛" | 16 oz. at ¾" | 1 13/16 x 1 7/16 x 1 11/16 | 13 | 10.01 | 9.01 | 8.51 | 7.00 | 6.50 | 6.00 |
| 2HD | C | 120 AC | 113 | 17 oz. at ⅛" | 4 oz. at ¾" | 1 13/16 x 1 7/16 x 1 11/16 | 13 | 10.01 | 9.01 | 8.51 | 7.00 | 6.50 | 6.00 |
| 2HD | I | 24 DC | 20 | 100 oz. at ⅛" | 5 oz. at ¾" | 1 13/16 x 1 7/16 x 1 11/16 | 13 | 10.31 | 9.28 | 8.77 | 7.21 | 6.70 | 6.18 |
| 2HD | C | 24 DC | 64 | 50 oz. at ⅛" | 1 oz. at ⅝" | 1 13/16 x 1 7/16 x 1 11/16 | 13 | 10.31 | 9.28 | 8.77 | 7.21 | 6.70 | 6.18 |
| 3HD | I | 24 DC | 21 | 160 oz. at 1/16" | 8 oz. at ¾" | 1 25/32 x 1 7/16 x 1⅝ | 14 | 6.93 | 6.24 | 5.89 | 4.85 | 4.50 | 4.16 |
| 3HD | C | 24 DC | 52 | 100 oz. at 1/16" | 3 oz. at ¾" | 1 25/32 x 1 7/16 x 1⅝ | 14 | 6.93 | 6.24 | 5.89 | 4.85 | 4.50 | 4.16 |
| 4 | I | 120 AC | 37 | 24 oz. at ⅛" | 22 oz. at 1" | 2 1/16 x 1 7/16 x 1⅝ | 14.5 | 4.85 | 4.37 | 4.13 | 3.39 | 3.15 | 2.91 |
| 4 | C | 120 AC | 133 | 8 oz. at ⅛" | 6 oz. at 1" | 2 1/16 x 1 7/16 x 1⅝ | 14.5 | 4.85 | 4.37 | 4.13 | 3.39 | 3.15 | 2.91 |
| 4 | I | 24 DC | 15 | 110 oz. at ⅛" | 4 oz. at 1" | 2 1/16 x 1 7/16 x 1⅝ | 14.5 | 4.85 | 4.37 | 4.13 | 3.39 | 3.15 | 2.91 |
| 4 | C | 24 DC | 4 | 55 oz. at ⅛" | 2.5 oz. at ⅞" | 2 1/16 x 1 7/16 x 1⅝ | 14.5 | 4.85 | 4.37 | 4.13 | 3.39 | 3.15 | 2.91 |
| 4 | I | 115 DC | 346 | 90 oz. at ⅛" | 4 oz. at 1" | 2 1/16 x 1 7/16 x 1⅝ | 14.5 | 5.16 | 4.64 | 4.38 | 3.61 | 3.35 | 3.09 |
| 4 | C | 115 DC | 1300 | 55 oz. at ⅛" | 2.5 oz. at ⅞" | 2 1/16 x 1 1/16 x 1⅝ | 14.5 | 5.16 | 4.64 | 4.38 | 3.61 | 3.35 | 3.09 |
| 4HD | I | 120 AC | 15 | 107 oz. at 1/16" | 30 oz. at 1¼" | 2 3/16 x 1 7/16 x 1⅝ | 15 | 7.40 | 6.67 | 6.29 | 5.19 | 4.81 | 4.44 |
| 4HD | C | 120 AC | 53 | 26 oz. at ⅛" | 8 oz. at 1¼" | 2 3/16 x 1 7/16 x 1⅝ | 15 | 7.40 | 6.67 | 6.29 | 5.19 | 4.81 | 4.44 |
| 4HD | I | 24 DC | 15 | 156 oz. at ⅛" | 21 oz. at ¾" | 2 3/16 x 1 7/16 x 1⅝ | 15 | 7.40 | 6.67 | 6.29 | 5.19 | 4.81 | 4.44 |
| 4HD | C | 24 DC | 30 | 70 oz. at ⅛" | 4 oz. at ¾" | 2 3/16 x 1 7/16 x 1⅝ | 15 | 7.40 | 6.67 | 6.29 | 5.19 | 4.81 | 4.44 |
| 4HD | I | 115 DC | 350 | 156 oz. at ⅛" | 21 oz. at ¾" | 2 3/16 x 1 7/16 x 1⅝ | 15 | 7.40 | 6.67 | 6.29 | 5.19 | 4.81 | 4.44 |
| 4HD | C | 115 DC | 1200 | 70 oz. at ⅛" | 4 oz. at ¾" | 2 3/16 x 1 7/16 x 1⅝ | 15 | 7.40 | 6.67 | 6.29 | 5.19 | 4.81 | 4.44 |
| 9 | I | 120 AC | 220 | 17 oz. at ⅛" | 8 oz. at ½" | 1 9/64 x 1 1/16 x 1 | 4 | 2.37 | 2.13 | 2.01 | 1.66 | 1.54 | 1.42 |
| 9 | C | 120 AC | 350 | 11 oz. at ⅛" | 4 oz. at ½" | 1 9/64 x 1 1/16 x 1 | 4 | 2.37 | 2.13 | 2.01 | 1.66 | 1.54 | 1.42 |
| 9 | I | 24 DC | 52 | 16 oz. at ⅛" | 1 oz. at ½" | 1 9/64 x 1½ x 1 | 4 | 2.37 | 2.13 | 2.01 | 1.66 | 1.54 | 1.42 |
| 9 | C | 24 DC | 90 | 10 oz. at ⅛" | 1 oz. at 7/16" | 1 9/64 x 1½ x 1 | 4 | 2.37 | 2.13 | 2.01 | 1.66 | 1.54 | 1.42 |
| 10 | I | 120 AC | 74 | 40 oz. at ⅛" | 25 oz. at ½" | 1 1/16 x 1⅜ x 1 13/32 | 6.5 | 2.70 | 2.43 | 2.30 | 1.89 | 1.76 | 1.62 |
| 10 | C | 120 AC | 172 | 20 oz. at ⅛" | 10 oz. at ½" | 1 1/16 x 1⅜ x 1 13/32 | 6.5 | 2.70 | 2.43 | 2.30 | 1.89 | 1.76 | 1.62 |
| 10 | I | 24 DC | 37 | 26 oz. at ⅛" | 4 oz. at ½" | 1 1/16 x 1⅜ x 1 13/32 | 6.5 | 2.70 | 2.43 | 2.30 | 1.89 | 1.76 | 1.62 |
| 10 | C | 24 DC | 69 | 16 oz. at ⅛" | 1 oz. at ½" | 1 1/16 x 1⅜ x 1 13/32 | 6.5 | 2.70 | 2.43 | 2.30 | 1.89 | 1.76 | 1.62 |
| 11 | I | 24 AC | 3.5 | 25 oz. at ⅛" | 6 oz. at 1" | 1⅞ x 15/16 x 1 3/1[illegible] | 7.5 | 3.64 | 3.28 | 3.10 | 2.55 | 2.37 | 2.18 |
| 11 | C | 24 AC | 8 | 12 oz. at ⅛" | 1 oz. at 1" | 1⅞ x 15/16 x 1 3/16 | 7.5 | 3.64 | 3.28 | 3.10 | 2.55 | 2.37 | 2.18 |
| 11 | I | 120 AC | 85 | 25 oz. at ⅛" | 6 oz. at 1" | 1⅞ x 15/16 x 1 3/16 | 7.5 | 3.64 | 3.28 | 3.10 | 2.55 | 2.37 | 2.18 |
| 11 | C | 120 AC | 200 | 12 oz. at ⅛" | 1 oz. at 1" | 1⅞ x 15/16 x 1 3/16 | 7.5 | 3.64 | 3.28 | 3.10 | 2.55 | 2.37 | 2.18 |
| 11 | I | 6 DC | 2 | 40 oz. at ⅛" | 2 oz. at ¾" | 1⅞ x 15/16 x 1 3/16 | 7.5 | 3.64 | 3.28 | 3.10 | 2.55 | 2.37 | 2.18 |
| 11 | C | 6 DC | 4.5 | 25 oz. at ⅛" | 1 oz. at ¾" | 1⅞ x 15/16 x 1 3/16 | 7.5 | 3.64 | 3.28 | 3.10 | 2.55 | 2.37 | 2.18 |
| 11 | I | 24 DC | 31 | 40 oz. at ⅛" | 2 oz. at ¾" | 1⅞ x 15/16 x 1 3/16 | 7.5 | 3.64 | 3.28 | 3.10 | 2.55 | 2.37 | 2.18 |
| 11 | C | 24 DC | 72 | 25 oz. at ⅛" | 1 oz. at ¾" | 1⅞ x 15/16 x 1 3/16 | 7.5 | 3.64 | 3.28 | 3.10 | 2.55 | 2.37 | 2.18 |
| 12 | I | 120 AC | 100 | 32 oz. at ⅛" | 4 oz. at 1" | 1⅝ x 1¼ x 1 7/16 | 6 | 5.16 | 4.64 | 4.38 | 3.61 | 3.35 | 3.09 |
| 12 | C | 120 AC | 150 | 22 oz. at ⅛" | 3 oz. at ⅞" | 1⅝ x 1¼ x 1 7/16 | 6 | 5.16 | 4.64 | 4.38 | 3.61 | 3.35 | 3.09 |
| 14 | I | 120 AC | 11 | 110 oz. at ⅛" | 52 oz. at 1½" | 2 7/16 x 1 15/16 x 2 1/16 | 9 | 6.97 | 6.28 | 5.92 | 4.88 | 4.54 | 4.18 |
| 14 | C | 120 AC | 18 | 65 oz. at ⅛" | 37 oz. at 1½" | 2 7/16 x 1 15/16 x 2 1/16 | 9 | 6.97 | 6.28 | 5.92 | 4.88 | 4.54 | 4.18 |
| 16 | I | 120 AC | 41 | 90 oz. at ⅛" | 30 oz. at ¾" | 1⅝ x 1¼ x 1½ | 7.5 | 4.25 | 3.83 | 3.61 | 2.98 | 2.76 | 2.55 |
| 16 | C | 120 AC | 85 | 50 oz. at ⅛" | 10 oz. at ¾" | 1⅝ x 1¼ x 1½ | 7.5 | 4.25 | 3.83 | 3.61 | 2.98 | 2.76 | 2.55 |
| 16 | I | 240 AC | 200 | 90 oz. at ⅛" | 30 oz. at ¾" | 1⅝ x 1¼ x 1½ | 7.5 | 4.55 | 4.10 | 3.86 | 3.18 | 2.95 | 2.72 |
| 16 | C | 240 AC | 350 | 50 oz. at ⅛" | 10 oz. at ¾" | 1⅝ x 1¼ x 1½ | 7.5 | 4.55 | 4.10 | 3.86 | 3.18 | 2.95 | 2.72 |
| 18 | I | 120 AC | 8.8 | 280 oz. at ⅛" | 80 oz. at 1" | 2½ x 1 13/16 x 2 1/16 | 16.5 | 5.76 | 5.19 | 4.90 | 4.03 | 3.75 | 3.45 |
| 18 | C | 120 AC | 19.7 | 145 oz. at ⅛" | 40 oz. at 1" | 2½ x 1 13/16 x 2 1/16 | 16.5 | 5.76 | 5.19 | 4.90 | 4.03 | 3.75 | 3.45 |
| 18 | I | 240 AC | 45 | 280 oz. at ⅛" | 80 oz. at 1" | 2½ x 1 13/16 x 2 1/16 | 16.5 | 6.28 | 5.46 | 5.16 | 4.25 | 3.95 | 3.76 |
| 18 | C | 240 AC | 78 | 145 oz. at ⅛" | 40 oz. at 1" | 2½ x 1 13/16 x 2 1/16 | 16.5 | 6.28 | 5.46 | 5.16 | 4.25 | 3.95 | 3.76 |
| 22 | I | 6 DC | 4 | 24 oz. at 1/16" | 1 oz. at ⅜" | 1¼ x ¾ x ¾ | 2.5 | 3.39 | 3.06 | 2.89 | 2.37 | 2.21 | 2.03 |
| 22 | C | 6 DC | 9 | 13 oz. at 1/16" | 0.5 oz. at ¼" | 1¼ x ¾ x ¾ | 2.5 | 3.39 | 3.06 | 2.89 | 2.37 | 2.21 | 2.03 |
| 22 | I | 24 DC | 60 | 24 oz. at 1/16" | 1 oz. at 7/16" | 1¼ x ¾ x ¾ | 2.5 | 3.39 | 3.06 | 2.89 | 2.37 | 2.21 | 2.03 |
| 22 | C | 24 DC | 144 | 13 oz. at 1/16" | 0.5 oz. at ⅜" | 1¼ x ¾ x ¾ | 2.5 | 3.39 | 3.06 | 2.89 | 2.37 | 2.21 | 2.03 |
| 24 | I | 120 AC | 310 | 16 oz. at 1/16" | 3 oz. at ⅝" | 1¼ x 27/32 x 1 | 3 | 3.94 | 3.55 | 3.35 | 2.76 | 2.56 | 2.36 |
| 24 | C | 120 AC | 500 | 10.5 oz. at 1/16" | 2 oz. at ⅝" | 1¼ x 27/32 x 1 | 3 | 3.94 | 3.55 | 3.35 | 2.76 | 2.56 | 2.36 |
| 24 | I | 24 DC | 52 | 36 oz. at 1/16" | 3 oz. at ½" | 1¼ x 27/32 x 1 | 3 | 3.94 | 3.55 | 3.35 | 2.76 | 2.56 | 2.36 |
| 24 | C | 24 DC | 114 | 18 oz. at 1/16" | 0.5 oz. at ½" | 1¼ x 27/32 x 1 | 3 | 3.94 | 3.55 | 3.35 | 2.76 | 2.56 | 2.36 |
| 26 | I | 120 AC | 140 | 28 oz. at 1/16" | 3 oz. at ⅞" | 1¾ x ⅞ x 15/16 | 4 | 4.16 | 3.74 | 3.54 | 2.91 | 2.70 | 2.49 |
| 26 | C | 120 AC | 250 | 13 oz. at 1/16" | 4 oz. at ⅝" | 1¾ x ⅞ x 15/16 | 4 | 4.16 | 3.74 | 3.54 | 2.91 | 2.70 | 2.49 |
| 26 | I | 24 DC | 36 | 65 oz. at 1/16" | 3 oz. at ¾" | 1¾ x ⅞ x 15/16 | 4 | 3.94 | 3.55 | 3.35 | 2.76 | 2.56 | 2.36 |
| 26 | C | 24 DC | 85 | 36 oz. at 1/16" | 1.5 oz. at ½" | 1¾ x ⅞ x 15/16 | 4 | 3.94 | 3.55 | 3.35 | 2.76 | 2.56 | 2.36 |
| 28 | I | 24 AC | 7.5 | 35 oz. at 1/16" | 5 oz. at ½" | 1⅛ x 15/16 x 1 3/16 | 3.5 | 3.64 | 3.28 | 3.10 | 2.55 | 2.37 | 2.18 |
| 28 | C | 24 AC | 17.4 | 20 oz. at 1/16" | 2.5 oz. at ½" | 1⅛ x 15/16 x 1 3/16 | 3.5 | 3.64 | 3.28 | 3.10 | 2.55 | 2.37 | 2.18 |
| 28 | I | 120 AC | 220 | 35 oz. at 1/16" | 5 oz. at ½" | 1⅛ x 15/16 x 1 3/16 | 3.5 | 3.94 | 3.55 | 3.35 | 2.76 | 2.56 | 2.36 |
| 28 | C | 120 AC | 400 | 20 oz. at 1/16" | 2.5 oz. at ½" | 1⅛ x 15/16 x 1 3/16 | 3.5 | 3.94 | 3.55 | 3.35 | 2.76 | 2.56 | 2.36 |
| 28 | I | 6 DC | 3.3 | 35 oz. at 1/16" | 2 oz. at ½" | 1⅛ x 15/16 x 1 3/16 | 3.5 | 3.39 | 3.06 | 2.89 | 2.37 | 2.21 | 2.03 |
| 28 | C | 6 DC | 7.7 | 24 oz. at 1/16" | 1 oz. at ⅜" | 1⅛ x 15/16 x 1 3/16 | 3.5 | 3.39 | 3.06 | 2.89 | 2.37 | 2.21 | 2.03 |
| 28 | I | 12 DC | 13 | 35 oz. at 1/16" | 2 oz. at ½" | 1⅛ x 15/16 x 1 3/16 | 3.5 | 3.39 | 3.06 | 2.89 | 2.37 | 2.21 | 2.03 |
| 28 | C | 12 DC | 27 | 24 oz. at 1/16" | 1 oz. at ⅜" | 1⅛ x 15/16 x 1 3/16 | 3.5 | 3.39 | 3.06 | 2.89 | 2.37 | 2.21 | 2.03 |
| 28 | I | 24 DC | 50 | 35 oz. at 1/16" | 2 oz. at ½" | 1⅛ x 15/16 x 1 3/16 | 3.5 | 3.39 | 3.06 | 2.89 | 2.37 | 2.21 | 2.03 |
| 28 | C | 24 DC | 104 | 24 oz. at 1/16" | 1 oz. at ⅜" | 1⅛ x 15/16 x 1 3/16 | 3.5 | 3.39 | 3.06 | 2.89 | 2.37 | 2.21 | 2.03 |
| 34 | I | 120 AC | 400 | 15 oz. at 1/16" | 1 oz. at ½" | 1⅛ x ¾ x 1⅛ | 2.5 | 2.11 | 1.90 | 1.79 | 1.48 | 1.37 | 1.27 |
| 34 | C | 120 AC | 865 | 7 oz. at 1/16" | 0.5 oz. at ½" | 1⅛ x ¾ x 1⅛ | 2.5 | 2.11 | 1.90 | 1.79 | 1.48 | 1.37 | 1.27 |
| 34 | I | 24 DC | 36 | 17 oz. at 1/16" | 1 oz. at 7/16" | 1⅛ x ¾ x 1 7/64 | 2.5 | 2.11 | 1.90 | 1.79 | 1.48 | 1.37 | 1.27 |
| 34 | C | 24 DC | 145 | 8.5 oz. at 1/16" | 0.5 oz. at ¼" | 1⅛ x ¾ x 1 7/64 | 2.5 | 2.11 | 1.90 | 1.79 | 1.48 | 1.37 | 1.27 |
| 38 | I | 115 AC | 860 | 14 oz. at 1/32" | 1 oz. at 9/32" | 49/64 x ¾ x ¾ | 2 | 1.55 | 1.40 | 1.32 | 1.09 | 1.00 | .93 |
| 38 | C | 115 AC | 1500 | 9 oz. at 1/32" | 1 oz. at ¼" | 49/64 x ¾ x ¾ | 2 | 1.55 | 1.40 | 1.32 | 1.09 | 1.00 | .93 |
| 38 | I | 24 DC | 72 | 21 oz. at 1/32" | 1 oz. at ¼" | 49/64 x ¾ x ¾ | 2 | 1.55 | 1.40 | 1.32 | 1.09 | 1.00 | .93 |
| 38 | C | 24 DC | 175 | 10 oz. at 1/32" | 0.5 oz. at 5/32" | 49/64 x ¾ x ¾ | 2 | 1.55 | 1.40 | 1.32 | 1.09 | 1.00 | .93 |

# GUARDIAN® RELAYS, STEPPERS



240, 245

6100, 6300

## SERIES 240U AC AND 245U DC RELAYS

For contact ratings up to 15 amps. Compact, reliable and inexpensive AC and DC units are factory pretested and adjusted. Single-screw, center-hole mounting for quick assembly. Easily serviced, though servicing is seldom required. UL Recog. File #E-23524A. Silver contacts rated 15 amps; points ¼″ x 1/16″; 5-amp and 10-amp points available to 6PDT; other contact materials available to specifications. Phenolic insulation is tested at 1500 volts, 60 Hz. Solder lug terminals. AC coils rated 6 VA, 60 Hz; operate satisfactorily at −15% of rated voltage and will not overheat at +10% of rated voltage on continuous duty. DC coils operate at 1.5 watts min. or 3 watts max.; operate on values up to 10% above, or 20% below rated voltage. Size, 2 29/32″ x 1 3/32″ x 2 9/16″, 4PDT. Shpg. Wt., 4.5 oz.

| Guardian Number* | Coil Res. | Cont. Comb. | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250 Up |
|---|---|---|---|---|---|---|---|
| 240U-A-24A | 24 | SPST† | $3.57 | $3.21 | $3.04 | $2.50 | $2.33 |
| 240U-2C-24A | 24 | DPDT | 4.48 | 4.04 | 3.81 | 3.14 | 2.91 |
| 240U-4C-24A | 24 | 4PDT | 6.57 | 5.91 | 5.58 | 4.60 | 4.27 |
| 240U-A-120A | 550 | SPST† | 3.57 | 3.21 | 3.04 | 2.50 | 2.33 |
| 240U-2C-120A | 550 | DPDT | 4.48 | 4.04 | 3.81 | 3.14 | 2.91 |
| 240U-4C-120A | 550 | 4PDT | 6.57 | 5.91 | 5.58 | 4.60 | 4.27 |
| 245U-A-6D | 12 | SPST† | 3.57 | 3.21 | 3.04 | 2.50 | 2.33 |
| 245U-2C-6D | 12 | DPDT | 4.48 | 4.04 | 3.81 | 3.14 | 2.91 |
| 245U-4C-6D | 12 | 4PDT | 6.57 | 5.91 | 5.58 | 4.60 | 4.27 |
| 245U-A-12D | 50 | SPST† | 3.57 | 3.21 | 3.04 | 2.50 | 2.33 |
| 245U-2C-12D | 50 | DPDT | 4.48 | 4.04 | 3.81 | 3.14 | 2.91 |
| 245U-4C-12D | 50 | 4PDT | 6.57 | 5.91 | 5.58 | 4.60 | 4.27 |
| 245U-A-24D | 200 | SPST† | 3.57 | 3.21 | 3.04 | 2.50 | 2.33 |
| 245U-2C-24D | 200 | DPDT | 4.48 | 4.04 | 3.81 | 3.14 | 2.91 |
| 245U-4C-24D | 200 | 4PDT | 6.57 | 5.91 | 5.58 | 4.60 | 4.27 |

*Suffix indicates voltage (i.e., **-6A** for 6 VAC; **-6D** for 6 VDC, etc.). †Normally open.

## SOLID STATE RELAYS

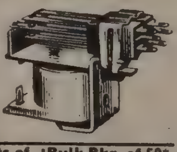
Universal control voltage; output and control circuits completely isolated. Pull-in voltage externally adjustable, 80–130 VAC/DC; close pull-in/drop-out differential for accurate voltage sensing. Control of inductive, resistive or high-inrush lamp loads maintained from 10 mA–3A. Internal filtering prevents random turn-on of "off" contacts. Rugged; no spark or contact bounce. **Series 6100:** Rated 1A; Shpg. Wt., 4 oz. **Series 6300:** Rated 3A; Wt., 8 oz.

| Guardian Number | Size, Inches | Net Each, Lots of 1-49 | 50-99 | 100 Up |
|---|---|---|---|---|
| 6100-THA-SPST-NO* | 2 x 1 9/16 x 1 11/16 | $17.95 | $16.16 | $15.26 |
| 6110-OHA-SPST-NO | 2¾ x 1⅜ x 1⅜ | 18.50 | 16.65 | 15.73 |
| 6100-THC-SPDT* | 2 x 1 9/16 x 1 11/16 | 22.95 | 20.66 | 19.51 |
| 6110-OHC-SPDT | 2¾ x 1⅜ x 1⅜ | 23.50 | 21.15 | 19.98 |
| 6300-THA-SPST-NO* | 3 x 1⅝ x 1 7/16 | 20.45 | 18.40 | 17.38 |
| 6310-OHA-SPST-NO | 3 3/16 x 1 15/16 x 1 15/16 | 20.95 | 18.86 | 17.81 |
| 6300-THC-SPDT* | 3 x 1⅝ x 1 9/16 | 27.45 | 24.71 | 23.33 |
| 6310-OHC-SPDT | 3 3/16 x 1 15/16 x 1 15/16 | 28.95 | 26.06 | 24.61 |

*.110″ quick-connect base; rest have octal plug mounting.

## SERIES 900 AND 910 10-AMP RELAYS

### UL AND CSA RECOGNIZED (FILE #E23524B)

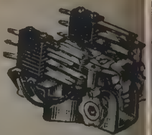


**Series 900**—Low cost DPDT relay features a trouble-free design incorporating a minimum of parts. UL Recog. Contacts rated 10 amps, 120 VAC, resistive load. Molded switches; one-piece mounting clip and return spring; molded bobbin and coil cover. Keyed and locked lifters. Shpg. Wt., 6 oz. **Series 910**—Same, but with 3/16″ quick-disconnect terminals instead of solder terminals. Size, 2 11/16″ x 1 11/16″ x 1 25/32″.

| Guardian Number | Coil Volts | Net Each, Lots of 1-9 | 10-24 | 25-49 | Bulk Pkg. of 50* Each | 2 Up |
|---|---|---|---|---|---|---|
| 900-2C-24A | 24 AC | $1.90 | $1.80 | $1.65 | $76.50 | $67.00 |
| 900-2C-120A | 120 AC | 1.90 | 1.80 | 1.65 | 76.50 | 67.00 |
| 900-2C-240A | 240 AC | 1.90 | 1.80 | 1.65 | 76.50 | 67.00 |
| 905-2C-6D | 6 DC | 1.90 | 1.80 | 1.65 | 76.50 | 67.00 |
| 905-2C-12D | 12 DC | 1.90 | 1.80 | 1.65 | 76.50 | 67.00 |
| 905-2C-24D | 24 DC | 1.90 | 1.80 | 1.65 | 76.50 | 67.00 |
| 910-2C-24A | 24 AC | 1.90 | 1.80 | 1.65 | 76.50 | 67.00 |
| 910-2C-120A | 120 AC | 1.90 | 1.80 | 1.65 | 76.50 | 67.00 |
| 910-2C-240A | 240 AC | 1.90 | 1.80 | 1.65 | 76.50 | 67.00 |
| 915-2C-6D | 6 DC | 1.90 | 1.80 | 1.65 | 76.50 | 67.00 |
| 915-2C-12D | 12 DC | 1.90 | 1.80 | 1.65 | 76.50 | 67.00 |
| 915-2C-24D | 24 DC | 1.90 | 1.80 | 1.65 | 76.50 | 67.00 |

*Units of 50 supplied nested in handy "form-fitted" assembly line trays.

## SEQUENCE RELAYS—AC-DC



**Types 660, 665**—For switching operations in a desired repetitive sequence such as signs, motors, etc. Each electrical impulse moves the relay contacts to next position in sequence. Contacts rated up to 12½ amps, 120 V, 60 Hz, non-inductive load. Mounting, 4 holes 8-32 (NC-2B). Shipping Weight, 8 oz.

| Guardian Number* | Cont. Comb. | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250 U |
|---|---|---|---|---|---|---|
| 660-C-24A | SPDT | $ 7.54 | $ 6.77 | $ 6.41 | $5.28 | $4.90 |
| 660-2C-24A | DPDT | 8.14 | 7.33 | 6.92 | 5.70 | 5.29 |
| 660-4C-24A | 4PDT | 11.83 | 10.65 | 10.06 | 8.28 | 7.69 |
| 660-C-120A | SPDT | 7.54 | 6.77 | 6.41 | 5.28 | 4.90 |
| 660-2C-120A | DPDT | 8.14 | 7.33 | 6.92 | 5.70 | 5.29 |
| 660-4C-120A | 4PDT | 11.83 | 10.65 | 10.06 | 8.28 | 7.69 |
| 665-C-24D | SPDT | 7.54 | 6.77 | 6.41 | 5.28 | 4.90 |
| 665-2C-24D | DPDT | 8.14 | 7.33 | 6.92 | 5.70 | 5.29 |
| 665-4C-24D | 4PDT | 11.83 | 10.65 | 10.06 | 8.28 | 7.69 |

*Suffix indicates coil voltage.

## SERIES 1240 AC AND 1245 DC 10-AMP RELAYS

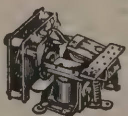
### UL RECOGNIZED (FILE #E-17260A)

High efficiency, compact relays for communications, automation, remote control switching circuits and laboratory applications. Solder lug terminals are molded in phenolic panel block for coils as well as contacts. Barriers in panel block are raised to meet UL over-surface spacing; UL insulation throughout. Contacts rated 10 amps at 120 VAC, 60 Hz, non-inductive. Single 6-32 tapped mounting hole. Size, 1⅝″ x 1″ x 1¼″. Shpg. Wt., 2.5 oz.

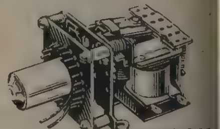
| Guardian Number* | Coil Ohms | Cont. Comb. | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500 Up |
|---|---|---|---|---|---|---|---|---|
| 1240-2C-6A | 8 | DPDT | $4.13 | $3.72 | $3.51 | $2.89 | $2.68 | $2.48 |
| 1240-3C-6A | 4 | 3PDT | 4.68 | 4.21 | 3.98 | 3.28 | 3.04 | 2.80 |
| 1240-2C-24A | 59 | DPDT | 4.13 | 3.72 | 3.51 | 2.89 | 2.68 | 2.48 |
| 1240-3C-24A | 50 | 3PDT | 4.68 | 4.21 | 3.98 | 3.28 | 3.04 | 2.80 |
| 1240-2C-120A | 1190 | DPDT | 4.13 | 3.72 | 3.51 | 2.89 | 2.68 | 2.48 |
| 1240-3C-120A | 1000 | 3PDT | 4.68 | 4.21 | 3.98 | 3.28 | 3.04 | 2.80 |
| 1240-2C-240A | 5340 | DPDT | 4.40 | 3.96 | 3.74 | 3.08 | 2.86 | 2.64 |
| 1240-3C-240A | 4750 | 3PDT | 4.95 | 4.46 | 4.21 | 3.47 | 3.22 | 2.97 |
| 1245-2C-6D | 18 | DPDT | 3.74 | 3.37 | 3.18 | 2.62 | 2.43 | 2.24 |
| 1245-3C-6D | 18 | 3PDT | 4.24 | 3.82 | 3.60 | 2.97 | 2.76 | 2.54 |
| 1245-2C-12D | 75 | DPDT | 3.74 | 3.37 | 3.18 | 2.62 | 2.43 | 2.24 |
| 1245-3C-12D | 75 | 3PDT | 4.24 | 3.82 | 3.60 | 2.97 | 2.76 | 2.54 |
| 1245-2C-24D | 300 | DPDT | 3.74 | 3.37 | 3.18 | 2.62 | 2.43 | 2.24 |
| 1245-3C-24D | 300 | 3PDT | 4.24 | 3.82 | 3.60 | 2.97 | 2.76 | 2.54 |
| 1245-2C-110D | 6500 | DPDT | 4.13 | 3.72 | 3.51 | 2.89 | 2.68 | 2.48 |
| 1245-3C-110D | 6500 | 3PDT | 4.68 | 4.21 | 3.98 | 3.28 | 3.04 | 2.80 |

*Suffix indicates volts (i.e., **-6A** for 6 VAC, **-12D** for 12 VDC, etc.).

## TYPES MER AND MER-SOL ELECTRICAL RESET STEPPERS



MER



MER-SOL

**Type MER**—Direct drive (steps on energization) electrical reset stepper with positive mechanical reset interlock actuated by the reset magnet; unlocks on first energization of the step magnet. Assures positive reset on as short a pulse as 1/100 sec; or, even from its own selection contacts. Capable of counting in groups up to 21, then resetting automatically. By interconnecting two or more, count can be increased to any desired total counting by tens or any other convenient multiple. Can be used to control a sequence of operation and then automatically reset to initial or starting position. Maximum of 20 steps per second; 24 points; 22 active contacts. Coil operates satisfactorily at 15% below or 10% above voltage indicated. Size, 3 5/16″ w. x 2 3/16″ lg. x 2 3/16″ h. max. Shpg. Wt., 11½ oz.

**Type MER-SOL**—Same as Type MER, but with added solenoid for extra versatility. Energizing solenoid physically moves wiper(s) away from selector deck for advance or reset without contacting deck; increases contact capacity and electrical life. Power input to step magnet reduced from 35 VA to 20 VA. Solenoid and reset coil energized simultaneously to reduce friction during reset. Size, 3 5/16″ w. x 4⅜″ lg. x 2 3/16″ h. Shpg. Wt., 14 oz.

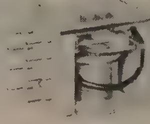
| Guardian Number | VA | | Watt | | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | * | † | * | † | 1-24 | 25-49 | 50-99 | 100-249 | 250 Up |
| MER-120AC | 35 | 9 | 20 | 8 | $18.56 | $16.71 | $15.78 | $13.00 | $12.07 |
| MER-24DC | 35 | 9 | 20 | 8 | 18.56 | 16.71 | 15.78 | 13.00 | 12.07 |
| MER-SOL-120AC | 20 | 9 | 20 | 8 | 26.48 | 23.84 | 22.51 | 18.54 | 17.22 |
| MER-SOL-24DC | 20 | 9 | 20 | 8 | 26.48 | 23.84 | 22.51 | 18.54 | 17.22 |

*Stepping coil. †Reset coil.

# GUARDIAN® Relays

## NEW LOW-COST AC-DC MINIATURE ENCLOSED DPDT PLUG-IN RELAYS

**Type 1330, 1335**

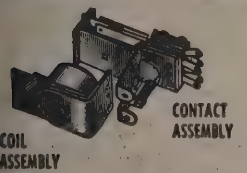

**Type 1330P, 1335P**

npact DPDT relays ideal for circuitry in business machines, tocopiers, computers, etc. Save space and cost. Plug-in conience. Lexan* cover; plug-in convenience with optional socket. oice of solder (no suffix) or PC (suffix P) termination. Contacts ed 5 amps, 30 VDC or 120 VAC resistive. Socket fits panels 1″–.062″ thick with cutout .759″ x .830″ with .025″ radii at all r corners. Relay Wt., ¾ oz. *Reg. GE TM.

| Guardian Number* | | Coil Ohms | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|
| lder Terinal Type | Printed Circuit Type | | 1-24 | 25-49 | 50-99 | 100-249 | 250 Up |
| 0-2C-6A | 1330P-2C-6A | 15 | $3.80 | $3.42 | $3.23 | $2.66 | $2.47 |
| 0-2C-12A | 1330P-2C-12A | 50 | 3.80 | 3.42 | 3.23 | 2.66 | 2.47 |
| 0-2C-24A | 1330P-2C-24A | 245 | 3.80 | 3.42 | 3.23 | 2.66 | 2.47 |
| 0-2C-120A | 1330P-2C-120A | 5400 | 4.00 | 3.60 | 3.40 | 2.80 | 2.60 |
| 5-2C-6D | 1335P-2C-6D | 30 | 3.72 | 3.35 | 3.16 | 2.60 | 2.42 |
| 5-2C-12D | 1335P-2C-12D | 125 | 3.72 | 3.35 | 3.16 | 2.60 | 2.42 |
| 5-2C-24D | 1335P-2C-24D | 500 | 3.72 | 3.35 | 3.16 | 2.60 | 2.42 |
| 5-2C-110D | 1335P-2C-110D | ...... | 3.94 | 3.55 | 3.35 | 2.76 | 2.56 |
| 0-1ST† | 1330-2PC† | ...... | .50 | .50 | .50 | .50 | .50 |

ffix indicates volts (i.e., **-120A** for 120 VAC; **-6D**, 6 VDC, etc.). ckets for above relays.

## ERIES 200 RELAY WITH COMPLETELY INTERHANGEABLE COIL AND CONTACT ASSEMBLIES



MIDGET CONTACT ASSEMBLY. Dotted line shows size of standard unit.

o basic parts—a coil assembly and a contact switch assembly—nprise this simple, yet versatile Guardian relay. The coil assem consists of the coil and field piece; the contact assembly cons of switch blades, armature, return spring and mounting cket. The Guardian Midget Contact Assembly is **interchange**e with the standard Series 200 coil assembly. Available with DT, DPDT or 4PDT contact switch assemblies, each **interangeable** with all AC or DC coils.

### SERIES 200 RELAY

| uardian Number | Volts | Coil | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250Up |
|---|---|---|---|---|---|---|---|
| 0-6A | 6 | AC | $2.04 | $1.84 | $1.73 | $1.43 | $1.33 |
| 0-12A | 12 | AC | 2.04 | 1.84 | 1.73 | 1.43 | 1.33 |
| 0-24A | 24 | AC | 2.04 | 1.84 | 1.73 | 1.43 | 1.33 |
| 0-120A | 120 | AC | 2.37 | 2.13 | 2.01 | 1.66 | 1.54 |
| 0-240A | 240 | AC | 3.14 | 2.83 | 2.67 | 2.20 | 2.04 |
| 0-6D | 6 | DC | 2.20 | 1.98 | 1.87 | 1.54 | 1.43 |
| 0-12D | 12 | DC | 2.20 | 1.98 | 1.87 | 1.54 | 1.43 |
| 0-24D | 24 | DC | 2.20 | 1.98 | 1.87 | 1.54 | 1.43 |
| 0-32D | 32 | DC | 2.20 | 1.98 | 1.87 | 1.54 | 1.43 |
| 0-110D | 110 | DC | 2.92 | 2.63 | 2.48 | 2.04 | 1.90 |
| 0-5,000D | Plate | DC | 2.53 | 2.28 | 2.15 | 1.77 | 1.64 |
| 0-10,000D | Plate | DC | 2.92 | 2.63 | 2.48 | 2.04 | 1.90 |

### CONTACT SWITCH ASSEMBLIES

| ardian umber | Type | * | Cont. Comb. | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250Up |
|---|---|---|---|---|---|---|---|---|
| 0-1 | Standard | 8 | SPDT | $1.76 | $1.58 | $1.50 | $1.23 | $1.14 |
| 0-2 | Standard | 8 | DPDT | 2.31 | 2.08 | 1.96 | 1.62 | 1.50 |
| 0-4 | Standard | 12.5 | DPDT | 2.59 | 2.33 | 2.20 | 1.81 | 1.68 |
| 0-5 | Standard | 8 | 4PDT | 4.07 | 3.66 | 3.46 | 2.85 | 2.65 |
| 0-M1 | Midget | 10 | SPDT | 1.65 | 1.49 | 1.40 | 1.16 | 1.07 |
| 0-M2 | Midget | 10 | DPDT | 2.04 | 1.84 | 1.73 | 1.43 | 1.33 |
| 0-M5 | Midget | 8 | 4PDT | 3.30 | 2.97 | 2.81 | 2.31 | 2.15 |

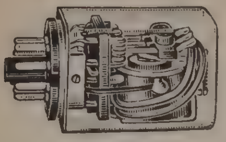
ontact amps.

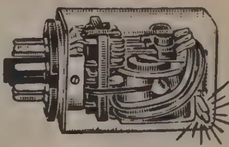
### CONTACT SWITCH PARTS

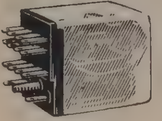
e contact switch parts 200-3 for adding poles to contact switch semblies 200-1 and 200-2. Use midget contact switch parts 0-M3 to add poles to midget contact switch assemblies 200-M1 d 200-M2.

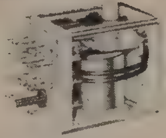
| Guardian Number | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250 Up |
|---|---|---|---|---|---|
| 200-3 | $1.76 | $1.58 | $1.50 | $1.23 | $1.14 |
| 200-M3 | 1.76 | 1.58 | 1.50 | 1.23 | 1.14 |

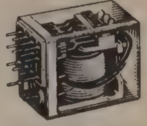
## ENCLOSED PLUG-IN AC-DC RELAYS


**Type 1210 and 1215**


**Type 1210N**


**Type 1310, 1315**


**Type 1310B, 1315B**


**Type 1310P, 1315P**

In high-impact, transparent Lexan case for light weight and resistance to weather and temperatures up to 200° F. **Types 1210, -N, 1215**—With 8-pin octal plug for DPDT and 11-pin for 3PDT. Contacts rated 10 amps at 120 VAC, 60 Hz, non-inductive. Type 1210-N has miniature neon lamp connected across terminals. Lamp lights when coil is energized, goes out in case of circuit fault. Ideal substitute for circuit tester in relay banks, mass relay arrangements, or where relays are visibly located at intermediate switching points of the circuitry. Size, 2²³⁄₃₂″ x 1⅜″ x 1⅜″. Shpg. Wt., 3.5 oz. UL Recognized File #E-17260A (5 amp only). **Types 1310 and 1315**—Miniature plug-in relays with solder terminals (no suffix); PC terminals (suffix P); with miniature neon lamp connected across coil terminals to glow on coil energization or show circuit fault on failure to glow (suffix N); and, with insulated button for push-to-test without applying voltage to coil (suffix B). Long life (100 million operations) 4PDT contacts rated 5 amps, 30 VDC or 120 VAC. Size, 1¹⁷⁄₆₄″ x ⁵⁵⁄₆₄″ x 1⁷⁄₆₄″. Shpg. Wt., 1⅛ oz.

### ENCLOSED PLUG-IN RELAYS—AC-DC

| Guardian Number* | Coil Ohms | Cont. Comb. | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500 Up |
|---|---|---|---|---|---|---|---|---|
| 1210N-2C-120A | 1100 | DPDT | $7.43 | $6.69 | $6.32 | $5.20 | $4.83 | ..... |
| 1210N-3C-120A | 1100 | 3PDT | 8.80 | 7.92 | 7.48 | 6.16 | 5.72 | ..... |
| 1210-2C-6A | 33 | DPDT | 6.60 | 5.94 | 5.61 | 4.62 | 4.29 | $3.96 |
| 1210-3C-6A | 33 | 3PDT | 8.25 | 7.43 | 7.01 | 5.78 | 5.36 | 4.95 |
| 1210-2C-24A | 54 | DPDT | 6.60 | 5.94 | 5.61 | 4.62 | 4.29 | 3.96 |
| 1210-3C-24A | 54 | 3PDT | 8.25 | 7.43 | 7.01 | 5.78 | 5.36 | 4.95 |
| 1210-2C-120A | 1100 | DPDT | 6.60 | 5.94 | 5.61 | 4.62 | 4.29 | 3.96 |
| 1210-3C-120A | 1100 | 3PDT | 8.25 | 7.43 | 7.01 | 5.78 | 5.36 | 4.95 |
| 1210-2C-240A | 5000 | DPDT | 6.88 | 6.19 | 5.85 | 4.82 | 4.47 | 4.13 |
| 1210-3C-240A | 5000 | 3PDT | 8.53 | 7.68 | 7.25 | 5.97 | 5.54 | 5.12 |
| 1215-2C-6D | 18 | DPDT | 6.60 | 5.94 | 5.61 | 4.62 | 4.29 | 3.96 |
| 1215-3C-6D | 18 | 3PDT | 8.25 | 7.43 | 7.01 | 5.78 | 5.36 | 4.95 |
| 1215-2C-12D | 75 | DPDT | 6.60 | 5.94 | 5.61 | 4.62 | 4.29 | 3.96 |
| 1215-3C-12D | 75 | 3PDT | 8.25 | 7.43 | 7.01 | 5.78 | 5.36 | 4.95 |
| 1215-2C-24D | 300 | DPDT | 6.60 | 5.94 | 5.61 | 4.62 | 4.29 | 3.96 |
| 1215-3C-24D | 300 | 3PDT | 8.25 | 7.43 | 7.01 | 5.78 | 5.36 | 4.95 |
| 1215-2C-110D | 6500 | DPDT | 7.15 | 6.44 | 6.08 | 5.01 | 4.65 | 4.29 |
| 1215-3C-110D | 6500 | 3PDT | 8.80 | 7.92 | 7.48 | 6.16 | 5.72 | 5.28 |

*Suffix indicates volts (i.e., **-120A** for 120 VAC; **-6D**, 6 VDC, etc.).

### ENCLOSED PLATE CIRCUIT PLUG-IN RELAYS—DC

| Guardian Number* | Oper. mA | Cont. Comb. | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500 Up |
|---|---|---|---|---|---|---|---|---|
| 1215-2C-2.5 | 10 | DPDT | $6.82 | $6.14 | $5.80 | $4.77 | $4.43 | $4.09 |
| 1215-3C-2.5 | 12 | 3PDT | 7.98 | 7.18 | 6.78 | 5.59 | 5.19 | 4.78 |
| 1215-2C-5 | 7.2 | DPDT | 6.93 | 6.24 | 5.89 | 4.85 | 4.50 | 4.15 |
| 1215-3C-5 | 8.5 | 3PDT | 8.25 | 7.43 | 7.01 | 5.78 | 5.36 | 4.95 |
| 1215-2C-10 | 5 | DPDT | 7.15 | 6.44 | 6.08 | 5.01 | 4.65 | 4.29 |
| 1215-3C-10 | 5 | 3PDT | 8.53 | 7.68 | 7.25 | 5.97 | 5.54 | 5.11 |

*Suffix indicates coil resistance in kilohms (e.g., **-2.5** for 2500 ohms, **-10** for 10,000 ohms, etc.): Not UL Recognized.

### MINIATURE ENCLOSED PLUG-IN RELAYS

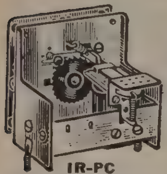
| Guardian Number* | | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| Solder Terminal Type†• | Printed Circuit Type• | 1-24 | 25-49 | 50-99 | 100-249 | 250 Up |
| 1310-4C-6A | 1310P-4C-6A | $5.00 | $4.50 | $4.25 | $3.50 | $3.25 |
| 1310-4C-12A | 1310P-4C-12A | 5.00 | 4.50 | 4.25 | 3.50 | 3.25 |
| 1310-4C-24A | 1310P-4C-24A | 5.00 | 4.50 | 4.25 | 3.50 | 3.25 |
| 1310-4C-120A | 1310P-4C-120A | 5.20 | 4.68 | 4.42 | 3.64 | 3.38 |
| 1315-4C-6D | 1315P-4C-6D | 4.30 | 3.87 | 3.66 | 3.01 | 2.80 |
| 1315-4C-12D | 1315P-4C-12D | 4.30 | 3.87 | 3.66 | 3.01 | 2.80 |
| 1315-4C-24D | 1315P-4C-24D | 4.30 | 3.87 | 3.66 | 3.01 | 2.80 |
| 1315-4C-110D | 1315P-4C-110D | 4.85 | 4.37 | 4.12 | 3.40 | 3.15 |
| **Solder Term., & Neon Lamp** | **Solder Term., Push-to-Test** | | | | | |
| 1310N-4C-120A | 1310B-4C-120A | 5.80 | 5.27 | 4.98 | 4.10 | 3.81 |
| 1315N-4C-24D | 1315B-4C-24D | 4.90 | 4.41 | 4.17 | 3.43 | 3.19 |
| 1315N-4C-110D | 1315B-4C-110D | 5.45 | 4.91 | 4.63 | 3.82 | 3.54 |
| 1310-1‡ | 1310-2§ | .60 | .60 | .60 | .60 | .60 |

*Suffix indicates volts (i.e., **-6A**, 6 VAC; **-6D**, 6 VDC etc.) †UL Recognized, File E-23524. ‡Socket for all solder terminal type relays. §Socket for printed circuit type relays. •Available with cadmium oxide contacts for motor load uses; information and prices on request.

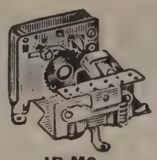
# GUARDIAN® Relays

## STEPPING RELAYS

### CONTINUOUS ROTATION



IR-PC

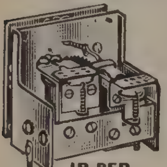


IR-MC

**Type IR-PC**—Micro-finished shaft and Oilite shaft bearing. Beryllium copper pawl control shutter. Selection contacts terminated on phenolic board; solder beaded. Mechanical life expectancy estimated 4,000,000 steps. Has 40-point ratchet with 40 active contacts, including zero position. Size, 3⅜″ lg. x 3⅜″ w. x 3½″ h. Shipping Weight, 17 oz.

**Type IR-MC**—A smaller, continuous operation stepper similar to above; has life expectancy of 2,000,000 steps. Has 24-point ratchet with 24 active contacts, including zero. Size, 3¼″ lg. x 3″ w. x 2³⁄₁₆″ h. Shipping Weight, 9½ oz.

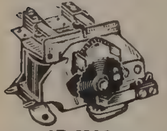
### ELECTRICAL RESET



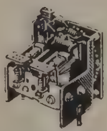
IR-PER

**Type IR-PER**—Micro-finished shaft and Oilite shaft bearing. Positive mechanical stops limit total number of steps in any single unit. Returns automatically to start position when reset coil is energized. Has 40-point ratchet with 36 active contacts including zero position. Size, 3″ lg. x 3⅜″ w. x 3⁹⁄₁₆″ h. Shipping Wt., 22 oz.

### ADD AND SUBTRACT



IR-MAS



IR-PAS

**Type IR-MAS**—Midget stepper with non-ferrous shutters controlling pawl motion. Steps one step at a time in either direction, depending on which of the two coils is energized. Has 30-point ratchet, with zero position switch opened at home position. Size, 3¼″ lg. x 3⅛″ w. x 1¹⁵⁄₁₆″ h. Shipping Weight, 11 oz.

**Type IR-PAS**—Similar in operation to IR-MAS, but larger. Has 40 points and 40 active contacts. Supplied with 45-amp, quick-connect terminals and Form "C" cam switch. Size, 3¼″ lg. x 3⅜″ w. x 3⁹⁄₁₆″ h. Shipping Weight, 22 oz.

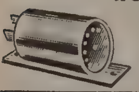
### STEPPING RELAY DATA CHART

All units rated 120 VAC coil voltage; will operate satisfactorily at 15% below or 10% above. Auxiliary switches may be connected in series with the commutator of the selecting finger and added to the step and/or reset magnet to increase the normal contact rating of 1.5 A, 120 VAC 60 Hz resistive. Contact fingers insulated from shaft. All units are intermittent duty rated at 10% duty cycle (out of each hour); single period maximum energization, 5 minutes.

| Guardian Number | VA | Watts | * | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250 Up |
|---|---|---|---|---|---|---|---|---|
| IR-PC-120AC | 40 | 30 | 20 | $23.49 | $21.14 | $19.97 | $16.45 | $15.27 |
| IR-MC-120AC | 30 | 17 | 20 | 17.39 | 15.65 | 14.78 | 12.18 | 11.30 |
| IR-PER-120AC | 50†<br>10‡ | 35†<br>7‡ | 20 | 30.92 | 27.82 | 26.29 | 21.65 | 20.11 |
| IR-MAS-120AC | 12 | 9 | 10 | 20.33 | 18.19 | 17.28 | 14.23 | 13.21 |
| IR-PAS-120AC | 50 | 35 | 29 | 30.92 | 27.82 | 26.29 | 21.65 | 20.11 |

*Maximum steps per second. †Stepping coil. ‡Reset coil.

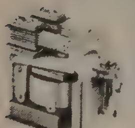
### ROTOMITE STEPPER—DC



Compact, completely metal cased. Continuous rotation on 12 positions up to 20 steps per second. Contact rating 3 amps resistive, 1 amp inductive (50% PF). DC coils are continuous duty. Over 1,000,000 operations. Size, 2″ x 1³⁄₁₆″ dia. Shipping Wt., 5 oz.

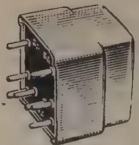
| Guardian Number | Pos. | V DC | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250 Up |
|---|---|---|---|---|---|---|---|
| IR-705-12P-6D | 12 | 6 | $7.26 | $6.53 | $6.17 | $5.08 | $4.72 |
| IR-705-12P-12D | 12 | 12 | 7.26 | 6.53 | 6.17 | 5.08 | 4.72 |
| IR-705-12P-24D | 12 | 24 | 7.26 | 6.53 | 6.17 | 5.08 | 4.72 |

### NEW TYPE 840L ON/OFF SINGLE COIL MECHANICAL LATCHING RELAY STEPPER

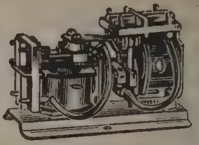


Improved, compact design is impulse operated for positive on/off control of positioning devices, remote controls, lighting, etc. Impulses as short as 20 msec energizes coil to reverse position of switches. Holds last position of switch with coil de-energized. Contacts rated 10 amps, 120 VAC, 60 Hz non-inductive; requires 8.2 VA. Solder lug terminals for coils and contacts. Single hole mounting tapped 8-32NC-2B. Shpg. Wt., 5.2 oz.

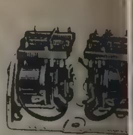
| Guardian Number | Contacts | Coil VAC | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250 Up |
|---|---|---|---|---|---|---|---|
| 840L-C-24A | SPDT | 24 | $5.23 | $4.71 | $4.45 | $3.66 | $3.40 |
| 840L-2C-24A | DPDT | 24 | 6.30 | 5.67 | 5.36 | 4.41 | 4.10 |
| 840L-4C-24A | 4PDT | 24 | 9.00 | 8.10 | 7.65 | 6.30 | 5.85 |
| 840L-C-120A | SPDT | 120 | 5.23 | 4.71 | 4.45 | 3.66 | 3.40 |
| 840L-2C-120A | DPDT | 120 | 6.30 | 5.67 | 5.36 | 4.41 | 4.10 |
| 840L-4C-120A | 4PDT | 120 | 9.00 | 8.10 | 7.65 | 6.30 | 5.85 |



PC



IR-1200/1200



IR-1200/1200U

## PLUG-IN PC RELAYS

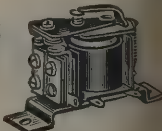
For low power, solid state circuitry; DPDT switching. Conta rated 3 amps at 120 VAC, 60 Hz resistive. Normal power, 1 wa Terminals on 0.1″ grid for soldering onto standard PC boar Coil resistance, 3500 ohms, 120 VAC, 60 Hz. Life, over 10 milli operations. Size, 1¹⁄₁₆″ sq. x ³¹⁄₃₂″ h. Conform to UL Office App ances and Business Equipment requirements.

| Guardian Number | Input | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250 Up |
|---|---|---|---|---|---|---|
| IR-1350PC-2C-24A | 24 VAC | $3.60 | $3.24 | $3.06 | $2.52 | $2.3 |
| IR-1350PC-2C-120A | 120 VAC | 3.90 | 3.51 | 3.32 | 2.73 | 2.5 |
| IR-1355PC-2C-6D | 6 VDC | 3.60 | 3.24 | 3.06 | 2.52 | 2.3 |
| IR-1355PC-2C-12D | 12 VDC | 3.60 | 3.24 | 3.06 | 2.52 | 2.3 |
| IR-1355PC-2C-24D | 24 VDC | 3.60 | 3.24 | 3.06 | 2.52 | 2.3 |

## INTERLOCKING AC/AC RELAYS

Two interlocking AC relays on sturdy metal frame bracket. F continuous circuit maintenance without coil power consumptio Electrically pulse operated, 4PDT switching; mechanical hol electrical release. Contacts rated 10 amps, 120 VAC, 60 H non-inductive. Coil resis., 1100 ohms. Shipping Weight, 5.5 o **Guardian Type IR-1200/1200-4C-120A** (On metal frame, 1¹⁄₁₆ x 1¾″ x 2⅞″) or **IR-1200/1200UB-4C-120A** (U-bracket, 1¹³⁄₁₆″ 1⅜″ x 3³⁄₁₆″)—Net Each, Lots 1–24.....**$10.40**; 25–49..... **$9.3** 50–99.......**$8.84**; 100–249.......**$8.32**; 250 Up....... **7.2**

## HEAVY DUTY AC RELAYS

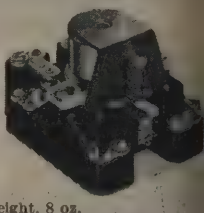


Rugged unit breaks up to 20 amps at 240 V. Armature equipped with phenolic contact mounting block carrying ⁵⁄₁₆″ dual contacts. Phenolic tested at 1500 V breakdown to ground. Contacts are silver alloy. Contact rating 20 amps at 60 Hz 240 V non-inductive load. Relay is available in SPST-NO only. Two 8-32 mtg. holes on 2¹⁹⁄₃₂″ centers. Size, 3″ x 1⅞″ x 1¾″ Shpg. Wt., 5.5 oz.

| Guardian Number | Volts AC | Coil Ohms | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250U |
|---|---|---|---|---|---|---|---|
| IR-220-A-24A | 24 | 25 | $4.95 | $4.46 | $4.21 | $3.47 | $3.2 |
| IR-220-A-120A | 120 | 600 | 5.56 | 5.00 | 4.73 | 3.89 | 3.6 |
| IR-220-A-240A | 240 | 2500 | 6.11 | 5.50 | 5.19 | 4.28 | 3.9 |

## POWER RELAYS

### SERIES 2600U AND 2605U DPDT—25 AMPS



Compact power relays with DPDT contacts rated 25 amps. Inverted coil construction protects armature and contacts from inadvertent mechanical damage or electrical shorting. Series 2600U relays are rated for continuous duty at 240 VAC with 75% power factor; requires 9.5 VA, 60 Hz. Screw terminals are easily accessible. (Quick-Connect Terminal Kit permits easy conversion to ¼″ AMP terminals). "Press-to-Test" armature lever for convenient manual circuit testing. Two .196″ dia. holes on 1⅞″ centers. Size, 3⁵⁄₁₆″ x 2½″ x 2¹⁄₁₆″. Shipping Weight, 8 oz.

| Guardian Number | Volts | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250 Up |
|---|---|---|---|---|---|---|
| 2600U-DPDT-24A | 24 AC | $7.43 | $6.69 | $6.32 | $5.20 | $4.83 |
| 2600U-DPDT-120A | 120 AC | 7.43 | 6.69 | 6.32 | 5.20 | 4.83 |
| 2600U-DPDT-240A | 240 AC | 7.81 | 7.03 | 6.64 | 5.47 | 5.08 |
| 2605U-DPDT-12D | 12 DC | 7.43 | 6.69 | 6.32 | 5.20 | 4.83 |
| 2605U-DPDT-24D | 24 DC | 7.43 | 6.69 | 6.32 | 5.20 | 4.83 |
| 2605U-DPDT-110D | 110 DC | 7.81 | 7.03 | 6.64 | 5.47 | 5.08 |
| 2600U-SPDT-Aux. Switch* | ......... | 1.49 | 1.34 | 1.27 | 1.04 | .97 |
| 2600U-Quick Connect Term. Kit | ......... | .74 | .67 | .63 | .52 | .48 |

*Recessed SPDT auxiliary switch (illustrated with relay) ha solder lug blade tails, rated for 10 amp operation.

### SERIES 2620U AND 2625U DPST-NO—25 AMPS

Identical to Series 2600U above, but with DPST-NO contacts Supplied with screw terminals; quick-connect terminal kit permits easy conversion to ¼″ AMP terminals (see listing in table, above)

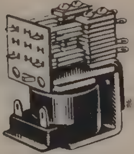
| | | | | | | |
|---|---|---|---|---|---|---|
| 2620U-DPST-24A | 24 AC | $5.65 | $5.09 | $4.80 | $3.96 | $3.67 |
| 2620U-DPST-120A | 120 AC | 5.65 | 5.09 | 4.80 | 3.96 | 3.67 |
| 2620U-DPST-240A | 240 AC | 6.15 | 5.54 | 5.23 | 4.31 | 4.00 |
| 2625U-DPST-12D | 12 DC | 5.70 | 5.13 | 4.85 | 3.99 | 3.71 |
| 2625U-DPST-24D | 24 DC | 5.70 | 5.13 | 4.85 | 3.99 | 3.71 |
| 2625U-DPST-110D | 110 DC | 6.15 | 5.54 | 5.23 | 4.31 | 4.00 |

# GUARDIAN® RELAYS, SWITCHES AND STEPPERS

## GUARDIAN RELAYS

-1220, IR-1225

SOC-1


IR-640, IR-645

### SERIES IR-1220 AC AND IR-1225 DC ENCLOSED RELAYS

satile enclosed relay for plug-in or solder connection or use 1 quick-connect terminals. Reduced height and cost by elimi- ion of radio type plug, extra wiring and sub-assembly between y and plug. Features "Uni-Guard" continuous loop moving ies; snap-lock cover; and multipurpose terminals usable as er lug, AMP Faston 110 quick-connect, or socket plug-in use. h mounting bracket. Size, 1⁵⁄₃₂" x 1¹¹⁄₁₆" x 1⁹⁄₁₆". UL Recog- d. **Type IR-1220/1220:** Electrical reset version. **Type IR-1225/ 5:** Latching relay. **Type 1220M and 1225M:** Manual reset sion.

| Guardian Number* | Coil Ohms | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500 Up |
|---|---|---|---|---|---|---|---|
| 1220-2C-24A | 54 | $4.40 | $3.96 | $3.74 | $3.08 | $2.86 | $2.64 |
| 1220-2C-120A | 1100 | 4.40 | 3.96 | 3.74 | 3.08 | 2.86 | 2.64 |
| 1220-2C-240A | 5000 | 4.68 | 4.21 | 3.98 | 3.28 | 3.04 | 2.80 |
| 1220-3C-6A | 3.3 | 4.95 | 4.46 | 4.21 | 3.47 | 3.22 | 2.97 |
| 1220-3C-24A | 54 | 4.95 | 4.46 | 4.21 | 3.47 | 3.22 | 2.97 |
| 1220-3C-120A | 1100 | 4.95 | 4.46 | 4.21 | 3.47 | 3.22 | 2.97 |
| 1220-3C-240A | 5000 | 5.23 | 4.71 | 4.45 | 3.66 | 3.40 | 3.13 |
| 1225-2C-6D | 18 | 4.40 | 3.96 | 3.74 | 3.08 | 2.86 | 2.64 |
| 1225-2C-12D | 75 | 4.40 | 3.96 | 3.74 | 3.08 | 2.86 | 2.64 |
| 1225-2C-24D | 300 | 4.40 | 3.96 | 3.74 | 3.08 | 2.86 | 2.64 |
| 1225-2C-110D | 6500 | 4.68 | 4.21 | 3.98 | 3.28 | 3.04 | 2.80 |
| 1225-3C-6D | 18 | 4.95 | 4.46 | 4.21 | 3.47 | 3.22 | 2.97 |
| 1225-3C-12D | 75 | 4.95 | 4.46 | 4.21 | 3.47 | 3.22 | 2.97 |
| 1225-3C-24D | 300 | 4.95 | 4.46 | 4.21 | 3.47 | 3.22 | 2.97 |
| 1225-3C-110D | 6500 | 5.23 | 4.71 | 4.45 | 3.66 | 3.40 | 3.13 |
| -1220/1220-2C-24A | 54 | 13.75 | 12.38 | 11.69 | 9.63 | 8.94 | ..... |
| -1220/1220-2C-120A | 1100 | 13.75 | 12.38 | 11.69 | 9.63 | 8.94 | ..... |
| -1225/1225-2C-24D | 300 | 13.75 | 12.38 | 11.69 | 9.63 | 8.94 | ..... |
| 20M-2C-24A | 54 | 6.05 | 5.45 | 5.14 | 4.24 | 3.93 | ..... |
| 20M-2C-120A | 1110 | 6.05 | 5.45 | 5.14 | 4.24 | 3.93 | ..... |
| 25M-2C-24D | 300 | 6.05 | 5.45 | 5.14 | 4.24 | 3.93 | ..... |

iffix denotes contact combination (i.e., **-2C-** for DPDT and - for 3PDT) and coil voltage (e.g., **-6A** for 6 VAC).

**ardian No. SOC-1** (Thick) or **SOC-2** (Thin) **Socket**—Snap-in IR-1220, -1225 relays. Meets all UL requirements. Socket minal lugs can be soldered to, or will accept AMP Series 110 ick-connects.

t Each, Lots of 1–9 .................................... **65c**
t Each, Lots of 10 Up .................................... **60c**

### ALL-PURPOSE ECONOMY AC-DC RELAYS

mpact, lightweight relay capable of unusually heavy power ntrol for its size. Variety of AC-DC voltages and contact com- ations. Contacts rated 10 amps at 60 Hz, 120-volt non- luctive load. Center mounting with single hole. Size, 1¹¹⁄₁₆" x ½" x 1". Shipping Weight, 3.5 oz. UL Recognized.

#### 60 HERTZ—AC COILS

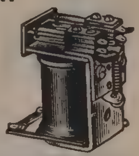
| Guardian Number† | Coil Ohms | Cont. Comb. | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250 Up |
|---|---|---|---|---|---|---|---|
| -640U-A-24A | 24 | SPST* | $3.19 | $2.87 | $2.71 | $2.23 | $2.07 |
| -640U-C-24A | 24 | SPDT | 3.47 | 3.12 | 2.95 | 2.43 | 2.26 |
| -640U-2C-24A | 24 | DPDT | 3.74 | 3.37 | 3.18 | 2.62 | 2.43 |
| -640U-4C-24A | 24 | 4PDT | 5.50 | 4.95 | 4.68 | 3.85 | 3.58 |
| -640U-A-120A | 550 | SPST* | 3.19 | 2.87 | 2.71 | 2.23 | 2.07 |
| -640U-C-120A | 550 | SPDT | 3.47 | 3.12 | 2.95 | 2.43 | 2.26 |
| -640U-2C-120A | 550 | DPDT | 3.74 | 3.37 | 3.18 | 2.62 | 2.43 |
| -640U-4C-120A | 550 | 4PDT | 5.50 | 4.95 | 4.68 | 3.85 | 3.58 |
| -640U-2C-240A | 2950 | DPDT | 4.62 | 4.16 | 3.93 | 3.23 | 3.00 |

#### DC COILS

| Guardian Number† | Coil Ohms | Cont. Comb. | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250 Up |
|---|---|---|---|---|---|---|---|
| -645U-A-6D | 12 | SPST* | $3.19 | $2.87 | $2.71 | $2.23 | $2.07 |
| -645U-C-6D | 12 | SPDT | 3.47 | 3.12 | 2.95 | 2.43 | 2.26 |
| -645U-2C-6D | 12 | DPDT | 3.74 | 3.37 | 3.18 | 2.62 | 2.43 |
| -645U-4C-6D | 12 | 4PDT | 5.50 | 4.95 | 4.68 | 3.85 | 3.58 |
| -645U-A-12D | 50 | SPST* | 3.19 | 2.87 | 2.71 | 2.23 | 2.07 |
| -645U-C-12D | 50 | SPDT | 3.47 | 3.12 | 2.95 | 2.43 | 2.26 |
| -645U-2C-12D | 50 | DPDT | 3.74 | 3.37 | 3.18 | 2.62 | 2.43 |
| -645U-4C-12D | 50 | 4PDT | 5.50 | 4.95 | 4.68 | 3.85 | 3.58 |
| -645U-A-24D | 200 | SPST* | 3.19 | 2.87 | 2.71 | 2.23 | 2.07 |
| -645U-C-24D | 200 | SPDT | 3.47 | 3.12 | 2.95 | 2.43 | 2.26 |
| -645U-2C-24D | 200 | DPDT | 3.74 | 3.37 | 3.18 | 2.62 | 2.43 |
| -645U-4C-24D | 200 | 4PDT | 5.50 | 4.95 | 4.68 | 3.85 | 3.58 |
| -645U-A-110D | 4000 | SPST* | 3.74 | 3.37 | 3.18 | 2.62 | 2.43 |
| -645U-C-110D | 4000 | SPDT | 4.07 | 3.66 | 3.46 | 2.85 | 2.65 |
| -645U-2C-110D | 4000 | DPDT | 4.34 | 3.91 | 3.69 | 3.04 | 2.82 |
| -645U-4C-110D | 4000 | 4PDT | 5.78 | 5.20 | 4.91 | 4.05 | 3.76 |

Normally open. †Suffix indicates coil voltage (i.e., **-6A** for 6 AC; **-6D** for 6 VDC, etc.).

### DC PLATE CIRCUIT RELAY

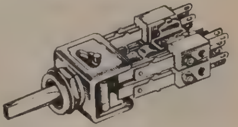


DPDT; constructed with extra long coil for greater sensitivity. Adaptable to voltage operation as well as sensitive plate circuit control installations. Coil impregnated for reliability and longer life. Average power requirement, 0.2 watt. Contacts, fine silver, rated 10 amps. Single 8-32 center mtg. hole. Size, 2⅛" x 2" x 1½". Shipping Weight, 5.5 oz.

| Guardian Number | Oper. mA | Coil Ohms | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250 Up |
|---|---|---|---|---|---|---|---|
| IR-625-2.5 | 9 | 2500 | $4.90 | $4.41 | $4.17 | $3.43 | $3.19 |
| IR-625-5 | 6.3 | 5000 | 5.23 | 4.71 | 4.45 | 3.66 | 3.40 |
| IR-625-10 | 4.5 | 10,000 | 6.38 | 5.74 | 5.42 | 4.47 | 4.15 |

## GUARDIAN SWITCHES

### MULTICOLOR ILLUMINATED LEVER SWITCHES



Two of three operating positions marked by 28 V lamp shining through red and green insertable filters; center position is clear. Available in Locked-Off-Locked (**LOL**), Locked-Locked (**LL**) and Locked-Momentary (**LM**) configurations in 4 or 10 amps, 110 VAC resistive; cam kit permits easy conversion to LOL, MOM, LL, ML, LM, OF, LO, MOL and LOM configurations. Mounts vertically on 1⅜" centers and horizontally on ¾" centers, in panels up to 1⁄16" thick; behind panel size, 1.334" w. x 2.380" d. (max.) x .750" h. Terminals are .110" quick-connect type.

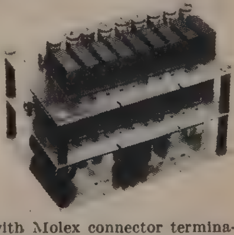
| Guardian Number | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|
| LOL-2C-10 Amp | $4.00 | $3.60 | $3.40 | $3.20 |
| LL-2C-10 Amp | 4.00 | 3.60 | 3.40 | 3.20 |
| LM-2C-10 Amp | 4.00 | 3.60 | 3.40 | 3.20 |
| LOL-4C-4 Amp | 4.95 | 4.45 | 4.15 | 3.70 |
| LL-4C-4 Amp | 4.95 | 4.45 | 4.15 | 3.70 |
| LM-4C-4 Amp | 4.95 | 4.45 | 4.15 | 3.70 |

**Guardian Cam Kit**—12 inserts for 9 switching positions.
Net Each, Lots of 1–9 ......... **$1.70**; 10 Up ......... **$1.60**

**Guardian Color Filter/Lamp Kit**—28 V lamp, socket, retainer clip, 2 red filters and 2 green filters.
Net Each, Lots: 1–9 ......... **$1.10**; 10 Up ......... **$1.00**

## GUARDIAN OF CALIFORNIA

### SLS SOLID STATE LOGIC STEPPERS



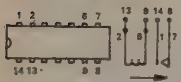
The only power, solid state steppers to accept either high level or logic level inputs with high noise immunity. Output of each step is 120 VAC, 2½ amp switch. Modular design permits stacking for a variety of configurations. Choice of 10 or 20 steps from standard models; also available with pulsers for self-stepping use. May be cascaded or paralleled for complex switching or control functions. Practically unlimited life with mechanically noise-free operation under proper operation. **Input:** 120 VAC, 50/60 Hz or 400 Hz; and 24 VDC. **Terminals:** Come with Molex connector terminations (3 sets required for 10-step unit). **Step Advance:** Either mechanical switch closure or DC poles, all models with **A** (e.g., SLS110-2**A**111); all others, self-stepping. **Size:** 4" x 6" x 4.06".

| Guardian Number | Volts | Steps | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100 Up |
|---|---|---|---|---|---|---|
| SLS110-2A111 | 120 AC | 10 | $130.00 | $123.50 | $117.00 | $ 97.50 |
| SLS110-1A211 | 24 DC | 10 | 112.00 | 106.40 | 100.80 | 84.00 |
| SLS120-2A111 | 120 AC | 20 | 225.00 | 214.24 | 202.95 | 169.15 |
| SLS120-1A211 | 24 DC | 20 | 189.40 | 181.95 | 170.45 | 142.05 |
| SLS110-25111 | 120 AC | 10 | 137.50 | 130.15 | 122.62 | 107.75 |
| SLS110-15211 | 24 DC | 10 | 119.50 | 113.05 | 106.42 | 89.25 |
| SLS120-25111 | 120 AC | 20 | 232.50 | 221.90 | 208.57 | 174.40 |
| SLS120-15211 | 24 DC | 20 | 196.90 | 188.60 | 176.07 | 147.30 |
| SLS Connector Kit | | | 1.00 | ....... | ....... | ....... |

# GUARDIAN® OF CALIFORNIA Reed Relays

## SERIES MDR MINI REED RELAYS

Compatible with dual-in-line integrated circuits. Terminals can be inserted into the same PC board as a 14-terminal dual-in-line IC. Operating sensitivity of the 5-volt DC coil makes it compatible with DTL and TTL logic families; has must-operate value of 3.75 volts at 25° C. **Contacts:** 1 Form A. **Contact Ratings:** 250 mA with 500 mA carry or maximum voltage of 28 VDC at 3 watts. **Contact Resistance:** 200 milliohms max. **Breakdown Voltage:** 200 VDC minimum. **Capacitance:** 0.25 pF typical. **Operate Time:** 0.350 msec typical, including bounce. **Release Time:** 0.025 msec typical. **Insulation Resistance:** $10^{10}$ ohms. **Temperature:** −55° to +85° C. **Size:** .790″ x .270″ x .250″; terminals spaced .100″.

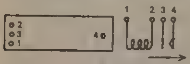


1 Form A

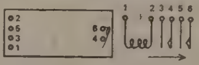
| Guardian Number | Coil Nom. VDC* | Coil Ohms† ±10% | Pick-up VDC‡ | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| MDR-1A005 | 5 | 500 | 3.75 | $5.35 | $5.08 | $4.81 | $4.28 | $4.01 |
| MDR-1A012 | 12 | 1400 | 9.00 | 5.35 | 5.08 | 4.81 | 4.28 | 4.01 |
| MDR-1A024 | 24 | 3600 | 18.00 | 5.35 | 5.08 | 4.81 | 4.28 | 4.01 |

## SERIES MRR MINI REED RELAYS

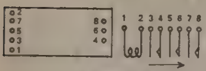
Compact size (only .790″ long and .250″ high) with 5, 6, 12 or 24 VDC coil. The 5-volt coil makes relay compatible with TTL logic for computer interface. **Contacts:** 1, 2, 3 or 4 Form A. **Ratings:** 250 mA (carry 500 mA); 28 VDC, 3 watts maximum. **Contact Resistance:** 200 milliohms max. **Breakdown:** 200 VDC minimum. **Capacitance:** 0.25 pF typical. **Operate Time:** 0.350 msec typical, including bounce. **Release Time:** 0.025 msec typical. **Insulation Resistance:** $10^{10}$ ohms. **Temperature:** −55° to +85° C. **Size:** .790″ long x .250″ high; widths from .250″ to .575″. Pins .020″ dia., .125″ long.



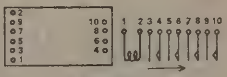
1 Form A



2 Form A



3 Form A

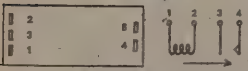


4 Form A

| Guardian MRR- | Contacts | Coil Nom. V DC* | Coil Ohms ±10% † | Pick-up V DC‡ | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|---|
| 1A005 | 1A | 5 | 350 | 3.75 | $4.30 | $4.08 | $3.87 | $3.44 | $3.22 |
| 1A006 | 1A | 6 | 350 | 4.50 | 4.30 | 4.08 | 3.87 | 3.44 | 3.22 |
| 1A012 | 1A | 12 | 1400 | 9.00 | 4.30 | 4.08 | 3.87 | 3.44 | 3.22 |
| 1A024 | 1A | 24 | 3600 | 18.00 | 4.80 | 4.56 | 4.32 | 3.84 | 3.60 |
| 2A005 | 2A | 5 | 150 | 3.75 | 6.30 | 5.98 | 5.67 | 5.04 | 4.72 |
| 2A006 | 2A | 6 | 150 | 4.50 | 4.90 | 4.65 | 4.41 | 3.92 | 3.67 |
| 2A012 | 2A | 12 | 600 | 9.00 | 4.90 | 4.65 | 4.41 | 3.92 | 3.67 |
| 2A024 | 2A | 24 | 2400 | 18.00 | 5.30 | 5.03 | 4.77 | 4.24 | 3.97 |
| 3A006 | 3A | 6 | 130 | 4.50 | 5.60 | 5.32 | 5.04 | 4.48 | 4.20 |
| 3A012 | 3A | 12 | 520 | 9.00 | 5.60 | 5.32 | 5.04 | 4.48 | 4.20 |
| 3A024 | 3A | 24 | 2000 | 18.00 | 5.90 | 5.60 | 5.31 | 4.72 | 4.42 |
| 4A006 | 4A | 6 | 110 | 4.50 | 6.70 | 6.36 | 6.03 | 5.36 | 5.02 |
| 4A012 | 4A | 12 | 450 | 9.00 | 6.70 | 6.36 | 6.03 | 5.36 | 5.02 |
| 4A024 | 4A | 24 | 1600 | 18.00 | 6.90 | 6.55 | 6.21 | 5.52 | 5.17 |

## SERIES ERR ECONOMY REED RELAYS

Quality performance at an economy price. Relays are 100% tested to assure high dependability. **Contacts:** 1A SPST (NO). **Current Rating:** 500 mA max. **Voltage Rating:** 100 VDC max. **Power:** 15 watts max. **Contact Resistance:** 200 milliohms max. **Capacitance:** 0.3 pF typical. **Operate Time:** 2 msec typical, including bounce. **Release Time:** 0.1 msec. **Insulation Resistance:** $10^{9}$ ohms. **Temperature:** −55° to +85° C. **Size:** 1.500″ x .625″ x .625″; pins .045″ x .025″, .18″ long.



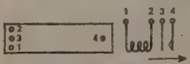
1 Form A

| Guardian Number | Coil Nom. VDC* | Coil Ohms† ±10% | Pick-up VDC‡ | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| ERR-1A006 | 6 | 75 | 4.5 | $1.92 | $1.82 | $1.73 | $1.54 | $1.44 |
| ERR-1A012 | 12 | 300 | 9.0 | 2.10 | 1.99 | 1.89 | 1.68 | 1.57 |
| ERR-1A024 | 24 | 1200 | 18.0 | 2.24 | 2.13 | 2.02 | 1.79 | 1.68 |

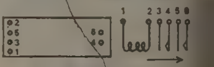
*Maximum voltage: 6-volt types, 9 volts max.; 12-volt types, 18 V max.; 24-volt types, 30 V max. (except MDR and MDR relays; 5-volt, 6 V max.; 6-volt, 7.5 V max.; 12-volt, 15 V max. and 24-volt, 28 V max. †At 25° C. ‡Maximum, at 25° C.

## SERIES GRR REED RELAYS

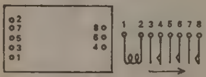
Encapsulated reed relays capable o switching dry circuit loads to l watts and 0.5 amp steady state current. Isolation between coil and contacts; immune to false operation b transients that affect solid stat devices. Contacts sealed in glas to avoid contamination. Switching speed as fast as 500 μsec. **Contacts** 1, 2, 3 or 4 Form A. **Current Rating** 500 mA max. **Voltage:** 200 VD max. **Power:** 10 watts max. **Contact Resistance:** 200 milliohms max. **Breakdown:** 300 VDC min **Capacitance:** 0.2 pF typ. **Operate Time:** 0.3 to 0.5 msec, including bounce. **Release Time:** 0.1 msec. **Insulation Resistance:** 10 ohms. **Temperature:** −55° to +85° C. **Size:** 1.125″ long, .370″ high; width from .350″ to .700″. Pins .023″ dia., .125″ long.



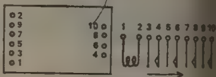
1 Form A



2 Form A



3 Form A

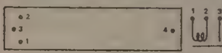


4 Form A

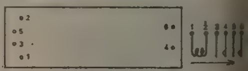
| Guardian Number GRR- | Contacts | Coil Nom. V DC* | Coil Ohms ±10% † | Pick-up V DC‡ | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|---|
| 1A006 | 1A | 6 | 125 | 4.2 | $3.50 | $3.32 | $3.15 | $2.80 | $2.62 |
| 1A012 | 1A | 12 | 500 | 8.4 | 3.50 | 3.32 | 3.15 | 2.80 | 2.62 |
| 1A024 | 1A | 24 | 2000 | 16.8 | 3.90 | 3.70 | 3.51 | 3.12 | 2.92 |
| 2A006 | 2A | 6 | 110 | 4.2 | 4.60 | 4.37 | 4.14 | 3.68 | 3.45 |
| 2A012 | 2A | 12 | 440 | 8.4 | 4.60 | 4.37 | 4.14 | 3.68 | 3.45 |
| 2A024 | 2A | 24 | 1750 | 16.8 | 5.00 | 4.75 | 4.50 | 4.00 | 3.75 |
| 3A006 | 3A | 6 | 75 | 4.2 | 5.90 | 5.60 | 5.31 | 4.72 | 4.42 |
| 3A012 | 3A | 12 | 300 | 8.4 | 5.90 | 5.60 | 5.31 | 4.72 | 4.42 |
| 3A024 | 3A | 24 | 1200 | 16.8 | 6.10 | 5.79 | 5.49 | 4.88 | 4.57 |
| 4A006 | 4A | 6 | 55 | 4.2 | 6.90 | 6.55 | 6.21 | 5.52 | 5.17 |
| 4A012 | 4A | 12 | 220 | 8.4 | 6.90 | 6.55 | 6.21 | 5.52 | 5.17 |
| 4A024 | 4A | 24 | 900 | 16.8 | 7.00 | 6.65 | 6.30 | 5.60 | 5.25 |

## SERIES SRR STANDARD REED RELAYS

Epoxy-enclosed relays are widely used in all areas of switching. Provide long, trouble-free life with isolation between input and output, sealed contacts and high standard of quality. **Contacts:** 1 or 2 Form A. **Current:** 1.0 amp max. **Voltage:** 250 VAC max. **Power:** 15 watts max. **Contact Resistance:** 100 milliohms max. **Capacitance:** 1.2 pF typical. **Operate Time:** 3 msec typical, including bounce. **Release Time:** 0.5 msec. **Insulation Resistance:** $10^{9}$ ohms. **Temperature:** −55° to +85° C. **Size:** 2.700″ long x .655″ high; .625″ or .900″ wide. Pins .032″ dia., .125″ long.



1 Form A



2 Form A

| Guardian Number SRR- | Contacts | Coil Nom. V DC* | Coil Ohms ±10% † | Pick-up V DC‡ | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|---|
| 1A006 | 1A | 6 | 125 | 4.5 | $3.40 | $3.23 | $3.06 | $2.72 | $2.55 |
| 1A012 | 1A | 12 | 500 | 9.0 | 3.40 | 3.23 | 3.06 | 2.72 | 2.55 |
| 1A024 | 1A | 24 | 2000 | 18.0 | 3.70 | 3.51 | 3.33 | 2.96 | 2.77 |
| 2A006 | 2A | 6 | 85 | 4.5 | 4.25 | 4.04 | 3.82 | 3.40 | 3.19 |
| 2A012 | 2A | 12 | 340 | 9.0 | 4.25 | 4.04 | 3.82 | 3.40 | 3.19 |
| 2A024 | 2A | 24 | 1360 | 18.0 | 4.50 | 4.27 | 4.05 | 3.60 | 3.37 |

## SERIES PRR POWER REED RELAYS

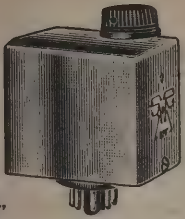
Identical in size, appearance and configuration to SRR series above. Capable of switching up to 3-amp load. Typical switching speed of 3 msec, with voltage rating of 220 V max. (resistive) and breakdown of 650 VDC minimum; carrying current, 5 amps max. **Contacts:** 1 or 2 Form A. **Current Rating:** 3.0 amps max. **Power:** 50 VA. **Contact Resistance:** 60 milliohms max. **Capacitance:** 0.8 pF typical. **Operate Time:** 2.5 msec typical, including bounce. **Insulation Resistance:** $10^{10}$ ohms. **Temperature:** −55° to +85° C. **Size:** 2.700″ long x .655″ high; .625″ or .900″ wide.

| Guardian Number PRR- | Contacts | Coil Nom. V DC* | Coil Ohms ±10% † | Pick-up V DC‡ | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|---|
| 1A006 | 1A | 6 | 100 | 4.5 | $6.80 | $6.46 | $6.12 | $5.44 | $5.10 |
| 1A012 | 1A | 12 | 400 | 9.0 | 6.80 | 6.46 | 6.12 | 5.44 | 5.10 |
| 1A024 | 1A | 24 | 1600 | 18.0 | 7.10 | 6.74 | 6.39 | 5.68 | 5.32 |
| 2A006 | 2A | 6 | 75 | 4.5 | 8.90 | 8.45 | 8.01 | 7.12 | 6.67 |
| 2A012 | 2A | 12 | 300 | 9.0 | 8.90 | 8.45 | 8.01 | 7.12 | 6.67 |
| 2A024 | 2A | 24 | 1200 | 18.0 | 9.30 | 8.83 | 8.37 | 7.44 | 6.97 |

# GUARDIAN® OF CALIFORNIA

# SOLID STATE CONTROLS

D, IR-AV2, IR-CS1,
R-FS, IR-PR1 and
IR-VS1 thru -VS3



TDO

MET

IR-BDT

IR-CT1

LDP

LDT

## SOLID STATE AC-DC TIME DELAY RELAYS

**ries TD:** Most accurate and compact. High adjustment reso- tion with 15-turn potentiometer. Adjustable delays, 1–180 cs; 24 VDC or 120 VAC inputs. Accurate to 5% nom. setting er full temp. and voltage range. Repeatability, 2% after 50 sec line interruption. Delays on attract with 3PDT contacts ted 10 amps resistive. Size, 2.06″ x 2.62″ x 3.00″.

**pe TDO:** Many more expensive unit features. Contacts rated amps DPDT, 120 VAC; adjustable delay 0.5–30 secs on attract; -turn potentiometer. Repeatability within 5% after 100 msec. e interruption. Size, 2.06″ x 2.62″ x 3.00″.

**ries MET:** Replace many more expensive units with close tol- ance repeatability. On-operate, on-release; adjustable 0.5–300 c. Output, 10 amps resistive, 120 VAC, 50/60 Hz. Inputs of 120 24 VAC, 50/60 Hz, or 24 VDC polarity protected. Accuracy, 10% of nom. setting over voltage and temperature range, epeatability, 1% within fixed conditions. Single-turn poten- ometer. Time delays 0.5–100 and 100–300 secs. Temp. range, C to +55° C. Prefix MET-**O** indicates delay on operate; ET-**R**, delay on release. Size, 1.90″ x 2.40″ x 3.50″.

**ries BDT:** Unusual commercial design: Operation on high or low ne; replaceable electromechanical relay; repeatability, tempera- re stability and small size. All-silicon circuitry operates over 5–125 VAC, 50/60 Hz input; draws only 5 mA before time out; VDC also available. Standard relay housing with octal plug. perates in most severe industrial uses, immune to most transient oise from power lines. Takes up to 2500 volts peak without amage or malfunction. Life, 5 x $10^7$ operations under normal onditions. Size, 1.39″ x 1.45″ x 2.15″.

| Guardian Number* | Adjust Range, Secs | Net Each, Lots of | | | |
|---|---|---|---|---|---|
| | | 1-24 | 25-49 | 50-99 | 100 Up |
| TD33C15-24D | 1–15 | $24.20 | $24.20 | $21.88 | $19.69 |
| TD33C60-24D | 10–60 | 25.19 | 25.19 | 22.67 | 20.40 |
| TD33C180-24D | 50–180 | 32.09 | 32.09 | 29.88 | 26.90 |
| TD63C15-120A | 1–15 | 29.70 | 29.70 | 26.73 | 24.06 |
| TD63C60-120A | 10–60 | 30.06 | 30.06 | 27.54 | 24.79 |
| TD63C180-120A | 50–180 | 36.85 | 36.85 | 33.16 | 29.84 |
| TDO62C30-120A | .5–30 | 16.32 | 16.32 | 15.69 | 14.12 |
| MET-O-100-24A | .5–100 | 18.00 | 17.10 | 16.20 | 13.50 |
| MET-O-300-24A | 100–300 | 19.10 | 18.15 | 17.20 | 14.30 |
| MET-O-100-120A | .5–100 | 17.60 | 16.70 | 15.85 | 13.20 |
| MET-O-300-120A | 100–300 | 19.10 | 18.15 | 17.20 | 14.30 |
| MET-O-100-24D | .5–100 | 18.00 | 17.10 | 16.20 | 13.50 |
| MET-O-300-24D | 100–300 | 19.10 | 18.15 | 17.20 | 14.30 |
| MET-R-100-24A | .5–100 | 26.20 | 24.90 | 23.60 | 19.65 |
| MET-R-300-24A | 100–300 | 26.90 | 25.55 | 23.95 | 20.20 |
| MET-R-100-120A | .5–100 | 25.50 | 24.25 | 22.95 | 19.24 |
| MET-R-300-120A | 100–300 | 26.25 | 24.95 | 23.65 | 19.70 |
| MET-R-100-24D | .5–100 | 26.20 | 24.90 | 23.60 | 19.65 |
| MET-R-300-24D | 100–300 | 26.90 | 25.55 | 23.95 | 20.20 |
| IR-BDT-0-10-120V | 1–10 | 17.10 | 16.25 | 15.40 | 12.80 |
| IR-BDT-0-60-120V | 10–60 | 17.60 | 16.75 | 15.85 | 13.20 |
| IR-BDT-0-10-24V | 1–10 | 16.90 | 16.05 | 15.20 | 12.65 |
| IR-BDT-0-60-24V | 10–60 | 17.10 | 16.25 | 15.40 | 12.80 |

*Suffix indicates voltage: **24D** = 24 VDC; **24A** = 24 VAC; **120A** = 120 VAC.

## PROTECTIVE SENSOR DEVICES

olid state network designs, these sensors are bi-products of esigns for military uses. Relay is 3PDT rated 10 amps resistive ith either 24 VDC or 120 VAC available. Mount by socket, assis mount, or directly into a .110″ printed circuit. Temperature nge, 0° C to +50° C. Life, 100,000 operations min. Transient oltage protection to 600 V for 3-phase model; 2500 V, all others. ust cover provided on all but CT1 Series (a transfer molded art). Size: CT1 Series, 1.25″ x 1.87″ x 1.00″; all others, 1.70″ x 57″ x 3.00″.

**eries IR-CT1 and No. IR-CS1**—AC Current Sensors.

**eries IR-AV2**—3-Phase, 4-Wire Voltage Sensors. Detects from -phase, 95 VAC source when sufficient voltage is available or ss of any line or drop in average to 50 VAC. Use as warning lockout device protecting motors, etc. For pull-in or drop-out; ill repeat close values, allowing for unevenly loaded lines that an cause drastic rise and fall in other lines.

**eries IR-FS1 and IR-FS2**—Adjustable Frequency Sensor. Use s under- or over-frequency detector, AC generator speed detector, estructive frequency trip-out or AC power loss detector. IR-FS1 utput relay energizes as frequency rises to adjusted sense-point; e-energizes when frequency drops to approx. 1.5% of sense-point. R-FS2 output relay energizes at its low-voltage pull-in point, dependent of the control circuit; remains energized until fre- uency rises to the adjusted sense point. Sense point adjusts thru over: 45–66 Hz for units with 60 Hz input; 360–440 Hz for units ith 400 Hz input.

**eries IR-PR1**—4-Wire Phase Rotation Sensor. With ABC phase otation, output relay is energized by 75 VAC balanced phase nputs. Non-latching. Designed to monitor power input to 3-phase otors or systems.

**eries IR-VS1**—Over-Voltage Sensor. Output relay energizes as nput voltage rises to adjusted sense-point. De-energizes as input oltage drops approx. 2.5% below sense-point. Acts as under- or ver-voltage detector. Adjusts thru cover: 90–130 VAC range for 20 VAC units; 18–32 volts for 24-volt units.

**eries IR-VS2**—Under-Voltage Sensor. Output relay energizes at ow voltage pull-in point. Independent of control circuit; remains et until voltages rise to sense-point. Adjusts thru cover: 90–130 AC for 120 VAC units; 18–32 volts for 24-volt units.

**eries IR-VS3**—Close Differential Voltage Sensor. Output relay nergizes as input voltage rises to desired sense-point; de-energizes s input drops to adjusted differential release point. Non-latching utput; energizes when voltage returns to normal. Sense-point djusts thru cover top: 105–130 VAC for 120 VAC input units; 3–32 volts for 24-volt units. Differential also sets thru top: 2.5–15 AC for 120-volt input units; 1–5 volts for 24-volt input units.

| Guardian Number | Sensing Range, 50/60 Hz | Net Each, Lots of | | | |
|---|---|---|---|---|---|
| | | 1-24 | 25-49 | 50-99 | 100 Up |
| IR-CT1-201 | .1–1.5 amps | $14.50 | $13.77 | $13.05 | $12.32 |
| IR-CT1-202 | 1–10 amps | 13.60 | 12.92 | 12.24 | 11.56 |
| IR-CT1-203 | 5–50 amps | 13.60 | 12.92 | 12.24 | 11.56 |
| IR-CT1-204 | 10–100 amps | 13.60 | 12.92 | 12.24 | 11.56 |
| IR-CS1-220 | 90–125 VAC input | 31.20 | 29.64 | 28.08 | 23.40 |

| Guardian Number | Nominal Input | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-49 | 50-99 | 100 Up |
| IR-AV2-611 | 120 VAC, 60 Hz | $34.20 | $32.49 | $30.78 |
| IR-AV2-621 | 120 VAC, 400 Hz | 34.20 | 32.49 | 30.78 |
| IR-FS1-610 | 120 VAC, 60 Hz | 55.20 | 52.44 | 49.68 |
| IR-FS1-620 | 120 VAC, 400 Hz | 55.20 | 52.44 | 49.68 |
| IR-FS2-610 | 120 VAC, 60 Hz | 55.20 | 52.44 | 49.68 |
| IR-FS2-620 | 120 VAC, 400 Hz | 55.20 | 52.44 | 49.68 |
| IR-PR1-610 | 120 VAC, 60 Hz | 33.95 | 32.25 | 30.55 |
| IR-PR1-620 | 120 VAC, 400 Hz | 39.95 | 37.95 | 35.95 |
| IR-VS1-610 | 120 VAC, 60 Hz | 42.90 | 40.76 | 38.61 |
| IR-VS1-620 | 120 VAC, 400 Hz | 42.90 | 40.76 | 38.61 |
| IR-VS1-300 | 24 VDC | 41.70 | 39.62 | 37.53 |
| IR-VS1-410 | 24 VAC, 60 Hz | 42.15 | 40.04 | 37.93 |
| IR-VS1-420 | 24 VAC, 400 Hz | 42.15 | 40.04 | 37.93 |
| IR-VS2-610 | 120 VAC, 60 Hz | 42.90 | 40.76 | 38.61 |
| IR-VS2-620 | 120 VAC, 400 Hz | 42.90 | 40.76 | 38.61 |
| IR-VS2-300 | 24 VDC | 41.70 | 39.62 | 37.53 |
| IR-VS2-410 | 24 VAC, 60 Hz | 42.15 | 40.04 | 37.93 |
| IR-VS2-420 | 24 VAC, 400 Hz | 42.15 | 40.04 | 37.93 |
| IR-VS3-610 | 120 VAC, 60 Hz | 54.80 | 52.06 | 49.32 |
| IR-VS3-620 | 120 VAC, 400 Hz | 54.80 | 52.06 | 49.32 |
| IR-VS3-300 | 24 VDC | 53.40 | 50.73 | 48.06 |
| IR-VS3-410 | 24 VAC, 60 Hz | 54.15 | 51.44 | 48.73 |
| IR-VS3-420 | 24 VAC, 400 Hz | 54.15 | 51.44 | 48.73 |

## VOLTAGE LEVEL DETECTORS

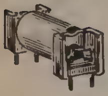
Inexpensive voltage level detectors with unusual operating characteristics. Molded module design. Circuits are silicon semiconductor devices forming a peak detecting voltage differential amplifier, signal amplifier, and a solid state output switch to drive various Guardian relays. Sense level is adjustable (fixed or variable) 85–135 VAC, 20–30 or 180–250 VAC (all 50/60 Hz) plus 20–30 VDC by external resistance. This broad adjustment permits use as an under or over level detector. Two units can form bandpass or pedestal level sensing. Used with Guardian TMT or TMP timing modules, they can provide inexpensive time delayed voltage detection systems that can ignore normal line fluctuation. Transient suppressed, they will withstand 2500 V peak (short duration) without damage or malfunction; 600 V on DC units. Size: LDT, 2.00″ sq. x 6.3″; LDP, 1.50″ sq. x 1.00″.

| Guardian Number | Volts | Net Each, Lots of | | | |
|---|---|---|---|---|---|
| | | 1-24 | 25-49 | 50-99 | 100-249 |
| LDT-100-24A | 24 VAC | $14.80 | $14.06 | $13.30 | $11.10 |
| LDT-100-120A | 120 VAC | 14.80 | 14.06 | 13.30 | 11.10 |
| LDT-100-240A | 240 VAC | 19.20 | 18.40 | 17.10 | 16.65 |
| LDT-100-24D | 24 VDC | 15.10 | 14.35 | 13.60 | 11.35 |
| LDP-100-24A | 24 VAC | 17.90 | 17.00 | 16.10 | 13.65 |
| LDP-100-120A | 120 VAC | 17.90 | 17.00 | 16.10 | 13.65 |
| LDP-100-240A | 240 VAC | 22.30 | 20.90 | 19.10 | 18.30 |
| LDP-100-24D | 24 VDC | 17.55 | 16.70 | 15.80 | 13.15 |

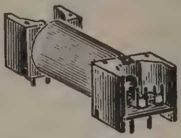
# *Magnecraft*® DRY REED AND NEW DIP REED RELAYS

## DRY REED RELAYS

### CLASS 101MPC AND CLASS 102MPC LOW-COST REED RELAYS



**Class 101MPC**



**Class 102MPC**

Low-cost reed relays provide optimum reliability, fast operation and low profile printed circuit mounting. One-piece, rugged reed support terminal pin is rigidly fastened to terminal board and soldered stress-free to the switch leads; assure performance and adjustment will not be affected by external stresses. **Miniature Class 101MPC:** SPST-NO (1 Form A) contacts rated 10 VA at 0.5 amp or 200 VDC max. non-inductive. Life, 5 million cycles at full load; 20 million at ½ load. Nominal power, 500 mW. Size, 1⅛″ x ⅜″ x ⅜″. Weight, approx. 1 oz.

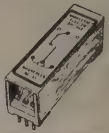
**Standard Class 102MPC:** SPST-NO (1 Form A) contacts rated 15 VA at 1.0 amp or 250 VDC max. non-inductive. Life, 20 million cycles at full load; 100 million at ½ load. Nominal Power, 500 mW. Size, 2⅝″ x ⅝″ x 23/32″. Weight, approx. 1 oz.

| Magnecraft Number | Contacts & Size | Coil Data* | | Avg. msec | | Net Ea., 1-24* |
|---|---|---|---|---|---|---|
| | | Volts | Ohms | Oper. | Release | |
| W101MPCX-122 | SPST-NO<br>(1 Form A)<br>Miniature | 6 | 70 | 1 | 0.5 | $2.65 |
| W101MPCX-123 | | 12 | 300 | 1 | 0.5 | 2.65 |
| W101MPCX-124 | | 24 | 1100 | 1 | 0.5 | 2.65 |
| W102MPCX-145 | SPST-NO<br>(1 Form A)<br>Standard | 6 | 70 | 3 | 0.5 | 2.50 |
| W102MPCX-146 | | 12 | 250 | 3 | 0.5 | 2.50 |
| W102MPCX-147 | | 24 | 1000 | 3 | 0.5 | 2.50 |

### IC COMPATIBLE REED RELAYS

**Class 101M (1 Form A)**

**Class 104M (1 Form C)**



**Class 101MPC (1 Form A)**

**Class 104MPC (1 Form C)**

Provide the small size, low profile, printed circuit mounting and low operating power required for IC compatibility, typically 40 mW. Two package configurations available: Inline axial leads or PC mounting. **Life:** 5 million operations at rated load; longer at reduced load. **Size:** Inline axial-lead units, 1″ x 7/16″ x ½″. Printed circuit mounting types, 1⅛″ x ⅜″ x 13/32″.

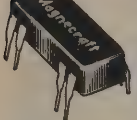
**Class 101M** (Inline Axial Leads) **and 101MPC** (PC Mtg.): SPST-NO (1 Form A) contacts rated 10 VA at 0.5 amp or 100 VDC max. resistive.

**Class 104M** (Inline Axial Leads) **and 104MPC** (PC Mtg.): SPDT (1 Form C) contacts rated 3 VA at 0.25 amp or 28 VAC max. resistive.

| Magnecraft Number | Contacts | Pick-Up Max., VDC | Coil Data* | | Net Ea. 1-25* |
|---|---|---|---|---|---|
| | | | Volts | Ohms | |
| W101MX-41 | SPST-NO<br>(1 Form A) | 2.4 | 3 | 250 | $2.68 |
| W101MX-35 | | 4 | 5 | 500 | 2.68 |
| W101MPCX-104 | | 4 | 5 | 450 | 4.12 |
| W104MX-10 | SPDT<br>(1 Form C) | 2.4 | 3 | 250 | 6.20 |
| W104MX-9 | | 4 | 5 | 500 | 6.20 |
| W104MPCX-46 | | 4 | 5 | 300 | 7.53 |

★**QUANTITY DISCOUNTS:** Lots: 25–49, −10%; 50–74, −15%; 75–99, −20%; 100–499, −30%; write for larger quantity discounts.

## NEW LOW COST DUAL-INLINE REED RELAYS



Epoxy-molded DIP (dual-inline package) 8-pin reed relays offer high quality at low cost, compatible with the standard packaging developed for integrated circuitry. Unique design provides the optimum in automated insertion and other economical installation techniques associated with printed circuit applications. Ideal for use in circuits where high density packaging is essential. The 5 VDC IC-compatible versions will operate directly from TTL or DTL circuits; also available in standard coil voltages of 6, 12 or 24 VDC. Class 107 and 118 relays are available with or without an internal clamping diode. **Size:** W107, .750″ x .187″ x .250″; W117 and W118, .750″ x .210″ x .260″.

**Class 107DIP:** SPST-NO (1 Form A) contacts rated 3 VA at 0.5 amp max. or 28 VDC resistive, max. Operate time, 200 μsec typ. Dielectric strength, 200 VDC minimum between contacts. Contact resistance, 200 milliohms average. Life, 10 million operations typical; longer life at reduced loads.

**Class 117DIP:** DPST-NO (2 Form A) contacts rated 3 VA at 0.5 amp max. or 28 VDC resistive, max. Operate time, 200 μsec typical. Dielectric strength, 200 VDC minimum between contacts. Contact resistance, 200 milliohms average. Life, 10 million operations typical; longer life at reduced loads.

**Class 118DIP:** SPDT (1 Form C) contacts rated 6 VA at 0.250 amp resistive, maximum. Operate time, 500 μsec typical. Dielectric strength, 200 VDC minimum between contacts. Contact resistance, 150 milliohms average. Life, 5 million operations at rated load; longer at reduced load; rating to 0.5 amp at reduced life.

| Magnecraft Number | Contacts | Pick-Up, VDC‡ | Coil Data* | | Typ. Power, mW | Net Ea., 1-24* |
|---|---|---|---|---|---|---|
| | | | VDC | Ohms | | |
| W107DIP-1 | SPST-NO<br>(1 Form A) | 4 | 5 | 500 | 50 | $4.00 |
| W107DIP-2 | | 4.8 | 6 | 500 | 500 | 3.50 |
| W107DIP-3 | | 9.6 | 12 | 500 | 500 | 3.50 |
| W107DIP-4 | | 19.2 | 24 | 1200 | 500 | 3.50 |
| W107DIP-5† | | 4 | 5 | 500 | 50 | 4.70 |
| W107DIP-6† | | 4.8 | 6 | 500 | 500 | 4.20 |
| W107DIP-7† | | 9.6 | 12 | 500 | 500 | 4.20 |
| W107DIP-8† | | 19.2 | 24 | 1200 | 500 | 4.20 |
| W117DIP-9 | DPST-NO<br>(2 Form A) | 4 | 5 | 200 | 150 | 4.68 |
| W117DIP-10 | | 4.8 | 6 | 200 | 300 | 4.20 |
| W117DIP-11 | | 9.6 | 12 | 500 | 300 | 4.20 |
| W117DIP-12 | | 19.2 | 24 | 1200 | 300 | 4.20 |
| W118DIP-1 | SPDT<br>(1 Form C) | 4 | 5 | 200 | 150 | 7.80 |
| W118DIP-2 | | 4.8 | 6 | 200 | 300 | 7.30 |
| W118DIP-3 | | 9.6 | 12 | 500 | 300 | 7.30 |
| W118DIP-4 | | 19.2 | 24 | 1200 | 300 | 7.30 |
| W118DIP-5† | | 4 | 5 | 200 | 150 | 8.50 |
| W118DIP-6† | | 4.8 | 6 | 200 | 300 | 8.00 |
| W118DIP-7† | | 9.6 | 12 | 500 | 300 | 8.00 |
| W118DIP-8† | | 19.2 | 24 | 1200 | 300 | 8.00 |

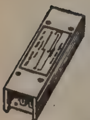
†Internal clamping diode included. ‡Maximum.

★**QUANTITY DISCOUNTS**

Lots of 25–49, −10%; 50–74, −15%; 75–99, −20%; 100–499, −30%; write for larger quantity discounts.

## NEW MINIATURE MERCURY WETTED REED RELAYS

### CLASS 137MPC AND 137M



In-line axial lead (or PC mounting) mercury wetted reed relay offers low cost and bounce-free design (using a diode across the coil) with stable contact resistance of 100 milliohms over a long life. Non-position sensitive; can be mounted in any position. Provides over 20 million bounce-free operations. Available for PC mounting (W137MPC) or with axial leads (W137M).

### SPECIFICATIONS

**Contact Configuration:** SPST-NO (1 Form A). **Contact Load Rating:** 1 VA max. at 0.1 amp or 10 VDC resistive, maximum. **Nominal Coil Power:** 500 mW. **Operate Time:** 0.5 msec average. **Release Time:** 0.5 msec average. **Contact Bounce:** None, using diode suppressed coil. **Dielectric Strength:** 500 VDC between contacts; 500 VAC rms between contacts and coil. **Contact Resistance:** 100 milliohms average. **Life:** 20 million operations at rated load; longer at reduced loads.

| Magnecraft Number | Contacts | Max. Pick-up VDC | Coil Data* | | | Mounting | Net Each, Lots of | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | VDC | Ohms | Nom. mW | | 1-24 | 25-49 | 50-74 | 75-99 | 100-499 | 500-999 | 1000 Up |
| W137MPCX-1 | SPST-NO | 4.8 | 6 | 70 | 500 | PC | $6.04 | $5.44 | $5.13 | $4.83 | $4.23 | $3.93 | $3.62 |
| W137MPCX-2 | SPST-NO | 9.6 | 12 | 300 | 500 | PC | 6.04 | 5.44 | 5.13 | 4.83 | 4.23 | 3.93 | 3.62 |
| W137MPCX-3 | SPST-NO | 19.2 | 24 | 1100 | 500 | PC | 6.04 | 5.44 | 5.13 | 4.83 | 4.23 | 3.93 | 3.62 |

***COIL DATA:** Voltage shown is nominal. Pull-in at 80% of nominal or less for DC relays; 85% of nominal for AC relays at 25° C. Resistance shown is ±10% at 25° C.

# Magnecraft® MERCURY-WETTED REED, HIGH VOLTAGE & LATCHING RELAYS

## MODULAR PACKAGED MERCURY WETTED STANDARD SIZE RELAYS

dular units feature nylon bobbin and integral base, epoxy resin ninal board, one piece tinned terminal supports and pins riveted mortised position, steel cover and hermetically switch mech- m. High performance from mercury-wetted contacts: avoids tact erosion, welding, bounce and chatter. Capillary action in pressure hydrogen atmosphere maintains mercury film on coil ated contacts. Less than 10% variation of 50 milliohms maxi- n resistance for life; life exceeds one billion cycles. Operates ght, no more than 30° from vertical. No adjustments, no de- oration. Switches from 50 VA to extremely minute current and age. **Contacts:** Series 132, SPST-NO (Form A); Series 133, DT (Form C) Single Side Stable. **Rating:** Series 132, 50 VA at nps max. or 400V max. noninductive; Series 133, same, but 2 ps max. **Power Requirements:** 0.5W nominal, 0.15W minimum, maximum. **Temperature Range:** −38°F to +200°F. **Average ne:** Operate and release, 2 msec. **Dimensions:** 41/64" h. x ¾" w. ⅝" lg. Weight, 3 oz.

| agnecraft umber | Coil Data* | | | Net Each, Lots of* | | | | |
|---|---|---|---|---|---|---|---|---|
| | mA | VDC | Ω | 1-24 | 25-49 | 50-74 | 75-99 | 100-499 |
| 32MPCX1 | 140 | .... | 30 | $5.83 | $5.25 | $4.96 | $4.66 | $4.08 |
| 32MPCX2 | ..... | 6 | 70 | 5.83 | 5.25 | 4.96 | 4.66 | 4.08 |
| 32MPCX3 | ..... | 12 | 250 | 5.83 | 5.25 | 4.96 | 4.66 | 4.08 |
| 32MPCX4 | ..... | 24 | 1000 | 5.83 | 5.25 | 4.96 | 4.66 | 4.08 |
| 32MPCX5 | ..... | 48 | 4000 | 6.00 | 5.40 | 5.10 | 4.80 | 4.20 |
| 32MPCX6 | 9 | .... | 7000 | 6.68 | 6.01 | 5.68 | 5.34 | 4.68 |
| 33MPCX1 | 140 | .... | 30 | 8.42 | 7.58 | 7.16 | 6.74 | 5.89 |
| 33MPCX2 | ..... | 6 | 70 | 8.42 | 7.58 | 7.16 | 6.74 | 5.89 |
| 33MPCX3 | ..... | 12 | 250 | 8.42 | 7.58 | 7.16 | 6.74 | 5.89 |
| 33MPCX4 | ..... | 24 | 1000 | 8.42 | 7.58 | 7.16 | 6.74 | 5.89 |
| 33MPCX5 | ..... | 48 | 4000 | 8.60 | 7.74 | 7.31 | 6.88 | 6.02 |
| 33MPCX6 | 9 | .... | 7000 | 9.35 | 8.42 | 7.95 | 7.48 | 6.55 |

## ENCAPSULATED MERCURY-WETTED MINIATURE RELAYS

all, printed circuit relays. Plug-in terminal pins extending from xy mounting board, are soldered to rigid terminal posts; leads n capsule are soldered with capsule and coil in place to eliminate akage, contact distortion and protect coil. Environment-proof sing provides protection from atmospheric conditions. Com- e unit mounts quickly to circuit boards. No contact bounce or sion. Operates upright, no more than 30° from vertical. **Con- ts:** Series W131PCX8 thru 11, SPST-NO (Form A); Series 31PCX12 thru 15, DPST-NO (2 Form A). **Power Require- nts:** Series W131PCX8 thru 11, 0.6W nominal; Series 31PCX12 thru 15, 0.9W nominal. **Temperature Range:** −37°F +200°F. **Average Time:** Operate and release, 1 msec. **Life:** One ndred million cycles at rated load. **Dimensions:** Series 31PCX8 thru 11, ½" h. x 9/16" w. x 1½" lg. (Wt., 2 oz.); Series 31PCX12 thru 15, 9/16" h. x 11/16" w. x 1½" lg. (Wt., 3 oz.).

| agnecraft umber | Coil Data* | | | Net Each, Lots of* | | | | |
|---|---|---|---|---|---|---|---|---|
| | mA | VDC | Ω | 1-24 | 25-49 | 50-74 | 75-99 | 100-499 |
| 31PCX8 | .... | 6 | 65 | $8.38 | $7.54 | $7.12 | $6.70 | $5.87 |
| 31PCX9 | .... | 12 | 250 | 8.44 | 7.60 | 7.17 | 6.75 | 5.91 |
| 31PCX10 | .... | 24 | 1000 | 8.55 | 7.70 | 7.27 | 6.84 | 5.99 |
| 31PCX11 | 8 | .... | 5000 | 9.01 | 8.11 | 7.66 | 7.21 | 6.31 |
| 31PCX12 | .... | 6 | 40 | 10.62 | 9.56 | 9.03 | 8.50 | 7.43 |
| 31PCX13 | .... | 12 | 150 | 10.66 | 9.59 | 9.06 | 8.53 | 7.46 |
| 31PCX14 | .... | 24 | 650 | 10.71 | 9.64 | 9.10 | 8.57 | 7.50 |
| 31PCX15 | 8 | .... | 5000 | 11.21 | 10.09 | 9.53 | 8.97 | 7.85 |

## MINIATURE MODULAR, PRINTED CIRCUIT MERCURY-WETTED REED RELAYS

dular design for printed circuit applications. Integral nylon bin and base for maximum electrical insulation. Steel cover full mechanical protection and magnetic shielding. No con- t bounce. Terminal pins spaced 0.1" for rapid assembly to boards. Upright operating position, not more than 30° from tical. **Contacts:** W131MPCX-2 thru -5, SPST-NO (1 Form A); thru -9 DPST-NO (2 Form A). Rated 28 VA max. at 1.0 A x. or 100 VAC max. resistive. **Coil Power:** 500 mW nom., ST types; 700 mW nom., DPST. **Capacitance:** 1.2 pF avg. oss contacts. **Life:** 25 million operations typical; longer at uced load. **Size:** W131MPCX-2 thru -5, 13/32" w. x 1⅛" lg. x h.; -6 thru -9, 39/64" w. x 1⅛" lg. x ⅜" h.

| Magnecraft Number | Contacts | Coil Data* | | Av. Time, msec | | Net Each 1-24* |
|---|---|---|---|---|---|---|
| | | Volts | Ohms | Operate | Release | |
| 31MPCX-2 | SPST-NO (1 Form A) | 6 | 70 | 1 | 1 | $6.40 |
| 31MPCX-3 | | 12 | 300 | 1 | 1 | 6.48 |
| 31MPCX-4 | | 24 | 1100 | 1 | 1 | 6.53 |
| 31MPCX-5 | | 48 | 4300 | 1 | 1 | 6.98 |
| 31MPCX-6 | DPST-NO (2 Form A) | 6 | 50 | 1 | 1 | 11.53 |
| 31MPCX-7 | | 12 | 220 | 1 | 1 | 11.58 |
| 31MPCX-8 | | 24 | 850 | 1 | 1 | 11.65 |
| 31MPCX-9 | | 48 | 3300 | 1 | 1 | 11.93 |

W132MPC
SPST-NO
W133MPC
SPDT
SPST-NO DPST-NO
W131PC
SPST-NO DPST-NO
W131MPC
W133LMPC
SPDT
W102VX,
W102HVX
SPST-NO
W102UHVX
SPST-NO
W101VM
SPST-NO
W101VMCP
SPST-NO

## HIGH VOLTAGE DRY REED RELAYS

**Contacts:** SPST-NO (Form A), 50 VA at 3 A max. **Size:** 4½" x 1 5/16" x ⅞". Wt., 3 oz.

**Class 102V**—5000 V in modular package. Contact and coil leads soldered to rigid terminal posts; widely spaced. Internally insulated. Operates in any position. **Rating:** 5 KVDC max. or 5 KVAC peak resistive. **Time:** Operate, 3.0 msec avg.; release, 0.5 msec. **Life:** 20 million cycles typical.

**Class 102HV**—10,000 V. Specially insulated. Contact and coil leads soldered to rigid terminal posts; widely spaced. Shock proof material. **Rating:** 10,000 V at 1 mA resistive. **Time:** Operate, 25 msec typical including bounce. **Life:** One million cycles typ.

**Class 102UHV**—20,000 V. Outside leads for coils. Specially insulated. **Rating:** 20,000 V peak at 1 mA resistive. **Time:** Operate, 25 msec typ. in. bounce. **Life:** One million cycles typical.

| Magnecraft Number | Coil Data* | | | Net Each, Lots of* | | | | |
|---|---|---|---|---|---|---|---|---|
| | mA | VDC | Ω | 1-24 | 25-49 | 50-74 | 75-99 | 100-499 |
| W102VX-49 | .... | 6 | 70 | $13.69 | $12.32 | $11.64 | $10.95 | $ 9.58 |
| W102VX-50 | .... | 12 | 250 | 13.73 | 12.36 | 11.67 | 10.98 | 9.61 |
| W102VX-51 | .... | 24 | 1000 | 13.78 | 12.40 | 11.71 | 11.02 | 9.65 |
| W102VX-52 | .... | 48 | 4000 | 14.15 | 12.74 | 12.03 | 11.32 | 9.91 |
| W102VX-55† | .... | 24 | 2900 | 16.76 | 15.08 | 14.25 | 13.41 | 11.73 |
| W102HVX1 | .... | 6 | 25 | 19.88 | 17.89 | 16.90 | 15.90 | 13.92 |
| W102HVX2 | .... | 12 | 100 | 19.88 | 17.89 | 16.90 | 15.90 | 13.92 |
| W102HVX3 | .... | 24 | 400 | 19.88 | 17.89 | 16.90 | 15.90 | 13.92 |
| W102UHVX1 | .... | 6 | 25 | 33.62 | 30.26 | 28.58 | 26.90 | 23.53 |
| W102UHVX2 | .... | 12 | 100 | 33.62 | 30.26 | 28.58 | 26.90 | 23.53 |
| W102UHVX3 | .... | 24 | 400 | 33.62 | 30.26 | 28.58 | 26.90 | 23.53 |

†SPST-NC (Form B).

## MINIATURE 1000-VOLT REED RELAYS

Switches up to 1000 volts, in miniature package with reed relay reliability. Class 101VM has in-line design with reed leads fastened to molded bobbin for stress relief. The nylon bobbin has rugged coil terminal inserts to eliminate shorts. Class 101VMPC has reed leads spaced 0.3" from coil leads for high dielectric strength, elimination of shorts. **Contacts:** SPST-NO, Form A. **Rating:** 1000 VDC at .001 amp max., resistive. **Coil Power:** W101VM, 600 mW nominal; W101VMPC, 700 mW. **Average Time:** Operate, 1 msec.; release, 0.5 msec. **Life:** Greater than 1 million operations. **Size:** W101VM, 2¼" x ½" x 7/16"; W101VMPC, 1⅛" x ⅜" x 39/64".

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| W101VMX-1 | ... | 6 | 100 | $10.90 | $ 9.81 | $ 9.27 | $8.72 | $7.63 |
| W101VMX-2 | ... | 12 | 250 | 10.92 | 9.83 | 9.28 | 8.74 | 7.64 |
| W101VMX-3 | ... | 24 | 500 | 10.93 | 9.83 | 9.29 | 8.74 | 7.65 |
| W101VMX-4 | 9 | .... | 2500 | 11.12 | 10.01 | 9.45 | 8.90 | 7.78 |
| W101VMPCX-1 | ... | 6 | 50 | 11.90 | 10.71 | 10.12 | 9.52 | 8.33 |
| W101VMPCX-2 | ... | 12 | 220 | 11.97 | 10.77 | 10.17 | 9.58 | 8.38 |
| W101VMPCX-3 | ... | 24 | 850 | 12.00 | 10.80 | 10.20 | 9.60 | 8.40 |
| W101VMPCX-4 | ... | 48 | 3300 | 12.22 | 11.00 | 10.39 | 9.78 | 8.55 |

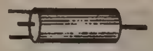
## MAGNETIC LATCHING MERCURY-WETTED REED RELAYS

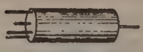
stable relay requires no coil current to hold either of two hing positions. Armature contact remains in last operated ition until coil polarity is reversed. Ideal for printed circuit mory applications, with stress-free mounting, rigid positioning l mechanical protection. With single-wound coils, switching is ieved by reversing coil polarity; double-wound coils have arate polarized windings, switched by two separate inputs. **ntacts:** SPDT (1 Form C) break-before-make, bi-stable. **Rat-** : 50 VA at 2 amps max. or 400 VDC max., resistive. **Power:** mW nominal. **Average Time:** 2 msec., operate and release. : 25 million operations, typical; longer at reduced load. : 2⅝" x ¾" x 41/64".

| Magnecraft Number | Coil Data* | | | | Net Ea., 1-24* |
|---|---|---|---|---|---|
| | Winding | mA | VDC | Ohms | |
| W133LMPCX-17 | Single | 40 | ...... | 70 | $ 9.87 |
| W133LMPCX-18 | Single | ..... | 6 | 250 | 9.88 |
| W133LMPCX-19 | Single | ..... | 12 | 1000 | 9.92 |
| W133LMPCX-20 | Single | ..... | 24 | 4000 | 10.07 |
| W133LMPCX-21 | Single | 4 | ...... | 7000 | 10.17 |
| W133LMPCX-22 | Double | 80 | ...... | 30/30 | 11.23 |
| W133LMPCX-23 | Double | ..... | 6 | 120/120 | 11.25 |
| W133LMPCX-24 | Double | ..... | 12 | 460/460 | 11.32 |
| W133LMPCX-25 | Double | ..... | 24 | 1800/1800 | 11.42 |
| W133LMPCX-26 | Double | 8 | ...... | 3000/3000 | 11.50 |

*SEE PREVIOUS PAGE FOR COIL DATA. ★LARGER QUANTITY PRICES ON REQUEST.

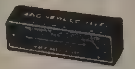
# *Magnecraft*® Dry Reed Relays


W101EP SPST-NO


W104EP SPDT

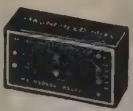
W105EP SPST-NO

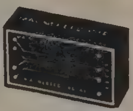
W101PC SPST-NO


W102PC SPST-NO

W103PC SPDT

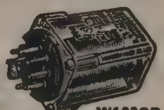
W101PC DPST-NO

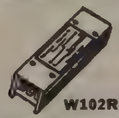

W102PC DPST-NO

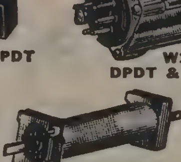

W103PC DPDT

W104PC SPDT

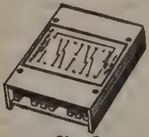
W104PC DPDT

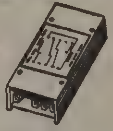

W103CP DPDT & 3PDT

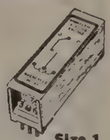

W102RMPCX


W102RMX

## MODULAR-PACKAGED DRY REED RELAYS


Size 3


Size 2


Size 1

Modular-packaged dry reed relays ideal for printed circuit applications. Switching mechanism is hermetically sealed in glass with inert gas fill. Precious metal contacts. Unique mounting design prevents damaging stresses on reed elements. Nylon bobbin and integral mounting base mortised and rigidly riveted to epoxy resin terminal board. Snap-on metal cover provides magnetic shielding and mechanical protection. Fast acting: 2 or 3 μsec, operating; 1 msec, release time. Long life: 20 million cycles at max. load; 100 million at low load. Available Form A or Form C: Form A rated 15 VA at 1 amp or 250 VAC max.; Form C rated 10 VA at ½ amp or 250 VAC max. Choice of three case sizes: **Size 1,** single Form A or C; 41/64″ h. x ¾″ w. x 2⅝″ lg.; requires 0.5 W DC power. **Size 2,** three Form A or two Form C; 41/64″ h. x 1 1/16″ w. x 2⅝″ lg.; requires 0.75 W DC power. **Size 3,** six Form A or four Form C; 41/64″ h. x 1 31/64″ w. x 2⅝″ lg.; requires 1.5 W DC power.

| Magnecraft Number | Contacts & Size | Coil Data* | | | Av. Time, msec | | Net Ea. 1-24* |
|---|---|---|---|---|---|---|---|
| | | mA | VDC | Ω | Operate | Release | |
| W102MPCX5 | SPST-NO Size 1 | 140 | .... | 30 | 3 | ½ | $ 3.29 |
| W102MPCX6 | | .... | 6 | 70 | 3 | ½ | 3.29 |
| W102MPCX7 | | .... | 12 | 250 | 3 | ½ | 3.29 |
| W102MPCX8 | | .... | 24 | 1000 | 3 | ½ | 3.29 |
| W102MPCX9 | | .... | 48 | 4000 | 3 | ½ | 3.46 |
| W102MPCX10 | | 9 | .... | 7000 | 3 | ½ | 4.14 |
| W103MPCX1 | SPDT Size 1 | 140 | .... | 30 | 2 | ½ | 5.83 |
| W103MPCX2 | | .... | 6 | 70 | 2 | ½ | 5.83 |
| W103MPCX3 | | .... | 12 | 250 | 2 | ½ | 5.83 |
| W103MPCX4 | | .... | 24 | 1000 | 2 | ½ | 5.83 |
| W103MPCX5 | | .... | 48 | 4000 | 2 | ½ | 6.00 |
| W103MPCX6 | | 9 | .... | 7000 | 2 | ½ | 6.68 |
| W102MPCX48 | 3PST-NO Size 2 | .... | 6 | 50 | 3 | ½ | 5.62 |
| W102MPCX49 | | .... | 12 | 175 | 3 | ½ | 5.63 |
| W102MPCX50 | | .... | 24 | 750 | 3 | ½ | 5.77 |
| W102MPCX51 | | .... | 48 | 3000 | 3 | ½ | 5.97 |
| W102MPCX52 | 6PST-NO Size 3 | .... | 6 | 25 | 3 | ½ | 9.18 |
| W102MPCX53 | | .... | 12 | 100 | 3 | ½ | 9.30 |
| W102MPCX54 | | .... | 24 | 375 | 3 | ½ | 9.35 |
| W102MPCX55 | | .... | 48 | 1500 | 3 | ½ | 9.43 |
| W103MPCX30 | DPDT Size 2 | .... | 6 | 50 | 2 | ½ | 8.33 |
| W103MPCX31 | | .... | 12 | 175 | 2 | ½ | 8.33 |
| W103MPCX32 | | .... | 24 | 750 | 2 | ½ | 8.47 |
| W103MPCX33 | | .... | 48 | 3000 | 2 | ½ | 8.67 |
| W103MPCX34 | 4PDT Size 3 | .... | 6 | 25 | 2 | ½ | 14.60 |
| W103MPCX35 | | .... | 12 | 100 | 2 | ½ | 14.70 |
| W103MPCX36 | | .... | 24 | 375 | 2 | ½ | 14.77 |
| W103MPCX37 | | .... | 48 | 1500 | 2 | ½ | 14.88 |

## ★QUANTITY DISCOUNTS

For larger quantity orders, the following discounts apply. Use price shown in tables above, and multiply with multipliers shown.

| For Lots | Discount | Multiplier | For Lots | Discount | Multiplier |
|---|---|---|---|---|---|
| 25-49 | −10% | .90 | 75-99 | −20% | .80 |
| 50-74 | −15% | .85 | 100-499 | −30% | .70 |

## MAGNEREED (DRY REED) RELAYS

Stabilized contact resistance, high speed positive switching and sensitive operation; adaptable to complex logic circuits. All models have molded epoxy resin encapsulation. Pre-adjusted precious metal contacts in inert gas environment are actuated by coil around capsule. **Series W101:** 10 VA at .5 amp max. or 200 VDC max. resistive. Life, 5 million cycles at max. load; 20 million, ½-load. Cap., 1.0 pF between contacts. Size: W101EP, 1″ x 7/16″ dia. (Wt., 1 oz.); W101PC, SPST-NO, 1½″ x ½″ x 9/16″ (Wt., 2 oz.); W101PC, DPST-NO, 1½″ x 11/16″ x 9/16″ (Wt., 3 oz.). **Series W102:** 15 VA at 1 A max., or 250 VAC max. non-inductive. Life, 20 million cycles at max. load; 100 million ½-load. Cap., SPST, 1 pF; DPST, 1.2 pF. Size: W102PC, SPST-NO, 2¼″ x 21/32″ x ⅝″ (Wt., 3 oz.); W102PC, DPST-NO, 2¼″ x 1¼″ x ¾″ (Wt., 4 oz.). **Series W103:** 10 VA at ½ A, or 250 VAC max. non-inductive. Life, 25 million cycles at max. load; 50 million, ½-load. Cap., SPDT, 3 pF; DPDT 3.5 pF. Operation, SPDT break before make, single side stable. Size: W103PC, SPDT, 2¼″ x 21/32″ x ⅝″ (Wt., 3 oz.); W103PC, DPDT, 2¼″ x 1¼″ x ¾″ (Wt., 4 oz.). **Series W103CP:** Plug-in mounting type with non-metallic dust cover; has W103 relays with common operating coil. DPDT units are 8-pin; 3PDT units, 11-pin. Size, 1⅜″ x 1⅜″ x 2⅛″ (Wt., 5 oz.). **Series W104:** 3 VA at .25 A max., or 28 V max. non-inductive. Life, 10 million cycles at rated load. No bias magnet. Size: W104EP, 1″ x 7/16″ dia. (Wt., 1 oz.); W104PC, SPDT, 1½″ x ½″ x 9/16″ (Wt., 2 oz.); W104PC, DPDT, 1½″ x 11/16″ x 9/16″ (Wt., 2 oz.). **Series W105:** 0.1 VA at 10 mA. Life, 10 million cycles at rated load. Size, 7/16″ x ¼″ dia. (Wt., ½ oz.).

| Magnecraft Number | Contacts | Coil Data* | | | Av. Time, msec | | Net Ea. 1-24* |
|---|---|---|---|---|---|---|---|
| | | mA | VDC | Ω | Operate | Release | |
| W101EPX5 | SPST-NO | .... | 6 | 65 | 1 | ½ | $ 3.62 |
| W101EPX6 | SPST-NO | .... | 12 | 225 | 1 | ½ | 3.62 |
| W101EPX7 | SPST-NO | .... | 24 | 1000 | 1 | ½ | 4.24 |
| W101EPX8 | SPST-NO | 8 | .... | 5000 | 1 | ½ | 4.68 |
| W101PCX5 | SPST-NO | .... | 6 | 65 | 1 | ½ | 5.11 |
| W101PCX6 | SPST-NO | .... | 12 | 250 | 1 | ½ | 5.16 |
| W101PCX7 | SPST-NO | .... | 24 | 1000 | 1 | ½ | 5.26 |
| W101PCX8 | SPST-NO | 8 | .... | 5000 | 1 | ½ | 5.68 |
| W101PCX9 | DPST-NO | .... | 6 | 40 | 1 | ½ | 7.15 |
| W101PCX10 | DPST-NO | .... | 12 | 150 | 1 | ½ | 7.18 |
| W101PCX11 | DPST-NO | .... | 24 | 650 | 1 | ½ | 7.24 |
| W101PCX12 | DPST-NO | 8 | .... | 5000 | 1 | ½ | 7.69 |
| W102PCX1 | SPST-NO | .... | 6 | 100 | 3 | ½ | 4.77 |
| W102PCX2 | SPST-NO | .... | 12 | 400 | 3 | ½ | 4.83 |
| W102PCX3 | SPST-NO | .... | 24 | 1500 | 3 | ½ | 4.87 |
| W102PCX4 | SPST-NO | 6.5 | .... | 5000 | 3 | ½ | 5.32 |
| W102PCX5 | DPST-NO | .... | 6 | 50 | 3 | ½ | 6.22 |
| W102PCX6 | DPST-NO | .... | 12 | 200 | 3 | ½ | 6.28 |
| W102PCX7 | DPST-NO | .... | 24 | 800 | 3 | ½ | 6.33 |
| W102PCX8 | DPST-NO | 9 | .... | 5000 | 3 | ½ | 6.78 |
| W103PCX1 | SPDT | .... | 6 | 100 | 2 | ½ | 7.22 |
| W103PCX2 | SPDT | .... | 12 | 400 | 2 | ½ | 7.27 |
| W103PCX3 | SPDT | .... | 24 | 1500 | 2 | ½ | 7.32 |
| W103PCX4 | SPDT | 6.5 | .... | 5000 | 2 | ½ | 7.76 |
| W103PCX5 | DPDT | .... | 6 | 50 | 2 | ½ | 10.77 |
| W103PCX6 | DPDT | .... | 12 | 200 | 2 | ½ | 10.79 |
| W103PCX7 | DPDT | .... | 24 | 800 | 2 | ½ | 10.84 |
| W103PCX8 | DPDT | 9 | .... | 5000 | 2 | ½ | 11.31 |
| W103CPX7 | DPDT | .... | 6 | 75 | 2 | ½ | 12.92 |
| W103CPX8 | DPDT | .... | 12 | 300 | 2 | ½ | 12.95 |
| W103CPX9 | DPDT | .... | 24 | 1000 | 2 | ½ | 13.01 |
| W103CPX10 | DPDT | 8 | .... | 5000 | 2 | ½ | 13.57 |
| W103CPX11 | 3PDT | .... | 6 | 40 | 2 | ½ | 16.77 |
| W103CPX12 | 3PDT | .... | 12 | 150 | 2 | ½ | 16.83 |
| W103CPX13 | 3PDT | .... | 24 | 650 | 2 | ½ | 16.95 |
| W103CPX14 | 3PDT | 10 | .... | 5000 | 2 | ½ | 17.50 |
| W104EPX2 | SPDT | .... | 6 | 65 | 1 | 1 | 7.37 |
| W104EPX3 | SPDT | .... | 12 | 225 | 1 | 1 | 7.37 |
| W104EPX4 | SPDT | .... | 24 | 1000 | 1 | 1 | 8.05 |
| W104EPX5 | SPDT | 8 | .... | 5000 | 1 | 1 | 8.55 |
| W104PCX7 | SPDT | .... | 6 | 65 | 1 | 1 | 10.07 |
| W104PCX8 | SPDT | .... | 12 | 225 | 1 | 1 | 10.12 |
| W104PCX9 | SPDT | .... | 24 | 1000 | 1 | 1 | 10.22 |
| W104PCX10 | SPDT | 8 | .... | 5000 | 1 | 1 | 10.64 |
| W104PCX3 | DPDT | .... | 6 | 40 | 1 | 1 | 14.59 |
| W104PCX4 | DPDT | .... | 12 | 150 | 1 | 1 | 14.62 |
| W104PCX5 | DPDT | .... | 24 | 650 | 1 | 1 | 14.68 |
| W104PCX6 | DPDT | 8 | .... | 5000 | 1 | 1 | 15.13 |
| W105EPX1 | SPST-NO | .... | 6 | 90 | 1 | 1 | 6.18 |
| W105EPX2 | SPST-NO | .... | 12 | 350 | 1 | 1 | 6.18 |
| W105EPX3 | SPST-NO | .... | 24 | 1300 | 1 | 1 | 6.30 |

## 3 AMP SPST-NO POWER DRY REED RELAYS

Low profile, printed circuit mounted relay with contact rating formerly available only in general purpose or telephone type relays. Housed in molded nylon bobbin with snap-on, steel cover for mechanical and magnetic shielding. Switch mechanism in hermetically-sealed glass capsule. **Contacts:** SPST-NO (Form A). **Rating:** 100 VA at 3 A or 250 V max. **Power:** 0.5 W nominal; 2 watts max. **Size:** 2⅝″ x 41/64″ x ¾″. Wt., 3 oz.

| Magnecraft Number | Coil Data* | | | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|---|
| | mA | VDC | Ω | 1-24 | 25-49 | 50-74 | 75-99 | 100-499 |
| W102RMPCX1 | ... | 6 | 70 | $7.87 | $7.08 | $6.69 | $6.30 | $5.51 |
| W102RMPCX2 | ... | 12 | 250 | 7.88 | 7.09 | 6.70 | 6.31 | 5.52 |
| W102RMPCX3 | ... | 24 | 1000 | 7.93 | 7.14 | 6.74 | 6.34 | 5.55 |
| W102RMPCX4 | ... | 48 | 4000 | 8.18 | 7.36 | 6.95 | 6.54 | 5.73 |

Similar to above, but with inline leads and size: 3¼″ x ½″ x 19/32″.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| W102RMX5 | ... | 6 | 200 | $4.18 | $3.76 | $3.55 | $3.34 | $2.93 |
| W102RMX6 | ... | 12 | 500 | 4.22 | 3.80 | 3.59 | 3.38 | 2.95 |
| W102RMX7 | ... | 24 | 2000 | 4.33 | 3.90 | 3.68 | 3.46 | 3.03 |
| W102RMX8 | ... | 48 | 5000 | 4.53 | 4.08 | 3.85 | 3.62 | 3.17 |

### *COIL DATA

Current shown is pull-in at specified value or less. Voltage shown is nominal. Pull-in at 80% of nominal or less for DC relays; 85% of nominal for AC relays at 25° C. Resistance shown is ±10% at 25° C.

# Magnecraft® Dry Reed Relays

## MINIATURE PC DRY REED RELAYS

odular, printed circuit dry reed relays are fast, reliable and mpact. Hermetically sealed in glass capsule filled with inert gas. ed support terminals rigidly anchored to molded nylon bobbin; lded to switch leads for maximum insulation. Terminal pins aced for .1" grid centers. Magnetically shielded and mechanically otected by snap-on steel cover. **Contact Resistance:** 150 millims avg. **Life:** W101, 5 million cycles at rated load; W104, 10 llion cycles. **Rating:** W101, 10 VA, 500 mA max. or 200 VDC max., n-inductive; W104, 3 VA, 250 mA max. or 28 V max., nonluctive. **Size 1:** Single Form A or C, ⅜" h. x 13/16" w. x 1⅛" lg.; quires 500 mWDC power. Weight, 1 oz. **Size 2:** Three form A or o Form C, ⅜" h. x 39/64" w. x 1⅛" lg.; requires 700 mWDC wer. Weight, 1 oz.

| agnecraft Number | Contacts, Size & Form | Coil Data* | | | Avg. Time, msec | | Net Ea. 1-24• |
|---|---|---|---|---|---|---|---|
| | | mA | VDC | Ω | Operate | Release | |
| 101MPCX1 | SPST-NO | . . . | 6 | 70 | 1 | ½ | $ 3.60 |
| 101MPCX2 | Size 1 | . . . | 12 | 300 | 1 | ½ | 3.60 |
| 101MPCX3 | Form A | . . . | 24 | 1100 | 1 | ½ | 3.63 |
| 101MPCX4 | | . . . | 48 | 4300 | 1 | ½ | 3.77 |
| 101MPCX5 | 3PST-NO | . . . | 6 | 50 | 1 | ½ | 6.75 |
| 101MPCX6 | Size 2 | . . . | 12 | 220 | 1 | ½ | 6.75 |
| 101MPCX7 | 3 Form A | . . . | 24 | 850 | 1 | ½ | 6.77 |
| 101MPCX8 | | . . . | 48 | 3300 | 1 | ½ | 6.85 |
| 104MPCX1 | SPDT | . . . | 6 | 70 | 1 | ½ | 6.82 |
| 104MPCX2 | Size 1 | . . . | 12 | 300 | 1 | ½ | 6.83 |
| 104MPCX3 | Form C | . . . | 24 | 1100 | 1 | ½ | 6.85 |
| 104MPCX4 | | . . . | 48 | 4300 | 1 | ½ | 6.98 |
| 104MPCX5 | DPDT | . . . | 6 | 50 | 1 | ½ | 11.62 |
| 104MPCX6 | Size 2 | . . . | 12 | 220 | 1 | ½ | 11.63 |
| 104MPCX7 | 2 Form C | . . . | 24 | 850 | 1 | ½ | 11.65 |
| 104MPCX8 | | . . . | 48 | 3300 | 1 | ½ | 11.73 |

## MICRO-MINIATURE DRY REED PC RELAYS

w profile, plug-in relays for printed circuit use. Same construcn as miniature types, above. **Contact Resistance:** 200 milliohms g. **Life:** 10 million cycles at rated load. **Rating:** 110 mVA x. at 10 mA max. or 12 V max., non-inductive. **Size:** 11/16" h. x " w. x ⅝" lg. Weight, ½ oz.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 105MPCX1 | SPST-NO | . . . | 6 | 120 | ½ | ¼ | $5.45 |
| 105MPCX2 | SPST-NO | . . . | 12 | 500 | ½ | ¼ | 5.47 |
| 105MPCX3 | SPST-NO | . . . | 24 | 2000 | ½ | ¼ | 5.58 |

## OPEN STYLE AXIAL LEAD DRY REED RELAYS

w cost reed relays give optimum reliability and fast operation. nned leads are specially fastened to a molded nylon bobbin stress relief on glass capsule during soldering. Rugged coil minal inserts eliminate possibility of shorts. Contacts hertically sealed with inert gas in glass capsule; free from dust ntamination, moisture or tampering. Tinned terminals for cuit mounting. No. 16-265-6 clip available for clip mounting. oice of 2 sizes; 2 contact arrangements. **Series W101MX:** niature; SPST-NO (1 Form A) contacts rated 10 VA x. at .5 A max. or 200 VDC max. resistive. Coil 600 mW minal. Cap., 0.3 pF avg. between contacts. Life, 5 million erations typical. Size, 2¼" lg. x ½" w. x 7/16" h., including ds. **Series W102MX:** Standard size; SPST-NO (1 Form A) ntacts rated 15 VA max. at 1 A max. or 250 VAC max. resise. Coil, 300 mW nominal. Cap., 0.9 pF avg. between contacts. e, 20 million operations typ. Size, 3¼" lg. (incl. leads) x " w. x ½" h. **Series W103MX:** Standard size; SPDT (1 Form contacts rated 10 VA max. at 0.5 A max. or 250 VAC max. istive. Coil, 300 mW nominal. Cap., 3.0 pF avg. between ntacts. Life, 25 million operations typ. Size, 3 7/16" lg. (incl. ds) x 19/32" w. x ½" h. **Series W104MX:** Miniature; SPDT Form C) contacts rated 3 VA max. at 0.25 A max. or 28 VAC x. resistive. Coil, 600 mW nominal. Cap., 1.3 pF avg. across ntacts. Life, 10 million operations typ. Size, 1" x 7/16" x ½" ot incl. leads).

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 01MX-1 | SPST-NO | ..... | 6 | 100 | 1 | 0.5 | $2.20 |
| 01MX-2 | (1 Form A) | ..... | 12 | 250 | 1 | 0.5 | 2.25 |
| 01MX-3 | Min. | ..... | 24 | 500 | 1 | 0.5 | 2.25 |
| 01MX-4 | | 9 | ..... | 2500 | 1 | 0.5 | 2.43 |
| 02MX-1 | | 40 | ..... | 100 | 3 | 0.5 | 2.18 |
| 02MX-2 | SPST-NO | ..... | 6 | 200 | 3 | 0.5 | 2.25 |
| 02MX-3 | (1 Form A) | ..... | 12 | 500 | 3 | 0.5 | 2.25 |
| 02MX-4 | Std. | ..... | 24 | 2000 | 3 | 0.5 | 2.47 |
| 02MX-5 | | 5.5 | ..... | 5000 | 3 | 0.5 | 2.63 |
| 04MX-1 | SPDT | ..... | 6 | 100 | 1 | 1 | 5.63 |
| 04MX-2 | (1 Form C) | ..... | 12 | 250 | 1 | 1 | 5.68 |
| 04MX-3 | Min. | ..... | 24 | 500 | 1 | 1 | 5.68 |
| 04MX-4 | | 9 | ..... | 2500 | 1 | 1 | 5.87 |
| 03MX-1 | SPDT | ..... | 6 | 200 | [illegible] | 0.5 | 4.23 |
| 03MX-2 | (1 Form C) | ..... | 12 | 500 | 2 | 0.5 | 4.23 |
| 03MX-3 | Std. | ..... | 24 | 2000 | 2 | 0.5 | 4.45 |
| 03MX-4 | | 5.5 | ..... | 5000 | 2 | 0.5 | 4.62 |

## MINIATURE LATCHING REED RELAYS

niature latching reed relay uses no standby power or permanent sing magnet to perform memory function. **Operate Time:** nsec, average. **Typical Life:** 1 million operations; longer at uced loads. **Duty Cycle:** Intermittent. **Contact Rating:** 3 VA 010 amp or 28 VDC, resistive. **Size:** 1⅛" x ⅜" x 39/64". Weight, z. approx.

| Magnecraft Number | Contacts | Coil VDC* | | | Coil Ohms* | Net Ea. 1-24• |
|---|---|---|---|---|---|---|
| | | Min. | Nom. | Max. | | |
| 01LMPCX-9 | SPST | 2.4 | 3 | 3.5 | 5.5/33 | $9.20 |
| 01LMPCX-10 | SPST | 4 | 5 | 6 | 20/150 | 9.20 |
| 01LMPCX-11 | SPST | 4 | 6 | 8 | 30/250 | 9.20 |
| 01LMPCX-12 | SPST | 10 | 12 | 14 | 85/585 | 9.20 |
| 01LMPCX-13 | SPST | 22 | 24 | 26 | 265/3200 | 9.20 |

Size 1
Size 2

W101, W104MPC
SPST-NO and SPDT

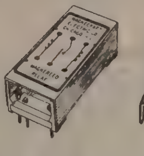
W105MPC
SPST-NO

W103M
SPDT

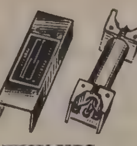
W102M
SPST-NO

W104M
SPDT

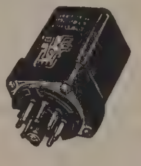
W101M
SPST-NO



W101LMPC



W103LMPC
Bi-Stable SPDT



W103LCP
Bi-Stable SPDT

## CLASS W103LMPC MAGNETIC LATCHING (BI-STABLE) DRY REED RELAYS

Biased permanent magnet holds either contact position; no coil current required. Ideal for memory applications. Coil current polarity reversed for single wound coils; separate polarized windings on double-wound coils have individual input terminals. Modular construction and printed circuit terminals for rugged, dependable use. **Contacts:** SPDT (Form C, Bi-Stable) break-before-make. **Rating:** 10 VA, 200 V maximum or 0.2 amp maximum non-inductive. **Power:** 0.15 W nominal and 2 W max., single wound; 0.2 W nominal and 2 W max., double wound. **Average Time:** 2 msec operate and release. **Life:** Twenty-five million cycles at rated load. **Size:** 2⅝" x 41/64" x ¾". Weight, 1 oz.

| Magnecraft Number‡ | Coil Data* | | | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|---|
| | mA | VDC | Ω | 1-24 | 25-49 | 50-74 | 75-99 | 100-499 |
| W103LMPCX3 | 40 | .... | 70 | $7.07 | $6.36 | $6.01 | $5.66 | $4.95 |
| W103LMPCX4 | .... | 6 | 250 | 7.07 | 6.36 | 6.01 | 5.66 | 4.95 |
| W103LMPCX5 | .... | 12 | 1000 | 7.07 | 6.36 | 6.01 | 5.66 | 4.95 |
| W103LMPCX6 | .... | 24 | 4000 | 7.26 | 6.53 | 6.17 | 5.81 | 5.08 |
| W103LMPCX7 | 4.0 | .... | 7000 | 8.01 | 7.21 | 6.81 | 6.41 | 5.61 |
| W103LMPCX8 | 80 | .... | 30† | 8.22 | 7.40 | 6.99 | 6.58 | 5.75 |
| W103LMPCX9 | .... | 6 | 120† | 8.33 | 7.50 | 7.08 | 6.66 | 5.83 |
| W103LMPCX10 | .... | 12 | 460† | 8.33 | 7.50 | 7.08 | 6.66 | 5.83 |
| W103LMPCX11 | .... | 24 | 1800† | 9.00 | 8.10 | 7.65 | 7.20 | 6.30 |
| W103LMPCX12 | 8.0 | .... | 3000† | 10.04 | 9.04 | 8.53 | 8.03 | 7.03 |

## CLASS W103LCP PLUG-IN LATCHING (BI-STABLE) REED RELAYS

Magnetic latching action; requires no coil current to hold either of two latching positions. Single wound coil (Types W103LCPX-7 to -10) switching is achieved by reversing coil current polarity. Double wound coil (-11 to -14) has separate polarized winding; switching is achieved by use of dual input. Enclosed plug-in construction. **Contacts:** SPDT. **Contact Resistance:** 150 milliohms average. **Contact Load Rating:** 10 VA at 0.2 amp maximum or 200 VDC maximum, resistive. **Typical Life:** 25 million operations (longer at reduced loads). **Operate Time:** 2 milliseconds average. **Contact Bounce:** 2 milliseconds average. **Capacitance:** 4.0 pF average, across contacts. **Size:** 1⅜" x 1⅜" x 2⅛" high. Wt., 5 oz.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| W103LCPX-7 | .... | 6 | 250 | $ 8.30 | $7.47 | $7.06 | $6.64 | $5.81 |
| W103LCPX-8 | .... | 12 | 1000 | 8.33 | 7.50 | 7.08 | 6.66 | 5.83 |
| W103LCPX-9 | .... | 24 | 4000 | 8.57 | 7.71 | 7.28 | 6.86 | 6.00 |
| W103LCPX-10 | 4 | ..... | 7000 | 8.80 | 7.92 | 7.48 | 7.04 | 6.16 |
| W103LCPX-11 | .... | 6 | 120† | 9.87 | 8.88 | 8.39 | 7.90 | 6.91 |
| W103LCPX-12 | .... | 12 | 460† | 9.97 | 8.97 | 8.47 | 7.98 | 6.98 |
| W103LCPX-13 | .... | 24 | 1800† | 10.02 | 9.02 | 8.52 | 8.02 | 7.01 |
| W103LCPX-14 | 8 | ..... | 3000† | 10.32 | 9.29 | 8.77 | 8.26 | 7.22 |

†Ohms per coil. ‡Series W103LMPCX3-7, single wound coils; Series W103LMPCX8-12, double wound coils.

***COIL DATA:** Current shown is pull-in at specified value or less. Voltage shown is nominal. Pull-in at 80% of nominal or less for DC relays; 85% of nom. for AC relays at 25° C. Resistance shown is ±10% at 25° C.

• **Quantity Discounts:** Lots 25–49, −10%; 50–74, −15%; 75–99, −20%; 100–499, −30%; write for discounts on larger quantities.

# *Magnecraft*® SOLID STATE RELAYS

## NEW SOLID STATE (HYBRID) TIME DELAY RELAYS

Class 211M

Class 214CP

Class 502PCSO (1 Form A)
Class 503PCSO (1 Form C)

Class 502PCSR (1 Form A)
Class 503PCSR (1 Form C)

### CLASS 211M SOLID STATE (HYBRID) TIME DELAY RELAYS

Designed for heavy-duty service, this time delay relay combines solid state circuitry for the timing function; an electro-mechanical relay provides 10-amp DPDT output switching. Molded, high impact plastic enclosure gives space saving surface mounting. Molded-in terminal strip has screw terminals for easy installation; adapts well to multi-modular applications. Knob-adjustable timing for operate delay or release delay. **Timing Repeatability:** ±5% at nominal voltage at 25° C. **Size:** 4½" x 1½" x 4$\frac{1}{32}$".

#### OPERATE TIMING TYPES

| Magnecraft Number | Coil V* | Delay Secs | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99* |
|---|---|---|---|---|---|---|
| W211MASOX-1 | 120 AC | .2-1 | $24.56 | $23.33 | $22.10 | $19.65 |
| W211MASOX-2 | | 1-10 | 24.56 | 23.33 | 22.10 | 19.65 |
| W211MASOX-3 | | 1-180 | 24.56 | 23.33 | 22.10 | 19.65 |
| W211MASOX-4 | | 2-300 | 24.56 | 23.33 | 22.10 | 19.65 |
| W211MSOX-1 | 24 DC | .2-1 | 24.56 | 23.33 | 22.10 | 19.65 |
| W211MSOX-2 | | 1-10 | 24.56 | 23.33 | 22.10 | 19.65 |
| W211MSOX-3 | | 1-180 | 24.56 | 23.33 | 22.10 | 19.65 |
| W211MSOX-4 | | 2-300 | 24.56 | 23.33 | 22.10 | 19.65 |

#### RELEASE TIMING TYPES

| Magnecraft Number | Coil V* | Delay Secs | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99* |
|---|---|---|---|---|---|---|
| W211MASRX-1 | 120 AC | .2-1 | $28.92 | $27.47 | $26.03 | $23.14 |
| W211MASRX-2 | | 1-10 | 28.92 | 27.47 | 26.03 | 23.14 |
| W211MASRX-3 | | 1-180 | 28.92 | 27.47 | 26.03 | 23.14 |
| W211MASRX-4 | | 2-300 | 28.92 | 27.47 | 26.03 | 23.14 |
| W211MSRX-1 | 24 DC | .2-1 | 28.92 | 27.47 | 26.03 | 23.14 |
| W211MSRX-2 | | 1-10 | 28.92 | 27.47 | 26.03 | 23.14 |
| W211MSRX-3 | | 1-180 | 28.92 | 27.47 | 26.03 | 23.14 |
| W211MSRX-4 | | 2-300 | 28.92 | 27.47 | 26.03 | 23.14 |

### CLASS 214CP COMPACT, PLUG-IN SOLID STATE (HYBRID) TIME DELAY RELAY

Fully adjustable time delay offers ±5% repeatability in a size equivalent to general purpose types. Time delay on operate. Contacts DPDT, rated 5 amps at 32 VDC or 115 VAC resistive. Enclosed in molded dust cover with 8-pin octal plug. **Size:** 2½" x 1⅜" x 1⅜". Weight, 3 oz.

| Magnecraft Number | Coil V* | Timing Secs | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99* |
|---|---|---|---|---|---|---|
| W214ACPSOX-1 | 120 AC | .300-30 | $21.27 | $20.21 | $19.14 | $17.02 |
| W214ACPSOX-2 | | 3-240 | 21.27 | 20.21 | 19.14 | 17.02 |
| W214ACPSOX-3 | 24 DC | .300-30 | 21.27 | 20.21 | 19.14 | 17.02 |
| W214ACPSOX-4 | | 3-240 | 21.27 | 20.21 | 19.14 | 17.02 |

### CLASS 502 AND 503 PC TIME DELAYS

#### SLOW OPERATE PC TIME DELAYS

Hybrid circuitry combines monolythic silicon structure for timing function and dry reed relay for isolated circuit switching. Encapsulated, fully-protected construction has low profile for printed circuit mounting. Polarity protection is standard. **Repeatability:** ±5% accurate. **Size:** 2¼" x 1¼" x ¾". Wt., approx. 2 oz.

**Class 502PCSO:** SPST-NO (Form A) contacts rated 1 amp at 15 VA or 250 VAC max. resistive.

| Magnecraft Number | Coil V* | Timing Range | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99* |
|---|---|---|---|---|---|---|
| W502PCSOX-2 | 12 | 100 msec to 100 sec† | $18.96 | $18.01 | $17.06 | $15.17 |
| W502PCSOX-3 | 24 | | 18.96 | 18.01 | 17.06 | 15.17 |
| W502PCSOX-5 | 12 | 3 sec to 5 min.‡ | 21.30 | 20.23 | 19.17 | 17.04 |
| W502PCSOX-6 | 24 | | 21.30 | 20.23 | 19.17 | 17.04 |

**Class 503PCSO:** SPDT (Form C) contacts rated 0.5 amp at 10 VA or 250 VAC max. resistive.

| Magnecraft Number | Coil V* | Timing Range | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99* |
|---|---|---|---|---|---|---|
| W503PCSOX-2 | 12 | 100 msec to 100 sec† | $20.82 | $19.78 | $18.74 | $16.66 |
| W503PCSOX-3 | 24 | | 20.82 | 19.78 | 18.74 | 16.66 |
| W503PCSOX-5 | 12 | 3 sec to 5 min.‡ | 22.31 | 21.19 | 20.08 | 17.85 |
| W503PCSOX-6 | 24 | | 22.31 | 21.19 | 20.08 | 17.85 |

External adjustment: †60K ohms/sec; ‡10K ohms/sec.

#### SLOW RELEASE PC TIME DELAYS

Makes use of hybrid circuitry: Monolythic silicon structure for timing function; dry reed relay performs isolated circuit switching with ±2% repeatability. Low profile design for printed circuit mounting is fully protected by encapsulation. **Size:** 2¼" x 1¼" x ¾". Wt., approx. 2 oz.

**Class 502PCSR:** SPST-NO (Form A) contacts rated 1 amp at 15 VA or 250 VAC max. resistive.

| Magnecraft Number | Coil V* | Timing Range | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99* |
|---|---|---|---|---|---|---|
| W502PCSRX-2 | 12 | 200 msec to 100 sec† | $26.73 | $25.39 | $24.06 | $21.38 |
| W502PCSRX-3 | 24 | | 26.73 | 25.39 | 24.06 | 21.38 |
| W502PCSRX-5 | 12 | 1 sec to 5 min.‡ | 29.84 | 28.35 | 26.86 | 25.36 |
| W502PCSRX-6 | 24 | | 29.84 | 28.35 | 26.86 | 25.36 |

**Class 503PCSR:** SPDT (Form C) contacts rated 0.5 amp at 10 VA or 250 VAC resistive.

| Magnecraft Number | Coil V* | Timing Range | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99* |
|---|---|---|---|---|---|---|
| W503PCSRX-2 | 12 | 200 msec to 100 sec† | $28.59 | $27.16 | $25.73 | $22.87 |
| W503PCSRX-3 | 24 | | 28.59 | 27.16 | 25.73 | 22.87 |
| W503PCSRX-5 | 12 | 1 sec to 5 min.‡ | 31.70 | 30.12 | 28.53 | 25.36 |
| W503PCSRX-6 | 24 | | 31.70 | 30.12 | 28.53 | 25.36 |

External adjustment: †25K ohms/sec; ‡6.5K ohms/sec.

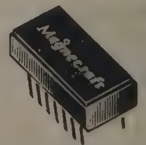
★LARGER QUANTITY PRICES ON REQUEST

***COIL DATA**

Voltage shown is nominal. Pull-in at 80% of nominal or less for DC relays; 85% of nominal for AC relays at 25° C. Resistance shown is ±10% at 25° C.

## NEW CLASS 505QIC DUAL-INLINE ALL SOLID STATE RELAY

Dual-inline 14-pin solid state relay offers built-in function versatility. Provides three functions in one (with only a slight external adaptation)—switching, latching and timing. **Contact Configuration:** DPDT (2 Form C). **Contact Load Rating:** 1 amp at 30 VDC at 25° C case temperature, maximum with any type of load. **Sensitive Input Impedance:** 50K ohms. **Operate Time:** 50 μsec maximum. **Release Time:** 50 μsec maximum. **Transfer Time:** 20 to 35 μsec. **Isolation Resistance:** 30 megohms, minimum. **Contact Resistance:** 700 milliohms, maximum. **Typical Life:** Greater than 1 billion operations at rated load. **Rating Increase:** To increase rating of W505QICX-3 to 1 amp at 30 VAC, merely connect in parallel a zener diode to pins 7 and 4, and connect a series limiting resistor to the power supply.


3 RELAYS IN ONE—
SWITCHING, LATCHING
AND TIMING

| Magnecraft Number | Must Operate VDC | Must Release VDC | Driver Supply VDC at mA | Contact Rating† at 30 VDC | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|---|---|---|
| W505QICX-1 | 2.5 | 1.1 | 3.6 at 45 | 1 amp | $25.68 | $24.45 | $23.21 | $20.74 | $19.51 |
| W505QICX-3 | 9.0 | 4.5 | 12 at 45 | 750 mA | 25.68 | 24.45 | 23.21 | 20.74 | 19.51 |

†Pins 4 and 11 must be connected on the printed circuit, providing switching on the low noise negative ground bus.

# Magnecraft® TIME DELAY RELAYS

## CLASS 211CP SOLID STATE PLUG-IN TIME DELAY RELAYS

ombines solid state circuitry for timing function, with Class 88 electromechanical relay DPDT 10-amp output switching. Nylon dust cover, plug-in mounting. DC models e reverse polarity protected. Transient protection for twice the nominal input voltage, a period not to exceed 8 msec. **Contacts:** DPDT, rated 10 amps. **Temperature Range:** erate, −10° to +55° C; storage, −55° to +85° C. **Timing Repeatability:** ±5% of tting at nominal voltage at 25° C. **Size:** 1¾" x 2⅜" x 2⅞" h. (not including knob). **ug:** Operate types, 8-pin; release types, 11-pin.

| For Delay On Operate | | | | For Delay On Release | | | |
|---|---|---|---|---|---|---|---|
| **Magnecraft Number** | **Coil V*** | **Delay Secs** | **Net Ea., Lots** | **Magnecraft Number** | **Coil V*** | **Delay Secs** | **Net Ea., Lots** |
| V211ACPSOX-18 | 120 AC | .2–1 | 1–9..... | W211ACPSRX-14 | 120 AC | .2–1 | 1–9..... |
| V211ACPSOX-5 | | 1–10 | $18.98 | W211ACPSRX-5 | | 1–10 | $22.93 |
| V211ACPSOX-7 | | 1–180 | 10–24... | W211ACPSRX-7 | | 1–180 | 10–24... |
| V211ACPSOX-8 | | 2–300 | $18.03 | W211ACPSRX-8 | | 2–300 | $21.78 |
| V211CPSOX-10 | 24 DC | .2–1 | 25–49... | W211CPSRX-9 | 24 DC | .2–1 | 25–49... |
| V211CPSOX-1 | | 1–10 | $17.08 | W211CPSRX-1 | | 1–10 | $20.64 |
| V211CPSOX-3 | | 1–180 | 50–99*.. | W211CPSRX-3 | | 1–180 | 50–99*.. |
| V211CPSOX-4 | | 2–300 | $15.18 | W211CPSRX-4 | | 2–300 | $18.34 |

## CLASS 212M PRECISION SOLID STATE TIME DELAY RELAYS

ecision time delay relays with 1% repeatability (typical). Uses hybrid circuitry (solid ate for timing, plus Class 88 10-amp output relay). Molded, high-impact enclosure for ace-saving surface mounting. Knob-adjustable timing, with dial calibrated in seconds. ansient protection against 1000 volts. Barrier screw terminals. Jumper wires can be ded for additional functions. Size, 4½" x 1½" x 4⅓₂".

| Magnecraft Number | Operation | Coil Volts* | Delay, Seconds | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|
| | | | | 1-9 | 10-24 | 25-49 | 50-99* |
| 212MASOX-2 | Slow operate | 120 VAC | 0.5–10 | $36.15 | $33.79 | $32.78 | $30.76 |
| 212MASOX-3 | Slow operate | 120 VAC | 5–100 | 37.74 | 35.29 | 34.25 | 32.18 |
| 212MASOX-4 | Slow operate | 120 VAC | 50–500 | 43.24 | 41.60 | 39.96 | 37.65 |
| 212MASRX-2 | Slow release | 120 VAC | 0.5–10 | 42.06 | 40.61 | 39.16 | 37.03 |
| 212MASRX-3 | Slow release | 120 VAC | 5–100 | 43.82 | 42.32 | 40.82 | 38.65 |
| 212MASRX-4 | Slow release | 120 VAC | 50–500 | 49.73 | 46.39 | 45.18 | 42.76 |

## CLASS 112 AIR DASHPOT TIME DELAY RELAYS

ectrically actuated, with rugged enclosure and few moving parts. Solenoid assembly ded to air dashpot/snap switch combination initiates time switching function. Mechani- timing function unaffected by voltage variations. Time delay adjustable, 1–150 conds, with knob or capped Allen screw. Time repeat accuracy, ±10%. Release delay thout standby power. DPDT contacts rated 10 amps. Enclosure has grommet for feed-ru wires (internally wired by user to .187" quick-connect terminals). Mounting by two " dia. holes on 3" centers. Size, 1¾" x 3³⁄₁₆" x 4³⁄₁₆". Weight, 20 oz.

**ass 112M** (W112MASOX-1 to W112MASRX-2): Same as above, but in molded, high-pact plastic enclosure with built-in screw type terminals. Flange mounting, with six " holes spaced ½" on 4⅛" centers. Factory wired. Size, 1½" x 4½" x 4⅓₂". Wt., 14 oz.

| Magnecraft Number | "Slow" Function | Coil* | | Adjust-ment | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|---|
| | | Volts | Ohms | | 1-9 | 10-24 | 25-49 | 50-99* |
| 112ACSOX-4 | Operate | 120 VAC | ........ | Knob | $24.30 | $23.09 | $21.87 | $19.44 |
| 112CSOX-3 | Operate | 24 VDC | 80 | Knob | 24.30 | 23.09 | 21.87 | 19.44 |
| 112ACSRX-4 | Release | 120 VAC | ........ | Knob | 24.30 | 23.09 | 21.87 | 19.44 |
| 112CSRX-3 | Release | 24 VDC | 80 | Knob | 24.30 | 23.09 | 21.87 | 19.44 |
| 112MASOX-1 | Operate | 120 VAC | ........ | Knob | 28.23 | 26.82 | 25.41 | 22.58 |
| 112MASOX-2 | Operate | 120 VAC | ........ | Screw | 28.23 | 26.82 | 25.41 | 22.58 |
| 112MSOX-2 | Operate | 24 VDC | 80 | Knob | 28.23 | 26.82 | 25.41 | 22.58 |
| 112MSOX-3 | Operate | 24 VDC | 80 | Screw | 28.23 | 26.82 | 25.41 | 22.58 |
| 112MASRX-1 | Release | 120 VAC | ........ | Knob | 28.23 | 26.82 | 25.41 | 22.58 |
| 112MASRX-2 | Release | 120 VAC | ........ | Screw | 28.23 | 26.82 | 25.41 | 22.58 |
| 112MSRX-1 | Release | 24 VDC | 80 | Knob | 28.23 | 26.82 | 25.41 | 22.58 |
| 112MSRX-2 | Release | 24 VDC | 80 | Screw | 28.23 | 26.82 | 25.41 | 22.58 |

## CLASS 113C MANUALLY ACTIVATED TIME DELAY SWITCHES

nsists of Class 113 air dashpot time delay switch built with a non-aging, low-friction aphite, precision ground tempered glass air dashpot timer. Pushing the button instantly ansfers the SPDT switch; releasing initiates the timing cycle. At the end of timing riod, snap contacts are instantly reset. Knob-adjustable timing range, 1–180 seconds. etal parts are corrosion-resistant. SPDT contacts rated 10 amps up to 32 VDC or 250 C resistive. Size, 2¹⁄₁₆" x 1⁵⁄₃₂" x 3⅝". Mounts in single panel hole. Wt., 8 oz

| agnecraft Number | Con-tact | Timing Range | But-ton Dia. | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249* |
| V113CX-1 | SPDT | 1–180 seconds | ½" | $12.96 | $12.31 | $11.66 | $10.37 | $9.72 |

## CLASS 110 10-AMP DPDT TIME DELAY RELAYS

### OPERATE TIME DELAY—ADJUSTABLE FROM 0.2 TO 45 SECONDS

oven high reliability relay contacts and switching mechanism with precision-built r Dashpot Timer of inert, non-aging, low friction materials. Positive switching action otects contacts from chattering and fritting. Timing repeat accuracy, ±10%.

**en type with solder terminals.** Six mounting holes: Two holes 6-32 thread located gonally, spaced 1³⁄₁₆" x 2⅛"; two holes .156" dia. located diagonally, spaced 1³⁄₁₆" x "; two holes .156" dia. spaced 1³⁄₁₆". Size, 3¹³⁄₁₆" lg., 1¹⁵⁄₁₆" h., 1⁷⁄₁₆" w. Weight, 6 oz.

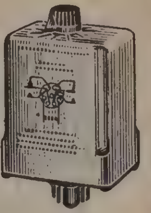
| agnecraft Number | Con-tacts | Coil* | | Nom. Power | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|---|
| | | Volts | Ohms | | 1-9 | 10-24 | 25-49 | 50-99* |
| 110X9 | DPDT | 24 VDC | 100 | 4 W | $17.75 | $15.97 | $15.09 | $14.20 |
| 110X10 | DPDT | 110 VDC | 2500 | 4 W | 18.34 | 16.51 | 15.59 | 14.67 |
| 110AX9 | DPDT | 115 VAC | ....... | 7 VA | 20.91 | 18.82 | 17.77 | 16.73 |

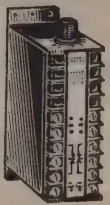
**ass 110CP in 40-347 Plug-in Cover.** Has 8-pin phenolic octal plug (wiring diagram D-2) with hold-down bracket and heavy duty metal enclosure. Snap-on cover provides ick access to relay; snap-on cap provides access to timing screw. Hold-down bracket has r mounting holes, .177" dia. on 1½" x 2⅝" centers. Size, 3½" x 2⁵⁄₁₆" x 4⅝". Wt., 15 oz.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 110CPX10 | DPDT | 24 VDC | 100 | 4 W | $26.78 | $24.10 | $22.76 | $21.42 |
| 110CPX11 | DPDT | 110 VDC | 2500 | 4 W | 27.44 | 24.70 | 23.32 | 21.95 |
| 110ACPX9 | DPDT | 115 VAC | ....... | 7 VA | 29.79 | 26.81 | 25.32 | 23.83 |

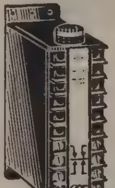
**ass 110CS in 40-348 Dust Cover.** Has heavy duty metal enclosure with snap-on cover quick access to relay. Snap-on cap provides access to timing screw. Screw type molded enolic barrier terminal block. Four mounting holes, .177" dia. on 4⅝" x 1⅛" centers. ze, 5" x 2⅜" x 2¹⁷⁄₃₂". Weight, 15 oz.

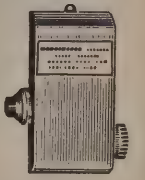
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 110CSX1 | DPDT | 24 VDC | 100 | 4 W | $28.56 | $25.70 | $24.28 | $22.85 |
| 110CSX2 | DPDT | 110 VDC | 2500 | 4 W | 29.22 | 26.30 | 24.84 | 23.38 |
| 110ACSX1 | DPDT | 115 VAC | ....... | 7 VA | 30.07 | 27.06 | 25.56 | 24.06 |


211CP


212M

112


112M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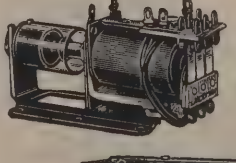
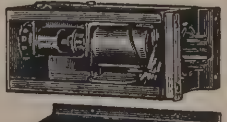
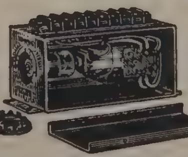

110 Open Type

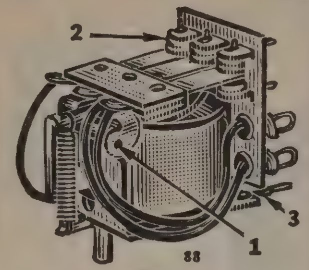

110CPX


110CSX

***COIL DATA:** Voltage shown is nominal. Pull-in at 80% of nominal or less for DC relays; 85% of nominal for AC relays at 25° C. Resistance shown is ±10% at 25° C.

**★LARGER QUANTITY PRICES AVAILABLE ON REQUEST**

# *Magnecraft*® GENERAL PURPOSE RELAYS

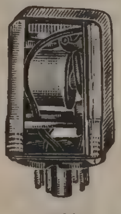


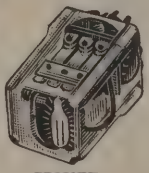
1. **Armature hinge pin** is a rivet of stainless steel with oversize precision reamed bearing surfaces for stabilized adjustment and long operating life.

2. **Built-in contact wipe;** silver alloy contacts are riveted for greater dependability.

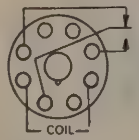
3. **Molded coil bobbins** with ruggedized coil terminal inserts.

88HP

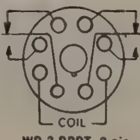

88CP


88ANCP

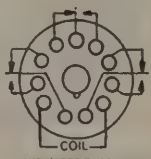
**PLUG-IN HEADER WIRING DIAGRAMS**



WD-1 SPDT, 8-pin



WD-2 DPDT, 8-pin



WD-3 3PDT, 11-pin

## CLASS 88ANCP ENCLOSED NEON-LIGHTED RELAYS

Same as Class 88CP, but with neon light to show when coil is energized. Units listed are 115 VAC†, 3 VA nom. power. Size, 1⅜" sq. x 2⅛" h. above socket. Wt., 3 oz.

| Mgcft. No. W88- | Con-tacts | Net Ea., Lots of | | | |
|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50-99★ |
| ANCPX1 | SPDT | $7.30 | $6.94 | $6.57 | $6.21 |
| ANCPX2 | DPDT | 8.02 | 7.62 | 7.22 | 6.82 |
| ANCPX3 | 3PDT | 9.70 | 9.37 | 8.73 | 8.25 |

## CLASS 88 AC-DC 10-AMP GENERAL PURPOSE RELAYS

High reliability, general purpose relay has glass melamine insulation for high dielectric strength and resistance to humidity or temperature change. Molded nylon bobbin. Contacts rated 10 amps at 115 VAC, non-inductive. Tinned solder terminals. Single 6-32 tapped mtg. hole with locating boss. Size, 1¹³⁄₁₆" lg. x 1³⁄₁₆" w. x 1¼" h. Weight, 2 oz.

| Magnecraft No. | Con-tacts | Volts or Current† | Resis., Ohms | Nom. Power | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | 1-9 | 10-24 | 25-49 | 50-99★ |
| W88AX1 | SPDT | 6 VAC | ........ | 3 VA | $4.02 | $3.82 | $3.62 | $3.42 |
| W88AX2 | SPDT | 12 VAC | ........ | 3 VA | 4.02 | 3.82 | 3.62 | 3.42 |
| W88AX3 | SPDT | 24 VAC | ........ | 3 VA | 4.02 | 3.82 | 3.62 | 3.42 |
| W88AX4 | SPDT | 115 VAC | ........ | 3 VA | 4.02 | 3.82 | 3.62 | 3.42 |
| W88AX34 | SPDT | 230 VAC | ........ | 3 VA | 4.54 | 4.31 | 4.09 | 3.86 |
| W88AX5 | DPDT | 6 VAC | ........ | 3 VA | 4.70 | 4.47 | 4.23 | 4.00 |
| W88AX6 | DPDT | 12 VAC | ........ | 3 VA | 4.70 | 4.47 | 4.23 | 4.00 |
| W88AX7 | DPDT | 24 VAC | ........ | 3 VA | 4.70 | 4.47 | 4.23 | 4.00 |
| W88AX8 | DPDT | 115 VAC | ........ | 3 VA | 4.70 | 4.47 | 4.23 | 4.00 |
| W88AX32 | DPDT | 230 VAC | ........ | 3 VA | 5.22 | 4.96 | 4.70 | 4.44 |
| W88AX9 | 3PDT | 6 VAC | ........ | 3 VA | 5.24 | 4.98 | 4.72 | 4.45 |
| W88AX10 | 3PDT | 12 VAC | ........ | 3 VA | 5.24 | 4.98 | 4.72 | 4.45 |
| W88AX11 | 3PDT | 24 VAC | ........ | 3 VA | 5.24 | 4.98 | 4.72 | 4.45 |
| W88AX12 | 3PDT | 115 VAC | ........ | 3 VA | 5.24 | 4.98 | 4.72 | 4.45 |
| W88AX36 | 3PDT | 230 VAC | ........ | 3 VA | 5.78 | 5.49 | 5.20 | 4.91 |
| W88X2 | SPDT | 6 VDC | 25 | 1.5 W | 3.60 | 3.42 | 3.24 | 3.06 |
| W88X3 | SPDT | 12 VDC | 100 | 1.5 W | 3.60 | 3.42 | 3.24 | 3.06 |
| W88X4 | SPDT | 24 VDC | 400 | 1.5 W | 3.60 | 3.42 | 3.24 | 3.06 |
| W88X5 | SPDT | 110 VDC | 8000 | 1.5 W | 4.24 | 4.03 | 3.82 | 3.60 |
| W88X6 | DPDT | 6 VDC | 25 | 1.5 W | 4.16 | 3.95 | 3.74 | 3.54 |
| W88X7 | DPDT | 12 VDC | 100 | 1.5 W | 4.16 | 3.95 | 3.74 | 3.54 |
| W88X8 | DPDT | 24 VDC | 400 | 1.5 W | 4.16 | 3.95 | 3.74 | 3.54 |
| W88X9 | DPDT | 110 VDC | 8000 | 1.5 W | 4.80 | 4.56 | 4.32 | 4.08 |
| W88X10 | 3PDT | 6 VDC | 25 | 1.5 W | 4.64 | 4.41 | 4.18 | 3.94 |
| W88X11 | 3PDT | 12 VDC | 100 | 1.5 W | 4.64 | 4.41 | 4.18 | 3.94 |
| W88X12 | 3PDT | 24 VDC | 400 | 1.5 W | 4.64 | 4.41 | 4.18 | 3.94 |
| W88X13 | 3PDT | 110 VDC | 8000 | 1.5 W | 5.24 | 4.98 | 4.72 | 4.45 |
| W88X14* | SPDT | 7.2 mA | 2500 | 125 mW | 4.12 | 3.91 | 3.71 | 3.50 |
| W88X15* | SPDT | 5.0 mA | 5000 | 125 mW | 4.22 | 4.01 | 3.80 | 3.57 |
| W88X16* | SPDT | 3.6 mA | 10,000 | 125 mW | 4.68 | 4.45 | 4.21 | 3.98 |
| W88X17* | DPDT | 10 mA | 2500 | 250 mW | 4.42 | 4.20 | 3.98 | 3.76 |
| W88X18* | DPDT | 7.2 mA | 5000 | 250 mW | 4.52 | 4.29 | 4.07 | 3.84 |
| W88X19* | DPDT | 5 mA | 10,000 | 250 mW | 4.96 | 4.71 | 4.46 | 4.22 |
| W88X20* | 3PDT | 12.3 mA | 2500 | 375 mW | 4.88 | 4.64 | 4.39 | 4.15 |
| W88X21* | 3PDT | 8.7 mA | 5000 | 375 mW | 5.00 | 4.75 | 4.50 | 4.25 |
| W88X22* | 3PDT | 6.1 mA | 10,000 | 375 mW | 5.44 | 5.17 | 4.90 | 4.62 |

## CLASS 88HP HERMETICALLY-SEALED PLUG-IN 10-AMP AC-DC RELAYS

Hermetically-sealed Class 88 relays are high reliability units. Octal 8-pin plug on DPDT; 11-pin plug on 3PDT. Silver alloy contacts rated 10 amps. Size, 1¹¹⁄₁₆" dia. x 2¹⁄₁₆" h. above socket. Weight, 5 oz.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| W88AHPX21 | DPDT | 6 VAC | ........ | 3 VA | $11.30 | $10.74 | $10.17 | $ 9.61 |
| W88AHPX22 | DPDT | 12 VAC | ........ | 3 VA | 11.30 | 10.74 | 10.17 | 9.61 |
| W88AHPX23 | DPDT | 24 VAC | ........ | 3 VA | 11.30 | 10.74 | 10.17 | 9.61 |
| W88AHPX24 | DPDT | 115 VAC | ........ | 3 VA | 11.30 | 10.74 | 10.17 | 9.61 |
| W88AHPX36 | 3PDT | 115 VAC | ........ | 3 VA | 13.43 | 12.76 | 12.09 | 11.42 |
| W88HPX32 | DPDT | 6 VDC | 25 | 1.5 W | 10.77 | 10.23 | 9.69 | 9.15 |
| W88HPX33 | DPDT | 12 VDC | 100 | 1.5 W | 10.77 | 10.23 | 9.69 | 9.15 |
| W88HPX34 | DPDT | 24 VDC | 400 | 1.5 W | 10.77 | 10.23 | 9.69 | 9.15 |
| W88HPX35 | DPDT | 110 VDC | 8000 | 1.5 W | 11.92 | 11.32 | 10.73 | 10.13 |
| W88HPX51 | 3PDT | 24 VDC | 400 | 1.5 W | 12.88 | 12.24 | 11.59 | 10.95 |

## CLASS 88CP ENCLOSED, PLUG-IN 10-AMP, AC-DC RELAYS

Three-way protection against relay down time: 1) High reliability Class 88 relay described above; 2) Polycarbonate dust cover; 3) Plug-in mounting for quick change. "See-thru" enclosed design has 8-pin octal plug on SPDT and DPDT types; 11-pin plug on 3PDT types. Silver alloy contacts rated 10 amps. Size, 1⅜" x 1⅜" x 2⅛" h., above socket. 3 oz.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| W88ACPX1 | SPDT | 6 VAC | ........ | 3 VA | $6.17 | $5.86 | $5.55 | $5.24 |
| W88ACPX2 | SPDT | 12 VAC | ........ | 3 VA | 6.17 | 5.86 | 5.55 | 5.24 |
| W88ACPX3 | SPDT | 24 VAC | ........ | 3 VA | 6.17 | 5.86 | 5.55 | 5.24 |
| W88ACPX4 | SPDT | 115 VAC | ........ | 3 VA | 6.17 | 5.86 | 5.55 | 5.24 |
| W88ACPX76 | SPDT | 230 VAC | ........ | 3 VA | 6.94 | 6.59 | 6.25 | 5.90 |
| W88ACPX5 | DPDT | 6 VAC | ........ | 3 VA | 6.91 | 6.56 | 6.22 | 5.87 |
| W88ACPX6 | DPDT | 12 VAC | ........ | 3 VA | 6.91 | 6.56 | 6.22 | 5.87 |
| W88ACPX7 | DPDT | 24 VAC | ........ | 3 VA | 6.91 | 6.56 | 6.22 | 5.87 |
| W88ACPX8 | DPDT | 115 VAC | ........ | 3 VA | 6.91 | 6.56 | 6.22 | 5.87 |
| W88ACPX37 | DPDT | 230 VAC | ........ | 3 VA | 7.69 | 7.31 | 6.92 | 6.54 |
| W88ACPX9 | 3PDT | 6 VAC | ........ | 3 VA | 8.59 | 8.16 | 7.73 | 7.30 |
| W88ACPX10 | 3PDT | 12 VAC | ........ | 3 VA | 8.59 | 8.16 | 7.73 | 7.30 |
| W88ACPX11 | 3PDT | 24 VAC | ........ | 3 VA | 8.59 | 8.16 | 7.73 | 7.30 |
| W88ACPX12 | 3PDT | 115 VAC | ........ | 3 VA | 8.59 | 8.16 | 7.73 | 7.30 |
| W88ACPX39 | 3PDT | 230 VAC | ........ | 3 VA | 9.36 | 8.89 | 8.42 | 7.96 |
| W88CPX1 | SPDT | 6 VDC | 25 | 1.5 W | 5.94 | 5.64 | 5.35 | 5.05 |
| W88CPX2 | SPDT | 12 VDC | 100 | 1.5 W | 5.94 | 5.64 | 5.35 | 5.05 |
| W88CPX3 | SPDT | 24 VDC | 400 | 1.5 W | 5.94 | 5.64 | 5.35 | 5.05 |
| W88CPX4 | SPDT | 110 VDC | 8000 | 1.5 W | 6.55 | 6.33 | 5.99 | 5.66 |
| W88CPX5 | DPDT | 6 VDC | 25 | 1.5 W | 6.55 | 6.33 | 5.99 | 5.66 |
| W88CPX6 | DPDT | 12 VDC | 100 | 1.5 W | 6.55 | 6.33 | 5.99 | 5.66 |
| W88CPX7 | DPDT | 24 VDC | 400 | 1.5 W | 6.55 | 6.33 | 5.99 | 5.66 |
| W88CPX8 | DPDT | 110 VDC | 8000 | 1.5 W | 7.16 | 6.80 | 6.44 | 6.09 |
| W88CPX9 | 3PDT | 6 VDC | 25 | 1.5 W | 8.12 | 7.71 | 7.31 | 6.90 |
| W88CPX10 | 3PDT | 12 VDC | 100 | 1.5 W | 8.12 | 7.71 | 7.31 | 6.90 |
| W88CPX11 | 3PDT | 24 VDC | 400 | 1.5 W | 8.12 | 7.71 | 7.31 | 6.90 |
| W88CPX12 | 3PDT | 110 VDC | 8000 | 1.5 W | 8.75 | 8.31 | 7.88 | 7.44 |
| W88CPX13* | SPDT | 7.2 mA | 2500 | 125 mW | 6.49 | 6.17 | 5.84 | 5.52 |
| W88CPX14* | SPDT | 5.0 mA | 5000 | 125 mW | 6.60 | 6.27 | 5.94 | 5.61 |
| W88CPX15* | SPDT | 3.6 mA | 10,000 | 125 mW | 7.04 | 6.69 | 6.34 | 5.98 |
| W88CPX16* | DPDT | 10 mA | 2500 | 250 mW | 6.93 | 6.58 | 6.24 | 5.90 |
| W88CPX17* | DPDT | 7.2 mA | 5000 | 250 mW | 7.04 | 6.69 | 6.34 | 5.98 |
| W88CPX18* | DPDT | 5 mA | 10,000 | 250 mW | 7.48 | 7.11 | 6.73 | 6.36 |
| W88CPX19* | 3PDT | 12.3 mA | 2500 | 375 mW | 8.47 | 8.05 | 7.62 | 7.20 |
| W88CPX20* | 3PDT | 8.7 mA | 5000 | 375 mW | 8.58 | 8.15 | 7.72 | 7.29 |
| W88CPX21* | 3PDT | 6.1 mA | 10,000 | 375 mW | 9.02 | 8.57 | 8.12 | 7.67 |

*DC current-actuated for plate circuit operation; all others voltage-actuated. †Voltage shown is nominal. Pull-in at 80% of nominal or less for DC relays; 85% of nominal for AC relays at 25° C. Resistance shown is ±10% at 25° C.

**★LARGER QUANTITY PRICES AVAILABLE ON REQUEST**

# *Magnecraft*® GENERAL PURPOSE RELAYS

## CLASS 88KD LOW-COST AC AND DC OPERATED 50-AMP POWER RELAYS

eral purpose relays offer heavy duty silver alloy, gold flashed contacts for power ching. Contacts are SPST-NO, Form X, double-make; rated 50 amps at 115 VAC 8 VDC resistive. Stationary contacts assembled to glass melamine insulated ter- al board. Movable contacts and armature assembly on molded phenolic blade for llent wipe, high reliability. Terminals can be soldered or accept AMP Faston 250 es receptacles on contacts, 110 Series on coil. One 6-32 mtg. hole, locating boss. , 1¹⁵⁄₁₆" lg. x 1½" h. x 1¹⁄₁₆" w., overall. Wt., 3 oz.

| gnecraft umber | Contacts | Coil Data* | | Nom. Power | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|---|
| | | Volts | Ohms | | 1-9 | 10-24 | 25-49 | 50-99* |
| KADX-1 | SPST-NO | 24 VAC | ...... | 3 VA | $5.30 | $5.04 | $4.77 | $4.51 |
| KADX-2 | SPST-NO | 115 VAC | ...... | 3 VA | 5.30 | 5.04 | 4.77 | 4.51 |
| KADX-3 | SPST-NO | 230 VAC | ...... | 3 VA | 5.68 | 5.40 | 5.11 | 4.83 |
| KDX-1 | SPST-NO | 6 VDC | 25 | 1.5 W | 4.70 | 4.47 | 4.23 | 4.00 |
| KDX-2 | SPST-NO | 12 VDC | 100 | 1.5 W | 4.70 | 4.47 | 4.23 | 4.00 |
| KDX-3 | SPST-NO | 24 VDC | 400 | 1.5 W | 4.70 | 4.47 | 4.23 | 4.00 |
| KDX-4 | SPST-NO | 110 VDC | 8000 | 1.5 W | 5.58 | 5.30 | 5.02 | 4.74 |

## LASS 88L AC AND DC OPERATED 10-AMP LATCH-IN RELAYS

Class 88 relays with interlocking latch-in levers mounted on a common base. Each ature latches when pulled in. Energizing one armature releases (resets) the other. h relay is complete with independent operating coil. Contacts silver alloy rated 10 s. Relay coils designed for intermittent duty. Size, 3" lg. x 1¾" w. x 1¹⁵⁄₁₆" h., max. ght, 6½ oz.

| gnecraft umber | Con-tacts | Volts or Current* | Resis., Ohms* | Nom. Power | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | 1-9 | 10-24 | 25-49 | 50-99* |
| ALX-2 | 4PDT | 6 VAC | ....... | 6 VA | $11.98 | $11.38 | $10.78 | $10.18 |
| ALX-3 | 4PDT | 24 VAC | ....... | 6 VA | 11.98 | 11.38 | 10.78 | 10.18 |
| ALX-4 | 4PDT | 115 VAC | ....... | 6 VA | 11.98 | 11.38 | 10.78 | 10.18 |
| ALX-5 | 6PDT | 6 VAC | ....... | 6 VA | 14.46 | 13.74 | 13.01 | 12.29 |
| ALX-6 | 6PDT | 24 VAC | ....... | 6 VA | 14.46 | 13.74 | 13.01 | 12.29 |
| ALX-7 | 6PDT | 115 VAC | ....... | 6 VA | 14.46 | 13.74 | 13.01 | 12.29 |
| LX-1 | 4PDT | 6 VDC | 12 | 3 W | 10.91 | 10.36 | 9.82 | 9.27 |
| LX-2 | 4PDT | 12 VDC | 50 | 3 W | 10.91 | 10.36 | 9.82 | 9.27 |
| LX-3 | 4PDT | 24 VDC | 200 | 3 W | 10.91 | 10.36 | 9.82 | 9.27 |
| LX-4 | 4PDT | 110 VDC | 4000 | 3 W | 12.26 | 11.65 | 11.03 | 10.42 |
| LX-5 | 6PDT | 6 VDC | 12 | 3 W | 13.28 | 12.61 | 11.95 | 11.29 |
| LX-6 | 6PDT | 12 VDC | 50 | 3 W | 13.28 | 12.61 | 11.95 | 11.29 |
| LX-7 | 6PDT | 24 VDC | 200 | 3 W | 13.28 | 12.61 | 11.95 | 11.29 |
| LX-8 | 6PDT | 110 VDC | 4000 | 3 W | 14.63 | 13.90 | 13.17 | 12.44 |

## CLASS 88LCP AC AND DC OPERATED 10-AMP ENCLOSED LATCHING RELAYS

e operation and features as Class 88L above, but with enclosed dust cover plug-in truction. Clear, crackproof plastic case with molded 20-pin plug. 4PDT contacts d 10 amps (2 Form "C" plus 2 Form "C"). Size, 2⅜" x 1¾" x 3⁹⁄₁₆" h. (not including ). Mates with Amphenol 77-MIP-20 socket or equivalent. Weight, 8 oz.

| gnecraft Number | Con-tacts | Volts or Current* | Resis., Ohms* | Nom. Power | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | 1-9 | 10-24 | 25-49 | 50-99* |
| ALCPX-10 | 4PDT | 6 VAC | ........ | ......... | $17.26 | $16.39 | $15.53 | $14.67 |
| ALCPX-11 | 4PDT | 24 VAC | ........ | ......... | 17.26 | 16.39 | 15.53 | 14.67 |
| ALCPX-12 | 4PDT | 115 VAC | ........ | ......... | 17.26 | 16.39 | 15.53 | 14.67 |
| LCPX-9 | 4PDT | 6 VDC | 12 | ......... | 15.99 | 15.19 | 14.39 | 13.59 |
| LCPX-10 | 4PDT | 12 VDC | 50 | ......... | 15.99 | 15.19 | 14.39 | 13.59 |
| LCPX-11 | 4PDT | 24 VDC | 200 | ......... | 15.99 | 15.19 | 14.39 | 13.59 |
| LCPX-12 | 4PDT | 110 VDC | 4000 | ......... | 16.26 | 15.45 | 14.63 | 13.82 |

## CLASS 88R SMALL AC AND DC OPERATED 15-AMP POWER RELAYS

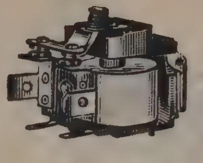
a quality, high reliability relay; 15-amp heavy-duty silver alloy contacts. Designed ndustrial control applications. Tinned solder terminals. One 6-32 tapped mtg. hole locating boss. Size, 1⅞" lg. x 1⁵⁄₁₆" w. x 1⁵⁄₃₂" h. Weight, 3 oz.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ARX2 | DPDT | 12 VAC | ........ | 3 VA | $6.87 | $6.58 | $6.18 | $5.26 |
| ARX3 | DPDT | 24 VAC | ........ | 3 VA | 6.87 | 6.58 | 6.18 | 5.26 |
| ARX4 | DPDT | 115 VAC | ........ | 3 VA | 7.05 | 6.70 | 6.35 | 5.99 |
| RX2 | DPDT | 12 VDC | 100 | 1.5 W | 6.80 | 6.46 | 6.12 | 5.78 |
| RX3 | DPDT | 24 VDC | 400 | 1.5 W | 6.80 | 6.46 | 6.12 | 5.78 |

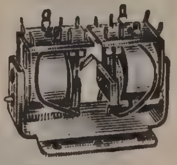
## CLASS 88K LOW COST AC AND DC OPERATED 15-AMP POWER RELAYS

vy duty, silver cadmium oxide SPDT contacts are gold flashed and rated 15 amps at VAC or 28 VDC resistive for power switching at low cost. Contacts assembled to melamine insulated terminal board for high dielectric strength. Flexible moving arm s excellent contact wipe. Terminals can be solder connected or will accept AMP on (or equivalent) 250 Series receptacles on contacts, 110 Series on coil. Supplied on nting base with base/chassis insulator. Contacts are 1 Form C, standard. Size, lg. x 1³⁄₁₆" w. x 1¼" h., overall.

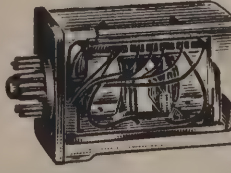
| gnecraft umber | Contacts | Coil Data* | | Nom. Power | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|---|
| | | Volts | Ohms | | 1-9 | 10-24 | 25-49 | 50-99* |
| AKX-1 | SPDT | 24 VAC | ....... | 3 VA | $5.12 | $4.86 | $4.61 | $4.35 |
| AKX-2 | SPDT | 115 VAC | ....... | 3 VA | 5.12 | 4.86 | 4.61 | 4.35 |
| AKX-3 | SPDT | 230 VAC | ....... | 3 VA | 6.20 | 5.89 | 5.58 | 5.27 |
| KX-1 | SPDT | 6 VDC | 25 | 1.5 W | 4.90 | 4.66 | 4.41 | 4.17 |
| KX-2 | SPDT | 12 VDC | 100 | 1.5 W | 4.90 | 4.66 | 4.41 | 4.17 |
| KX-3 | SPDT | 24 VDC | 400 | 1.5 W | 4.90 | 4.66 | 4.41 | 4.17 |
| KX-4 | SPDT | 110 VDC | 8000 | 1.5 W | 5.68 | 5.40 | 5.11 | 4.83 |



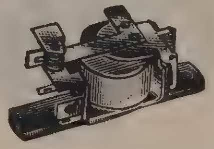
**88KD SPST NO-DM**



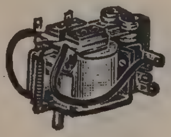
**88L 4PDT, 6PDT**



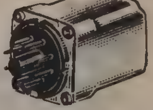
**88LCP 4PDT**



**88K SPDT**



**88R DPDT**



**CP2 Enclosure**

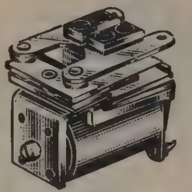
## CLASS CP2 AND CP4 PLUG-IN RELAY ENCLOSURES

Tough see-through dust cover enclosures of crackproof polycarbonate resin with high impact strength and dimensionally stable characteristics. Available in two sizes, with 8-pin or 11-pin plugs. Plug keyways oriented toward side of enclosure. Suitable for electronic assemblies. Mates with Amphenol 77-MIP-8 or -11 socket or equiv. **Size:** CP2, 1⅜" sq. x 2⅛" above socket; CP4, 1¾" x 2⅜" x 3½" above socket. Weight: CP2, 2 oz.; CP4, 4 oz.

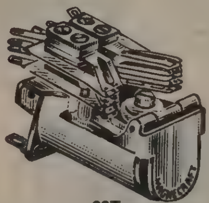
| Magne-craft No. | Pins | Net Each, Lots of* | | | |
|---|---|---|---|---|---|
| | | 1-24 | 25-49 | 50-99 | 100-249 |
| WCP2X-1 | 8 | $0.62 | $0.59 | $0.56 | $0.47 |
| WCP2X-2 | 11 | .79 | .75 | .71 | .59 |
| WCP4X-1 | 8 | 1.50 | 1.43 | 1.35 | 1.13 |
| WCP4X-2 | 11 | 1.97 | 1.87 | 1.77 | 1.48 |

**IL DATA:** Voltage shown is nominal. Pull-in at 80% of nominal or less for DC relays; 85% of nominal or less for AC relays at . Resistance shown is ±10% at 25° C. ★**Larger quantity prices available on request.**

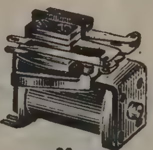
# *Magnecraft*® TELEPHONE TYPE RELAYS



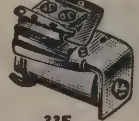
**11D**
**SPST-NO-DM**



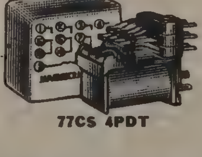
**22T**
**4PDT, 6PDT**



**33**
**DPDT, 4PDT**



**33F**
**SPDT**



**77CS 4PDT**

**Solder** **PC**
**77CS Sockets**

***COIL DATA**
Voltage specified relays pull in at 80% of nominal or less for DC relays and 85% of nominal or less for AC relays, at 25° C. Resistance values ± 10% at 25° C.

## CLASS 11D MINIATURE 50-AMP DC-OPERATED POWER RELAY

Miniature telephone type relays with heavy brass contact arms and 50-amp silver all
SPST-NO-DM contacts. Offer high reliability, accuracy and long life. Solder termina
spaced for easy wiring. Four 4-40 tapped mounting holes on ⅜" x 7/16" centers. Si
1⅝" x 15/16" x 17/16". Weight, 3 oz.

| Magnecraft Number | Contacts | Coil Data* |  | Nom. Power | Net Each, Lots of |  |  |  |
|---|---|---|---|---|---|---|---|---|
|  |  | Volts | Ohms |  | 1-9 | 10-24 | 25-49 | 50-9 |
| W11DX-39 | SPST-NO-DM | 12 VDC | 100 | 1.5 W | $5.45 | $4.91 | $4.63 | $4.3 |
| W11DX-40 | SPST-NO-DM | 24 VDC | 400 | 1.5 W | 5.45 | 4.91 | 4.63 | 4.3 |

## CLASS 22T 4-AMP TWIN CONTACT DC-OPERATED RELAYS

Miniature long form relay with accuracy, reliability and long life equal to, or sometim
superior to, larger relays. Unique pin-type armature hinge of heavy duty design a
precision construction assures stabilized adjustment through millions of operatio
Twin palladium contacts with long, flexible bifurcated contact springs assures highe
reliability. Contacts rated 4 amps. All mounting and wiring at heel end. Tinned sold
terminals with easy-to-wire spacing. Two 6-32 mounting holes on ¾" centers. Si
21/16" x 13/32" x 1¾" maximum. Weight, 5 oz.

### DC VOLTAGE ACTUATED RELAYS

| Magnecraft Number | Con-tacts | Volts or Current* | Coil Ohms* | Nom. Power | Net Each, Lots of |  |  |  |
|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  | 1-9 | 10-24 | 25-49 | 50-9 |
| W22TX-267 | 4PDT | 6 VDC | 20 | 2.0 W | $ 8.44 | $ 7.60 | $ 7.17 | $ 6.7 |
| W22TX-268 | 4PDT | 12 VDC | 80 | 2.0 W | 8.44 | 7.60 | 7.17 | 6.7 |
| W22TX-269 | 4PDT | 24 VDC | 375 | 1.5 W | 8.49 | 7.64 | 7.22 | 6.7 |
| W22TX-270 | 4PDT | 110 VDC | 8000 | 1.5 W | 9.97 | 8.97 | 8.47 | 7.9 |
| W22TX-272 | 6PDT | 12 VDC | 80 | 2.0 W | 11.87 | 10.68 | 10.09 | 9.5 |
| W22TX-273 | 6PDT | 24 VDC | 375 | 1.5 W | 11.92 | 10.73 | 10.13 | 9.5 |
| W22TX-274 | 6PDT | 110 VDC | 8000 | 1.5 W | 12.91 | 11.62 | 10.97 | 10.3 |
| **DC CURRENT ACTUATED RELAYS FOR PLATE CIRCUIT OPERATION** |  |  |  |  |  |  |  |  |
| W22TX-275 | DPDT | 4.5 mA | 10,000 | 200 mW | $6.93 | $6.24 | $5.89 | $5.5 |

## CLASS 33 SUBMINIATURE 3-AMP DC-OPERATED RELAYS

Subminiature telephone type relays, featuring fast operation with high shock resistan
and vibration resistance. Made for long life, reliability and accuracy in a wide range
small space requirements. Extensively used for aircraft, computer and mobile applicatio
where small size, light weight and resistance to shock and vibration are essenti
Palladium contacts rated 3 amps. Four 4-40 tapped mounting holes on ⅜" x ⅜" cente
Size, 113/32" x 11/16" x 17/16" maximum. Weight, 1 oz.

| Magnecraft Number | Con-tacts | Coil Data* |  | Nom. Power | Net Each, Lots of |  |  |  |
|---|---|---|---|---|---|---|---|---|
|  |  | Volts | Ohms |  | 1-9 | 10-24 | 25-49 | 50-9 |
| W33X-237 | DPDT | 6 VDC | 17 | 2.0 W | $4.87 | $4.38 | $4.14 | $3.9 |
| W33X-238 | DPDT | 12 VDC | 75 | 2.0 W | 4.87 | 4.38 | 4.14 | 3.9 |
| W33X-239 | DPDT | 24 VDC | 280 | 2.0 W | 4.92 | 4.43 | 4.18 | 3.9 |
| W33X-240 | DPDT | 110 VDC | 6500 | 2.0 W | 5.50 | 4.95 | 4.68 | 4.4 |
| W33X-241 | 4PDT | 6 VDC | 17 | 2.0 W | 6.58 | 5.92 | 5.59 | 5.2 |
| W33X-242 | 4PDT | 12 VDC | 75 | 2.0 W | 6.58 | 5.92 | 5.59 | 5.2 |
| W33X-243 | 4PDT | 24 VDC | 280 | 2.0 W | 6.63 | 5.97 | 5.64 | 5.3 |
| W33X-244 | 4PDT | 110 VDC | 6500 | 2.0 W | 7.23 | 6.51 | 6.15 | 5.7 |

## CLASS 33F SUBMINIATURE RF SWITCHING DC-OPERATED RELAY

Class 33 subminiature telephone type relay designed especially to afford lowest possi
capacitance between springs and to minimize losses at high frequencies. Suitable f
antenna change-over switching. Contact springs have ceramic insulation. Palladiu
contacts rated 2 amps. Tinned solder terminals. Four 4-40 tapped mtg. holes on
sq. centers. Size, 113/32" lg. x 11/16" w. x 1¼" h. Weight, 1 oz.

| Magnecraft Number | Con-tacts | Coil Data* |  | Nom. Power | Net Each, Lots of |  |  |  |
|---|---|---|---|---|---|---|---|---|
|  |  | Volts | Ohms |  | 1-9 | 10-24 | 25-49 | 50-9 |
| W33FX20 | SPDT | 6 VDC | 28 | 1.5 W | $4.06 | $3.65 | $3.45 | $3.2 |
| W33FX21 | SPDT | 12 VDC | 100 | 1.5 W | 4.11 | 3.70 | 3.49 | 3.2 |
| W33FX22 | SPDT | 24 VDC | 500 | 1.5 W | 4.16 | 3.74 | 3.54 | 3.3 |
| W33FX23 | SPDT | 110 VDC | 6500 | 1.5 W | 4.69 | 4.22 | 3.99 | 3.7 |

## CLASS 77CS LOW COST, 4PDT
## TELEPHONE TYPE RELAYS AND SOCKETS

Miniature 5-amp relay provides greater contact pressure without increasing coil operati
power. No internal wiring, solder connections or pigtails. Precision hinge-pin armatu
bearings have oversize surfaces for lowest friction and maximum contact effectivene
gives stabilized adjustment over long life. Molded, insulated snap-on dust cover prote
against shorts. Molded nylon bobbin and rugged coil terminal inserts. High dielect
strength essentially unaffected by humidity or temperature change. **Contacts:** 4PD
(4 Form C) rated 5 amps max. at 28 VDC or 115 VAC resistive. Material is silver all
gold flashed. **Dielectric Strength:** 750 VAC rms standard. **Size:** 17/64" w. x 55/64" d. x 19/32"
excluding solder terminals. **Mounting:** Plug-in or chassis mounted.

| Magnecraft Number | Con-tacts | Coil Data* |  | Nom. Power | Net Each, Lots of |  |  |  |
|---|---|---|---|---|---|---|---|---|
|  |  | Nom. Volts | Ohms |  | 1-9 | 10-24 | 25-49 | 50-9 |
| W77CSX-1 | 4PDT | 6 VDC | 40 | 1.0 W | $5.30 | $5.04 | $4.77 | $4.5 |
| W77CSX-2 | 4PDT | 12 VDC | 160 | 1.0 W | 5.30 | 5.04 | 4.77 | 4.5 |
| W77CSX-3 | 4PDT | 24 VDC | 600 | 1.0 W | 5.40 | 5.13 | 4.86 | 4.5 |
| W77CSX-4 | 4PDT | 48 VDC | 2500 | 1.0 W | 5.55 | 5.27 | 5.00 | 4.7 |
| W77CSX-5 | 4PDT | 110 VDC | 10,000 | 1.0 W | 5.97 | 5.67 | 5.37 | 5.0 |
| W77ACSX-1 | 4PDT | 115 VAC | .......... | 3 VA | 5.96 | 5.66 | 5.36 | 5.0 |
| 70-161-1 | Solder Terminal Socket/Retainer |  |  |  | .58 | .52 | .49 | .4 |
| 70-161-3 | Printed Circuit Socket |  |  |  | .58 | .52 | .49 | .4 |

## CLASS 77PC DIRECT PLUG-IN PRINTED CIRCUIT TYPE

Same physical and electrical characteristics as above. No socket necessary.

| Magnecraft Number | Con-tacts | Coil Data* |  | Nom. Power | Net Each, Lots of |  |  |  |
|---|---|---|---|---|---|---|---|---|
|  |  | Volts | Ohms |  | 1-9 | 10-24 | 25-49 | 50-9 |
| W77PCX12 | 4PDT | 6 VDC | 40 | 1.0 W | $5.60 | $5.32 | $5.04 | $4.7 |
| W77PCX13 | 4PDT | 12 VDC | 160 | 1.0 W | 5.60 | 5.32 | 5.04 | 4.7 |
| W77PCX14 | 4PDT | 24 VDC | 600 | 1.0 W | 5.69 | 5.41 | 5.12 | 4.8 |
| W77PCX15 | 4PDT | 48 VDC | 2500 | 1.0 W | 5.84 | 5.55 | 5.26 | 4.9 |
| W77PCX16 | 4PDT | 110 VDC | 10,000 | 1.0 W | 6.25 | 5.93 | 5.63 | 5.3 |

★LARGER QUANTITY PRICES AVAILABLE ON REQUEST

# *Magnecraft*® ENCLOSED, SEALED RELAYS

## ASS 11HS HERMETICALLY-SEALED 5-AMP DC-OPERATED RELAYS

ass 11 miniature relay hermetically sealed; high compression, glass insulated solder minal header. Silver alloy contacts rated 5 amps. Three 6-32 NC-2 threaded mtg. studs. eight, 6 oz. **4PDT Types:** In 40-102 enclosure, 1 5/8″ x 1 7/16″ x 2 1/16″ h. With 14-pin ternal header. Mtg. centers, 15/16″ x 1 3/16″. **6PDT Types:** In 40-188 enclosure, 1 15/64″ x 1 47/64″ x ″ h. With 20-pin terminal header. Mtg. centers, 1/2″ x 1 13/32″.

| agnecraft Number | Contacts | Volts or Current* | Resis., Ohms* | Nom. Power | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99★ |
|---|---|---|---|---|---|---|---|---|
| 11HSX321 | 4PDT | 6 VDC | 25 | 1.5 W | $15.92 | $14.33 | $13.53 | $12.74 |
| 11HSX322 | 4PDT | 12 VDC | 100 | 1.5 W | 15.97 | 14.37 | 13.57 | 12.78 |
| 11HSX323 | 4PDT | 24 VDC | 400 | 1.5 W | 15.97 | 14.37 | 13.57 | 12.78 |
| 11HSX327 | 6PDT | 12 VDC | 56 | 2.5 W | 19.91 | 17.92 | 16.92 | 15.93 |
| 11HSX328 | 6PDT | 24 VDC | 280 | 2.5 W | 19.96 | 17.96 | 16.97 | 15.97 |

## ASS 22CP PLUG-IN, REMOVABLE COVER 5-AMP AC-DC RELAYS

ass 22 relay with removable dust cover housing. Standard 8-, 11-, or 20-pin keyed ug-in installation. Internal bracket supports cover; one screw holds cover in place. ver alloy contacts rated 5 amps. **6PDT Types:** With hold-down bracket to permit ounting in any position; has two 6-32 mtg. holes for No. 6 screws on 2 7/16″ centers. With -pin plug. Size, 1 9/16″ x 2 11/16″ x 3 13/32″ h. Weight, 8 oz. **DPDT and 3PDT Types:** DPDT pe shave 8-pin plug; 3PDT types have 11-pin plug. Size, 1 7/16″ x 1 41/64″ x 3 3/32″ h. Wt., 6 oz.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 22ACPX60 | DPDT | 115 VAC | ....... | 5 VA | $10.23 | $ 9.21 | $ 8.70 | $ 8.18 |
| 22CPX49 | DPDT | 12 VDC | 80 | 2.0 W | 9.85 | 8.87 | 8.37 | 7.88 |
| 22CPX50 | DPDT | 24 VDC | 375 | 1.5 W | 9.90 | 8.91 | 8.42 | 7.92 |
| 22CPX51 | DPDT | 110 VDC | 8000 | 1.5 W | 11.14 | 10.03 | 9.47 | 8.91 |
| 22CPX54 | 3PDT | 24 VDC | 375 | 1.5 W | 11.92 | 10.73 | 10.13 | 9.54 |
| 22CPX56† | DPDT | 4.5 mA | 10000 | 200 mW | 11.14 | 10.03 | 9.47 | 8.91 |
| 22CPX61 | 6PDT | 6 VDC | 12 | 3.0 W | 16.72 | 15.05 | 14.21 | 13.38 |
| 22CPX62 | 6PDT | 12 VDC | 50 | 3.0 W | 16.72 | 15.05 | 14.21 | 13.38 |
| 22CPX63 | 6PDT | 24 VDC | 225 | 3.0 W | 16.77 | 15.09 | 14.25 | 13.42 |
| 22CPX64 | 6PDT | 110 VDC | 5000 | 3.0 W | 17.35 | 15.62 | 14.75 | 13.88 |

C current actuated for plate circuit operation; all others voltage actuated.

## CLASS 22HS HERMETICALLY-SEALED 5-AMP AC-DC RELAYS

ass 22 relay in 40-158 hermetically-sealed enclosure with 14-pin, glass insulated solder minal header. Silver alloy contacts rated 5 amps. Three 6-32 threaded mtg. studs on ″ x 1 3/16″ centers. Size, 1 1/4″ x 1 5/8″ x 2 11/16″ h. Weight, 7 oz.

| agnecraft Number | Contacts | Volts or Current* | Resis., Ohms* | Nom. Power | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99★ |
|---|---|---|---|---|---|---|---|---|
| 22AHSX32 | 4PDT | 115 VAC | ........ | 5 VA | $17.30 | $15.57 | $14.71 | $13.84 |
| 22HSX144 | 4PDT | 6 VDC | 20 | 2.0 W | 17.00 | 15.30 | 14.45 | 13.60 |
| 22HSX145 | 4PDT | 12 VDC | 80 | 2.0 W | 17.00 | 15.30 | 14.45 | 13.60 |
| 22HSX146 | 4PDT | 24 VDC | 375 | 1.5 W | 17.05 | 15.35 | 14.49 | 13.64 |

## ASS 33HS HERMETICALLY-SEALED 5-AMP DC-OPERATED RELAYS

ass 33 miniature relay hermetically sealed in 40-157 enclosure; high compression glass ulated solder terminal header: 8-pin for DPDT types; 14-pin, 4PDT types. Silver alloy ntacts rated 5 amps. Three 4-40 (NC-2) threaded mtg. studs on 1/2″ x 1″ centers. Size, ″ d. x 1 1/32″ lg. x 1 41/64″ h. Weight, 3 oz.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 33HSX177 | DPDT | 6 VDC | 17 | 2.0 W | $13.21 | $11.89 | $11.23 | $10.57 |
| 33HSX178 | DPDT | 12 VDC | 75 | 2.0 W | 13.21 | 11.89 | 11.23 | 10.57 |
| 33HSX179 | DPDT | 24 VDC | 280 | 2.0 W | 13.26 | 11.93 | 11.27 | 10.61 |
| 33HSX180 | DPDT | 110 VDC | 6500 | 2.0 W | 13.87 | 12.48 | 11.79 | 11.10 |
| 33HSX181 | 4PDT | 6 VDC | 17 | 2.0 W | 16.65 | 14.99 | 14.15 | 13.32 |
| 33HSX182 | 4PDT | 12 VDC | 75 | 2.0 W | 16.65 | 14.99 | 14.15 | 13.32 |
| 33HSX183 | 4PDT | 24 VDC | 280 | 2.0 W | 16.70 | 15.03 | 14.20 | 13.36 |
| 33HSX184 | 4PDT | 110 VDC | 6500 | 2.0 W | 17.36 | 15.62 | 14.76 | 13.89 |

## CLASS 44 MICRO-MINIATURE ROTARY RELAYS

ovides high reliability in crystal can size relay. Frame and header assembly is rugged dge construction; resists distortion from shock, vibration or temperature; meets litary specifications. Balanced armature minimizes effects of gravity, shock and vibran. Oversize hinge design has instrument type bearings at both ends; minimizes friction increased sensitivity and contact pressure. High temperature insulation. Hermetically aled in inert gas. DPDT contacts rated 2 amps at 28 VDC or 115 VAC, non-inductive. erating time, 5 msec., max. with nom. voltage; release time, 5 msec., max. Size, .875″ x 7″ x .359″. Choice of four enclosure styles.

**pe 40-227 Plug-In Header Enclosure.**

| agnecraft Number | Contacts | Volts or Current* | Resis., Ohms* | Nom. Power | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99★ |
|---|---|---|---|---|---|---|---|---|
| 4HPX34 | DPDT | 6.5 VDC | 34 | 1.2 W | $17.60 | $15.84 | $14.96 | $14.08 |
| 4HPX35 | DPDT | 11 VDC | 92 | 1.2 W | 17.60 | 15.84 | 14.96 | 14.08 |
| 4HPX36 | DPDT | 26.5 VDC | 552 | 1.2 W | 17.60 | 15.84 | 14.96 | 14.08 |
| 4HPX37 | DPDT | 38.5 VDC | 1278 | 1.2 W | 18.00 | 16.20 | 15.30 | 14.40 |
| 4HPX38 | DPDT | 76 VDC | 5000 | 1.2 W | 19.90 | 17.91 | 16.91 | 15.92 |

**pe 40-222 Solder Terminal Enclosure.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 4HSX104 | DPDT | 11 VDC | 92 | 1.2 W | $17.60 | $15.84 | $14.96 | $14.08 |

**pe 40-224 Solder Terminal Enclosure with Side Bracket.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 4HSX108 | DPDT | 6.5 VDC | 34 | 1.2 W | $17.95 | $16.15 | $15.26 | $14.36 |
| 4HSX109 | DPDT | 11 VDC | 92 | 1.2 W | 17.95 | 16.15 | 15.26 | 14.36 |
| 4HSX110 | DPDT | 26.5 VDC | 552 | 1.2 W | 17.95 | 16.15 | 15.26 | 14.36 |

**pe 40-234 Solder Terminal Enclosure with Flange Bracket.**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 4HSX113 | DPDT | 6.5 VDC | 34 | 1.2 W | $17.95 | $16.15 | $15.26 | $14.36 |
| 4HSX114 | DPDT | 11 VDC | 92 | 1.2 W | 17.95 | 16.15 | 15.26 | 14.36 |
| 4HSX115 | DPDT | 26.5 VDC | 552 | 1.2 W | 17.95 | 16.15 | 15.26 | 14.36 |

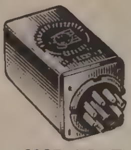
### *COIL DATA

rrent shown is pull-in at specified value or less. Voltage shown is nominal. Pull-in at % of nominal or less for DC relays; 85% of nominal for AC relays at 25° C. Resistance wn is ±10% at 25° C.

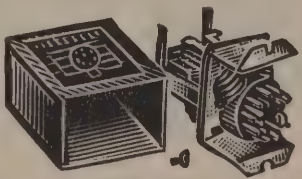
**★LARGER QUANTITY PRICES AVAILABLE ON REQUEST**

11HS, 4PDT

11HS, 6PDT



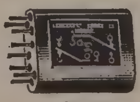
22CP, DPDT and 3PDT



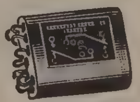
22CP, 6PDT

22HS

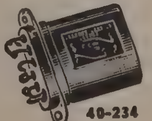
33HS



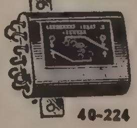
40-227



40-222



40-234



40-224

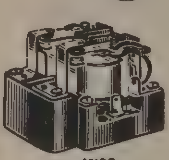
# Magnecraft® SPECIAL PURPOSE RELAYS

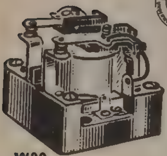
## CLASS 99 HEAVY DUTY POWER RELAYS

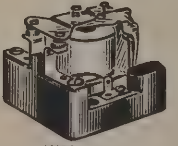
### UL LISTED FOR HEAVY DUTY INDUSTRIAL CONTROL

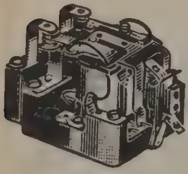
Relays illustrated with UL emblem are listed by Underwriters Laboratories under Motor Controller, Magnetic, Across The Line Starter: Open (File No. E43641). The only exception is W99AX-7, DPDT, 440 VAC relay, indicated by †.

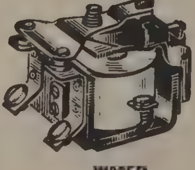
W99
SPDT

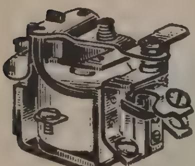

W99
DPDT


W99
DPST-NO


W99
SPST-NO-DM


W99 with
Aux. Cont.


W99SD
SPST-NO-DM


W99S
SPDT

Rugged, precision-built hinge pin armature bearings for extra long life. Lowest friction and maximum contact effectiveness. Dimensionally interchangeable with other power relays of the clapper type. Heavy duty plastic base and molded contact barrier mounted to armature for high insulation resistance. Positive contact wiping action. Heavy duty screw terminals. Molded coil bobbin. **Contacts:** Silver alloy, 5/16″ dia., gold flashed. Choice of SPDT, DPDT, DPST-NO and SPST-NO double break. **Size:** SPDT 25-amp, 2 3/16″ sq. x 2½″ h.; DPDT 25-amp, 3 3/16″ w. x 2½″ d. x 2⅜″ h.; DPST-NO 25-amp, 2½″ sq. x 2⅜″ h.; SPST-NO-DM 50-amp, 2½″ sq. x 2 3/16″ h.

| Magnecraft Number | Contacts | | Coil Data* | | Net Ea., 1-9* |
|---|---|---|---|---|---|
| | Configuration | Rating | Volts | Ohms | |
| W99AX-1 | SPDT | 25 A | 24 VAC | ........ | $5.66 |
| W99AX-2 | SPDT | 25 A | 115 VAC | ........ | 5.68 |
| W99AX-3 | SPDT | 25 A | 230 VAC | ........ | 5.86 |
| W99X-1 | SPDT | 25 A | 6 VDC | 18 | 5.42 |
| W99X-2 | SPDT | 25 A | 12 VDC | 70 | 5.42 |
| W99X-3 | SPDT | 25 A | 24 VDC | 290 | 5.44 |
| W99X-4 | SPDT | 25 A | 110 VDC | 6000 | 5.83 |
| W99AX-4 | DPDT | 25 A | 24 VAC | ........ | 8.43 |
| W99AX-5 | DPDT | 25 A | 115 VAC | ........ | 8.43 |
| W99AX-6 | DPDT | 25 A | 230 VAC | ........ | 8.63 |
| W99AX-7† | DPDT | 25 A | 440 VAC | ........ | 8.68 |
| W99X-5 | DPDT | 25 A | 6 VDC | 18 | 8.12 |
| W99X-6 | DPDT | 25 A | 12 VDC | 70 | 8.12 |
| W99X-7 | DPDT | 25 A | 24 VDC | 290 | 8.14 |
| W99X-8 | DPDT | 25 A | 110 VDC | 6000 | 8.53 |
| W99AX-8 | DPST | 25 A | 24 VAC | ........ | 6.65 |
| W99AX-9 | DPST | 25 A | 115 VAC | ........ | 6.67 |
| W99AX-10 | DPST | 25 A | 230 VAC | ........ | 6.85 |
| W99X-9 | DPST | 25 A | 6 VDC | 18 | 6.36 |
| W99X-10 | DPST | 25 A | 12 VDC | 70 | 6.36 |
| W99X-11 | DPST | 25 A | 24 VDC | 290 | 6.38 |
| W99X-12 | DPST | 25 A | 110 VDC | 6000 | 6.77 |
| W99ADX-1 | SPST-NO-DM | 50 A | 24 VAC | ........ | 5.64 |
| W99ADX-2 | SPST-NO-DM | 50 A | 115 VAC | ........ | 5.64 |
| W99ADX-3 | SPST-NO-DM | 50 A | 230 VAC | ........ | 5.85 |
| W99DX-1 | SPST-NO-DM | 50 A | 6 VDC | 18 | 5.35 |
| W99DX-2 | SPST-NO-DM | 50 A | 12 VDC | 70 | 5.35 |
| W99DX-3 | SPST-NO-DM | 50 A | 24 VDC | 290 | 5.37 |
| W99DX-4 | SPST-NO-DM | 50 A | 110 VDC | 6000 | 5.74 |

## CLASS 99 DPDT RELAYS WITH SPDT AUXILIARY CONTACTS

Auxiliary SPDT contacts rated 5 amps. 2½″ x 4 3/32″ x 2⅜″ max.

| | | | | | |
|---|---|---|---|---|---|
| W99AX-15 | DPDT | 25 A | 115 VAC | ........ | $10.43 |
| W99AX-16 | DPDT | 25 A | 230 VAC | ........ | 10.63 |

## CLASS 99S HEAVY DUTY POWER RELAYS

Same as Class 99, without phenolic base. **Size:** SPST-NO-DM 50-amp, 2″ x 2½″ x 1 5/16″ high; SPDT 25-amp, 2″ x 2⅞″ x 1 15/16″ h.

| | | | | | |
|---|---|---|---|---|---|
| W99SADX-1 | SPST-NO-DM | 50 A | 24 VAC | ........ | $6.28 |
| W99SADX-2 | SPST-NO-DM | 50 A | 115 VAC | ........ | 6.34 |
| W99SADX-3 | SPST-NO-DM | 50 A | 230 VAC | ........ | 6.56 |
| W99SDX-1 | SPST-NO-DM | 50 A | 6 VDC | 18 | 6.10 |
| W99SDX-2 | SPST-NO-DM | 50 A | 12 VDC | 70 | 6.10 |
| W99SDX-3 | SPST-NO-DM | 50 A | 24 VDC | 290 | 6.14 |
| W99SDX-4 | SPST-NO-DM | 50 A | 110 VDC | 6000 | 6.44 |
| W99SAX-1 | SPDT | 25 A | 24 VAC | ........ | 7.35 |
| W99SAX-2 | SPDT | 25 A | 115 VAC | ........ | 7.40 |
| W99SAX-3 | SPDT | 25 A | 230 VAC | ........ | 7.62 |
| W99SX-1 | SPDT | 25 A | 6 VDC | 18 | 7.11 |
| W99SX-2 | SPDT | 25 A | 12 VDC | 70 | 7.13 |
| W99SX-3 | SPDT | 25 A | 24 VDC | 290 | 7.15 |
| W99SX-4 | SPDT | 25 A | 110 VDC | 6000 | 7.47 |

## CLASS 128 COAXIAL RELAYS FOR RF SWITCHING

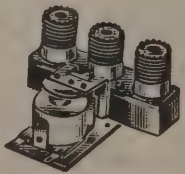
Compact relays combine a heavy duty coaxial relay with Class 88 relay structure. Precision-built, hinge-pin armature bearings assure consistent pull-in power with maximum reliability over long life. Coaxial contact structure is enclosed in a heavy duty, precision machined brass cavity with removable plug for convenient inspection of contacts. SPDT RF switching contacts are silver alloy, gold flashed; rated 100 watts RF. VSWR, 1.25:1 maximum, 0–500 MHz. Matches 50-ohm cable using standard UHF connectors. Operate time, 25 msec maximum. Release time, 25 msec maximum. Size, 2⅝″ x 2⅞″ x 1 7/16″.

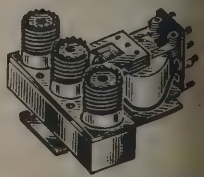
### STANDARD CLASS 128 SPDT COAXIAL RELAYS

| Magnecraft Number | Coil Data* | | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|
| | Volts | Ohms | 1-9 | 10-24 | 25-49 | 50-99 | 100-249* |
| W128AX-7 | 115 VAC | ..... | $18.47 | $16.62 | $15.70 | $14.78 | $13.85 |
| W128X-9 | 12 VDC | 100 | 18.13 | 16.32 | 15.41 | 14.50 | 13.60 |
| W128X-10 | 24 VDC | 400 | 18.20 | 16.38 | 15.47 | 14.56 | 13.65 |

### CLASS 128 SPDT RELAYS WITH DPDT AUXILIARY CONTACTS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| W128AX-11 | 115 VAC | ..... | $20.85 | $18.77 | $17.72 | $16.68 | $15.64 |
| W128X-14 | 12 VDC | 100 | 20.02 | 18.02 | 17.02 | 16.02 | 15.02 |
| W128X-15 | 24 VDC | 400 | 20.08 | 18.07 | 17.07 | 16.06 | 15.06 |


128 Coax Relay SPDT


128 SPDT with DPDT Auxiliary Contacts

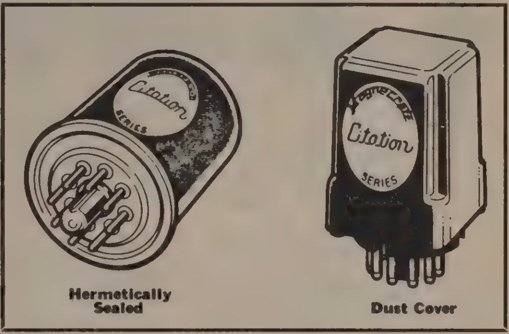
***COIL DATA:** Voltage shown is nominal. Pull-in at 80% of nominal or less for DC relays; 85% of nominal or less for AC relays at 25° C. Resistance shown is ± 10% at 25° C.

★LARGER QUANTITY PRICES AVAILABLE ON REQUEST

# Magnecraft® *Citation* Relays

## CLASS 88 GENERAL PURPOSE RELAYS

**BACKED BY AN UNCONDITIONAL 12-MONTH WARRANTY**


**Hermetically Sealed**

**Dust Cover**

- **PLUG-IN OCTAL STYLE WITH 8 OR 11 PINS**
- **10-AMP CONTACT RATING**
- **DPDT OR 3PDT CONTACTS**
- **AC OR DC OPERATION**
- **HERMETICALLY SEALED OR DUST COVERED**

ie Citation Series general purpose relay has evolved from an er-increasing demand for premium features by discriminating ay users. Citation relays are designed to incorporate all those atures which will provide the ultimate in reliability to meet the ost exacting requirements All Citation relays are offered with e unconditional warranty described below.

### 12-MONTH WARRANTY

**e Citation Series Relay will be replaced** with an identical odel **at no charge,** if for any reason it fails to perform satis-ctorily **for 12 months from date of purchase.** Relay must be companied by receipt and returned to point of purchase. ability limited to replacement only.

### CITATION FEATURES

**e-Cycling**—Each relay in the Citation Series is pre-cycled prior final inspection in order to stabilize operating characteristics d achieve an unprecedented level of quality control.

**nge-Pin Design**—Each relay has rugged, precision-built hinge-armature bearings with oversized bearing surfaces. This is e same construction used in the finest telephone type relays for nimum friction and maximum contact effectiveness, resulting stabilized adjustment over a long life.

**tegrated Bobbin Construction**—Molded nylon bobbins with ggedized coil terminal inserts eliminate all possibility of shorts.

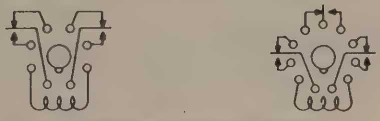
**ass Melamine Insulation**—Contact insulating member is made glass Melamine for high dielectric strength, essentially un-ected by changes in temperature and humidity.

**perior Contact Design**—High contact pressure and built-in ping action. Riveted contacts further enhance Citation reli-ility through longer life.

### SPECIFICATIONS

**Nominal Coil Voltage:** 12 or 24 VDC, or 115 VAC standard (see tables below). **Contact Form:** DPDT or 3PDT standard. **Contact Construction and Rating:** Code 120, silver alloy, gold flash, .187″ dia. standard; rated 10 amps at 115 VAC or 28 VDC resistive. **DC Coil Dissipation Capability:** 3.0 watts maximum continuous (see tables below for nominal operating power values). **Dielectric Withstanding Voltage:** 750 VAC rms between mutually insulated conductive elements. **Mounting:** Standard 8-pin or 11-pin octal-style plug. **Size:** Hermetically sealed, 1$\frac{11}{16}$″ dia. x 2$\frac{1}{32}$″ high above socket; dust cover type, 1$\frac{3}{8}$″ sq. x 2$\frac{1}{8}$″ high above socket.

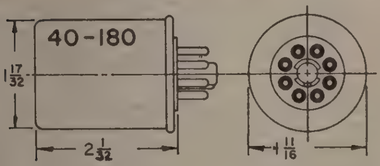
### WIRING DIAGRAMS


**DPDT** **3PDT**

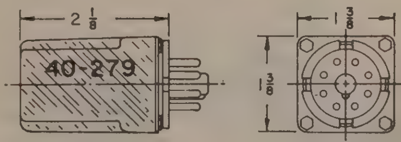
**Viewed from Pin End of Relay**

### DIMENSIONS

**Hermetically Sealed**



**Dust Cover**



### RELAYS WITH DUST COVER

| Magnecraft Number | Con-tacts | Rating, Amps | Coil Data* | | Nominal Power | Plug | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Volts | Ohms | | | 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | 100 Up |
| W88ACPX-115 | DPDT | 10 | 115 VAC | ....... | 3 VA | 8-pin | $10.99 | $10.28 | $ 9.77 | $ 9.25 | $ 8.74 | $ 7.20 |
| W88ACPX-120 | 3PDT | 10 | 115 VAC | ....... | 3 VA | 11-pin | 13.69 | 12.79 | 12.15 | 11.51 | 10.87 | 8.95 |
| W88CPX-187 | DPDT | 10 | 12 VDC | 100 | 1.5 watts | 8-pin | 10.45 | 9.74 | 9.25 | 8.77 | 8.28 | 6.82 |
| W88CPX-188 | DPDT | 10 | 24 VDC | 400 | 1.5 watts | 8-pin | 10.45 | 9.74 | 9.25 | 8.77 | 8.28 | 6.82 |
| W88CPX-191 | 3PDT | 10 | 12 VDC | 100 | 1.5 watts | 11-pin | 12.95 | 12.09 | 11.49 | 10.88 | 10.28 | 8.46 |
| W88CPS-192 | 3PDT | 10 | 24 VDC | 400 | 1.5 watts | 11-pin | 12.95 | 12.09 | 11.49 | 10.88 | 10.28 | 8.46 |

### HERMETICALLY SEALED RELAYS

| Magnecraft Number | Con-tacts | Rating, Amps | Volts | Ohms | Nominal Power | Plug | 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | 100 Up |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| W88AHPX-60 | DPDT | 10 | 115 VAC | ....... | 3 VA | 8-pin | $19.19 | $17.91 | $17.01 | $16.12 | $15.22 | $12.54 |
| W88AHPX-65 | 3PDT | 10 | 115 VAC | ....... | 3 VA | 11-pin | 22.40 | 20.92 | 19.87 | 18.83 | 17.78 | 14.64 |
| W88HPX-74 | DPDT | 10 | 24 VDC | 400 | 1.5 watts | 8-pin | 17.99 | 16.78 | 15.94 | 15.10 | 14.26 | 11.75 |
| W88HPX-78 | 3PDT | 10 | 24 VDC | 400 | 1.5 watts | 11-pin | 21.50 | 20.08 | 19.08 | 18.07 | 17.07 | 14.06 |

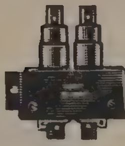
**OIL DATA:** Voltage shown is nominal. Pull in at 80% of nominal or less for DC relays; 85% of nominal for AC relays at 25° C. sistance shown is ± 10% at 25° C.

**CITATION RELAYS ARE IN STOCK FOR IMMEDIATE DELIVERY**

# Relays and Switches

## MAGNECRAFT MERCURY PLUNGER RELAYS

A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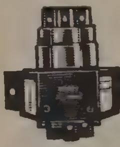
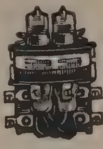
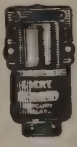
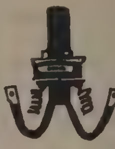
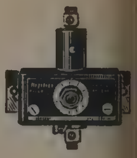

C

D


E


F


G


H

Silent, mercury-to-mercury action for power control applications. Front terminals for easy access. Contacts rated 550 VAC. **Contacts:** Single pole normally open, single pole normally closed, double pole (both contacts normally open), or triple pole (all contacts normally open).

### EPOXY ENCASED METAL TUBE RELAYS

Epoxy encased metal tube withstands physical shock. **Series WA:** Miniature type, rated 25 amps at 115 VAC. **Series WB:** Standard type, rated 50 amps at 115 VAC. **Series WH:** Heavy duty type, rated 100 amps at 115 VAC.

| Magnecraft No. | Fig. | Contacts | Rating, Amps | Size, Inches W. x D. x H. | Net Each, Lots of 1-9 | Net Each, Lots of 10-49 |
|---|---|---|---|---|---|---|
| **WA-1** | A | SP, NO | 25 | 3 x 2 11/32 x 4 3/16 | $21.10 | $ 18.47 |
| **WA-2** | A | SP, NC | 25 | 3 x 2 11/32 x 4 3/16 | 25.10 | 22.00 |
| **WA-11** | B | DP, NO | 25 | 4⅜ x 3½ x 4 3/16 | 40.75 | 35.60 |
| **WA-111** | C | 3P, NO | 25 | 4 5/16 x 3½ x 4 3/16 | 54.75 | 47.90 |
| **WB-1** | A | SP, NO | 50 | 3 x 2 11/32 x 4¾ | 24.65 | 21.60 |
| **WB-11** | B | DP, NO | 50 | 4⅜ x 2 11/16 x 4¾ | 48.00 | 42.00 |
| **WB-111** | .... | 3P, NO | 50 | 4 5/16 x 3 7/16 x 4¾ | 68.50 | 60.00 |
| **WH-1** | A | SP, NO | 100 | 4 x 3⅝ x 7½ | 64.50 | 56.50 |
| **WH-11** | B | DP, NO | 100 | 6½ x 4 x 7½ | 129.00 | 113.00 |
| **WH-111** | .... | 3P, NO | 100 | 6½ x 5¼ x 7½ | 181.00 | 158.10 |

### "TD" HI-POWER TIME DELAY RELAY

Solid-state time delay circuit automatically resets upon completion of the delay. Load contacts are completely isolated from the delay circuit. Delay operates from 120 VAC with ±2% repeatability. Armored steel clock tubes. Adjustable timing: 0.5 to 60 seconds.

| Magnecraft Number | Fig. | Rating, Amps | Size, Inches W. x D. x H. | Net Ea., Lots of 1-9 | Net Ea., Lots of 10-49 |
|---|---|---|---|---|---|
| **WTD-A-1** | H | 25 | 4⅜ x 2 11/16 x 4 3/16 | $32.20 | $28.20 |

### OPEN CONSTRUCTION RELAYS

**Series WMR:** Miniature relay rated 20 amps at 115 VAC; CSA Listed. **Series WEM:** Heavy duty relay rated 35 amps at 115 VAC; UL and CSA Listed. **Series WHD:** Heavy duty relay rated 60 amps at 115 VAC; UL and CSA Listed.

| Magnecraft No. | Fig. | Contacts | Rating, Amps | Size, Inches W. x D. x H. | Net Each, Lots of 1-9 | Net Each, Lots of 10-49 |
|---|---|---|---|---|---|---|
| **WMR-1** | D | SP, NO | 20 | 1⅞ x 1¾ x 3½ | $13.35 | $11.68 |
| **WMR-2** | D | SP, NC | 20 | 1⅞ x 1¾ x 4 | 13.90 | 12.16 |
| **WMR-11** | E | DP, NO | 20 | 3 x 1⅞ x 4½ | 24.75 | 21.65 |
| **WMR-111** | .... | 3P, NO | 20 | 3¼ x 2¾ x 5 | 35.60 | 31.15 |
| **WEM-1** | D | SP, NO | 35 | 2⅝ x 2⅜ x 4½ | 15.10 | 13.20 |
| **WEM-2** | D | SP, NC | 35 | 2⅝ x 2⅜ x 5⅛ | 16.50 | 14.45 |
| **WEM-11** | E | DP, NO | 35 | 3⅜ x 2½ x 5⅜ | 29.20 | 25.52 |
| **WEM-111** | .... | 3P, NO | 35 | 4 x 3⅜ x 6¼ | 42.40 | 37.10 |
| **WHD-1** | D | SP, NO | 60 | 4 x 2⅜ x 5¼ | 22.35 | 19.50 |
| **WHD-2** | D | SP, NC | 60 | 4 x 2⅜ x 5¼ | 22.50 | 19.68 |
| **WHD-11** | E | DP, NO | 60 | 4 x 2½ x 5¾ | 40.50 | 35.40 |
| **WHD-111** | .... | 3P, NO | 60 | 4 x 3⅜ x 6¼ | 57.50 | 50.25 |

### COMPLETELY ENCAPSULATED RELAYS

For use in extreme environments. Molded-in terminal connectors eliminate need for enclosures.

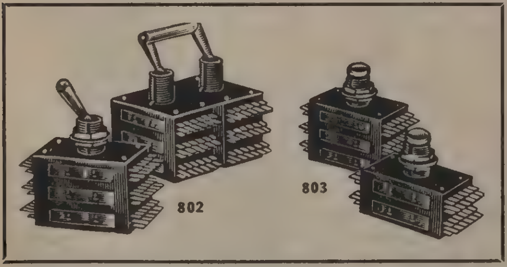
| | | | | | | |
|---|---|---|---|---|---|---|
| **WS-1** | F | SP, NO | 25 | 1¾ x 1⅝ x 3½ | $23.00 | $20.18 |
| **WT-1** | F | SP, NO | 50 | 2 x 1⅞ x 3⅞ | 28.50 | 25.00 |

### "100" 100-AMP RELAY

Encapsulated relay tube to withstand physical shock and rough handling. CSA Listed.

| | | | | | | |
|---|---|---|---|---|---|---|
| **W100-1** | G | SP, NO | 100 | 3½ x 3⅜ x 7 | $43.10 | $37.70 |

## T-BAR®, INC. SWITCHES



Multi-pole switches rated 5 amps at 115 VAC, employ stacked-up enclosed contact wafers. Silver plated terminals fit Model 88601 T-Bar connector, or may be soldered. Temperature rating, −55° to +85° C. Dielectric strength, 1,000 V rms, terminal to terminal. Suffix **A** in part number indicates normally open types.

### SERIES 803 PUSHBUTTON SWITCHES

| T-Bar No. 803- | Poles | Wafer Size | Net Each, Lots of 1-24 | 25-49 | 50-74 | 75-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| **4C** | 4PDT | Single | $ 7.13 | $ 6.77 | $ 6.43 | $ 6.13 | $ 4.92 | $ 4.63 |
| **8A** | 8PST | Single | 8.20 | 7.60 | 7.40 | 6.88 | 5.66 | 5.20 |
| **8C** | 8PDT | Single | 9.54 | 9.06 | 8.61 | 8.20 | 6.58 | 6.20 |
| **12A** | 12PST | Single | 8.91 | 8.46 | 8.04 | 7.66 | 6.15 | 5.79 |
| **12C** | 12PDT | Single | 10.77 | 10.23 | 9.72 | 9.26 | 7.43 | 7.00 |
| **24A** | 24PST | Double | 18.72 | 17.79 | 16.89 | 16.05 | 12.92 | 12.17 |
| **24C** | 24PDT | Double | 22.96 | 21.81 | 20.72 | 19.75 | 15.84 | 14.92 |
| **36A** | 36PST | Triple | 26.53 | 25.20 | 23.94 | 22.82 | 18.31 | 17.24 |
| **36C** | 36PDT | Triple | 32.50 | 30.88 | 29.33 | 27.95 | 22.43 | 21.13 |

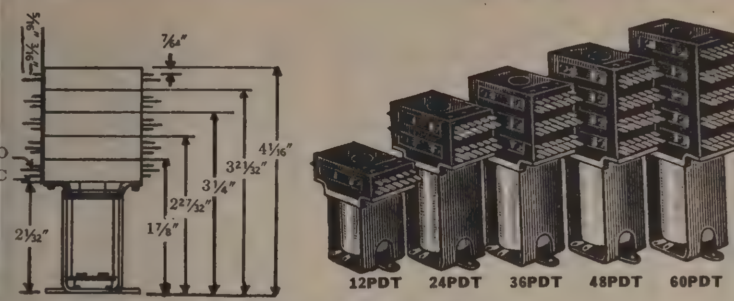
### SERIES 802 TOGGLE SWITCHES

All types double throw (Form C). Contacts in dust-tight plastic enclosures. Depth behind panel, 15/32" per 12 poles. Mechanical life, 50,000 cycles, except Models 144A, 144C, 10,000 cycles.

| T-Bar No. 802- | Poles | Wafer Size | Net Each, Lots of 1-24 | 25-49 | 50-74 | 75-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| **8A** | 8PST | Single | $10.11 | $ 9.60 | $ 9.12 | $ 8.69 | $ 6.98 | $ 6.57 |
| **8C** | 8PDT | Single | 11.44 | 10.87 | 10.33 | 9.84 | 7.89 | 7.44 |
| **12A** | 12PST | Single | 10.93 | 10.38 | 9.86 | 9.40 | 7.54 | 7.10 |
| **12C** | 12PDT | Single | 12.68 | 12.05 | 11.44 | 10.91 | 8.75 | 8.24 |
| **24A** | 24PST | Double | 20.62 | 19.59 | 18.61 | 17.73 | 14.23 | 13.40 |
| **24C** | 24PDT | Double | 24.86 | 23.62 | 22.44 | 21.38 | 17.15 | 16.16 |
| **36A** | 36PST | Triple | 28.44 | 27.02 | 25.67 | 24.46 | 19.62 | 18.49 |
| **36C** | 36PDT | Triple | 34.40 | 32.68 | 31.05 | 29.58 | 23.73 | 22.36 |
| | | | **Net Each, Lots of 1-4** | **5-9** | **10-24** | **25-99** | **100-249** | **250-499** |
| **48A** | 48PST | Four | $49.29 | $44.36 | $39.92 | $35.98 | $32.53 | $30.56 |
| **48C** | 48PDT | Four | 56.29 | 50.66 | 45.59 | 41.09 | 37.15 | 34.90 |
| **60A** | 60PST | Five | 61.48 | 55.33 | 49.80 | 44.88 | 40.58 | 38.12 |
| **60C** | 60PDT | Five | 70.60 | 63.54 | 57.19 | 51.54 | 46.60 | 43.77 |
| **72A** | 72PST | Six | 73.99 | 66.59 | 59.93 | 54.01 | 48.84 | 45.87 |
| **72C** | 72PDT | Six | 84.80 | 76.32 | 68.69 | 61.90 | 55.97 | 52.58 |
| **84A** | 84PST | Seven | 85.86 | 77.27 | 69.55 | 62.68 | 56.67 | 53.23 |
| **84C** | 84PDT | Seven | 98.56 | 88.70 | 79.83 | 71.94 | 65.05 | 61.11 |
| **96A** | 96PST | Eight | 98.16 | 88.34 | 79.51 | 71.65 | 64.79 | 60.86 |
| **96C** | 96PDT | Eight | 112.36 | 101.12 | 91.01 | 82.02 | 74.16 | 69.66 |
| **108A** | 108PST | Nine | 110.24 | 99.22 | 89.29 | 80.48 | 72.76 | 68.35 |
| **108C** | 108PDT | Nine | 127.20 | 114.48 | 103.03 | 92.86 | 83.95 | 78.86 |
| **144A** | 144PST | Twelve | 147.01 | 132.31 | 119.08 | 107.32 | 97.03 | 91.15 |
| **144C** | 144PDT | Twelve | 169.60 | 152.64 | 137.38 | 123.81 | 111.94 | 105.15 |

**SEE CATALOG INDEX FOR T-BAR PLUG-IN CONNECTORS AVAILABLE FOR SERIES 802 AND 803 SWITCHES.**

# T-Bar® and Tiny-T® Relays



SERIES 801 (Non-Latching)
SERIES 805 (Magnetic Latching)

tiny-T relay

SERIES 401/404
FLATPACK RELAY

## SERIES 801/805 T-BAR® RELAYS

noid actuated relays feature unique design employing stacked enclosed contact wafers for up to 60-pole switching. Ultra-pact; reliable. Gold plated silver contacts rated 500 watts tive (5 amps), make or break 3 amps. Operate and release , less than 30 milliseconds. Minimum life, 20 million mechani-operations. Dielectric strength, 1,000 VAC, terminal to case. Temperature range, −55° to +85° C. Terminals mate with Model 88601 T-Bar connector (see description below) which simply push onto contact wafers for quick, easy wiring; or, solder connections may be made. Contact assemblies in dust-tight plastic enclosures 1 1⁄32" w. x 2 3⁄8" lg.; height, 13⁄32" per 12-pole wafer.

### COIL CHARACTERISTICS

| Coil V | 4C, 8C, 12A or 12C Wt., 4.5 oz. | | | 24A or 24C Wt., 6.75 oz. | | | 36A, 36C, 48A Wt., 7.5 oz. | | | 48C, 52A, 52C, 60A Wt., 9 oz. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Resistance Ohms | Current Amps | Power Watts | Resistance Ohms | Current Amps | Power Watts | Resistance Ohms | Current Amps | Power Watts | Resistance Ohms | Current Amps | Power Watts |
| 15 AC | 3,963 | 024 | 2 80 | 3,450 | 027 | 3 10 | 2,355 | 041 | 4 72 | 1,930 | 049 | 5 62 |
| 10 DC | 3,963 | .028 | 3.05 | 3,450 | .032 | 3.54 | 2,355 | .047 | 5.18 | 1,930 | .057 | 6.27 |
| 48 DC | 778 | .062 | 2.98 | 674 | .071 | 3.41 | 438 | .110 | 5.26 | 350 | .137 | 6.58 |
| 28 DC | 258 | .109 | 3.08 | 227 | .123 | 3.44 | 150 | .187 | 5.23 | 120 | .233 | 6.52 |
| 24 DC | 193 | .124 | 2.98 | 174 | .138 | 3.32 | 111 | .216 | 5.15 | 94 | .255 | 6.12 |
| 12 DC | 49 | .244 | 2.96 | 45 | .267 | 3.19 | 28 | .429 | 5.16 | 22 | .545 | 6.54 |
| 6 DC | 12 | .504 | 3.01 | 11 | .541 | 3.24 | 7 | .857 | 5.06 | 5.5 | 1.09 | 6.54 |

## PRICING AND ORDERING INFORMATION FOR ABOVE RELAYS

### 801 SERIES STOCK T-BAR DC RELAYS*

| ar - | Poles† | Wafer Size | Net Each, Lots of 1-24 | 25-49 | 50-74 | 75-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| | 4PDT | Single | $ 9.23 | $ 8.77 | $ 8.33 | $ 7.94 | $ 6.37 | $ 6.00 |
| | 8PDT | Single | 13.21 | 12.55 | 11.92 | 11.36 | 9.12 | 8.59 |
| | 12PST | Single | 14.24 | 13.53 | 12.85 | 12.25 | 9.83 | 9.26 |
| | 12PDT | Single | 15.26 | 14.50 | 13.77 | 13.12 | 10.53 | 9.92 |
| | 24PST | Double | 23.92 | 22.72 | 21.59 | 20.57 | 16.50 | 15.55 |
| | 24PDT | Double | 27.44 | 26.07 | 24.76 | 23.60 | 18.93 | 17.84 |
| | 36PST | Triple | 31.75 | 30.16 | 28.65 | 27.31 | 21.91 | 20.64 |
| | 36PDT | Triple | 36.98 | 35.13 | 33.37 | 31.80 | 25.52 | 24.04 |
| | 48PST | Four | 39.57 | 37.59 | 35.71 | 34.03 | 27.30 | 25.72 |
| | 48PDT | Four | 51.29 | 48.73 | 46.29 | 44.11 | 35.39 | 33.34 |
| | 52PST | Five | 48.81 | 46.37 | 44.05 | 41.98 | 33.68 | 31.73 |
| | 52PDT | Five | 60.95 | 57.90 | 55.01 | 52.42 | 42.06 | 39.62 |
| | 60PST | Five | 55.23 | 52.47 | 49.85 | 47.50 | 38.11 | 35.90 |

### 801 SERIES STOCK T-BAR 115 VAC RELAYS

| | Poles† | Wafer Size | 1-24 | 25-49 | 50-74 | 75-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| | 4PDT | Single | $14.34 | $13.62 | $12.94 | $12.33 | $ 9.89 | $ 9.32 |
| | 8PDT | Single | 17.26 | 16.40 | 15.58 | 14.84 | 11.91 | 11.22 |
| | 12PST | Single | 18.19 | 17.28 | 16.42 | 15.64 | 12.55 | 11.82 |
| | 12PDT | Single | 19.12 | 18.16 | 17.26 | 16.44 | 13.19 | 12.43 |
| | 24PST | Double | 28.16 | 26.75 | 25.42 | 24.22 | 19.43 | 18.30 |
| | 24PDT | Double | 31.68 | 30.10 | 28.59 | 27.25 | 21.86 | 20.59 |
| | 36PST | Triple | 39.17 | 37.21 | 35.35 | 33.68 | 27.03 | 25.46 |
| | 36PDT | Triple | 41.22 | 39.16 | 37.20 | 35.45 | 28.44 | 26.79 |
| | 48PST | Four | 43.81 | 41.62 | 39.54 | 37.68 | 30.23 | 28.68 |
| | 48PDT | Four | 55.53 | 52.75 | 50.11 | 47.76 | 38.32 | 36.09 |
| | 52PST | Five | 53.05 | 50.40 | 47.88 | 45.62 | 36.60 | 34.48 |
| | 52PDT | Five | 65.19 | 61.93 | 58.83 | 56.06 | 44.98 | 42.37 |
| | 60PST | Five | 59.47 | 56.50 | 53.67 | 51.14 | 41.03 | 38.66 |

d voltage for complete ordering number (e.g., 801-12C-**24** for DT, 24 VDC coil). Additional 10% will be added for all units iring 6, 12 or 48 VDC coils on quantities of less than 250 pcs. pt on 48PST, 48PDT, 60PST and Series 805 latching relays. fix **A** (PST) types are normally open.

### 805 SERIES STOCK T-BAR LATCHING RELAYS

| T-Bar No. 805- | Poles† | Wafer Size | Net Each, Lots of 1-24 | 25-49 | 50-74 | 75-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| 4C | 4PDT | Single | $18.77 | $17.81 | $16.91 | $16.10 | $12.89 | $12.22 |
| 8C | 8PDT | Single | 22.75 | 21.35 | 20.45 | 19.45 | 15.58 | 14.80 |
| 12A | 12PST | Single | 23.80 | 22.60 | 21.50 | 20.40 | 16.31 | 15.53 |
| 12C | 12PDT | Single | 24.80 | 23.56 | 22.38 | 21.26 | 17.01 | 16.16 |
| 24A | 24PST | Double | 31.00 | 29.45 | 28.00 | 26.60 | 21.85 | 20.20 |
| 24C | 24PDT | Double | 34.40 | 32.70 | 31.10 | 29.50 | 24.60 | 22.45 |

†Suffix **A** (PST) types are normally open.

### T-BAR CONNECTORS AND TOOLS

**Model 88601 T-Bar Connector**—For use in connecting wires to T-Bar terminals or switches. Wires are first crimped to snap-in terminal using Model 8601-51 crimping tool (see below); nylon terminal block pushes onto wafer terminals. Each connector handles 6 poles, single or double throw (18 terminals); consists of 1 connector block, 20 crimp contacts, 2 labels and 1 retaining cup. Net Each, Lots of 1–99. . . .**$1.35**; Lots of 100–499. . . .**$1.25**

**Model 8601-51 Crimping Tool**—For use with above connectors. Crimps wire and insulation to snap-in terminals. Net. . **$59.75**

**Model 8601-61 Extraction Tool**—Removes snap-in terminal from connector block. Net Each. . . . . . . . . . . . . . . . . . . . . . . . . . **$9.00**

**Model 8601-71 Connector Tong**—For pushing on or withdrawing connectors from wafer terminals. Net Each. . . . . . . . . . . . **$1.00**

## SERIES 401 AND 404 TINY-T® FLATPACK RELAYS

profile, non-reed relays with .360" off-the-board height ted circuit terminals, spaced on .100" x .100" grid. Contacts gold-plated over silver base metal. **Series 401** 4-pole, single-w; contact rating 3 amps at 24 VDC resistive load. **Series 404,** double-pole, single-throw designed to control low level signals. Letter **A** in part number indicates normally open; letter **B** in part number indicates normally closed.

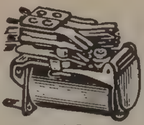
### SERIES 401

| Bar No. | Coil VDC | Ohms ±10% | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|
| -4A-12 | 12 | 145 | $5.75 | $5.48 | $5.23 | $4.26 | $4.07 |
| -4A-24 | 24 | 576 | 5.75 | 5.48 | 5.23 | 4.26 | 4.07 |
| -4A-48 | 48 | 2,300 | 5.75 | 5.48 | 5.23 | 4.26 | 4.07 |
| -4A-110 | 110 | 12,100 | 6.82 | 6.50 | 6.19 | 5.04 | 4.80 |
| -4B-12 | 12 | 96 | 6.50 | 6.20 | 5.81 | 4.81 | 4.59 |
| -4B-24 | 24 | 380 | 6.50 | 6.20 | 5.81 | 4.81 | 4.59 |
| -4B-48 | 48 | 1,505 | 6.50 | 6.20 | 5.81 | 4.81 | 4.59 |
| -4B-110 | 110 | 8,000 | 7.72 | 7.36 | 7.01 | 5.69 | 5.42 |

### SERIES 404

| T-Bar No. | Coil VDC | Ohms ±10% | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|
| 404-2A-12 | 12 | 145 | $5.75 | $5.48 | $5.23 | $4.26 | $4.07 |
| 404-2A-24 | 24 | 576 | 5.75 | 5.48 | 5.23 | 4.26 | 4.07 |
| 404-2A-48 | 48 | 2,300 | 5.75 | 5.48 | 5.23 | 4.26 | 4.07 |
| 404-2A-110 | 110 | 12,100 | 6.82 | 6.50 | 6.19 | 5.04 | 4.80 |
| 404-2B-12 | 12 | 96 | 6.50 | 6.20 | 5.81 | 4.81 | 4.59 |
| 404-2B-24 | 24 | 380 | 6.50 | 6.20 | 5.81 | 4.81 | 4.59 |
| 404-2B-48 | 48 | 1,505 | 6.50 | 6.20 | 5.81 | 4.81 | 4.59 |
| 404-2B-110 | 110 | 8,000 | 7.72 | 7.36 | 7.01 | 5.69 | 5.42 |

## TELEPHONE TYPE RELAYS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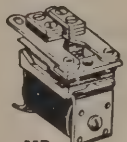
LSP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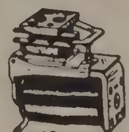
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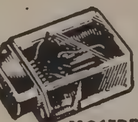
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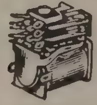
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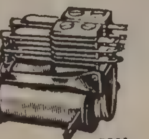
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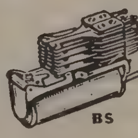
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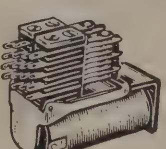

ML

The size, sensitivity, wide variety of coils and ability to carry a large number of poles make them ideal for automation, computers, and similar applications.

**LS Series:** Short springs, light weight armature for fast action with reliability, long life. Stainless steel hinge bearing gives 100 million operations. Twin palladium contacts rated 4 amps. Tinned pierced solder terminals. Two 6-32 mtg. holes on ¾″ ctrs. 2⅜″ x 1⅛″ x 1 11/16″. Wt., 4 oz.

**LSP Series:** Identical to LS Series, but enclosed in plastic cover and has rectangular socket with combination taper tab or solder terminations. Plugs in. LSP17D types have 16-pin socket; size, 1 23/32″ x 1 25/64″ x 2 33/64″ seated; wt., 4 oz. LSP23D types have 28-pin socket; size, 2 7/64″ x 1 25/64″ x 2 33/64″ seated; wt., 4½ oz.

**MB Series:** Miniature DC contactor for very high current uses. Heavy brass arms with silver contacts rated 60 amps; solder terminals. Four 3-48 mtg. holes on ⅜″ centers. Size, 1 21/32″ x ⅞″ x 1 7/16″. Wt., 2 oz.

**MC Series:** Low loss at high frequency using ceramic spacers; intercontact capacitance, 1.5 pF. Palladium contacts rated 1 amp. Tinned pierced solder terminals. Four 3-48 mtg. holes on ⅜″ centers. Size, 1 17/32″ x ¾″ x 1 25/32″. Weight, 2 oz.

**MG Series:** Subminiature relay for ai craft, computer, etc.; has good shock an vibration resistance. Open, enclosed i nylon dust cover or hermetically seale Silver contacts rated at 2 amps. Mounting: Open, four 3-48 holes on ⅜″ ctrs. dust cover, plug-in header to fit Ampheno receptacle No. 57-20140; sealed, three 4-4 studs on 1″ x ½″ ctrs. Size: 1 1/16″ x 11/16″ 1¼″ max.; sealed, 1 47/64″ x 13/16″ x 2 7/64″; dus cover, 1 23/64″ x 63/64″ x 1 19/32″. Weight: Open 1.2 oz.; sealed, 2.75 oz.; dust cover, 2.0 o

**MH Series:** Fast acting, long life miniature. Gold-flashed silver contacts rated amps for MH11L and LM; 5 amps for al others. Hooked solder terminals on seale models. Mounting: Open, MH11L, 6-3 stud 11/32″ long with locating boss; othe open models have four 3-48 holes on ⅜ centers. Sealed, AMR, -LM and -DM three 6-32 NC-2 studs on 1¼″ x ½″ ctrs. -DD, -D, three 6-32 studs on 1 3/16″ x 15/ ctrs. Size, 1 21/32″ x 1 17/32″ x ¾″. Weight Open, 2½ oz. max.; sealed, 5 oz. maximum

**ML Series:** Small relay with excellent sensitivity and outstanding switching capability for transistorized networks, etc Single contact arms ⅛″ dia. gold-flashed silver contacts rated 3 amps for 100,00 operations. Pierced solder terminals. Fou 3-48 mtg. holes on ⅜″ centers. Size, ¾″ 1 31/32″ x 1 19/32″. Weight, 2½ oz.

### LS AND LSP RELAYS

| P & B No. | Contacts | Coil VDC | Net Each, Lots of 1-20 | 21-499 | P & B No. | Contacts | Coil VDC | Net Each, Lots of 1-20 | 21-499 |
|---|---|---|---|---|---|---|---|---|---|
| LS17D | 4PDT | 24 | $6.50 | $5.50 | LS23D | 6PDT | 24 | $ 7.85 | $6.64 |
| LS17D | 4PDT | 48 | 6.70 | 5.67 | LS23D | 6PDT | 110 | 8.30 | 7.02 |
| LS17D | 4PDT | 110 | 6.95 | 5.88 | LSP23D | 6PDT | 24 | 10.50 | 8.88 |
| LSP17D | 4PDT | 24 | 8.45 | 7.15 | LSP23D | 6PDT | 48 | 10.60 | 8.97 |
| LSP17D | 4PDT | 48 | 8.55 | 7.23 | LSP23D | 6PDT | 110 | 10.90 | 9.22 |
| LSP17D | 4PDT | 110 | 8.85 | 7.49 | | | | | |

### MB, MC, MG, MH AND ML RELAYS

| P & B Number | Contacts | Coil Voltage or Current | Net Each, Lots of* 1-24 | 25-50 | 51-99 | 100-24 |
|---|---|---|---|---|---|---|
| MB3D | SPST-NO-DB | 6 VDC | $ 6.25 | $ 5.94 | $ 5.63 | $ 4.38 |
| MB3D | SPST-NO-DB | 12 or 24 VDC | 6.40 | 6.08 | 5.76 | 4.48 |
| MB3D | SPST-NO-DB | 110 VDC | 6.80 | 6.46 | 6.12 | 4.76 |
| MC5A | SPDT | 6 VAC | 6.10 | 5.80 | 5.49 | 4.27 |
| MC11A | DPDT | 120 VAC | 8.40 | 7.98 | 7.56 | 5.88 |
| MC5D | SPDT | 12 or 24 VDC | 5.35 | 5.08 | 4.82 | 3.75 |
| MC11D | DPDT | 24 VDC | 7.70 | 7.32 | 6.93 | 5.39 |
| MG11D | DPDT | 12 or 24 VDC | 6.00 | 5.70 | 5.40 | 4.20 |
| MG11D | DPDT | 110 VDC | 6.45 | 6.13 | 5.81 | 4.52 |
| MG17D | 4PDT | 12 or 24 VDC | 8.05 | 7.65 | 7.25 | 5.64 |
| MG17DP† | 4PDT | 12 or 24 VDC | 13.40 | 12.73 | 12.06 | 9.38 |
| MG17DP† | 4PDT | 110 VDC | 14.05 | 13.35 | 12.65 | 9.84 |
| MG17DT* | 4PDT | 24 VDC | 14.60 | 13.87 | 13.14 | 10.22 |
| MG17DT* | 4PDT | 110 VDC | 15.25 | 14.49 | 13.73 | 10.68 |
| MH11L | DPDT | 4.5 mA; 10K ohms resis. | 6.90 | 6.56 | 6.21 | 4.83 |
| MH11LM* | DPDT | 4.5 mA; 10K ohms resis. | 11.70 | 11.12 | 10.53 | 8.19 |
| MH17D | 4PDT | 6, 12 or 24 VDC | 6.95 | 6.60 | 6.26 | 4.87 |
| MH17DM* | 4PDT | 12 or 24 VDC | 13.95 | 13.25 | 12.56 | 9.77 |
| MH17AMR* | 4PDT | 120 VAC | 22.80 | 21.66 | 20.52 | 15.96 |
| MH23D | 6PDT | 6, 12 or 24 VDC | 8.70 | 8.27 | 7.83 | 6.09 |
| MH23D | 6PDT | 110 VDC | 9.25 | 8.79 | 8.33 | 6.48 |
| MH23DD* | 6PDT | 12 or 24 VDC | 18.55 | 17.62 | 16.70 | 12.99 |
| ML11D | DPDT | 4.0 mA; 2500 ohms, resis. | 7.35 | 6.98 | 6.62 | 5.15 |
| ML11D | DPDT | 2.83 mA; 5K ohms, resis. | 7.50 | 7.13 | 6.75 | 5.25 |
| ML11D | DPDT | 2.0 mA; 10K ohms, resis. | 7.85 | 7.46 | 7.07 | 5.50 |
| ML17D | 4PDT | 5.65 mA; 2500 ohms, resis. | 8.70 | 8.27 | 7.83 | 6.09 |
| ML17D | 4PDT | 4.0 mA; 5K ohms, resis. | 8.90 | 8.46 | 8.01 | 6.23 |
| ML17D | 4PDT | 2.83 mA; 10K ohms, resis. | 9.25 | 8.79 | 8.33 | 6.48 |
| ML23D | 6PDT | 6.93 mA; 2500 ohms, resis. | 9.85 | 9.36 | 8.87 | 6.90 |
| ML23D | 6PDT | 3.4 mA; 10K ohms, resis. | 10.40 | 9.88 | 9.36 | 7.28 |

*Sealed relay. †Enclosed relay.

### BS SERIES LONG COIL RELAYS

Long coil, telephone type for high sensitivity, simplified maintenance and long life. Suited for computer and automatic test equipment applications requiring large numbers of poles. Tinned solder terminals for rear panel wiring. Twin palladium contacts rated 4 amps. Two 8-32 NC-2B mounting holes on ¾″ centers. Size, 3⅞″ x 1 55/64″ x 1 1/16″ max. Weight, 9 oz.
**Dust Covers for BS Relays: See another P & B page for listings.**

| P & B Number | Contacts | Coil Voltage or Current | Net Each, Lots of 1-20 | 21-499 |
|---|---|---|---|---|
| BS17A | 4PDT | 120 VAC | $10.65 | $ 9.01 |
| BS17D | 4PDT | 24 VDC | 8.75 | 7.40 |
| BS17D | 4PDT | 110 VDC | 9.45 | 7.99 |
| BS17L | 4PDT | 5.5 mA at 10K ohms | 9.45 | 7.99 |
| BS23A | 6PDT | 120 VAC | 12.40 | 10.49 |
| BS23D | 6PDT | 24 VDC | 10.60 | 8.97 |
| BS23D | 6PDT | 110 VDC | 11.30 | 9.56 |

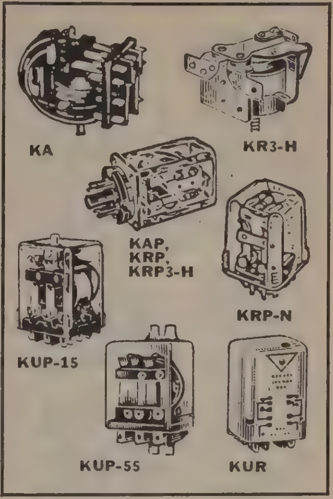
★LARGER QUANTITY PRICES ON REQUEST

P & B RELAYS ARE STOCKED AT NEWTON, MA; GAITHERSBURG, MD; ORLANDO & HOLLYWOOD, FL; HUNTSVILLE, AL; WINSTON-SALEM, NC; ATLANTA, GA; SALT LAKE CITY, UT; & SYRACUSE, NY

## GENERAL PURPOSE RELAYS

**and KAP Series:** Small, low cost,
y efficient relay for light power loads.
A and KAP relays with "Y" suffix
CSA listing and carry U/L com-
nt recognition (File No. E22575).
inuous duty. Mechanical life 10 mil-
operations. Contacts: Suffix **Y,** mov-
$\frac{1}{8}$" dia. gold-flashed silver; stationary, $\frac{5}{32}$" dia. wide silver overlay; rated 5 amps. Suffix **G,** movable contacts silver-cadmium-oxide rated 10 amps. Size and Mounting: KA, $1\frac{15}{32}$" x $1\frac{11}{16}$" x $1\frac{27}{32}$" with 6-32 thd. stud and locating tab on $\frac{7}{16}$" ctrs.; wt., 2 oz. KAP, enclosed in clear plastic dust cover $1\frac{17}{32}$" x $1\frac{7}{16}$" x $2\frac{9}{32}$" with 8- or 11-pin plug terminals; wt., 3 oz.

| & B mber | Contacts | Coil Voltages | Net Each, Lots of* 1-24 | 25-50 | 51-99 | 100-249 |
|---|---|---|---|---|---|---|
| AG | SPDT | 6, 12, 24 or 120 VAC | $ 3.75 | $ 3.56 | $ 3.38 | $ 2.63 |
| AG | SPDT | 240 VAC | 4.25 | 4.04 | 3.83 | 2.98 |
| AY | SPDT | 6, 12, 24 or 120 VAC | 3.70 | 3.52 | 3.33 | 2.59 |
| AY | SPDT | 240 VAC | 4.20 | 3.99 | 3.78 | 2.94 |
| 1AG | DPDT | 6, 12, 24 or 120 VAC | 4.60 | 4.37 | 4.14 | 3.22 |
| 1AG | DPDT | 240 VAC | 5.00 | 4.75 | 4.50 | 3.50 |
| 1AY | DPDT | 6, 12, 24 or 120 VAC | 4.50 | 4.28 | 4.05 | 3.15 |
| 1AY | DPDT | 240 VAC | 4.90 | 4.66 | 4.41 | 3.43 |
| 4AG | 3PDT | 6, 12, 24 or 120 VAC | 5.10 | 4.85 | 4.59 | 3.57 |
| 4AG | 3PDT | 240 VAC | 5.60 | 5.32 | 5.04 | 3.92 |
| 4AY | 3PDT | 6, 12, 24 or 120 VAC | 4.90 | 4.66 | 4.41 | 3.43 |
| 4AY | 3PDT | 240 VAC | 5.40 | 5.13 | 4.86 | 3.78 |
| DG | SPDT | 6, 12 or 24 VDC | 3.60 | 3.42 | 3.24 | 2.52 |
| DG | SPDT | 110 VDC | 4.30 | 4.09 | 3.87 | 3.01 |
| DY | SPDT | 6, 12 or 24 VDC | 3.55 | 3.37 | 3.20 | 2.49 |
| DY | SPDT | 110 VDC | 4.25 | 4.04 | 3.83 | 2.98 |
| 1DG | DPDT | 6, 12 or 24 VDC | 4.10 | 3.90 | 3.69 | 2.87 |
| 1DG | DPDT | 110 VDC | 4.80 | 4.56 | 4.32 | 3.36 |
| 1DY | DPDT | 6, 12 or 24 VDC | 3.95 | 3.75 | 3.56 | 2.77 |
| 1DY | DPDT | 110 VDC | 4.65 | 4.42 | 4.19 | 3.26 |
| 4DG | 3PDT | 6, 12 or 24 VDC | 4.65 | 4.42 | 4.19 | 3.26 |
| 4DG | 3PDT | 110 VDC | 5.35 | 5.08 | 4.82 | 3.75 |
| 4DY | 3PDT | 6, 12 or 24 VDC | 4.45 | 4.23 | 4.01 | 3.12 |
| 4DY | 3PDT | 110 VDC | 5.15 | 4.89 | 4.64 | 3.61 |
| 5AG | SPDT | 24 or 120 VAC | 6.40 | 6.08 | 5.76 | 4.48 |
| 11AG | DPDT | 6, 24 or 120 VAC | 7.15 | 6.79 | 6.44 | 5.01 |
| 11AY | DPDT | 24 or 120 VAC | 7.05 | 6.70 | 6.35 | 4.94 |
| 11AY | DPDT | 240 VAC | 7.45 | 7.08 | 6.71 | 5.22 |
| 14AG | 3PDT | 24 or 120 VAC | 8.85 | 8.41 | 7.97 | 6.20 |
| 14AY | 3PDT | 24 or 120 VAC | 8.70 | 8.27 | 7.83 | 6.09 |
| 14AY | 3PDT | 240 VAC | 9.10 | 8.65 | 8.19 | 6.37 |
| 5DG | SPDT | 24 VDC | 6.30 | 5.99 | 5.67 | 4.41 |
| 5DG | SPDT | 110 VDC | 7.00 | 6.65 | 6.30 | 4.90 |
| 11DG | DPDT | 24 VDC | 7.10 | 6.75 | 6.39 | 4.97 |
| 11DG | DPDT | 110 VDC | 7.80 | 7.41 | 7.02 | 5.46 |
| 11DY | DPDT | 12 or 24 VDC | 7.00 | 6.65 | 6.30 | 4.90 |
| 11DY | DPDT | 110 VDC | 7.70 | 7.32 | 6.93 | 5.39 |
| 14DG | 3PDT | 24 VDC | 8.80 | 8.36 | 7.92 | 6.16 |
| 14DG | 3PDT | 110 VDC | 9.50 | 9.03 | 8.55 | 6.65 |
| 14DY | 3PDT | 12 or 24 VDC | 8.60 | 8.17 | 7.74 | 6.02 |
| 14DY | 3PDT | 110 VDC | 9.30 | 8.84 | 8.37 | 6.51 |
| AH | SPST-NO-DB | 12, 24 or 120 VAC | 4.55 | 4.32 | 4.10 | 3.19 |
| DH | SPST-NO-DB | 12 or 24 VDC | 4.35 | 4.13 | 3.92 | 3.05 |
| DH | SPST-NO-DB | 110 VDC | 4.95 | 4.70 | 4.46 | 3.47 |
| 3AH | SPST-NO-DB | 12, 24 or 120 VAC | 7.35 | 6.98 | 6.62 | 5.15 |
| 3DH | SPST-NO-DB | 12 or 24 VDC | 7.10 | 6.75 | 6.39 | 4.97 |
| 3DH | SPST-NO-DB | 110 VDC | 7.80 | 7.41 | 7.02 | 5.46 |
| 5A | SPDT | 6, 24 or 120 VAC | 6.30 | 5.99 | 5.67 | 4.41 |
| 5AG | SPDT | 6, 24 or 120 VAC | 6.45 | 6.13 | 5.81 | 4.52 |
| 11A | DPDT | 6, 12, 24 or 120 VAC | 7.00 | 6.65 | 6.30 | 4.90 |
| 11A | DPDT | 240 VAC | 7.45 | 7.08 | 6.71 | 5.22 |
| 11AG | DPDT | 6, 12, 24 or 120 VAC | 7.25 | 6.89 | 6.53 | 5.08 |
| 11AG | DPDT | 240 VAC | 7.70 | 7.32 | 6.93 | 5.39 |
| 11AN | DPDT | 6, 12, 24 or 120 VAC | 8.30 | 7.89 | 7.47 | 5.81 |
| 11AN | DPDT | 240 VAC | 8.75 | 8.31 | 7.88 | 6.13 |
| 14A | 3PDT | 6, 12, 24 or 120 VAC | 8.70 | 8.27 | 7.83 | 6.09 |
| 14A | 3PDT | 240 VAC | 9.15 | 8.69 | 8.24 | 6.41 |
| 14AG | 3PDT | 6, 12, 24 or 120 VAC | 9.05 | 8.60 | 8.15 | 6.34 |
| 14AG | 3PDT | 240 VDC | 9.50 | 9.03 | 8.55 | 6.65 |
| 14AN | 3PDT | 6, 12, 24 or 120 VAC | 10.10 | 9.60 | 9.09 | 7.07 |
| 14AN | 3PDT | 240 VAC | 10.55 | 10.02 | 9.50 | 7.39 |
| 5D | SPDT | 6, 12 or 24 VDC | 6.25 | 5.94 | 5.63 | 4.38 |
| 5D | SPDT | 110 VDC | 6.95 | 6.60 | 6.26 | 4.87 |
| 5DG | SPDT | 6, 12 or 24 VDC | 6.40 | 6.08 | 5.76 | 4.48 |
| 5DG | SPDT | 110 VDC | 7.10 | 6.75 | 6.39 | 4.97 |
| 11D | DPDT | 6, 12 or 24 VDC | 6.95 | 6.60 | 6.26 | 4.87 |
| 11D | DPDT | 110 VDC | 7.65 | 7.27 | 6.89 | 5.36 |
| 11DG | DPDT | 6, 12 or 24 VDC | 7.20 | 6.84 | 6.48 | 5.04 |
| 11DG | DPDT | 110 VDC | 7.90 | 7.51 | 7.11 | 5.53 |
| 11DN | DPDT | 6, 12 or 24 VDC | 8.20 | 7.79 | 7.38 | 5.74 |
| 11DN | DPDT | 110 VDC | 8.95 | 8.50 | 8.06 | 6.27 |
| 14D | 3PDT | 6, 12 or 24 VDC | 8.60 | 8.17 | 7.74 | 6.02 |
| 14D | 3PDT | 110 VDC | 9.30 | 8.84 | 8.37 | 6.51 |
| 14DG | 3PDT | 6, 12 or 24 VDC | 8.95 | 8.50 | 8.06 | 6.27 |
| 14DG | 3PDT | 110 VDC | 9.65 | 9.17 | 8.69 | 6.76 |
| 5A15 | SPDT | 6, 12, 24 or 120 VAC | 4.10 | 3.90 | 3.69 | 2.87 |
| 5A15 | SPDT | 240 VAC | 4.55 | 4.32 | 4.10 | 3.19 |
| 5D15 | SPDT | 6, 12 or 24 VDC | 3.95 | 3.75 | 3.56 | 2.77 |
| 5D15 | SPDT | 110 VDC | 4.60 | 4.37 | 4.14 | 3.22 |
| 11A15 | DPDT | 6, 12, 24 or 120 VAC | 5.00 | 4.75 | 4.50 | 3.50 |
| 11A15 | DPDT | 240 VAC | 5.45 | 5.18 | 4.91 | 3.82 |
| 11D15 | DPDT | 6, 12 or 24 VDC | 4.50 | 4.28 | 4.05 | 3.15 |
| 11D15 | DPDT | 110 VDC | 5.20 | 4.94 | 4.68 | 3.64 |
| 14A15 | 3PDT | 6, 12, 24 or 120 VAC | 5.60 | 5.32 | 5.04 | 3.92 |
| 14A15 | 3PDT | 240 VAC | 6.05 | 5.75 | 5.45 | 4.24 |
| 14D15 | 3PDT | 6, 12 or 24 VDC | 5.15 | 4.89 | 4.64 | 3.61 |
| 14D15 | 3PDT | 110 VDC | 5.60 | 5.32 | 5.04 | 3.92 |
| 5A55 | SPDT | 120 VAC | 4.10 | 3.90 | 3.69 | 2.87 |
| 11A55 | DPDT | 24 or 120 VAC | 5.00 | 4.75 | 4.50 | 3.50 |
| 14A55 | 3PDT | 6, 12, 24 or 120 VAC | 5.60 | 5.32 | 5.04 | 3.92 |
| 14A55 | 3PDT | 240 VAC | 6.05 | 5.75 | 5.45 | 4.24 |
| 5D55 | SPDT | 24 VDC | 3.95 | 3.75 | 3.56 | 2.77 |
| 11D55 | DPDT | 6, 12 or 24 VDC | 4.50 | 4.28 | 4.05 | 3.15 |
| 11D55 | DPDT | 110 VDC | 5.20 | 4.94 | 4.68 | 3.64 |
| 14D55 | 3PDT | 6, 12 or 24 VDC | 5.15 | 4.89 | 4.64 | 3.61 |
| 14D55 | 3PDT | 110 VDC | 5.60 | 5.32 | 5.04 | 3.92 |
| 11D11 | DPDT | 24 VDC | 15.00 | 14.25 | 13.50 | 10.50 |



**KR3-H Series:** Small size, heavy-duty relay. Open only, SPST-NO-DB contacts. Movable carrier has twin $\frac{1}{4}$" dia. silver-cadmium oxide contacts rated 20 A, 120 VAC 60 Hz resis. or 28 VDC; 1 hp at 120/240 V 60 Hz. Terminals: $\frac{1}{4}$" quick connect or solder for contacts; coil, solder only. One 6-32 mtg. stud on $\frac{7}{16}$" ctr. Size, $1\frac{39}{64}$" x $1\frac{43}{64}$" x $1\frac{33}{64}$"; seated, $1\frac{7}{32}$" h. Weight, 2 oz.

**KRP3-H Series:** Same electrical specifications as KR3-H, but enclosed in clear, high-impact plastic dust cover with octal plug-in base. Size, $1\frac{17}{32}$" x $1\frac{7}{16}$" x $2\frac{9}{32}$" h. above plug. Weight, approx. 3 oz.

**KRP Series:** Versatile, multi-contact arrangements in clear plastic dust cover. Mounts by standard octal 8-pin plug on KRP5 and KRP11 models; 11-pin on KRP14. Gold-flashed silver contacts rated 5 amps. Size, $1\frac{13}{32}$" x $1\frac{13}{32}$" x 2" above plug. Wt., 3 oz. Suffix **G** means silver-cadmium oxide contacts on movables, rated 10 amps.

**KRP-N Indicator Lamp Relay:** General purpose, incorporating a lamp to indicate current or voltage in power circuit. Clear plastic dust cover. Standard octal plug. Silver cadmium-oxide contacts, rated at 10 amps. Size, $1\frac{13}{32}$" x $1\frac{13}{32}$" x 2". Wt., 3 oz.

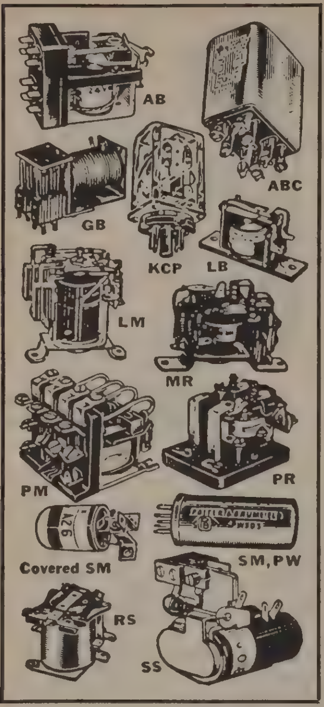
**KUP-15 Series:** Reliable 10-amp relay for industrial control applications. Has .187" quick connect/solder-type terminals. Enclosed in clear, high-impact plastic dust cover. Silver cadmium-oxide contacts assure long life. Continuous operation. Max. size, 1.531" x 1.406" x 1.906" h. seated; terminals, .316" lg. **Type 9KU1 to 9KU5 sockets and 9KU3 hold-down spring are available for use with KUP-15 Series relays. See another P & B page for listings.**

**KUP-55 Series:** Same as KUP-15 Series above, but has slotted-flange case for direct-to-chassis mounting. Identical electrically and mechanically, except not suitable for socket mounting. Rated at 10 amps. Has .187" quick connect/solder-type terminals; .156" wide slots are on 2.90" max. mounting centers. Wt., 3 oz. UL Component Recognition.

**KUR Direct Action Impulse Relay:** For applications requiring on-off operation or alternate energizing of two loads. Solid state flip-flop circuit precedes permanent memory electromagnetic latching relay; allows relay to remain latched during complete power loss. Requires 25 msec min. pulse width; up to 1200 pulses per minute repetition rate. Gold-flashed fine silver contacts rated 5 amps at 28 VDC resistive or 120 VAC, 80% power factor. Terminals are .187" quick-connect/solder type and fit standard KU sockets. Yellow plastic cover. Size, 1.531" x 1.406" x 2.126". Weight, 3½ oz.

**★LARGER QUANTITY PRICES ON REQUEST**

# AMF | POTTER & BRUMFIELD Relays



## SENSITIVE RELAYS

**PW Series:** Precision, lightweight, hermetically sealed relay for aircraft, missile applications. Withstand 10G vibration to 500 Hz. Rated 2 amps. Sensitivity, 180 mW for voltage actuated, 40 mW for current actuated models. Standard 7-pin miniature tube base mounting. Size, 1 11/16″ x .765″ dia. Weight, 1 oz.

**RS Series:** Small, low cost, sensitive relay for radio-sonde, light dimmer and model uses. Voltage and current actuated (60 mW sensitivity) models. Two 4-40 mtg. holes on ¾″ x ⅝″ diagonal centers. Bar palladium contacts rated 2 amps. Size, 1″ x 1 11/64″ x 15/16″. Weight, 1½ oz.

**SM Series:** Medium cost, lightweight relay for light contact load applications. Reed armature for extra long mechanical life. Hermetically sealed and dust covere models. Voltage and current actuated (7 mW sensitivity) models. Stationary, silve movable, rhodium contacts rated 0.25 am Min. 7-pin tube socket mount on seale model; two 3/32″ dia. holes on 17/32″ cente on dust cover model. Size, 1 11/16″ x .76 dia., sealed; 1⅝″ x 35/32″ x ⅞″, dust covered Weight, 1 oz.

**SS Series:** Ultra-sensitive, precision rel has dual series-connected coils with ba anced armature on needle-point bearing for low energy circuits. May be used as differential relay by connecting the tw coils in separate circuits. Sensitivity 1 mW. Silver contacts rated 2 amps. Tw 6-32 mtg. holes on 23/32″ centers. Size, 1 x 1¾″ x 1 11/16″. Weight, 3½ oz.

| P & B Number | Contacts | Coil Voltages or Current | Net Each, Lots of* | | | |
|---|---|---|---|---|---|---|
| | | | 1-24 | 25-50 | 51-99 | 100-24 |
| PW5DS | SPDT | 6, 12 or 24 VDC | $12.45 | $11.83 | $11.21 | $ 8.72 |
| PW5LS | SPDT | 2.8 mA at 5,000 ohms | 12.90 | 12.26 | 11.61 | 9.03 |
| PW5LS | SPDT | 2.0 mA at 10,000 ohms | 13.35 | 12.68 | 12.02 | 9.35 |
| RS5D | SPDT | 6 VDC | 3.05 | 2.90 | 2.75 | 2.14 |
| RS5D | SPDT | 12 VDC | 3.20 | 3.04 | 2.88 | 2.24 |
| RS5D | SPDT | 5 mA at 2,500 ohms | 3.30 | 3.14 | 2.97 | 2.31 |
| RS5D | SPDT | 3.5 mA at 5,000 ohms | 3.60 | 3.42 | 3.24 | 2.52 |
| RS5D | SPDT | 2.5 mA at 10,000 ohms | 4.20 | 3.99 | 3.78 | 2.94 |
| SM5DS | SPDT | 6, 12 or 24 VDC (sld.) | 7.65 | 7.27 | 6.89 | 5.36 |
| SM5L | SPDT | 2.7 mA at 10,000 ohms | 7.25 | 6.89 | 6.53 | 5.08 |
| SM5LS | SPDT | 3.9 mA at 5,000 ohms (sld.) | 7.95 | 7.55 | 7.16 | 5.57 |
| SM5LS | SPDT | 2.7 mA at 10,000 ohms (sld.) | 8.50 | 8.08 | 7.65 | 5.95 |
| SS5D | SPDT | 1 mA at 10,000 ohms | 16.05 | 15.25 | 14.45 | 11.24 |

The following sensitive relays are for use in photoelectric, counting bridges and simila control applications.

**GB Series:** Medium cost high quality relay. Silver contacts rated 5 amps. Sensitivit 115 mW for SP, 125 mW for DP, 275 mW for 4P models. Non-adjustable pick-up. Moun by 8-32 tapped core and locating boss. Size, 2 15/16″ x 1 23/32″ x 1 1/16″. Weight, 5 oz.

**KCP Series:** Low cost relay in clear plastic case. Has ⅛″ gold-flashed silver contact rated 2 amps. Sensitivity 125 mW for SP, 250 mW for DP and 375 mW for 3P model Standard octal plug-in mount: 8-pin for KCP5 and KCP11; 11-pin for KCP14. Siz 1 13/32″ x 1 13/32″ x 2″. Weight, 3 oz.

**LB Series:** Top performance, long life at low cost. Factory adjusted coil for minimu current. Silver contacts rated 5 amps. Two 3/16″ mtg. holes on 2 7/32″ centers. Size, 1¼″ 2 21/32″ x 1⅜″. Weight, 2 oz.

**LM Series:** Medium cost but high quality. Sensitivity 100 mW for SP, 200 mW for D models. Tall spring adjusting screw for pull-in. Gold-flash silver contacts rated 5 amp Two 6-32 mtg. holes on 1 13/16″ centers. Size, 2 3/16″ x 2 9/16″ x 2¼″. Weight, 5 oz.

| P & B Number | Contacts | Coil Resistance 2,500 Ohms | | | | | Coil Resistance 5,000 Ohms | | | | | Coil Resistance 10,000 Ohms | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Pull-in mA | Net Each, Lots of* | | | | Pull-in mA | Net Each, Lots of* | | | | Pull-in mA | Net Each, Lots of* | | | |
| | | | 1-24 | 25-50 | 51-99 | 100-249 | | 1-24 | 25-50 | 51-99 | 100-249 | | 1-24 | 25-50 | 51-99 | 100-24 |
| GB5D | SPDT | 6.8 | $3.95 | $3.75 | $3.56 | $2.77 | 4 8 | $4.15 | $3.94 | $3.73 | $2.91 | 3.4 | $4.65 | $4.42 | $4.19 | $3.26 |
| GB11D | DPDT | 7.0 | 5.55 | 5.27 | 5.00 | 3.89 | 5.0 | 5.75 | 5.46 | 5.18 | 4.03 | 3.53 | 6.25 | 5.94 | 5.63 | 4.38 |
| GB17D | 4PDT | 10.5 | 6.60 | 6.27 | 5.94 | 4.62 | 7.4 | 6.80 | 6.46 | 6.12 | 4.76 | 5.25 | 7.30 | 6.93 | 6.57 | 5.11 |
| KCP5 | SPDT | 7.2 | 6.85 | 6.51 | 6.17 | 4.80 | 5.0 | 6.95 | 6.60 | 6.26 | 4.87 | 3.6 | 7.40 | 7.03 | 6.66 | 5.18 |
| KCP11 | DPDT | 10.0 | 7.30 | 6.94 | 6.57 | 5.11 | 7.2 | 7.40 | 7.03 | 6.66 | 5.18 | 5.0 | 7.85 | 7.46 | 7.07 | 5.50 |
| KCP14 | 3PDT | 12.3 | 9.00 | 8.55 | 8.10 | 6.30 | 8.7 | 9.10 | 8.65 | 8.19 | 6.37 | 6.1 | 9.55 | 9.07 | 8.60 | 6.69 |
| LB5 | SPDT | 9.0 | 3.00 | 2.85 | 2.70 | 2.10 | 6.3 | 3.20 | 3.14 | 2.88 | 2.24 | 4.5 | 3.40 | 3.23 | 3.06 | 2.38 |
| LM5 | SPDT | 6.3 | 4.55 | 4.32 | 4.09 | 3.19 | 4.5 | 4.80 | 4.56 | 4.32 | 3.36 | 3.2 | 5.15 | 4.89 | 4.64 | 3.61 |
| LM11 | DPDT | 9.0 | 6.55 | 6.22 | 5.90 | 4.59 | 6.3 | 6.75 | 6.41 | 6.07 | 4.73 | 4.5 | 7.40 | 7.03 | 6.66 | 5.18 |

## POWER TYPE RELAYS

Used in automation, motor starting, clutch operation, signaling, etc., wherever a power rating from 5 to 25 amps, 120 VAC, non-inductive must be handled.

**AB Series:** For appliance and general purpose usage where rugged construction, long life and quiet operation are required. All AC models carry U/L and CSA labels. Silver contacts rated 10 amps. Two 8-32 mtg. holes on 1¼″ ctrs. Size, 1 15/16″ x 3″ x 1 13/32″. Weight, 5 oz.

**ABC Series:** Medium duty relay. With dust cover; terminals fit snap-on connectors or may be used in printed circuits using dip soldering; snap-on screw adapters are supplied. AC models carry U/L and CSA labels. Silver contacts rated 10 amps. One 8-32 mtg. stud, ⅜″ lg. and locating tab on 9/16″ centers. Size, 1 15/32″ x 2 25/32″ x 2 3/32″, less terminals. Weight, 7 oz.

**MR Series:** Medium duty relay handles small motors, transmitters, etc. Silver contacts rated 8 amps, except SPST-NO-DB models rated 10 amps. Two 5/32″ dia. holes on 2¼″ ctrs. for MR3 and MR11; on 2⅝″ ctrs. for MR5 and MR14. Size, 2 31/32″ x 2″ x 2 3/16″. Weight, 4 oz.

**PR Series:** Heavy-duty relay. Heavy-duty screw terminals. All models except PR11AL5 have silver contacts rated 25 amps; PR11AL5 has DPDT silver contacts rated 25 amps and SPDT auxiliary contacts rated 5 amps. All models except PR11AL5 carry U/L and CSA labels. Mtg., two 3/16″ holes on 1⅞″ ctrs. Size, 2½″ x 2½″ x 3⅜″. Weight, 11 oz., max.

**PM Series:** Compact, heavy duty 4PDT type for long, dependable polyphase and heavy switching use. Screw terminals staked to phenolic front section. Silver cadmium-oxide contacts rated 25 amps at 240 VAC, 50/60 Hz resistive; 1 hp per movable arm at 120 or 240 VAC, single phase. Life, 100,000 cycles at rated load. U/L and CSA listed except 480 V. Fro key-hole and 2 rear-channel slots for 8-3 screws on 2″ x 2½″ triangular ctrs. Siz 2 21/32″ x 3 23/64″ x 2 23/32″. Weight, 14 o

**PM/PR Cover—see listing on anoth P & B page.**

### 60-Hz AC RELAYS

| P & B Number | Contacts | 6, 12, 24 or 120 VAC Net Each, Lots of* | | | | 240 VAC Net Each, Lots of* | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1-24 | 25-50 | 51-99 | 100-249 | 1-24 | 25-50 | 51-99 | 100-24 |
| AB11AY† | DPDT | $ 6.15 | $ 5.84 | $ 5.54 | $ 4.31 | $ 6.65 | $ 6.32 | $ 5.99 | $ 4.66 |
| ABC11AY† | DPDT | 7.40 | 7.03 | 6.66 | 5.18 | 7.90 | 7.51 | 7.11 | 5.53 |
| MR3A† | SPST-NO-DB | 4.50 | 4.28 | 4.05 | 3.15 | ...... | ...... | ...... | ...... |
| MR5A | SPST | 4.05 | 3.85 | 3.65 | 2.84 | 4.50 | 4.28 | 4.05 | 3.15 |
| MR11A | DPDT | 5.70 | 5.42 | 5.13 | 3.99 | 6.15 | 5.84 | 5.54 | 4.31 |
| MR14A | 3PDT | 6.80 | 6.46 | 6.12 | 4.76 | 7.25 | 6.89 | 6.53 | 5.08 |
| PR1AY* | SPST-NO | 4.70 | 4.47 | 4.23 | 3.29 | ...... | ...... | ...... | ...... |
| PR3AY§ | SPST-NO-DB | 4.80 | 4.56 | 4.32 | 3.36 | 5.30 | 5.04 | 4.77 | 3.71 |
| PR5AY§ | SPDT | 5.05 | 4.80 | 4.55 | 3.54 | 5.55 | 5.27 | 5.00 | 3.89 |
| PR7AY§ | DPST | 5.65 | 5.37 | 5.09 | 3.96 | 6.15 | 5.84 | 5.54 | 4.31 |
| PR11AL5 | DPDT | 9.45 | 8.98 | 8.51 | 6.62 | 9.95 | 9.45 | 8.96 | 6.97 |
| PR11AY§ | DPDT | 7.45 | 7.08 | 6.71 | 5.22 | 7.95 | 7.55 | 7.16 | 5.57 |
| PR11AY | DPDT 480 V | 9.05 | 8.60 | 8.15 | 6.34 | ...... | ...... | ...... | ...... |
| PM17AY | 4PDT | 14.30 | 13.59 | 12.87 | 10.01 | 14.85 | 14.11 | 13.37 | 10.40 |
| PM17A | 4PDT 480 V | 15.75 | 14.96 | 14.18 | 11.03 | ...... | ...... | ...... | ...... |

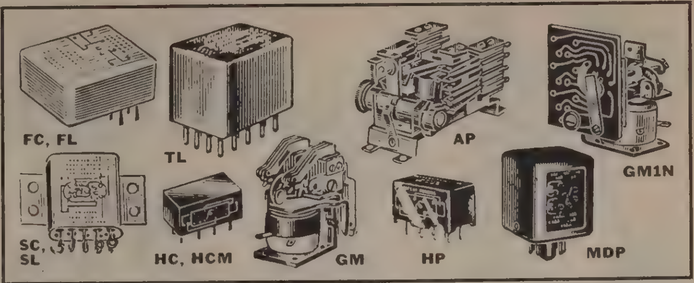
### DC RELAYS

| | | 6, 12 or 24 VDC | | | | 110 VDC | | | |
|---|---|---|---|---|---|---|---|---|---|
| AB11D‡ | DPDT | $ 6.00 | $ 5.70 | $ 5.40 | $4.20 | $ 6.50 | $ 6.18 | $ 5.85 | $4.55 |
| ABC11D | DPDT | 7.30 | 6.94 | 6.57 | 5.11 | 7.80 | 7.41 | 7.02 | 5.46 |
| MR3D | SPST-NO-DB | 4.10 | 3.90 | 3.69 | 2.87 | ...... | ...... | ...... | ...... |
| MR5D | SPST | 3.75 | 3.56 | 3.38 | 2.63 | 4.30 | 4.09 | 3.87 | 3.01 |
| MR11D | DPDT | 5.40 | 5.13 | 4.86 | 3.78 | 5.95 | 5.65 | 5.36 | 4.17 |
| MR14D | 3PDT | 6.40 | 6.08 | 5.76 | 4.48 | 6.95 | 6.60 | 6.26 | 4.87 |
| PR3DY | SPST-NO-DB | 4.80 | 4.56 | 4.32 | 3.36 | 5.50 | 5.23 | 4.95 | 3.85 |
| PR5DY | SPDT | 5.05 | 4.80 | 4.55 | 3.54 | 5.75 | 5.46 | 5.18 | 4.03 |
| PR7DY | DPST | 5.70 | 5.42 | 5.13 | 3.99 | 6.40 | 6.08 | 5.76 | 4.48 |
| PR11DY | DPDT | 7.45 | 7.08 | 6.71 | 5.22 | 8.15 | 7.74 | 7.34 | 5.71 |
| PM17DY | 4PDT | 13.65 | 12.97 | 12.29 | 9.56 | 14.25 | 13.54 | 12.83 | 9.98 |

*24 VAC model only. †No 12 VAC model. ‡No 6 VDC model. §208 V also available same price as 240 V models.

**★LARGER QUANTITY PRICES ON REQUEST**

# ΛMF | POTTER & BRUMFIELD Relays



## HIGH-RELIABILITY MINIATURE RELAYS

perature Range, −65° C to +125° C.

**Series:** Conventional, miniature relay flat on printed circuit board. Takes G shock, 400G linear acceleration, and vibration to 2000 Hz. Hermetically ed; bifurcated contacts. Plug-in termi- on 0.2" grid. Meets MIL-R-5757E, also MSFC-SPEC-339. Ambient temp. ge, −65° C to +125° C. Size, 1.1" x " x .485" h. Contacts, 3 amps. Weight, oz.

**Series:** Dual coil, miniature latching e. Same as above except in operation. h coil pulses alternately (per polarity), from a reversing (polarized) source necting the coils in series. Stays latched hout coil power to reduce drain.

**Series:** Miniature permanent magnet y has high shock and vibration resist- e. Features single coil action and con- ns to standard min. coil operation ex- t polarized connections because of mag- c circuit. Positive terminal marked n red dot. Contacts rated at 2 amps. e, .795" x .359" x 1.1". Mounting: —D, g-in terminals for printed circuit or eptacle; —DA shoulder flanges with .104" x .136" holes on 1.062" ctrs.; DB, welded bracket with four .125" es on 1.062" x .281" ctrs.; —DC, two NC-2A threaded studs on .488" x .220" gonal ctrs.; —DD, plain case. All ex- t —D have hook-end solder terminal ders. SCG11D has plug-in terminals on grid. Wt., ¾ oz.

**Series:** Dual coil, miniature magnetic ching relay for low power, high shock vibration resistance. Requires connec- ns to both coils; may be connected in es for polar operation, reverse polarity to reset. Operates on 1 watt, 3 msec pulse to either coil. Size, .795" x .4" x .9". Mounting type and dimensions same as SC Series. Contacts rated at 2 amps. Weight, 2 oz.

**TL Series:** 4PDT latching relay for severe environments. Hermetically sealed case. Strong PM keeps contacts locked at coil de-energized. Transfer Time: .5 ms approx. Temperature Range: −65° to +125° C. Meets or exceeds MIL-R-5757E and also MSFC-SPEC-339. Size, .730" x 1.040" x .76", body only. Wt., 1¼ oz. Mountings: "D", plain case, plug-in header; "DA", shoulder bracket .300" from base, hook-end solder; "DB", flat plate, .593" w. x 1.60" lg., four .125" dia. holes on .281" x 1.30" centers, hook-end solder. Contacts, 3 amps. Coil Resist., 600 ohms.

**HC Series:** Miniature, non-polarized, non-latching relay hermetically sealed in half-size crystal case. High-torque motor structure and bifurcated, gold-plated silver DPDT contacts offer positive performance in low-level applications. Contacts rated dry circuit to 2 amps at 28 VDC resistive. Meets or exceeds applicable sections of MIL-R-5757E, and complies with MSFC-SPEC-339. HC11D has plug-in, plain case; HC11DA has hook-end solder terminals and shoulder brackets; HC11DB has hook-end solder terminals and flat mounting plate with two holes. Temp. range, −65° C to +125° C. Size (plain case), 0.8" x 0.4" sq., seated. Wt., ¼ oz.

**HCM Series:** Military version of HC Series. Meets or exceeds appropriate sections of MIL-R-5757E. Designed for hostile environments found in aircraft applications and for ground support equipment. Straight pins or hook solder terminals. Wt., ½ oz. without bracket.

**HP Series:** Non-polarized, non-latching half-size relay. Same structure, contact material as HC Series but enclosed in high impact dust cover. Terminals on .200" grid for plug-in or PC board. Ideal for TV cameras, desk-top computers, dictating, etc. DPDT contacts rated low level to 2 amps. Continuous duty coils rated 5 msec operate, 3 msec release max. Size, .49" x .88" x .48" max.

**HPS Series:** Hermetically sealed version of HP; uses standard HP socket. For reliable performance in logic circuit applications or where prolonged submersion of PC boards in cleaning solvents may be required. Size, .810" x .410" x .410". Wt., ¼ oz.

| P & B umber | Contacts | Coil Voltages | Net Each, Lots of* | | | |
|---|---|---|---|---|---|---|
| | | | 1-24 | 25-50 | 51-99 | 100-249 |
| 11A | DPDT | 6, 12, 24 or 120 VAC | $10.15 | $ 9.64 | $ 9.14 | $ 7.11 |
| 11A | DPDT | 240 VAC | 10.70 | 10.17 | 9.63 | 7.49 |
| 17A | 4PDT | 24 or 120 VAC | 12.30 | 11.69 | 11.07 | 8.61 |
| 11D | DPDT | 6 or 24 VDC | 10.15 | 9.64 | 9.14 | 7.11 |
| 11D | DPDT | 110 VDC | 10.90 | 10.36 | 9.81 | 7.63 |
| 17D | 4PDT | 12 or 24 VDC | 12.30 | 11.69 | 11.07 | 8.61 |
| 17D | 4PDT | 110 VDC | 13.05 | 12.40 | 11.75 | 9.14 |
| 11D | DPDT | 6, 12 or 24 VDC | 19.40 | 18.43 | 17.46 | 13.58 |
| 11D | DPDT | 6, 12 or 24 VDC | 21.75 | 20.66 | 19.58 | 15.23 |
| 11D | DPDT | 6, 12 or 24 VDC | 19.60 | 18.62 | 17.64 | 13.72 |
| 11DA | DPDT | 12 or 24 VDC | 19.60 | 18.62 | 17.64 | 13.72 |
| 11DB | DPDT | 6, 12 or 24 VDC | 19.60 | 18.62 | 17.64 | 13.72 |
| 11DC | DPDT | 24 VDC | 19.60 | 18.62 | 17.64 | 13.72 |
| 11DD | DPDT | 24 VDC | 19.60 | 18.62 | 17.64 | 13.72 |
| G11D | DPDT | 24 VDC | 19.60 | 18.62 | 17.64 | 13.72 |
| 7141 | DPDT | 26.5 VDC* | 19.75 | 18.76 | 17.78 | 13.83 |
| 11D | DPDT | 6, 12 or 24 VDC | 21.45 | 20.38 | 19.31 | 15.02 |
| 11DA | DPDT | 6, 12 or 24 VDC | 21.45 | 20.38 | 19.31 | 15.02 |
| 11DB | DPDT | 6, 12 or 24 VDC | 21.45 | 20.38 | 19.31 | 15.02 |
| 11DC | DPDT | 24 VDC | 21.45 | 20.38 | 19.31 | 15.02 |
| 11DD | DPDT | 24 VDC | 21.45 | 20.38 | 19.31 | 15.02 |
| G11D | DPDT | 24 VDC | 21.45 | 20.38 | 19.31 | 15.02 |
| 17D | 4PDT | 24 VDC | 31.75 | 30.16 | 28.58 | 22.23 |
| 17DA | 4PDT | 24 VDC | 31.75 | 30.16 | 28.58 | 22.23 |
| 17DB | 4PDT | 24 VDC | 31.75 | 30.16 | 28.58 | 22.23 |
| M11A | DPDT | 24 or 120 VAC | 8.40 | 7.98 | 7.56 | 5.88 |
| M11AL11 | DPDT/DPDT | 120 VAC | 11.95 | 11.35 | 10.75 | 8.37 |
| M11D | DPDT | 12 or 24 VDC | 8.05 | 7.65 | 7.25 | 5.64 |
| M11D | DPDT | 110 VDC | 8.60 | 8.17 | 7.74 | 6.02 |
| M11DL11 | DPDT/DPDT | 12 or 24 VDC | 11.70 | 11.11 | 10.53 | 8.19 |
| M1N10A | SP-10 pos. | 120 VAC | 10.35 | 9.83 | 9.32 | 7.25 |
| M1N12A | SP-12 pos. | 120 VAC | 10.50 | 9.97 | 9.45 | 7.35 |
| M1N10D | SP-10 pos. | 24 VDC | 10.10 | 9.59 | 9.09 | 7.07 |
| M1N12D | SP-12 pos. | 24 VDC | 10.25 | 9.74 | 9.23 | 7.18 |
| C11D | DPDT | 24 VDC | 19.30 | 18.34 | 17.37 | 13.51 |
| C11DA | DPDT | 24 VDC | 19.30 | 18.34 | 17.37 | 13.51 |
| C11DB | DPDT | 24 VDC | 19.30 | 18.34 | 17.37 | 13.51 |
| CM11D | DPDT | 24 VDC | 12,90 | 12.26 | 11.61 | 9.03 |
| CM11DA | DPDT | 24 VDC | 12.90 | 12.26 | 11.61 | 9.03 |
| CM11DB | DPDT | 24 VDC | 12.90 | 12.26 | 11.61 | 9.03 |
| P11D | DPDT | 12 or 24 VDC | 8.35 | 7.93 | 7.52 | 5.85 |
| P11D | DPDT | 48 VDC | 8.90 | 8.46 | 8.01 | 6.23 |
| PS11D | DPDT | 12 or 24 VDC | 10.10 | 9.59 | 9.09 | 7.07 |

IL-R-1575E/10C-141 or RY4NA3B3L01.

## SPECIAL PURPOSE RELAYS

**AP Series:** Ratchet, impulse relay for reliability in on-off or reversing action for alternate operations of the control lead. Positive ratchet at all speeds on impulses as short as 60 milliseconds. Intermittent operation only. Silver contacts rated 5 amps. Three ⁵⁄₃₂" mtg. holes on 3⅜" x ⅞" triangular ctrs.; 2⁵⁄₁₆" x 3¾" x 2¼"; 7 oz.

**GM Series:** Versatile impulse/sequencing relay for single-coil latching applications. The 2 Form C contact arrangement is switched alternately by cams. Positive switching is by indirect action during drop-out of the armature. Can also be furnished with additional 2 Form C auxiliary contacts, suffix "L", operated directly by the armature. Contacts rated at 3 amps. Available with AC or DC coils. AC version operates on a 50% coil duty cycle (5 min. max.). Mounting: 8-32 tapped core with a locating boss. Size, 1.437" x 2.03" x 2.07" max. Wt., with aux contacts, 4¾ oz.; without, 4 oz.

**GM1N Series:** Relays employing basic structure of GM Series with unidirectional printed circuit boards in choice of 10 or 12 steps. Board is attached to ratchet shaft extension. Movable contact arm advances one position each time armature drops out. Contacts rated at .25 amp. Size, 1.875" x 2" x 2.312". Wt., approx. 4 oz.

**See another P & B page for accessories.**

## MDP SERIES SMALL POLARIZED RELAYS

all size, ultra-sensitivity and high speed switching combine th efficient. bounce-free contact action. Operation depends on th magnitude and direction of coil current. Temp., −60° C to 85° C. Size, 1½" sq. x 1¹³⁄₁₆" h. (seated); wt., 4¼ oz. Plastic st cover; 8-pin or 12-pin plugs.

### BI-STABLE TYPES (1 FORM C)

mature remains in its last energized position on coil de-energize. ngsten and Paliney contacts rated .01–1 amp resistive with table arc suppression, 25–150 V.

| P & B No. | Pick-up Cur., mA | Pick-up Pwr, µW | No. Coils | Ohms/ Coil | Net Each, Lots of | |
|---|---|---|---|---|---|---|
| | | | | | 1-9 | 10-49* |
| DP-300-1 | 1.5 | 338 | 2 | 150 | $24.65 | $22.19 |

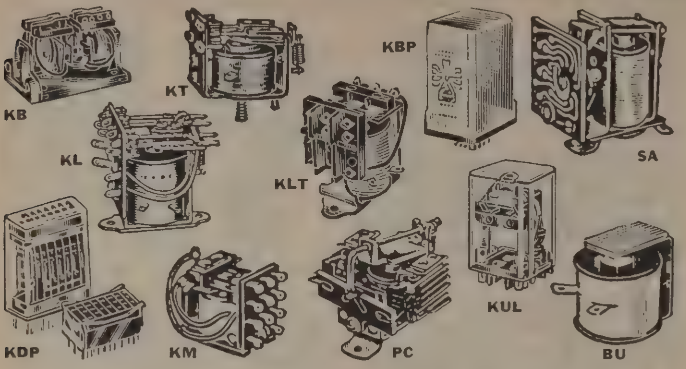
### CENTER-STABLE TYPES (1 FORM K)

Armature stays center-off with contacts open at coil de-energize. Silver contacts rated 3 A res. at 28 VDC.

| P & B No. | Pick-up Cur., mA | Pick-up Pwr, µW | No. Coils | Ohms/ Coil | Net Each, Lots of | |
|---|---|---|---|---|---|---|
| | | | | | 1-9 | 10-49* |
| MDP-1006 | .32 | 33.8 | 1 | 330 | $28.20 | $25.38 |
| MDP-1007 | .27 | 35 | 1 | 480 | 28.20 | 25.38 |
| MDP-1011 | .1 | 35 | 1 | 3500 | 28.20 | 25.38 |
| MDP-1013 | .067 | 32.3 | 1 | 7200 | 28.20 | 25.38 |
| MDP-2009 | .32 | 102 | 2 | 1000 | 28.20 | 25.38 |
| MDP-2011 | .17 | 66.5 | 2 | 2300 | 28.20 | 25.38 |

★LARGER QUANTITY PRICES ON REQUEST

# AMF | POTTER & BRUMFIELD Relays



| P & B Number | Contacts | Coil Voltages | Net Each, Lots of* 1-24 | 25-50 | 51-99 | 100-249 |
|---|---|---|---|---|---|---|
| KB17AG | 4PDT | 6, 12, 24 or 120 VAC | $12.30 | $11.69 | $11.07 | $ 8.61 |
| KB17AG | 4PDT | 240 VAC | 13.20 | 12.54 | 11.88 | 9.24 |
| KB23AG | 6PDT | 24 or 120 VAC | 14.80 | 14.60 | 13.32 | 10.36 |
| KB17AY | 4PDT | 6, 12, 24 or 120 VAC | 12.20 | 11.59 | 10.98 | 8.54 |
| KB17AY | 4PDT | 240 VAC | 13.10 | 12.44 | 11.79 | 9.17 |
| KB23AY | 6PDT | 24 or 120 VAC | 14.60 | 13.87 | 13.14 | 10.22 |
| KB17D | 4PDT | 6, 12 or 24 VDC | 10.95 | 10.40 | 9.86 | 7.76 |
| KB17D | 4PDT | 110 VDC | 12.40 | 11.78 | 11.16 | 8.68 |
| KB23D | 6PDT | 24 VDC | 13.25 | 12.59 | 11.93 | 9.28 |
| KB17DG | 4PDT | 6, 12 or 24 VDC | 11.20 | 10.64 | 10.08 | 7.84 |
| KB17DG | 4PDT | 110 VDC | 12.65 | 12.02 | 11.39 | 8.86 |
| KB23DG | 6PDT | 24 VDC | 13.60 | 12.92 | 12.24 | 9.52 |
| KB23DG | 6PDT | 110 VDC | 15.05 | 14.30 | 13.55 | 10.54 |
| KBP17A | 4PDT | 120 VAC | 17.15 | 16.29 | 15.44 | 12.01 |
| KBP17AG | 4PDT | 120 VAC | 17.35 | 16.48 | 15.62 | 12.15 |
| KBP17D | 4PDT | 24 VDC | 15.90 | 15.10 | 14.31 | 11.13 |
| KBP17DG | 4PDT | 12 or 24 VDC | 16.20 | 15.39 | 14.58 | 11.34 |
| KBP20A | 5PDT | 120 VAC | 17.65 | 16.77 | 15.89 | 12.36 |
| KBP20AG | 5PDT | 120 VAC | 17.90 | 17.00 | 16.11 | 12.53 |
| KBP20DG | 5PDT | 12 or 24 VDC | 17.05 | 16.20 | 15.35 | 11.94 |
| KDP29D11 | 8PDT | 24 VDC | 9.35 | 8.88 | 8.42 | 6.55 |
| KL17A | 4PDT | 6, 12, 24 or 120 VAC | 7.35 | 6.98 | 6.61 | 5.15 |
| KL17D | 4PDT | 6, 12 or 24 VDC | 6.95 | 6.60 | 6.25 | 4.87 |
| KL17D | 4PDT | 110 VDC | 7.65 | 7.27 | 6.88 | 5.36 |
| KLT5D | SPDT | 12 or 24 VDC | 4.20 | 3.99 | 3.78 | 2.98 |
| KLT11D | DPDT | 6, 12 or 24 VDC | 5.35 | 5.08 | 4.82 | 3.75 |
| KLT11D | DPDT | 48 VDC | 5.75 | 5.46 | 5.17 | 4.03 |
| KLT14D | 3PDT | 12 or 24 VDC | 5.95 | 5.65 | 5.36 | 4.17 |
| KM5D | SPDT | 6, 12 or 24 VDC | 4.00 | 3.80 | 3.60 | 2.80 |
| KM11D | DPDT | 6, 12 or 24 VDC | 4.40 | 4.18 | 3.96 | 3.08 |
| KM14D | 3PDT | 6, 12 or 24 VDC | 5.05 | 4.80 | 4.55 | 3.54 |
| KT11A | DPDT | 6 or 120 VAC | 4.30 | 4.08 | 3.87 | 3.01 |
| KT11D | DPDT | 6 or 12 VDC | 4.30 | 4.08 | 3.87 | 3.01 |
| KUL5A15S | DPDT | 120 VAC* | 6.30 | 5.99 | 5.67 | 4.41 |
| KUL5D15S | DPDT | 24 VDC | 5.45 | 5.18 | 4.91 | 3.82 |
| KUL11A15S | DPDT | 12, 24 or 120 VAC* | 7.10 | 6.75 | 6.39 | 4.97 |
| KUL11D15S | DPDT | 12 or 24 VDC | 6.05 | 5.75 | 5.45 | 4.24 |
| PC11A | DPDT | 6, 12, 24 or 120 VAC | 6.55 | 6.22 | 5.89 | 4.59 |
| PC17A | 4PDT | 24 or 120 VAC | 9.00 | 8.55 | 8.10 | 6.30 |
| PC11D | DPDT | 6, 12 or 24 VDC | 6.30 | 5.98 | 5.67 | 4.41 |
| PC17D | 4PDT | 24 VDC | 8.80 | 8.36 | 7.92 | 6.16 |
| SA-1N-12A | 12 steps | 120 VAC | 7.70 | 7.32 | 6.93 | 5.39 |
| BU | ............... | 6, 12, 24 or 120 VAC | 2.05 | 1.95 | 1.85 | 1.44 |

*Diodes included inside relay case.

## SPECIAL PURPOSE RELAYS

**KB (Open) and KBP (Enclosed) Series:** Latching relay with release and trip coils at same voltage. One sets the latch and the other releases. Operates on momentary impulse to either coil. Silver contacts are rated 5 amps; suffix "G" indicates silver-cadmium contacts on movables rated at 10 amps. AC open relays with 5 amp contacts are UL and CSA Listed. **Type KB** are open relays with two 5/32" holes on 1 3/8" mtg. ctrs.; size, 1 13/16" x 3 7/32" x 2 1/8". **Type KBP** have dust cover and 20-pin octal plug for Amphenol 77M1P-20 or similar socket; size, 1.781" x 2 13/32" x 3.56" max. seated. (Not UL or CSA Listed.)

**KDP Series:** Compact relay in dust cover provides 8 Form C (8PDT) switching with bifurcated contacts for simultaneous switching of 8 isolated outputs. Designed for dense packaging applications in electrical control systems. Operate speed 15 msec at 24 VDC nom. and 25° C. Contacts rated 1 amp at 30 VDC resistive or 0.5 amp at 120 VAC. Size, 1.19" x .56" x 1.54" max. Weight, 1 1/3 oz. without socket.

**KL Series:** High dielectric phenolic insulation for extra versatility. Gold-flashed silver contacts rated 5 amps at 120 VAC, 50/60 Hz. Two 6-32 mtg. holes on 1 7/16" centers. Size, 1 23/32" x 1 59/64" x 2 1/32". Weight, 5 oz.

**KLT Series:** Continuous duty coils, 6 W at +25° C. Contacts rated 3 A at 120 VAC, 50/60 Hz res. Two 6-32 holes on 1 7/16" ctrs. Size, 1 59/64" x 1 15/16" x 1 53/64". Wt., 4 oz.

**KM Series:** Subminiature relay for use where size and weight are critical factors. Silver contacts rated 2 amps. Solder lug terminals. Has 2-56 tapped hole and locating half-punch for mtg. Size, 11/16" x 1 1/8" x 53/64". Weight, .58 oz.

**KT Series:** Antenna switching relay has glass base insulation for minimum RF loss to switch 300-ohm line. Gold-flashed silver contacts rated 5 amps. Single 6-32 mtg. stud. Size, 1 15/16" x 1 5/16" x 1 11/16". Wt., 1 1/2 oz.

**KUL Series:** Commercial magnetic latching relay uses permanent magnet in parallel with normal magnetic circuit. Good memory stability; for continuous duty. Clear, high impact plastic case. Contacts rated 5 or 10 amps at 28 VDC resistive or 120 VAC, 80%, PF. Size, 1.406" x 1.531" x 2.156" max. Wt., 3 1/2 oz. See KUP sockets.

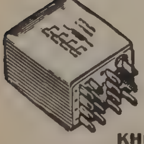
**PC Series:** Single coil impulse latching relay for on-off and current reversal switching on alternate pulses. Gold-flashed silver cadmium oxide contacts rated 7.5 amps. Two 5/32" mtg. holes on 2 5/8" centers. Size, 2 5/64" x 2 1/16" x 2 31/32". Weight, 5 oz.

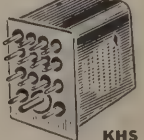
**SA Series:** Stepping switch, 12-position relay with printed circuit strips for currents up to 250 mA. Armature-driven pawl and ratchet wheel driving movable contact in 30° steps. Two 6-32 holes, 1 13/16" ctrs.; 2 17/32" x 2 15/32" x 1 25/32". Weight, 4 oz.

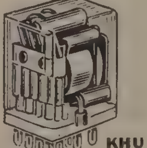
## BUZZER

**BU Series Buzzer:** AC operated coil with spring steel armature; buzzes when coil is energized. UL component recognized. Mounting, 6-32 tapped core. Size, 1 1/32" x 1 1/32" x 1 3/8". Weight, 1 5/8 oz.

## GENERAL PURPOSE TELEPHONE RELAYS







### SERIES KHP, KHS (SEALED) AND KHU (ENCLOSED) TYPES

Small, rugged 4PDT, AC or DC relays. KHU, clear polycarbonate and KHP has nylon dust cover; KHS is hermetically sealed in metal enclosure. For data processing and computer applications. Contacts available: Suffix **11** denotes gold-flashed silver rated 3 amps, 30 VDC or 120 VAC, resistive; suffix **12** denotes silver-cadmium oxide rated 3 amps; suffix **13** gold alloy contacts for low level to 2 amp applications; suffix **16** gold overlay on silver, bifurcated contacts rated 1 amp at 30 VDC, resistive, or 120 VAC. Mount by solder terminals and 3-48 stud 5/16" lg. Adaptable to sockets (listed on another page). Type KHU carries UL component recognition.

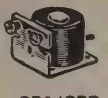
**★LARGER QUANTITY PRICES ON REQUEST**

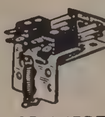
| P & B Number | Coil Voltages | Net Each, Lots of* 1-24 | 25-50 | 51-99 | 100-249 |
|---|---|---|---|---|---|
| KHP17A11 | 6, 12, 24 VAC | $5.55 | $5.27 | $5.00 | $3.89 |
| KHP17A11 | 120 VAC | 6.05 | 5.75 | 5.45 | 4.24 |
| KHP17A12 | 120 VAC | 6.20 | 5.89 | 5.58 | 4.34 |
| KHP17D11 | 6, 12, 24 VDC | 5.05 | 4.80 | 4.55 | 3.54 |
| KHP17D11 | 48 VDC | 5.25 | 4.99 | 4.73 | 3.68 |
| KHP17D11 | 90, 110 VDC | 5.90 | 5.61 | 5.31 | 4.13 |
| KHP17D13 | 24 VDC | 7.10 | 6.74 | 6.39 | 4.97 |
| KHP17D16 | 12, 24 VDC | 6.00 | 5.70 | 5.40 | 4.20 |
| KHS17A11 | 6, 12, 24 VAC | 9.55 | 9.07 | 8.60 | 6.69 |
| KHS17A11 | 120 VAC | 9.90 | 9.41 | 8.91 | 6.93 |
| KHS17A12 | 120 VAC | 10.10 | 9.60 | 9.09 | 7.07 |
| KHS17D11 | 6, 12, 24 VDC | 8.55 | 8.12 | 7.70 | 5.99 |
| KHS17D11 | 110 VDC | 9.40 | 8.93 | 8.46 | 6.58 |
| KHS17D12 | 24 VDC | 8.70 | 8.26 | 7.83 | 6.09 |
| KHU17A11 | 6, 12, 24 VAC | 5.55 | 5.27 | 5.00 | 3.89 |
| KHU17A11 | 120 VAC | 6.05 | 5.75 | 5.45 | 4.24 |
| KHU17D11 | 6, 12, 24 VDC | 5.05 | 4.80 | 4.55 | 3.54 |
| KHU17D11 | 48 VDC | 5.25 | 4.99 | 4.73 | 3.68 |
| KHU17D11 | 90, 110 VDC | 5.90 | 5.61 | 5.31 | 4.15 |
| KHP17D12 | 24 VDC | 5.20 | 4.94 | 4.68 | 3.64 |
| KHP17D12 | 110 VDC | 6.05 | 5.75 | 5.45 | 4.24 |
| KHU17A12 | 120 VAC | 6.20 | 5.89 | 5.58 | 4.34 |
| KHU17D12 | 24 VDC | 5.20 | 4.94 | 4.68 | 3.64 |
| KHU17D12 | 110 VDC | 6.05 | 5.75 | 5.45 | 4.24 |
| KHU17D16 | 12, 24 VDC | 6.00 | 5.70 | 5.40 | 4.20 |

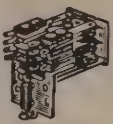
## GP SERIES "PIC & BUILD" KITS

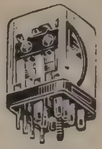
flexibility permitted using separate coils and switches for
combinations of up to 20 types of relays. Permits easy, rapid
ging of coils for different sensitivities; switches for variable
ct arrangements. Silver contacts rated 5 amps. Mounts with
tapped core and locating half-punch. Weight, 4 oz. average.

| B ber | Coil Voltage or Current | Net Each, Lots of* 1-24 | 25-50 | 51-99 | 100-249 |
|---|---|---|---|---|---|
| A | 6, 12, 24 or 120 VAC | $1.95 | $1.85 | $1.76 | $1.37 |
| A | 240 VAC | 2.40 | 2.28 | 2.16 | 1.68 |
| D | 6, 12 or 24 VDC | 2.40 | 2.28 | 2.16 | 1.68 |
| D | 110 VDC | 3.60 | 3.42 | 3.24 | 2.52 |
| D | 2500-ohm coil | 1.80 | 1.71 | 1.62 | 1.26 |
| D | 5000-ohm coil | 2.05 | 1.95 | 1.85 | 1.44 |
| D | 10K ohm coil | 2.40 | 2.28 | 2.16 | 1.68 |
| 11 | 2PDT switch | 2.00 | 1.90 | 1.80 | 1.40 |
| 17 | 4PDT switch | 3.40 | 3.23 | 3.06 | 2.38 |


GPA/GPD Coil


GP11 2PDT Switch


GP17 4PDT Switch


KNP Relay

## GA GENERAL PURPOSE RELAYS

Multiple-contact, voltage switching relay designed for industrial control usage. Silver contacts rated 5 amps; tinned, pierced solder terminals. Mounts on 8-32 tapped core with locating boss. Size, 1.063" x 1.719" x 1.781". Weight, 3½ oz.

| & B o. | Con-tacts | Coil Voltages | Net Each, Lots of 1-24 | 25-50 | 51-99 | 100-249 |
|---|---|---|---|---|---|---|
| 11A | DPDT | 6, 12, 24 or 120 VAC | $3.85 | $3.66 | $3.47 | $2.70 |
| 14A | 3PDT | 24 or 120 VAC | 4.60 | 4.37 | 4.14 | 3.22 |
| 17A | 4PDT | 6, 12, 24 or 120 VAC | 5.55 | 5.27 | 5.00 | 3.89 |
| 17A | 4PDT | 240 VAC | 5.95 | 5.65 | 5.36 | 4.17 |
| 11D | DPDT | 6, 12 or 24 VDC | 3.85 | 3.66 | 3.47 | 2.70 |
| 11D | DPDT | 110 VDC | 4.35 | 4.13 | 3.92 | 3.05 |
| 17D | 4PDT | 6, 12 or 24 VDC | 5.55 | 5.27 | 5.00 | 3.89 |
| 17D | 4PDT | 110 VDC | 6.05 | 5.75 | 5.45 | 4.24 |

## KNP GENERAL PURPOSE RELAYS

Small relays for general purpose applications where chassis space is limited. Enclosed in a clear, polycarbonate dust cover and recommended for AC or DC control applications. Relays have silver-cadmium oxide contacts for SPDT, DPDT or 3PDT switching. Relays are UL Recognized under Component Program for 1/10 HP at 120 VAC; 3 A at 32 VDC resistive; or 3 A at 240 VAC, 80% P.F. Relays have .110" quick-connect solder type terminals for easy connections. Can be mounted with No. 3-48 stud, or snap-in sockets with solder or printed circuit terminals. Size, .980" x 1.00" x 1.415" max. Weight, 1.4 oz. without socket.

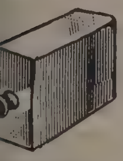
| P & B No. KNP- | Con-tacts | Coil Voltage | Net Each, Lots of* 1-24 | 25-50 | 51-99 | 100-249 |
|---|---|---|---|---|---|---|
| 5A21 | SPDT | 6, 12, 24 or 120 VAC | $3.75 | $3.56 | $3.37 | $2.62 |
| 5D21 | SPDT | 6, 12 or 24 VDC | 3.60 | 3.42 | 3.24 | 2.52 |
| 5D21 | SPDT | 110 VDC | 4.15 | 3.94 | 3.73 | 2.90 |
| 11A21 | DPDT | 6, 12, 24 or 120 VAC | 4.45 | 4.22 | 4.00 | 3.12 |
| 11D21 | DPDT | 6, 12 or 24 VDC | 4.00 | 3.80 | 3.60 | 2.80 |
| 11D21 | DPDT | 48 VDC | 4.15 | 3.94 | 3.73 | 2.90 |
| 11D21 | DPDT | 110 VDC | 4.65 | 4.42 | 4.18 | 3.26 |
| 14A21 | 3PDT | 6, 12, 24 or 120 VAC | 5.00 | 4.75 | 4.50 | 3.50 |
| 14D21 | 3PDT | 6, 12 or 24 VDC | 4.60 | 4.27 | 4.14 | 3.22 |
| 14D21 | 3PDT | 48 VDC | 4.75 | 4.51 | 4.27 | 3.32 |
| 14D21 | 3PDT | 110 VDC | 5.25 | 4.98 | 4.72 | 3.68 |

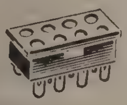
## MS SERIES MOTOR STARTING RELAYS

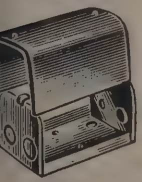
capacitor-start induc-
-run motors. Operate on
EMF of start winding.
erable armature gap.
t all UL spacing re-
ements. Two 5/32" holes;
ctrs. Size, 2⅛" x 2 1/16"
16". Wt., 7.5 oz. max.

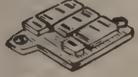
| P & B Number | Contacts | Coil Voltages | Net Each, Lots of* 1-24 | 25-50 | 51-99 | 100-249 |
|---|---|---|---|---|---|---|
| MS2AY | SPST-NC | 120 VAC for ¾ hp mot. | $4.20 | $3.99 | $3.78 | $2.94 |
| MS2AY | SPST-NC | 240 VAC for ¾ hp mot. | 4.70 | 4.47 | 4.23 | 3.29 |
| MS4AY | SPST-NC-DB | 120 VAC for 3 hp mot. | 4.90 | 4.67 | 4.41 | 3.43 |
| MS4AY | SPST-NC-DB | 240 VAC for 3 hp mot. | 5.40 | 5.17 | 4.86 | 3.78 |

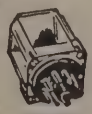
## COVERS, SPRINGS, SOCKETS, OTHER ACCESSORIES FOR P & B RELAYS

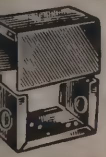

BS Cover

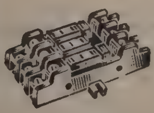

9HP1 Socket

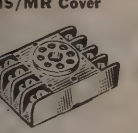

PM/PR Cover

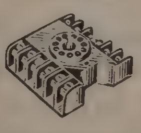

9KU1 Socket


35D070 "P" Case


MS/MR Cover


9KU6 Socket


9KR31 Socket


9KR32 Socket

**BS Dust Cover:** Sheet metal enclosure. Small unit for BS relays up to 6 Form C (6PDT, BS23); size, 1¼" x 2 3/16" x 3 27/32" plus ⅝" knob; wt., 6.5 oz.

**"P" Cases:** Clear, high-impact plastic case for mounting rectifiers, capacitors, resistors, etc. Octal-type plug with 8 or 11 pins, four screws. **9PM1 Adapter:** For mounting PM on PR holes. Box of 10.

**MS/MR Dust Cover:** For MS or MR Series relays; snaps onto metal base; relay mounts on pre-drilled base. **PM and PR Dust Covers:** Sheet metal base; aluminum cover, gray hammertone finish. Four ½" conduit knockouts; 3 #10 holes, 1⅞" x 4⅛" centers. **9PM2** is plastic cover.

**9KR15 Hold-Down Spring:** Fits KCP or KRP plug-in relays. Stainless steel. Two 5/32" holes on 1 5/16" ctrs.

**9KR31 8-Pin Socket:** For KRP, KAP, KCP and MDP plug-in relays. Screw terminals. Molded Lexan® frame.

**9KR32 11-Pin Socket:** For KRP, KAP, and KCP plug-in relays. Screw terminals. Molded Lexan frame.

**9KU3 Hold-Down Spring:** For KUP Series relays. Fits both pierced solder and printed circuit sockets.

**9KA1 Hold-Down Spring:** For KAP Series.

**9KD2 Socket:** For KDP Series. Solder terminals.

**9KD3 Hold-Down Spring:** For KDP Series.

**9KH1 Socket and Retainer:** Solder terminal sockets and retainers for KHU and KHP relays.

**9KH2 Socket:** Printed circuit terminal sockets for KHU and KHP relays.

**9KH3 Hold-Down Spring:** For KHU and KHP relays.

**9KN1 Socket:** Solder terminal sockets 27E118, with grounding lug for KNP relays.

**9KN2 Socket:** Printed circuit terminal sockets 27E119, with grounding lug for KNP relays.

**9KN3 Hold-Down Spring:** 20C246 spring, for KNP relays.

**9HP1 Socket:** For HP relays. Solder terminals; with retainer.

®Reg. General Electric TM.

**9KU1 Socket and Retainer:** For KHP plain case relays. Molded nylon, pierced solder terminals and retainers. Rated at 10 amps. Two .165" mtg. holes. **9KU2 Socket:** For KUP plain case relays. Molded nylon, printed circuit type. Rated 10 amps. Two .165" mtg. holes. **9KU5 Socket:** For KUP relays. Quick-connect .187" terminals. Two .165" mtg. holes. **9KU6 Socket:** For KUP relays. Molded Lexan frame; screw terminals.

**9KUL21 Hold-Down Spring:** For KUL relays.

| P & B No. | Type | Net Each, Lots of* 1-24 | 25-50 | 51-99 | 100-249 |
|---|---|---|---|---|---|
| 35D188 | Small BS | $2.10 | $1.99 | $1.89 | $1.47 |
| 35D130 | MS/MR | 2.20 | 2.08 | 1.98 | 1.54 |
| 35D227 | PM | 3.45 | 3.28 | 3.10 | 2.42 |
| 35D013 | PR | 3.45 | 3.28 | 3.10 | 2.42 |
| 9PM1 | PM/PR | 1.75 | 1.66 | 1.57 | 1.23 |
| 9PM2 | PM | 1.90 | 1.81 | 1.71 | 1.33 |
| 35D070 | 8-pin P | .65 | .62 | .58 | .46 |
| 35D072 | 11-pin P | .80 | .76 | .72 | .56 |

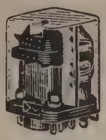
| P & B No. | Description | Box Qty. | Net Each per Box |
|---|---|---|---|
| 9KA1 | Spring | 50 | $ 5.80 |
| 9HP1 | Socket | 10 | 4.75 |
| 9KD2 | Socket | 10 | 9.50 |
| 9KD3 | Spring | 50 | 5.50 |
| 9KH1 | Socket and retainer | 10 | 6.60 |
| 9KH2 | Socket | 10 | 6.60 |
| 9KH3 | Spring | 50 | 5.50 |
| 9KN1 | Socket | 10 | 7.00 |
| 9KN2 | Socket | 10 | 7.00 |
| 9KN3 | Spring | 50 | 5.00 |
| 9KR15 | Spring | 50 | 5.80 |
| 9KR31 | Socket | 5 | 12.50 |
| 9KR32 | Socket | 5 | 18.75 |
| 9KU1* | Socket and retainer | 5 | 3.95 |
| 9KU2* | Socket | 5 | 4.75 |
| 9KU3* | Spring | 50 | 5.25 |
| 9KU5 | Socket | 5 | 6.30 |
| 9KU6 | Socket | 4 | 14.00 |
| 9KUL21 | Spring | 25 | 4.50 |

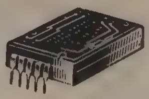
*UL component recognized.

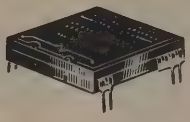
★LARGER QUANTITY PRICES ON REQUEST

P & B RELAYS ARE STOCKED AT NEWTON, MA; GAITHERSBURG, MD; ORLANDO & HOLLYWOOD, FL; HUNTSVILLE, AL; WINSTON-SALEM, NC; ATLANTA, GA; SALT LAKE CITY, UT; & SYRACUSE, NY

# AMF | POTTER & BRUMFIELD Relays


KUA


JDA


JDB

EBT, EBA

CPF, CPS, CPV

## KUA AMPLIFIER-DRIVEN KUP RELAY

Driven relay is KUP general purpose type. Solid state hybrid relay is designed for low power signals typical of IC's. Continuous duty operation at 24 VDC nominal control voltage; features built-in polarity protection. Control circuit sensitivity, 60 μW; requires approx. 1.2 W in activated state. Control signal between 2.4 VDC and 30 VDC will operate KUA provided specified supply voltage is applied. Contacts are gold-flashed fine silver rated 1/10 hp at 120 VAC, 60 Hz; ⅓ hp at 240 VAC, 60 Hz; 5 A at 28 VDC. Enclosed in a plain, clear polycarbonate case with .187″ quick-connect/solder type terminals that fit standard KU series sockets. Size, 1.406″ x 1.531″ x 1.906″ max. Weight, approx. 3½ oz.

| P & B No. | Contacts | Nominal Voltage | Net Each, Lots of* | | | |
|---|---|---|---|---|---|---|
| | | | 1-24 | 25-50 | 51-99 | 100-249 |
| KUA5G11 | SPDT | 24 VDC | $13.70 | $13.02 | $12.33 | $9.59 |
| KUA11G11 | DPDT | 24 VDC | 14.14 | 13.44 | 12.74 | 9.91 |

## JDA AMPLIFIER-DRIVEN JDT RELAY

Sensitive reed relay features same .275″ low profile, dual in-line design as JDT reed relay series. Control signal is amplified by solid state driver circuit with 100 μW sensitivity. Control signals between 2.4 VDC and 30 VDC will operate JDA when specified supply voltage is applied. Releases when control signal is reduced to .5 VDC or less. Designed for control voltage change rate exceeding 1 V/msec. Contacts rated 10 watts max. resistive per contact, 50 VDC or .5 amp max. Terminals spaced on .1″ grid centers. Approximate weight, .4 oz.

| P & B No. | Contacts | Nominal Voltage | Net Each, Lots of* | | | |
|---|---|---|---|---|---|---|
| | | | 1-9 | 10-24 | 25-99 | 100-249 |
| JDA7GB1 | DPDT-NO | 24 VDC | $15.25 | $11.38 | $9.68 | $8.77 |

## JDB SERIES SOLID STATE/REED AC SWITCH

Solid state hybrid relay designed for interfacing from DC control circuits to such 120 VAC, 60 Hz loads as fractional hp motors, solenoids and contactors. Expected life exceeds 10 million operations for a specified load current and ambient temperature combination. SPST-NO solid state "contact" is designed to carry max. load of 1.7 A rms, 60 Hz at 25° C ambient, or 1.0 A rms, 60 Hz at 55° C ambient. Operate time is 1 msec max. at nominal coil voltage at 25° C; release time, 10 msec max. Dual in-line package design has .1″ grid centers for terminals. Weight, .6 oz.

| P & B No. | Nominal Voltage | Net Each, Lots of* | | | |
|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-99 | 100-249 |
| JDB1DD22 | 6, 12 VDC | $13.80 | $10.30 | $8.76 | $7.94 |
| JDB1DD22 | 24 VDC | 14.40 | 10.74 | 9.14 | 8.28 |

## EBT SERIES SOLID STATE HYBRID RELAYS

Combines the input/output isolation of a reed relay with the inrush switching capabilities and long life of a solid state switch. EBT relays switch 7 A, 60 Hz at 55° ambient temperature with nominal load voltage of 120 V. Rated 5 A rms, 60 Hz at 55° C ambient. Min. operating current, 200 mA, 60 Hz. Expected life, greater than 10 million bounce-free operations. Operate time, 2 msec max.; release time; 10 msec max. Typical "closed contact" voltage drop, 1.1 V. Reed-triggered triac is potted in KAP-style plastic dust cover; octal terminals for standard 8-pin socket. Weight, approximately 5.5 oz.

| P & B No. | Nominal Voltage | Net Each, Lots of* | | | |
|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50 Up |
| EBT1DA52 | 6, 12, 24 VDC | $16.60 | $15.77 | $14.94 | $13.28 |

## EBA SOLID STATE HYBRID RELAY

Has all the output switching characteristics, package and moun ing of EBT, but includes a control signal amplifier. Designed operate from current source output mode of DTL and TTL log circuits; 60 μW signal will switch a 7 A load. Must operate voltag 2.4 VDC at approx. 25 μA with 24 VDC supply. Max. input, VDC or 1 mA; releases when voltage is reduced to .5 VDC less. Control voltage change rate must exceed 1 V/msec. Polari protection provided for control input and supply voltage terminal

| P & B No. | Nominal Voltage | Operate Time | Net Each, Lots of* | | | |
|---|---|---|---|---|---|---|
| | | | 1-9 | 10-24 | 25-49 | 50 U |
| EBA1GA52 | 24 VDC | 2 msec | $23.40 | $22.23 | $21.06 | $18.72 |

## CPF SOLID STATE FREQUENCY SENSOR

De-energizes output relay when frequency of AC input reache upper or lower limit of adjustable bandpass that brackets 60 H e.g., 62 or 58 Hz. Relay contacts rated 10 A at 120 VAC rm 60 Hz; will drop out to stop a process, sound alarm or perfor other desired functions. Bandpass is continuously adjustable fro 56–64 Hz to 59–61 Hz. Tripping point tolerance, ±1% of ban pass limits; operates on 120 VAC, ±10%. Operating temperatur −10° C to +55° C. Solid state sensor circuit and general purpos relay are enclosed in 38-style nylon dust cover equipped wit standard 8-pin plug for socket mounting. Approx. weight, 8 o

| P & B No. | Contacts | Net Each, Lots of* | | | |
|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50 Up |
| CPF38-70001 | SPDT | $82.80 | $78.66 | $74.52 | $66.24 |

## CPS THREE-PHASE SEQUENCE SENSOR

Solid state sensor is designed to detect reverse phase sequence an provide positive control of conventional three-phase four-wire 6 Hz circuits. Output relay de-energizes on loss of one or more phase or when phase reversal causes a combination other than the norma A-B-C relationship. Rugged, long-life general purpose relay ha silver/cadmium oxide contacts rated 10 A at 120 VAC rms, 60 H resistive. Solid state sensor circuits and general purpose relay ar enclosed in 38-style nylon dust cover. Coil designed for continuou duty in 120/208 VAC, 60 Hz, three-phase, four-wire system Operating temperature, −10° C to +55° C. Provided with stand ard 8-pin plug for socket mounting. Weight, approximately 8 o

| P & B No. | Contacts | Net Each, Lots of* | | | |
|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50 Up |
| CPS38-90001 | SPDT | $35.50 | $33.73 | $31.95 | $28.40 |

## CPV THREE-PHASE VOLTAGE SENSOR

Provides undervoltage protection. Responds to lower than norm voltage by de-energizing output relay when average input volta drops below a predetermined level, thus activating an alarm de-energizing a process under its control. Pickup and dropou levels are designed to prevent triggering on fractional volta variations. Solid state sensor circuits and general purpose relay a enclosed in 38-style nylon dust cover. Silver/cadmium oxide te minals are rated 10 A at 120 VAC rms, 60 Hz, resistive. Coil d signed for continuous duty operation in 120/208 VAC, 60 H three-phase four-wire systems. Operating temperature, −10° C +55° C. Provided with standard 8-pin plug for socket mountin Weight, approximately 8 oz.

| P & B No. | Contacts | Net Each, Lots of* | | | |
|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50 Up |
| CPV38-90001 | SPDT | $29.75 | $28.26 | $26.78 | $23.80 |

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WE OFFER COMPLETE BROAD LINE, IN-DEPTH INVENTORIES FOR
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P & B RELAYS ARE STOCKED AT NEWTON, MA; GAITHERSBURG, MD; ORLANDO & HOLLYWOOD, FL; HUNTSVILLE, AL; WINSTON-SALEM, NC; ATLANTA, GA; SALT LAKE CITY, UT; & SYRACUSE, NY

## DC OPERATED RELAYS

**Series:** Dependable and versatile, a fine choice for switching is from dry circuit to 5 amps. Sensitivities to 20 mW/pole ilable. Operating temp., −55° C to +72° C. Transparent losure. Three styles of contacts available: UL File No. E42810. pe R10-**E1** has solder terminals, stud or plug-in mtg. (sockets ional, see below); R10-**E2** has PC terminals, no stud mounting al suffix signifies coil ohms.

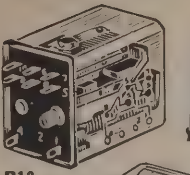
**Series Slimline® 4PDT Relays:** For PC boards; allows .6″ rd mtg. centers. Many contacts available with wide range of voltages; only .43″ thick for low profile designs. Switching ge from true dry circuit to 5 A; pull-in power, 720 mW. Size, ″ x 1.40″ x .43″. Final suffix signifies coil ohms. Type R40-**E1** solder terminals or plug-in socket mtg.; R40-**E2** has PC pins vertical mtg. less socket; R40-**E3** has PC pins for flat mtg. socket.

### 2 AMPS

| P & B Number R10- | Contacts | Coil Volts | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-499 | 500-999* |
|---|---|---|---|---|---|---|---|
| -Y2-V52 | DPDT | 6 | $3.25 | $2.93 | $2.44 | $2.28 | $2.11 |
| -Y2-V185 | DPDT | 12 | 3.25 | 2.93 | 2.44 | 2.28 | 2.11 |
| -Y2-V185 | DPDT | 12 | 3.25 | 2.93 | 2.44 | 2.28 | 2.11 |
| -Y2-V700 | DPDT | 24 | 3.25 | 2.93 | 2.44 | 2.28 | 2.11 |
| -Y2-V700 | DPDT | 24 | 3.25 | 2.93 | 2.44 | 2.28 | 2.11 |
| -Y2-V2.5K | DPDT | 48 | 3.25 | 2.93 | 2.44 | 2.28 | 2.11 |
| -Y2-V15.0K | DPDT | 115 | 4.95 | 4.46 | 3.71 | 3.47 | 3.22 |
| -Y4-V52 | 4PDT | 6 | 3.60 | 3.24 | 2.70 | 2.52 | 2.34 |
| -Y4-V185 | 4PDT | 12 | 3.60 | 3.24 | 2.70 | 2.52 | 2.34 |
| -Y4-V185 | 4PDT | 12 | 3.60 | 3.24 | 2.70 | 2.52 | 2.34 |
| -Y4-V700 | 4PDT | 24 | 3.60 | 3.24 | 2.70 | 2.52 | 2.34 |
| -Y4-V700 | 4PDT | 24 | 3.60 | 3.24 | 2.70 | 2.52 | 2.34 |
| -Y4-V2.5K | 4PDT | 48 | 3.60 | 3.24 | 2.70 | 2.52 | 2.34 |
| -Y4-V15.0K | 4PDT | 115 | 5.30 | 4.77 | 3.98 | 3.71 | 3.45 |
| -Z4-V185* | 4PDT | 12 | 4.10 | 3.69 | 3.08 | 2.87 | 2.67 |
| -Z4-V700* | 4PDT | 24 | 4.10 | 3.69 | 3.08 | 2.87 | 2.67 |
| -Y6-V25 | 6PDT | 6 | 4.65 | 4.19 | 3.49 | 3.26 | 3.02 |
| -Y6-V90 | 6PDT | 12 | 4.65 | 4.19 | 3.49 | 3.26 | 3.02 |
| -Y6-V90 | 6PDT | 12 | 4.65 | 4.19 | 3.49 | 3.26 | 3.02 |
| -Y6-V430 | 6PDT | 24 | 4.65 | 4.19 | 3.49 | 3.26 | 3.02 |
| -Y6-V430 | 6PDT | 24 | 4.65 | 4.19 | 3.49 | 3.26 | 3.02 |
| -Y6-V1.5K | 6PDT | 48 | 4.65 | 4.19 | 3.49 | 3.26 | 3.02 |
| -Y6-V1.5K | 6PDT | 48 | 4.65 | 4.19 | 3.49 | 3.26 | 3.02 |
| -Y6-V9.0K | 6PDT | 115 | 5.55 | 5.00 | 4.16 | 3.89 | 3.61 |
| **5 AMPS** | | | | | | | |
| -X2-V52 | DPDT | 6 | $3.35 | $3.02 | $2.51 | $2.35 | $2.18 |
| -X2-V185 | DPDT | 12 | 3.35 | 3.02 | 2.51 | 2.35 | 2.18 |
| -X2-V700 | DPDT | 24 | 3.35 | 3.02 | 2.51 | 2.35 | 2.18 |
| -X2-V2.5K | DPDT | 48 | 3.35 | 3.02 | 2.51 | 2.35 | 2.18 |
| -X2-V15.0K | DPDT | 115 | 5.05 | 4.55 | 3.79 | 3.54 | 3.28 |
| -X4-V52 | 4PDT | 6 | 3.85 | 3.47 | 2.89 | 2.70 | 2.50 |
| -X4-V185 | 4PDT | 12 | 3.85 | 3.47 | 2.89 | 2.70 | 2.50 |
| -X4-V700 | 4PDT | 24 | 3.85 | 3.47 | 2.89 | 2.70 | 2.50 |
| -X4-V2.5K | 4PDT | 48 | 3.85 | 3.47 | 2.89 | 2.70 | 2.50 |
| -X4-V15.0K | 4PDT | 115 | 5.55 | 5.00 | 4.16 | 3.89 | 3.61 |
| -X6-V25 | 6PDT | 6 | 5.05 | 4.55 | 3.79 | 3.54 | 3.28 |
| -X6-V90 | 6PDT | 12 | 5.05 | 4.55 | 3.79 | 3.54 | 3.28 |
| -X6-V430 | 6PDT | 24 | 5.05 | 4.55 | 3.79 | 3.54 | 3.28 |
| -X6-V1.5K | 6PDT | 48 | 5.05 | 4.55 | 3.79 | 3.54 | 3.28 |
| -X6-V9.0K | 6PDT | 115 | 5.95 | 5.36 | 4.46 | 4.17 | 3.87 |
| **100 mA—BIFURCATED LOW LEVEL CONTACTS** | | | | | | | |
| 1-Z2-V52 | DPDT | 6 | $3.65 | $3.29 | $2.74 | $2.56 | $2.37 |
| 1-Z2-V185 | DPDT | 12 | 3.65 | 3.29 | 2.74 | 2.56 | 2.37 |
| 1-Z2-V700 | DPDT | 24 | 3.65 | 3.29 | 2.74 | 2.56 | 2.37 |
| 1-Z2-V2.5K | DPDT | 48 | 3.65 | 3.29 | 2.74 | 2.56 | 2.37 |
| 1-Z2-V15.0K | DPDT | 115 | 5.35 | 4.82 | 4.01 | 3.75 | 3.48 |
| 1-Z4-V52 | 4PDT | 6 | 4.10 | 3.69 | 3.08 | 2.87 | 2.67 |
| 1-Z4-V185 | 4PDT | 12 | 4.10 | 3.69 | 3.08 | 2.87 | 2.67 |
| 1-Z4-V700 | 4PDT | 24 | 4.10 | 3.69 | 3.08 | 2.87 | 2.67 |
| 1-Z4-V2.5K | 4PDT | 48 | 4.10 | 3.69 | 3.08 | 2.87 | 2.67 |
| 1-Z4-V15.0K | 4PDT | 115 | 5.80 | 5.22 | 4.35 | 4.06 | 3.77 |
| 1-Z6-V25 | 6PDT | 6 | 5.30 | 4.77 | 3.98 | 3.71 | 3.45 |
| 1-Z6-V90 | 6PDT | 12 | 5.30 | 4.77 | 3.98 | 3.71 | 3.45 |
| 2-Z6-V90 | 6PDT | 12 | 5.30 | 4.77 | 3.98 | 3.71 | 3.45 |
| 1-Z6-V430 | 6PDT | 24 | 5.30 | 4.77 | 3.98 | 3.71 | 3.45 |
| 2-Z6-V430 | 6PDT | 24 | 5.30 | 4.77 | 3.98 | 3.71 | 3.45 |
| 1-Z6-V1.5K | 6PDT | 48 | 5.30 | 4.77 | 3.98 | 3.71 | 3.45 |
| 2-Z6-V1.5K | 6PDT | 48 | 5.30 | 4.77 | 3.98 | 3.71 | 3.45 |
| 1-Z6-V9.0K | 6PDT | 115 | 6.20 | 5.58 | 4.64 | 4.34 | 4.03 |
| **2 AMPS—SENSITIVE CURRENT (J ADJUSTMENT)** | | | | | | | |
| 1-Y2-J2.5K | DPDT 85 mW | 5.8† | $3.55 | $3.20 | $2.66 | $2.49 | $2.31 |
| 1-Y2-J5.0K | | 4.1† | 4.05 | 3.65 | 3.04 | 2.84 | 2.63 |
| 1-Y2-J10.0K | | 3.1† | 4.45 | 4.01 | 3.34 | 3.12 | 2.89 |
| 1-Y4-J2.5K | 4PDT 175 mW | 8.4† | 3.95 | 3.56 | 2.96 | 2.77 | 2.57 |
| 1-Y4-J5.0K | | 6.2† | 4.45 | 4.01 | 3.34 | 3.12 | 2.89 |
| 1-Y4-J10.0K | | 4.5† | 4.85 | 4.37 | 3.64 | 3.40 | 3.15 |
| 1-Z4-J1.0K | 4PDT 175 mW | 13.0† | 4.45 | 4.01 | 3.34 | 3.12 | 2.89 |
| 1-Z4-J2.5K | | 8.4† | 4.45 | 4.01 | 3.34 | 3.12 | 2.89 |
| 2-Z4-J2.5K | | 8.4† | 4.45 | 4.01 | 3.34 | 3.12 | 2.89 |
| 1-Z4-J5.0K | | 6.2† | 4.95 | 4.46 | 3.71 | 3.47 | 3.22 |
| 2-Z4-J5.0K | | 6.2† | 5.30 | 4.77 | 3.98 | 3.71 | 3.45 |
| **AC** | | | | | | | |
| 1-X2-115VAC | DPDT | 115 | $4.50 | $4.05 | $3.38 | $3.15 | $2.93 |
| 1-X4-115VAC | 4PDT | 115 | 5.40 | 4.86 | 4.05 | 3.78 | 3.51 |

Bifurcated low level contacts. †mA.

**★LARGER QUANTITY PRICES ON REQUEST**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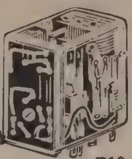
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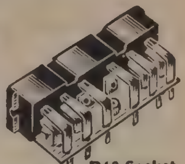
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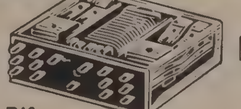
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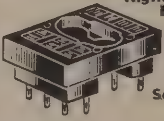

R10 Socket

### 2 AMPS

| P & B Number R40- | Coil Volts | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-499 | 500-999 | 1000-2499 |
|---|---|---|---|---|---|---|---|
| E1-Y4-V50 | 6 | $5.35 | $4.82 | $4.01 | $3.75 | $3.58 | $3.48 |
| E1-Y4-V200 | 12 | 5.35 | 4.82 | 4.01 | 3.75 | 3.58 | 3.48 |
| E3-Y4-V200 | 12 | 5.35 | 4.82 | 4.01 | 3.75 | 3.58 | 3.48 |
| E1-Y4-V800 | 24 | 5.35 | 4.82 | 4.01 | 3.75 | 3.58 | 3.48 |
| E2-Y4-V800 | 24 | 5.35 | 4.82 | 4.01 | 3.75 | 3.58 | 3.48 |
| E3-Y4-V800 | 24 | 5.35 | 4.82 | 4.01 | 3.75 | 3.58 | 3.48 |
| E1-Y4-V3.2K | 48 | 5.35 | 4.82 | 4.01 | 3.75 | 3.58 | 3.48 |
| E3-Y4-V3.2K | 48 | 5.35 | 4.82 | 4.01 | 3.75 | 3.58 | 3.48 |
| **5 AMPS** | | | | | | | |
| E2-X4-V50 | 6 | $5.60 | $5.04 | $4.20 | $3.92 | $3.75 | $3.64 |
| E1-X4-V200 | 12 | 5.60 | 5.04 | 4.20 | 3.92 | 3.75 | 3.64 |
| E2-X4-V200 | 12 | 5.60 | 5.04 | 4.20 | 3.92 | 3.75 | 3.64 |
| E3-X4-V200 | 12 | 5.60 | 5.04 | 4.20 | 3.92 | 3.75 | 3.64 |
| E1-X4-V800 | 24 | 5.60 | 5.04 | 4.20 | 3.92 | 3.75 | 3.64 |
| E2-X4-V800 | 24 | 5.60 | 5.04 | 4.20 | 3.92 | 3.75 | 3.64 |
| E3-X4-V800 | 24 | 5.60 | 5.04 | 4.20 | 3.92 | 3.75 | 3.64 |
| **100 mA—BIFURCATED LOW LEVEL CONTACTS** | | | | | | | |
| E1-Z4-V200 | 12 | $5.85 | $5.27 | $4.39 | $4.10 | $3.92 | $3.80 |
| E2-Z4-V200 | 12 | 5.85 | 5.27 | 4.39 | 4.10 | 3.92 | 3.80 |
| E3-Z4-V200 | 12 | 5.85 | 5.27 | 4.39 | 4.10 | 3.92 | 3.80 |
| E1-Z4-V800 | 24 | 5.85 | 5.27 | 4.39 | 4.10 | 3.92 | 3.80 |
| E2-Z4-V800 | 24 | 5.85 | 5.27 | 4.39 | 4.10 | 3.92 | 3.80 |
| E3-Z4-V800 | 24 | 5.85 | 5.27 | 4.39 | 4.10 | 3.92 | 3.80 |
| E2-Z4-V3.2K | 48 | 5.85 | 5.27 | 4.39 | 4.10 | 3.92 | 3.80 |
| E3-Z4-V3.2K | 48 | 5.85 | 5.27 | 4.39 | 4.10 | 3.92 | 3.80 |
| **500 µA—DRY CIRCUIT CROSS BAR** | | | | | | | |
| E1-L4-V200 | 12 | $6.80 | $6.12 | $5.10 | $4.76 | $4.56 | $4.42 |
| E3-L4-V200 | 12 | 6.80 | 6.12 | 5.10 | 4.76 | 4.56 | 4.42 |
| E1-L4-V800 | 24 | 6.80 | 6.12 | 5.10 | 4.76 | 4.56 | 4.42 |
| E3-L4-V800 | 24 | 6.80 | 6.12 | 5.10 | 4.76 | 4.56 | 4.42 |
| E1-L4-V3.2K | 48 | 6.80 | 6.12 | 5.10 | 4.76 | 4.56 | 4.42 |
| E3-L4-V3.2K | 48 | 6.80 | 6.12 | 5.10 | 4.76 | 4.56 | 4.42 |

**R12 Series Variable Time Delay Relays:** Small size DPDT with 5 amp contacts and silicon transistor circuitry. Delay time .1 to 120 seconds in three ranges; no false operation. Critical timing capacitor meets military specifications; high resolution 15-turn potentiometer. Size, 1.580″ x .735″ x 1.187″.

| P & B Number R12- | Delay Sec | Coil Volts | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-499 | 500-999* |
|---|---|---|---|---|---|---|---|
| 2-12-X2-E1 | 0.1 to 2.0 | 12 | $18.10 | $16.29 | $13.58 | $12.67 | $11.77 |
| 2-24-X2-E1 | | 24 | 18.10 | 16.29 | 13.58 | 12.67 | 11.77 |
| 30-12-X2-E1 | 1.0 to 30 | 12 | 18.60 | 16.74 | 13.95 | 13.02 | 12.09 |
| 30-24-X2-E1 | | 24 | 18.60 | 16.74 | 13.95 | 13.02 | 12.09 |
| 120-12-X2-E1 | 5.0 to 120 | 12 | 20.10 | 18.09 | 15.08 | 14.07 | 13.07 |
| 120-24-X2-E1 | | 24 | 20.10 | 18.09 | 15.08 | 14.07 | 13.07 |

### SOCKETS FOR R10 SERIES RELAYS

| P & B Number | Contacts | Terminal | Contents | Net per Box |
|---|---|---|---|---|
| 9XR10-1 | DPDT | Solder | 10 each, sockets and hold down springs | $5.50 |
| 9XR10-2 | 4PDT | Solder | | 7.00 |
| 9XR10-3 | 6PDT | Solder | | 9.00 |
| 9XR10-4 | DPDT | PC pins | 10 each, sockets and hold down springs | 5.50 |
| 9XR10-5 | 4PDT | PC pins | | 7.00 |
| 9XR10-6 | 6PDT | PC pins | | 9.00 |
| 9XR10-7 | DPDT | Solder | 10 each, sockets and hold down springs | 5.50 |
| 9XR10-8 | 4PDT | Solder | | 7.00 |
| 9XR10-9 | 6PDT | Solder | | 9.00 |
| 9XR10-10 | Pkg. 50 strap hold down springs, PC skts. | | | 2.50 |

### SOCKETS FOR R40 SLIMLINE SERIES RELAYS

| | | | | |
|---|---|---|---|---|
| 9XR40-1 | 4PDT | Right angle PC | 10 each, sockets and hold down springs | $13.50 |
| 9XR40-2 | 4PDT | Vert. PC | | 9.50 |
| 9XR40-3 | 4PDT | Chassis mount—solder | As above, plus mounting clips | 10.00 |

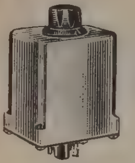
### SOCKETS FOR R12 SERIES TIME DELAY RELAYS

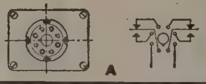
| | | | | |
|---|---|---|---|---|
| 9XR12-1 | DPDT | Solder | 10 ea., skts, hold down springs | $9.00 |
| 9XR12-2 | DPDT | PC pins | | 9.00 |

**P & B RELAYS ARE STOCKED AT NEWTON, MA; GAITHERSBURG, MD; ORLANDO & HOLLYWOOD, FL; HUNTSVILLE, AL; WINSTON-SALEM, NC; ATLANTA, GA; SALT LAKE CITY, UT; & SYRACUSE, NY**

# AMF | POTTER & BRUMFIELD Relays

## SOLID STATE TIME DELAY RELAYS


CD-38, CK-38 and CH-38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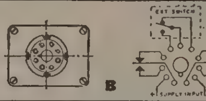

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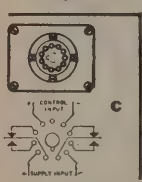

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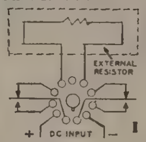

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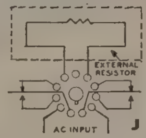

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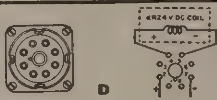

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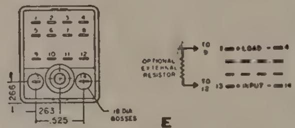

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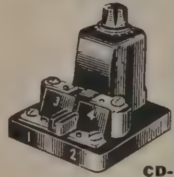
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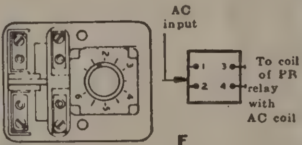

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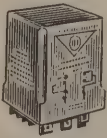
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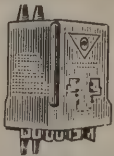
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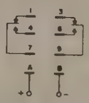
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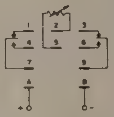

H

### CU SERIES LOW-COST RELAYS

Designed for delay on operate applications in machine tool controls, copiers, office equipment, coin-operated machines, etc. Available in two types: fixed time delay (Outline Drawing G); or adjustable with external resistor (Outline Drawing H). All models have internal DPDT relay rated 10 amps at 120 VAC. Type CU-41 has plain case, 1.531" x 1.406" x 1.096" high; mounts in same sockets as KUP Series relays. See another P & B page for listings. Type CU-42 has slotted flange case. Weight, 3½ oz.

| P & B Number | Out-line Dwg. | Time Delay, Seconds | Input Voltage | Ext. Resis. Ohms* | Net Each 1-9* |
|---|---|---|---|---|---|
| CUA41-70010 | G | 10 | 120 VAC | None | $14.20 |
| CUA41-70120 | G | 120 | 120 VAC | None | 15.75 |
| CUA41-30010 | G | 10 | 24 VAC | None | 14.20 |
| CUC41-30010 | G | 10 | 24 VDC | None | 14.20 |
| CUC41-30120 | G | 120 | 24 VDC | None | 15.75 |
| CUA42-70010 | G | 10 | 120 VAC | None | 14.20 |
| CUA42-70120 | G | 120 | 120 VAC | None | 15.75 |
| CUA42-30010 | G | 10 | 24 VAC | None | 14.20 |
| CUC42-30010 | G | 10 | 24 VDC | None | 14.20 |
| CUC42-30120 | G | 120 | 24 VDC | None | 15.75 |
| CUF41-70010 | H | 1.0 to 10 | 120 VAC | 200K | 15.00 |
| CUF41-70120 | H | 1.0 to 120 | 120 VAC | 2.4 megs | 16.30 |
| CUF41-30010 | H | 1.0 to 10 | 24 VAC | 200K | 15.00 |
| CUH41-30010 | H | 1.0 to 10 | 24 VDC | 160K | 15.00 |
| CUH41-30120 | H | 1.0 to 120 | 24 VDC | 2 megs | 16.30 |
| CUF42-70010 | H | 1.0 to 10 | 120 VAC | 200K | 15.00 |
| CUF42-70120 | H | 1.0 to 120 | 120 VAC | 2.4 megs | 16.30 |
| CUF42-30010 | H | 1.0 to 10 | 24 VAC | 200K | 15.00 |
| CUH42-30010 | H | 1.0 to 10 | 24 VDC | 160K | 15.00 |
| CUH42-30120 | H | 1.0 to 120 | 24 VDC | 2 megs | 16.30 |

*Value of external resistor required for maximum delay time.

### CD SERIES GENERAL PURPOSE TYPES

Economically priced, solid state relays are dependable and accurate, available with a wide variety of operational configurations. Offer accurate time delay, fast reset time and excellent repeatability. Series includes models for both 120 VAC and 24 VDC operation, and choice of two models of timing: knob-adjustable, with internal relay (CD-38) or for use with external relay (CD-21 and CD-45); or adjustable with an external resistor (CD-31). Accuracy over temperature and voltage range, ±5% of nominal. Repeatability, ±1%. Fast reset time, 60 msec. Dial setting, time-calibrated ±5% of full-scale. Operating temperature, –40° C to +55° C. Continuous duty. Rugged plastic enclosures. All relays listed provide time delay "on operate" except CDB-38-70012 and CDD-38-30012, which have delayed release when control circuit is de-energized (supply circuit must be energized continuously; see Outline Drawing C). Size: **CD-38,** 1.781" x 2.375" x 3.562" h.; wt., 8¼ oz. **CD-21,** 1.406" sq. x 2.562" h.; wt., 4¼ oz. **CD-31,** .859" x 1.109" x 1.28" h.; wt., 2 oz, **CD-45,** 2.5" x 3" x 2.75" h.; wt., 6 oz.

| P & B Number | Out-line Dwg. | Time Delay, Seconds | Input Voltage | Notes | Net Each 1-9* |
|---|---|---|---|---|---|
| CDB-38-70003 | A | 0.1 to 10 | 120 VAC | a | $44.25 |
| CDB-38-70004 | A | 0.6 to 60 | 120 VAC | a | 44.25 |
| CDB-38-70005 | A | 1.8 to 180 | 120 VAC | a | 44.25 |
| CDD-38-30003 | A | 0.1 to 10 | 24 VDC | a | 42.00 |
| CDD-38-30004 | A | 0.6 to 60 | 24 VDC | a | 42.00 |
| CDD-38-30005 | A | 1.8 to 180 | 24 VDC | a | 42.00 |
| CDB-38-70012 | C | 0.6 to 60 | 120 VAC | a, g | 52.90 |
| CDD-38-30012 | C | 0.6 to 60 | 24 VDC | a, g | 49.95 |
| CDB-21-70003 | D | 0.1 to 10 | 120 VAC | b | 39.15 |
| CDB-21-70001 | D | 1.8 to 180 | 120 VAC | b | 39.15 |
| CDD-21-30003 | D | 0.1 to 10 | 24 VDC | c | 38.80 |
| CDD-21-30001 | D | 1.8 to 180 | 24 VDC | c | 38.80 |
| CDH-31-30005 | E | 180 max. | 24 VDC | d, e | 39.35 |
| CDB-45-70002 | F | 0.6 to 60 | 120 VAC | f | 37.50 |

### CH SERIES LOW-COST TYPES

Engineered for a wide range of industrial applications where not-too-critical performance suffices and where economy is more important than precision timing accuracy. Enclosed in a molded white nylon dust cover, CH units are knob-adjustable (except CHA-38-70001, fixed delay) and have plug-in octal terminals and an internally mounted, quality P & B DPDT relay. Accuracy, ±10% of nominal. Repeatability, ±2%. Reset time, 100 msec. Operating temperature, –10° C to +55° C. Dial setting, reference scale. Polarity reversal protection on DC. Size, 1.781" x 2.375" x 3.562" high, maximum. Weight, 4 oz.

| P & B Number | Out-line Dwg. | Time Delay, Seconds | Input Voltage | Notes | Net Each 1-9* |
|---|---|---|---|---|---|
| CHA-38-70001 | A | 10 | 120 VAC | a | $18.90 |
| CHB-38-30001 | B | 1.0 to 10 | 24 VAC | a | 19.95 |
| CHB-38-30003 | B | 1.0 to 180 | 24 VAC | a | 19.95 |
| CHB-38-70001 | B | 1.0 to 10 | 120 VAC | a | 19.95 |
| CHB-38-70003 | B | 1.0 to 180 | 120 VAC | a | 19.95 |
| CHB-38-80001 | B | 1.0 to 10 | 240 VAC | a | 20.95 |
| CHD-38-30001 | A | 1.0 to 10 | 24 VDC | a | 18.95 |
| CHD-38-30003 | A | 1.0 to 180 | 24 VDC | a | 18.95 |
| CHB-38-70011 | B | 1.0 to 10 | 120 VAC | a, g | 23.95 |
| CHB-38-70013 | B | 1.0 to 180 | 120 VAC | a, g | 23.95 |
| CHD-38-30011 | B | 1.0 to 10 | 24 VAC | a, g | 21.95 |
| CHD-38-30013 | B | 1.0 to 180 | 24 VAC | a, g | 21.95 |

### CK SERIES

Available in three types: Fixed, resistor adjustable and knob adjustable for delay on operate applications. Similar to CH Series with internally mounted 10 amps DPDT relay. Enclosed in white nylon dust cover for compact and convenient assembly. Does not false operate and will time as low as 0.1 sec. For AC or DC applications where false operation cannot be tolerated. CK units are knob adjustable except CKA and CKC, fixed delay. Reset time, 60 msec. Equipped with plug-in octal type terminals. Size, 2.375" x 1.781" x 3.562" h. max. (with knob). Weight, 4 oz.

| P & B Number | Out-line Dwg. | Time Delay Seconds | Input Voltage | Notes | Net Each 1-9* |
|---|---|---|---|---|---|
| CKA-38-70010 | A | 10 | 120 VAC | a | $21.90 |
| CKC-38-30010 | A | 10 | 24 VDC | a | 20.90 |
| CKF-38-70010 | J | .1 to 10 | 120 VAC | a | 22.05 |
| CKH-38-30010 | I | .1 to 10 | 24 VDC | a | 21.05 |
| CKB-38-30010 | A | .1 to 10 | 24 VAC | a | 22.95 |
| CKB-38-70010 | A | .1 to 10 | 120 VAC | a | 22.95 |
| CKB-38-70120 | A | 1.2 to 120 | 120 VAC | a | 22.95 |

**Notes: a,** Has internal relay with DPDT contacts rated at 10 amps, 120 VAC. **b,** Use with P & B Type KRP5AG, KRP11AG or KRP14AG, 120 VAC relays. **c,** Use with P & B Type KRP5DG, KRP11DG or KRP14DG, 24 VDC relays. **d,** Use with P & B Type KHP17D11, 24 VDC relay. **e,** As supplied, unit has fixed time delay of 180 secs; adjustable to 1.8 sec, with external resistor (not furnished). **f,** Use with P & B Type PR11AY, 120 VAC relay. **g,** Provides delay on release; all other types have delay on operate.

**★QUANTITY PRICES AVAILABLE ON REQUEST**

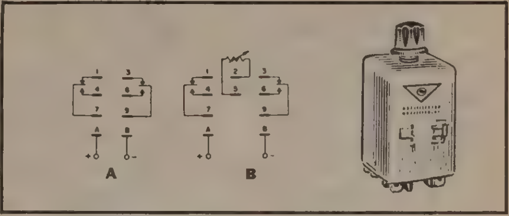
## SOLID STATE FIXED AND ADJUSTABLE TIME DELAY RELAYS

### CL SERIES FIXED AND ADJUSTABLE RELAYS

r applications where false operation cannot be tolerated. Designed delay on operate. Similar to CU Series except do not false erate when timing interval is interrupted. Includes internally unted DPDT 10-amp relay enclosed in yellow polycarbonate st cover. Available in fixed, resistor-adjustable or knob-adjust- e types. Reset time 150 msec. Plug-in type terminals and rious enclosure styles available. Types CLA and CLC, fixed; pes CLF and CLH, resistor adjustable; Type CLB, adjustable ob with reference scale. Size, 1.531″ x 1.406″ x 1.906″ max. ept CLB style, 1.531″ x 1.406″ x 2.782″ max. including knob. eight, 3.5 oz.

| P & B Number | Out-Line Dwg. | Time Delay, Seconds | Input Voltage | Ext. Resis. Ohms* | Net Each 1-9* |
|---|---|---|---|---|---|
| A41-70010 | A | 10 | 120 VAC | None | $17.35 |
| C41-30010 | A | 10 | 24 VDC | None | 17.35 |
| F41-70010 | B | .1 to 10 | 120 VAC | 200K | 18.85 |
| H41-30010 | B | .1 to 10 | 24 VDC | 160K | 18.85 |
| B51-30010 | B | .1 to 10 | 24 VAC | None | 19.85 |
| B51-70010 | B | .1 to 10 | 120 VAC | None | 19.85 |
| B51-70120 | B | 1.2 to 120 | 120 VAC | None | 21.15 |

alue of external resistor required for maximum delay time.

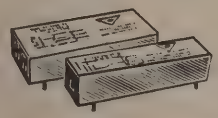


### CUB SERIES KNOB-ADJUSTABLE RELAYS

Designed for delay on operate, DPDT relay and solid state delay circuit are assembled in a slightly taller case than other CU types. Timing intervals adjustable over 1 to 10 and 1 to 120 seconds. Repeatability ±3%. For 120 VAC operation. Size, 1.531″ x 1.406″ x 2.782″ max. including knob. Weight, 3.5 oz.

| P & B Number | Out-line Dwg. | Time Delay, Seconds | Input Voltage | Net Each 1-9* |
|---|---|---|---|---|
| CUB51-70010 | A | 1 to 10 | 120 VAC | $16.30 |
| CUB51-70120 | A | 1 to 120 | 120 VAC | 17.85 |

## SOLID STATE CJ SERIES DRY REED TIME DELAY RELAYS

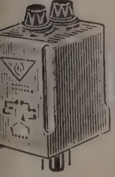


Series time delay dry reed relays combine the basic timing aracteristics of time delay relays with the long life and per- rmance of miniature dry reed relays. Two CJ Series types are ailable: **CJC** fixed time delay on operate with internal relay ntacts rated at 10 VA, and **CJH** external resistor-adjustable lay on operate. Pin terminations are for PC board mounting. **me Delay Periods:** Choice of 3 sec, 0.1 to 10 sec, or 1 to 120 c, adjustable to ±10% at nominal voltage at 25° C ambient mperature. **Operating Temperature:** −10° C to +55° C. **ntact Forms:** Up to 1C (A+B) in three cavities. **Size:** 2.718″ ax. x 0.688″ to 1.094″ x 0.710″. Weight, 1½ oz. approx.

| P & B Number | Time Delay, Seconds | Input Voltage | External Resistor Ohms* | Net Each 1-9* |
|---|---|---|---|---|
| CJC01-20003 | 3 | 12 VDC | None | $19.30 |
| CJC01-30003 | 3 | 24 VDC | None | 19.30 |
| CJC02-20003 | 3 | 12 VDC | None | 19.95 |
| CJC02-30003 | 3 | 24 VDC | None | 19.95 |
| CJC03-20003 | 3 | 12 VDC | None | 21.20 |
| CJC03-30003 | 3 | 24 VDC | None | 21.20 |
| CJH01-20010 | 0.1 to 10 | 12 VDC | 750K | 19.80 |
| CJH01-20120 | 1 to 120 | 12 VDC | 1.8 megs | 22.55 |
| CJH01-30010 | 0.1 to 10 | 24 VDC | 750K | 19.80 |
| CJH01-30120 | 1 to 120 | 24 VDC | 1.8 megs | 22.55 |
| CJH02-20010 | 0.1 to 10 | 12 VDC | 750K | 20.45 |
| CJH02-20120 | 1 to 120 | 12 VDC | 1.8 megs | 23.20 |
| CJH02-30010 | 0.1 to 10 | 24 VDC | 750K | 20.45 |
| CJH02-30120 | 1 to 120 | 24 VDC | 1.8 megs | 23.20 |
| CJH03-20010 | 0.1 to 10 | 12 VDC | 750K | 21.70 |
| CJH03-20120 | 1 to 120 | 12 VDC | 1.8 megs | 24.45 |
| CJH03-30010 | 0.1 to 10 | 24 VDC | 750K | 21.70 |
| CJH03-30120 | 1 to 120 | 24 VDC | 1.8 megs | 24.45 |

*Value of external resistor required for maximum delay time.

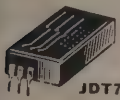
## SOLID STATE CS SERIES VOLTAGE SENSORS

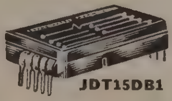


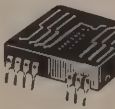
Economical solid state units for critical voltage sensing applications, including generator controls, battery chargers, high/low voltage indicators. Available in two types: adjustable pick-up and drop-out, or adjustable drop-out and fixed pick-up. Nylon dust cover, with octal plug. DC types have polarity protection. Sensing current drain, 3 mA maximum. Maximum current drain, 30 mA after sensing. Set point accuracy, 1%. Range tolerance, ±5%. Operating temperature, −10° C to +55° C. Load switching relay contacts: 2 Form C DPDT rated 3 amps at 28 VDC resistive, 120 VAC resistive. Size, 1.75″ x 2.375″ x 3.593″ high max. Weight, 8 oz.

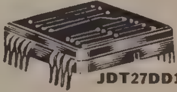
| P & B Number | Pick-up Range, Volts | Drop-Out Range, Volts | Nom. Voltage | Net Each 1-9* |
|---|---|---|---|---|
| CSJ38-30010 | 20–30 | 18–28 | 24 VAC | $30.20 |
| CSJ38-70010 | 92–140 | 90–138 | 120 VAC | 32.95 |
| CSL38-30010 | 20–30 | 18–28 | 24 VDC | 26.20 |
| CSJ38-71010 | 105 | 90–103 | 120 VAC | 29.20 |
| CSL38-31010 | 22 | 16–20 | 24 VDC | 23.15 |

## JDT SERIES DUAL THIN-LINE REED RELAYS


JDT7DA1


JDT15DB1


JDT21DC1


JDT27DD1

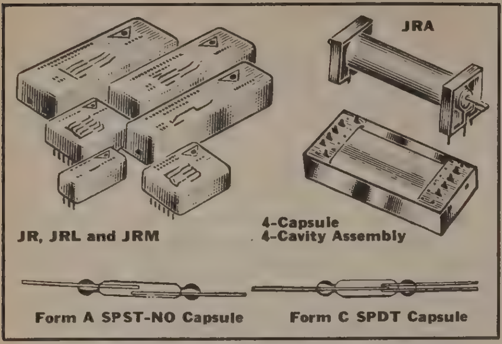
w profile ideal for high density packaging applications. Two, ur, six and eight pole Form "A" contact arrangements for ultiple-function switching. Hermetically sealed dry reed switches ted 10 watts max. resistive; continuous duty DC operation. Encapsulated in epoxy; dual inline terminals are on .100″ centers. Operate time, 3.5 msec max. including bounce; release time, 3.5 msec max.

| P & B Number | Poles | Coil |  |  | Max. Dimensions, Inches W. x D. x H. | Net Each, Lots of* |  |  |  |
|---|---|---|---|---|---|---|---|---|---|
|  |  | VDC | Resistance, Ohms* | Power, mW |  | 1-9 | 10-24 | 25-99 | 100-249 |
| JDT7DA1 | 2 "A" | 6 | 115 | 310 | 1.250 x .600 x .275 | $ 5.75 | $ 4.29 | $3.65 | $3.31 |
| JDT7DA1 | 2 "A" | 12 | 460 | 310 | 1.250 x .600 x .275 | 5.75 | 4.29 | 3.65 | 3.31 |
| JDT7DA1 | 2 "A" | 24 | 1840 | 310 | 1.250 x .600 x .275 | 6.40 | 4.77 | 4.06 | 3.68 |
| JDT15DB1 | 4 "A" | 6 | 115 | 310 | 1.250 x .800 x .275 | 7.65 | 5.71 | 4.86 | 4.40 |
| JDT15DB1 | 4 "A" | 12 | 480 | 310 | 1.250 x .800 x .275 | 7.65 | 5.71 | 4.86 | 4.40 |
| JDT15DB1 | 4 "A" | 24 | 1850 | 310 | 1.250 x .800 x .275 | 8.30 | 6.19 | 5.27 | 4.77 |
| JDT21DC1 | 6 "A" | 6 | 100 | 360 | 1.250 x 1.100 x .275 | 10.95 | 8.17 | 6.95 | 6.30 |
| JDT21DC1 | 6 "A" | 12 | 400 | 360 | 1.250 x 1.100 x .275 | 10.95 | 8.17 | 6.95 | 6.30 |
| JDT21DC1 | 6 "A" | 24 | 1600 | 360 | 1.250 x 1.100 x .275 | 11.60 | 8.65 | 7.37 | 6.67 |
| JDT27DD1 | 8 "A" | 6 | 60 | 600 | 1.250 x 1.300 x .275 | 12.95 | 9.66 | 8.22 | 7.44 |
| JDT27DD1 | 8 "A" | 12 | 240 | 600 | 1.250 x 1.300 x .275 | 12.95 | 9.66 | 8.22 | 7.44 |
| JDT27DD1 | 8 "A" | 24 | 960 | 600 | 1.250 x 1.300 x .275 | 13.70 | 10.22 | 8.70 | 7.88 |

±10% at 25° C.

★LARGER QUANTITY PRICES ON REQUEST

# AMF | POTTER & BRUMFIELD Relays



## JR AND JRM SERIES DRY REED RELAYS

Quality-made dry reed relays featuring fast response, excellent sensitivity, reliable performance, and choice of JR standard or JRM miniature sizes. Ideal for data processing, computer equipment, logic circuitry, voltage or current sensing applications, and various other types of sophisticated control circuits. Two basic types of glass dry reed switches are utilized singly or in groups to form a wide selection of operational configurations; either reed switch may be magnetically biased. Each series is offered in five package sizes of from one to five capsules in a nylon bobbin placed inside an operating coil. All relay assemblies are furnished in protective metal covers; terminal pins are welded to the reed terminations and extend as printed terminals. The recently introduced JRM miniatures, only 1.125″ w. x 0.468″ h., are designed for applications where contact ratings do not exceed 10 watts.

Both JR and JRM relays employ dry reed glass capsules with two basic types of contact arrangements: Form A (SPST-NO) and Form C (SPDT). With permanent magnet biasing Form A becomes Form B (SPST-NC), an arrangement requiring that coil polarity be observed and which uses a two-cavity bobbin. By combining one Form A with one Form B, a single Form C (SPDT) break-before-make arrangement can be furnished; it uses a three-cavity bobbin. A true Form C (SPDT; in tables below, footnote indicates six P & B types available) uses a reed switch with two stationary and one movable contact. The movable contact is normally closed until the coil is energized, causing a true Form C (SPDT) break-before-make; it uses a single-cavity bobbin.

**Insulating Materials:** Glass-supported nylon, acetate film and glass. **Pick-Up:** 75% of nominal at 25° C. **Operate Time:** JR Series, 3 msec and JRM Series, 1 msec (including bounce) at nominal coil voltage at 25° C. **Release Time:** JR Series, 0.5 msec and JRM Series, 0.05 msec at 25° C. **Coil Power:** (Applies to all coil voltages and is based upon nominal voltage and resistance.) JR Series—one capsule, 240 mW; two capsules, 360 mW; three capsules, 720 mW; four capsules, 960 mW; five capsules, 1.5 watts. JRM Series—one capsule, 180 mW; two capsules, 275 mW; three capsules, 420 mW; four capsules, 540 mW; five capsules, 720 mW. **Size:** JR Series, 2.715″ w. x 0.656″ h. max.; JRM Series, 1.125″ w. x 0.468″ h. max. (See diagrams below for weights and other dimensions.)

### JR STANDARD SERIES

| P & B No. | No. Cav-ities | Coil | | Contacts | | Net Each, Lots of* | | |
|---|---|---|---|---|---|---|---|---|
| | | Nom. V | Res. Ohms | Arrange-ment | Rat-ing | 1-9 | 10-24 | 25-99 |
| JR1000 | 1 | 6 | 150 | 1A | 15 W | $3.20 | $2.39 | $2.03 |
| JR1001 | 2 | 6 | 100 | 2A | 15 W | 4.30 | 3.21 | 2.73 |
| JR1020 | 1 | 6 | 150 | 1A | 50 W | 4.50 | 3.36 | 2.86 |
| JR1040 | 1 | 6 | 150 | 1C* | 10 W | 8.05 | 6.01 | 5.11 |
| JR1041 | 2 | 6 | 100 | 2C* | 10 W | 8.80 | 6.56 | 5.59 |
| JR1060 | 2 | 6 | 100 | 1B | 15 W | 4.30 | 3.21 | 2.73 |
| JR1005 | 1 | 12 | 600 | 1A | 15 W | 3.20 | 2.39 | 2.03 |
| JR1006 | 2 | 12 | 400 | 2A | 15 W | 4.30 | 3.21 | 2.73 |
| JR1008 | 4 | 12 | 150 | 4A | 15 W | 6.00 | 4.48 | 3.81 |
| JR1025 | 1 | 12 | 600 | 1A | 50 W | 4.50 | 3.36 | 2.86 |
| JR1045 | 1 | 12 | 600 | 1C* | 10 W | 8.05 | 6.01 | 5.11 |
| JR1046 | 2 | 12 | 400 | 2C* | 10 W | 8.80 | 6.56 | 5.59 |

*True Form C.

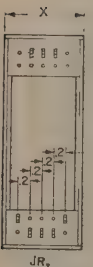
| P & B No. | No. Cav-ities | Coil | | Contacts | | Net Each, Lots of* | | |
|---|---|---|---|---|---|---|---|---|
| | | Nom. V | Res. Ohms | Arrange-ment | Rat-ing | 1-9 | 10-24 | 25-99 |
| JR1063 | 2 | 12 | 400 | 1B | 15 W | $4.30 | $3.21 | $2.73 |
| JR1086 | 3 | 12 | 200 | 1A+1B | 15 W | 5.30 | 3.95 | 3.37 |
| JR1010 | 1 | 24 | 2400 | 1A | 15 W | 3.75 | 2.80 | 2.38 |
| JR1011 | 2 | 24 | 1600 | 2A | 15 W | 4.55 | 3.39 | 2.89 |
| JR1013 | 4 | 24 | 600 | 4A | 15 W | 6.30 | 4.70 | 4.00 |
| JR1030 | 1 | 24 | 2400 | 1A | 50 W | 4.85 | 3.62 | 3.08 |
| JR1031 | 2 | 24 | 1600 | 2A | 50 W | 7.25 | 5.41 | 4.60 |
| JR1050 | 1 | 24 | 2400 | 1C* | 10 W | 8.40 | 6.27 | 5.33 |
| JR1051 | 2 | 24 | 1600 | 2C* | 10 W | 8.90 | 6.64 | 5.65 |
| JR1066 | 2 | 24 | 1600 | 1B | 15 W | 4.35 | 3.25 | 2.76 |
| JR1088 | 3 | 24 | 800 | 1A+1B | 15 W | 5.65 | 4.21 | 3.59 |
| JR1089 | 5 | 24 | 384 | 2A+2B | 15 W | 8.75 | 6.53 | 5.56 |

*True Form C.

### JRM MINIATURE SERIES

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| JRM1000 | 1 | 6 | 200 | 1A | 10 W | $3.45 | $2.57 | $2.19 |
| JRM1001 | 2 | 6 | 130 | 2A | 10 W | 5.05 | 3.77 | 3.21 |
| JRM1003 | 4 | 6 | 67 | 4A | 10 W | 8.05 | 6.01 | 5.11 |
| JRM1036 | 2 | 6 | 130 | 1B | 10 W | 4.40 | 3.28 | 2.79 |
| JRM1037 | 3 | 6 | 86 | 2B | 10 W | 5.90 | 4.40 | 3.75 |
| JRM1048 | 3 | 6 | 86 | 1A+1B | 10 W | 5.90 | 4.40 | 3.75 |
| JRM1049 | 5 | 6 | 50 | 2A+2B | 10 W | 9.05 | 6.75 | 5.75 |
| JRM1006 | 1 | 12 | 800 | 1A | 10 W | 3.45 | 2.57 | 2.19 |
| JRM1007 | 2 | 12 | 520 | 2A | 10 W | 5.05 | 3.77 | 3.21 |
| JRM1009 | 4 | 12 | 268 | 4A | 10 W | 8.05 | 6.01 | 5.11 |
| JRM1040 | 2 | 12 | 520 | 1B | 10 W | 4.40 | 3.28 | 2.79 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| JRM1041 | 3 | 12 | 344 | 2B | 10 W | $5.90 | $4.40 | $3.75 |
| JRM1050 | 3 | 12 | 344 | 1A+1B | 10 W | 5.90 | 4.40 | 3.75 |
| JRM1051 | 5 | 12 | 200 | 2A+2B | 10 W | 9.05 | 6.75 | 5.75 |
| JRM1012 | 1 | 24 | 3200 | 1A | 10 W | 3.80 | 2.83 | 2.41 |
| JRM1013 | 2 | 24 | 2080 | 2A | 10 W | 5.20 | 3.88 | 3.30 |
| JRM1015 | 4 | 24 | 1072 | 4A | 10 W | 8.15 | 6.08 | 5.18 |
| JRM1044 | 2 | 24 | 2080 | 1B | 10 W | 4.50 | 3.36 | 2.86 |
| JRM1045 | 3 | 24 | 1376 | 2B | 10 W | 6.05 | 4.51 | 3.84 |
| JRM1052 | 3 | 24 | 1376 | 1A+1B | 10 W | 6.05 | 4.51 | 3.84 |
| JRM1053 | 5 | 24 | 800 | 2A+2B | 10 W | 9.20 | 6.86 | 5.84 |

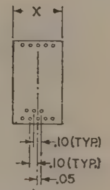


JR, 3 CAVITIES

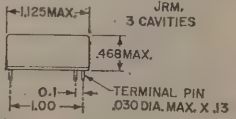
### OUTLINE DIMENSIONS

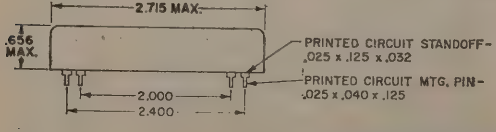
### TYPICAL WIRING DIAGRAMS

| X (MAX. DEPTH) | WEIGHT |
|---|---|
| **JR Standard Relays** | |
| For 1 Cavity = .687″ | 1.50 oz. |
| For 2 Cavities = .890″ | 2.00 oz. |
| For 3 Cavities = 1.094″ | 2.50 oz. |
| For 4 Cavities = 1.297″ | 3.00 oz. |
| For 5 Cavities = 1.516″ | 3.50 oz. |
| **JRM Miniature Relays** | |
| For 1 Cavity = .437″ | .366 oz. |
| For 2 Cavities = .562″ | .395 oz. |
| For 3 Cavities = .703″ | .530 oz. |
| For 4 Cavities = .813″ | .620 oz. |
| For 5 Cavities = .968″ | .781 oz. |



JRM, 3 CAVITIES





## JRA SERIES DRY REED RELAYS

For applications where stray magnetic fields and interaction of coils will not interfere with their operation. Employs a dry reed glass capsule with 1 Form A (SPST-NO) contact arrangement. **Operate Time:** 1.5 msec at nom. voltage at 25° C. **Coil Power:** (Based on nom. voltage and resistance) 550 mW. **Contact Rating:** 25 VA (2 amps or 250 V max.). **Size:** 1.95″ x .70″ x .82″ min.

| P & B No. | Nominal Coil Voltage | Coil Resistance ±10% at 25° C | Net Each, Lots of | |
|---|---|---|---|---|
| | | | 1-76 | 77 Up |
| JRA1006 | 6 VDC | 74 ohms | $1.50 | $0.77 |
| JRA1012 | 12 VDC | 290 ohms | 1.50 | .77 |
| JRA1024 | 24 VDC | 1200 ohms | 1.50 | .77 |

## JRL SERIES LATCHING DRY REED RELAYS

Reliabe bi-stable relays designed for memory work. Single-wound coils switch contacts on polarity reversal. Needs no coil current to maintain contact in either position. Can be mounted on PC boards in any position; not position sensitive. **Contact Arrangement:** 1 Form A and 2 Form A rated 15 watts; resistive available. **Operate Time:** 2.0 msec at 25° C including bounce. **Size:** 2.718″ x .890″ x .656″ max. Weight, 2½ oz.

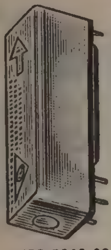
| P & B No. | No. Cav-ities | Coil | | Contacts | | Net Each, Lots of* | | |
|---|---|---|---|---|---|---|---|---|
| | | Nom. VDC | Res. Ohms | Arrange-ment | Rat-ing | 1-9 | 10-24 | 25-99 |
| JRL1000 | 2 | 6 | 400 | 1 A | 15 W | $4.75 | $3.54 | $3.02 |
| JRL1001 | 2 | 12 | 1600 | 1 A | 15 W | 4.75 | 3.54 | 3.02 |
| JRL1002 | 2 | 24 | 6400 | 1 A | 15 W | 5.25 | 3.92 | 3.33 |
| JRL1012 | 3 | 6 | 300 | 2 A | 15 W | 6.75 | 5.04 | 4.29 |
| JRL1013 | 3 | 12 | 1200 | 2 A | 15 W | 6.75 | 5.04 | 4.29 |
| JRL1014 | 3 | 24 | 4800 | 2 A | 15 W | 7.10 | 5.30 | 4.51 |

★LARGER QUANTITY PRICES ON REQUEST

# JM SERIES MERCURY-WETTED CONTACT RELAYS

ER & BRUMFIELD
Mercury
Wetted
Contact
RELAY
JM1 119 11

11 119 11



JMS 5040 62

Reservoir of mercury and contact assembly are hermetically sealed under high pressure hydrogen atmosphere to do away with contact chatter and bounce. Make or break is positive every time. Capsule used in JMF, JMF2 (2 capsules) and JML relays has a SPDT, break-before-make (Form C), nonbridging contact arrangement. Each capsule used in JM1–JM4, JMD, JMP and JMS relays has a SPDT, make-before-break (Form D), bridging contact arrangement. JMF, JMF2, JML, JMP and JMS series achieve a high rate of sensitivity by factory-adjusted magnet biasing. Upright mounting required, but deviation from upright up to 30° causes only minor ation in operating characteristics. **Contact Ratings:** JMF, F2, JML and JMS 500 volts max. and 2 amps max., 100 VA . with contact protection unless in a low level circuit. Details simple protection circuit consisting of resistor and capacitor series are included with each relay. JM1 thru JM4, JMD JMP 500 volts max. and 5 amps max., 250 VA max. Octal e mounting except Fig. 41, 14-pin miniature plug; JMD, F, JMF2 and JMS are designed for printed circuit board inting on 0.200" grid spacing. Sizes given are overall.

| P & B apsule | Size, Inches Dia. x H. | P & B Capsule | Size, Inches W. x D. x H. |
|---|---|---|---|
| M1 | 1.105 x 3.196 | JMD | 0.750 x 0.750 x 3.190 |
| M2, JM3 | 1.531 x 3.937 | JMF | 0.625 x 0.625 x 2.062 |
| M4 | 1.687 x 3.562 | JMF2 | 1.120 x 0.78 x 2.07 |
| ML | 1.234 x 3.218 | JMS | 0.625 x 0.625 x 2.062 |
| MP | 1.110 x 3.665 | | |

## NEW JMS SENSITIVE SERIES IN PC MODULE

### BI-STABLE, DUAL-WOUND COIL

ted 20 mW per winding. Resistance value given is per winding.

| p- le | Coil and Terminal* | Coil Characteristics: Resis., Ohms (± 10%) | Coil Characteristics: Must Operate mADC | Coil Characteristics: Max. VDC | Net Each, Lots of: 1-9 | Net Each, Lots of: 10-24 | Net Each, Lots of: 25-49 |
|---|---|---|---|---|---|---|---|
| IS | 5040 62 | 325 | ±7 | 24 | $11.35 | $8.47 | $7.21 |
| IS | 5070 62 | 1250 | ±3.6 | 47 | 11.90 | 8.88 | 7.56 |

### 40 mW SINGLE-SIDE STABLE, SINGLE-WOUND COIL

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| IS | 1070 61 | 34 | 32 | 7.7 | $11.35 | $8.47 | $7.21 |
| IS | 1130 61 | 620 | 7 | 33 | 11.35 | 8.47 | 7.21 |
| IS | 1160 61 | 2430 | 3.6 | 65 | 11.90 | 8.88 | 7.56 |
| IS | 1190 61 | 8600 | 2.0 | 122 | 11.90 | 8.88 | 7.56 |

## JML SENSITIVE SERIES

### SINGLE-SIDE-STABLE

| ap- ule | Coil and Terminal* | Coil Characteristics: Resis., Ohms (± 10%) | Coil Characteristics: Must Operate mADC | Coil Characteristics: Must Release mADC | Net Each, Lots of: 1-9 | Net Each, Lots of: 10-24 | Net Each, Lots of: 25-99 |
|---|---|---|---|---|---|---|---|
| ML | 1061 81 | 40 | 9.75 | 1.68 | $14.00 | $10.44 | $8.89 |
| ML | 1110 81 | 350 | 3.56 | .61 | 14.00 | 10.44 | 8.89 |
| ML | 1160 81 | 1000 | 2.21 | .38 | 14.00 | 10.44 | 8.89 |
| ML | 1190 81 | 2500 | 1.43 | .17 | 14.95 | 11.15 | 9.49 |
| ML | 1200 81 | 4000 | 1.25 | .25 | 14.95 | 11.15 | 9.49 |
| ML | 1240 81 | 11000 | .72 | .12 | 14.95 | 11.15 | 9.49 |
| ML | 1260 81 | 25000 | .52 | .09 | 14.95 | 11.15 | 9.49 |

### BI-STABLE

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ML | 5200 81 | 4000 | +0.53 | −0.53 | $14.95 | $11.15 | $ 9.49 |
| ML | 5430 82 | (1) 1100<br>(2) 1100 | +1.76 | −1.76 | 16.40 | 12.23 | 10.41 |

### CHOPPER (60-Hz)

| | | | | | | |
|---|---|---|---|---|---|---|
| ML | 8130 81 | 600 | 6.3 V rms | $14.60 | $10.89 | $9.27 |

## JMF SENSITIVE SERIES IN PC MODULE

### SINGLE-SIDE-STABLE

| Capsule | Coil and Terminal* | Coil Characteristics: Resis., Ohms (± 10%) | Coil Characteristics: Must Operate mADC | Coil Characteristics: Must Release mADC | Net Each, Lots of: 1-9 | Net Each, Lots of: 10-24 | Net Each, Lots of: 25-99 |
|---|---|---|---|---|---|---|---|
| JMF | 1070 61 | 450 | 12.9 | 2.1 | $11.35 | $8.47 | $7.21 |
| JMF | 1080 61 | 675 | 11.6 | 1.9 | 11.35 | 8.47 | 7.21 |
| JMF | 1120 61 | 1425 | 8.4 | 1.4 | 11.35 | 8.47 | 7.21 |
| JMF | 1150 61 | 2400 | 7.8 | 1.3 | 11.35 | 8.47 | 7.21 |
| JMF | 1160 61 | 4000 | 4.0 | .67 | 11.90 | 8.88 | 7.56 |

### BI-STABLE

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| JMF | 5080 61 | 675 | +5.4 | −5.4 | $11.35 | $8.47 | $7.21 |

## JMF2 DUAL-CAPSULE SENSITIVE SERIES

### SINGLE-SIDE-STABLE

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| JMF2 | 1000 71 | 130 | 3.0 | 0.5 | $21.75 | $16.23 | $13.81 |
| JMF2 | 1001 71 | 520 | 6.0 | 1.0 | 21.75 | 16.23 | 13.81 |
| JMF2 | 1002 71 | 2200 | 12.0 | 2.0 | 22.30 | 16.64 | 14.16 |

## JMP POLARIZED SERIES

### SINGLE-SIDE-STABLE

| Capsule | Coil and Terminal* | Coil Characteristics: Resis., Ohms (± 10%) | Coil Characteristics: Must Operate mADC | Coil Characteristics: Must Release mADC | Net Each, Lots of: 1-9 | Net Each, Lots of: 10-24 | Net Each, Lots of: 25-99 |
|---|---|---|---|---|---|---|---|
| JMP | 1160 11 | 1000 | 5.60 | .40 | $18.40 | $13.72 | $11.68 |
| JMP | 1200 11 | 4000 | 2.96 | .24 | 19.70 | 14.70 | 12.51 |

### BI-STABLE

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| JMP | 5200 11 | 4000 | +1.5 | −1.5 | $19.70 | $14.70 | $12.51 |

## NEW JMD SERIES IN PC MODULE

### SINGLE CAPSULE

| Capsule | Coil and Terminal* | Coil Characteristics: Resis., Ohms (± 10%) | Coil Characteristics: Must Operate mADC | Coil Characteristics: Max. Volts at 35° C | Net Each, Lots of: 1-9 | Net Each, Lots of: 10-24 | Net Each, Lots of: 25-99 |
|---|---|---|---|---|---|---|---|
| JMD | 1060 63 | 150 | 55.0 | 18 | $11.45 | $8.54 | $7.27 |
| JMD | 1090 63 | 450 | 33.5 | 30 | 11.45 | 8.54 | 7.27 |
| JMD | 1100 63 | 750 | 24.3 | 39 | 11.45 | 8.54 | 7.27 |

## JM1 TO JM4 SERIES

### SINGLE CAPSULE, SPDT SINGLE COIL

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| JM1 | 106 12 | 40 | 67.7 | 9.0 | $16.95 | $12.64 | $10.76 |
| JM1 | 109 12 | 130 | 38.8 | 16.1 | 16.95 | 12.64 | 10.76 |
| JM1 | 112 11 | 500 | 20.1 | 31.6 | 16.95 | 12.64 | 10.76 |
| JM1 | 114 11 | 700 | 20.0 | 37.4 | 16.95 | 12.64 | 10.76 |
| JM1 | 114 12 | 700 | 20.0 | 37.4 | 16.95 | 12.64 | 10.76 |
| JM1 | 118 11 | 2500 | 10.1 | 70.7 | 17.25 | 12.87 | 10.95 |
| JM1 | 119 11 | 4000 | 8.1 | 89.5 | 8.55 | 8.55 | 8.55 |
| JM1 | 120 11 | 7000 | 6.0 | 117.0 | 17.85 | 13.32 | 11.33 |
| JM1 | 121 11 | 11K | 5.0 | 148.0 | 17.85 | 13.32 | 11.33 |
| JM1 | 123 11 | 25K | 3.6 | 224.0 | 17.85 | 13.32 | 11.33 |

### TWO CAPSULES, DPDT SINGLE COIL

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| JM2 | 104 22 | 50 | 110.0 | 12.25 | $27.50 | $20.52 | $17.46 |
| JM2 | 106 21 | 140 | 66.5 | 20.5 | 27.50 | 20.52 | 17.46 |
| JM2 | 109 22 | 315 | 44.0 | 30.7 | 27.50 | 20.52 | 17.46 |
| JM2 | 110 22 | 500 | 34.8 | 38.7 | 27.50 | 20.52 | 17.46 |
| JM2 | 111 22 | 700 | 30.5 | 45.8 | 27.50 | 20.52 | 17.46 |
| JM2 | 112 22 | 1250 | 22.1 | 61.2 | 27.50 | 20.52 | 17.46 |
| JM2 | 115 21 | 5000 | 11.3 | 122.0 | 27.50 | 20.52 | 17.46 |
| JM2 | 115 22 | 5000 | 11.3 | 122.0 | 27.50 | 20.52 | 17.46 |

### THREE CAPSULES, 3PDT SINGLE COIL

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| JM3 | 109 31 | 315 | 44.0 | 30.7 | $35.60 | $26.56 | $22.61 |
| JM3 | 110 31 | 500 | 34.8 | 38.7 | 35.60 | 26.56 | 22.61 |
| JM3 | 111 31 | 700 | 30.5 | 45.8 | 35.60 | 26.56 | 22.61 |
| JM3 | 115 31 | 5000 | 11.3 | 122.0 | 35.60 | 26.56 | 22.61 |

### FOUR CAPSULES, 4PDT SINGLE COIL

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| JM4 | 106 41 | 65 | 100.0 | 15.1 | $45.90 | $34.24 | $29.15 |
| JM4 | 110 41 | 390 | 42.0 | 37.0 | 45.90 | 34.24 | 29.15 |

Last two digits indicate termination diagram figure, e.g., JML 1061 **81**, see Figure 81; JM1 106 **12**, see Figure 12.

## TERMINATION DIAGRAMS

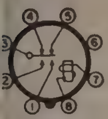


Figure 11

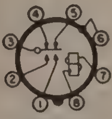


Figure 12

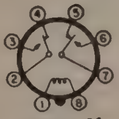


Figure 21

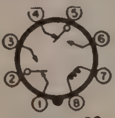


Figure 22

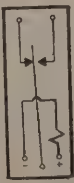


Figure 61

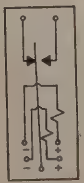


Figure 62

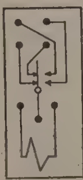


Figure 63

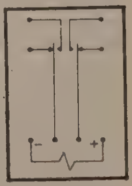


Figure 71

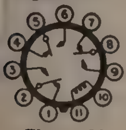


Figure 31

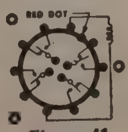


Figure 41

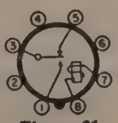


Figure 81

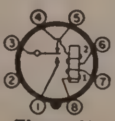
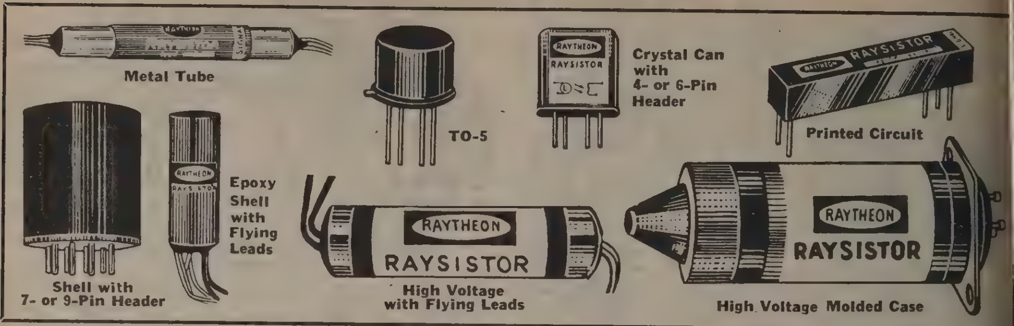


Figure 82

# RAYTHEON Raysistor® OPTOELECTRONIC DEVICES


Metal Tube
TO-5
Crystal Can with 4- or 6-Pin Header
Printed Circuit
Shell with 7- or 9-Pin Header
Epoxy Shell with Flying Leads
High Voltage with Flying Leads
High Voltage Molded Case
RAYTHEON
RAYSISTOR

The Raysistor® is a four-terminal optoelectronic device which performs a variety of control functions. It provides noise-free control of AC or DC signals over a wide dynamic range without transients or contact (or wiper) chatter. Since there are no moving parts, Raysistors are exceptionally rugged and have inherently long life in such typical applications as variable resistors, solid state switches, relays, and voltage or signal isolators. These units operate on the principle of controlled light acting on a photoresistive element. No electrical or mechanical connection exists between the control and signal circuits. Available in the ten case styles described at right.

®Registered Raytheon Company trademark.

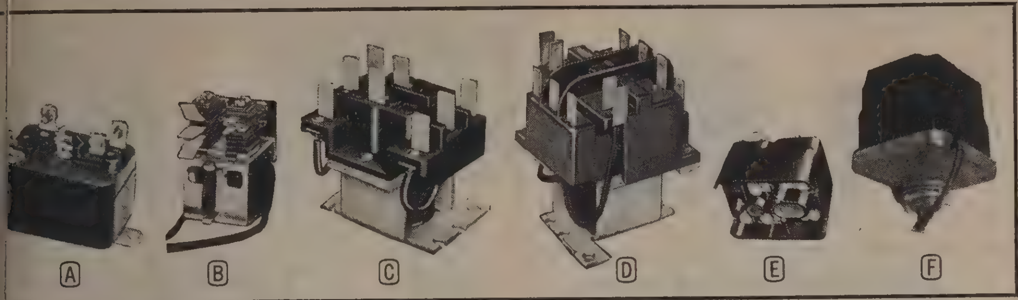
### CASE STYLES AND SIZES

Metal tube 2.25″ lg. nom. (example, Model CK1101); standard TO-5 case 0.370″ dia. max. x 0.260″ h. max. with flexible leads 1.5″ lg. min. (Model CK1114); crystal can 0.735″ w. x 0.350″ th. x 0.745″ h. with pins 0.310″ lg. (Model CK1121); printed circuit type in case 1.94″ w. x 0.375″ th. x 0.42″ h. with PC mounting tab (Model CK1101P); shell 0.730″ dia. x 1.150″ h. with 7-pin header (Model CK2033); epoxy shell 0.900″ dia. x 1.150″ h. with 9-pin header (Model CK2042); epoxy shell 0.438″ dia. x 1.125″ lg. with flying leads (Model CK2034); high-voltage type in case 0.635″ dia. x 2.715″ lg. nom. with flying leads (Model CK2029); crystal can 0.735″ w. x 0.625″ th. x 0.745″ h. with 6-pin header (Model CK2020); high-voltage type in 1.28″ dia. x 3.65″ lg. molded case with pins 0.44″ lg. (Model CK1105).

| Raytheon Model No. | Control Lamp | | Signal (Photocell) Resistance, Ohms | | | | Typical Switching Time, sec# | | Light Source Type⌶ | Case Style (See Description Above) | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Volts | mA | Max. On* | Min. Off† | Max. Volts | Max. Power, mW⧗ | On‡ | Off§ | | | 1-9 | 10-24 | 25-99 |
| CK1101 | 120• | 1-3▲ | 1000 | $10^7$ | 100 | 75 | .0012** | .060 | N | Metal tube | $11.00 | $ 9.00 | $ 7.50 |
| CK1101P | 120 | 1-3▲ | 1000 | $10^7$ | 100 | 75 | .0012** | .060 | N | Printed circuit | 10.75 | 8.80 | 7.35 |
| CK1102 | 0-1 | 0-50 | 700 | $10^6$ | 100 | 75 | .020 | .300 | I | Metal tube | 11.00 | 9.00 | 7.50 |
| CK1102P | 0-1 | 0-50 | 700 | $10^6$ | 100 | 75 | .020 | .300 | I | Printed circuit | 10.75 | 8.80 | 7.35 |
| CK1103 | 0-5 | 0-200 | 150 | $10^6$ | 100 | 75 | .020 | .800 | I | Metal tube | 11.00 | 9.00 | 7.50 |
| CK1103P | 0-5 | 0-200 | 150 | $10^6$ | 100 | 75 | .020 | .800 | I | Printed circuit | 10.75 | 8.80 | 7.35 |
| CK1104 | 0-25 | 0-37 | 150 | $10^6$ | 100 | 75 | .010 | .450 | I | Metal tube | 11.00 | 9.00 | 7.50 |
| CK1104P | 0-25 | 0-37 | 150 | $10^6$ | 100 | 75 | .010 | .450 | I | Printed circuit | 10.75 | 8.80 | 7.35 |
| CK1105 | 120• | 1-3▲ | 10,000 | $10^6$ | 300 | 250 | .020 | 1.0 | N | High voltage; molded case | 24.50 | 20.00 | 16.70 |
| CK1108 | 0-5 | 0-200 | 250 | $10^6$ | 300 | 250 | .030 | 1.0 | I | High voltage; molded case | 24.50 | 20.00 | 16.70 |
| CK1112 | 0-10 | 0-17 | 700 | $10^6$ | 100 | 75 | .030 | .400 | I | Molded metal tube | 11.00 | 9.00 | 7.50 |
| CK1112P | 0-10 | 0-17 | 700 | $10^6$ | 100 | 75 | .030 | .400 | I | Printed circuit | 10.75 | 8.80 | 7.35 |
| CK1114 | 0-1 | 0-17 | 850 | $10^6$ | 100 | 100 | .018 | .060 | I | TO-5 | 8.75 | 7.15 | 6.00 |
| CK1115 | 0-4 | 0-55 | 200 | $10^7$ | 200 | 100 | .020 | .300 | I | TO-5 | 8.75 | 7.15 | 6.00 |
| CK1116 | 0-4 | 0-17 | 350 | $10^7$ | 200 | 100 | .010 | .300 | I | TO-5 | 9.35 | 7.75 | 6.60 |
| CK1121 | 0-5 | 0-55 | 150 | $10^7$ | 200 | 100 | .020 | .250 | I | Crystal can with socket | 4.00 | 3.25 | 2.75 |
| CK1122 | 0-10 | 0-17 | 1000 | $10^7$ | 200 | 100 | .030 | .225 | I | Crystal can with socket | 4.00 | 3.25 | 2.75 |
| CK1123 | 0-25 | 0-37 | 150 | $10^7$ | 200 | 100 | .010 | .300 | I | Crystal can with socket | 4.00 | 3.25 | 2.75 |
| CK1124■ | 150• | .2-1.2▲ | 3000 | $10^7$ | 200 | 100 | .002** | .100 | N | Crystal can with socket | 4.00 | 3.25 | 2.75 |
| CK2000 | 0-25 | 0-37 | 40 | $10^6$ | 100 | 100 | .030 | .300 | I | Crystal can with socket | 5.00 | 4.05 | 3.50 |
| CK2003 | 0-10 | 0-17 | 225 | $10^7$ | 150 | 100 | .035 | .250 | I | Crystal can with socket | 4.60 | 3.85 | 3.35 |
| CK2006 | 0-12 | 0-17 | 1500 | $10^6$ | 150 | 100 | .040 | 1.5 | I | Crystal can CdS with socket | 4.60 | 3.85 | 3.35 |
| CK2008 | 120• | 1-3▲ | 300 | $10^7$ | 150 | 100 | .0015 | .060 | N | Printed circuit | 11.60 | 9.60 | 8.10 |
| CK2009 | 0-4 | 0-55 | 135 | $10^7$ | 200 | 100 | .020 | .300 | I | TO-5 | 9.60 | 7.75 | 6.60 |
| CK2011 | 0-120 | 0-25 | 300 | $10^6$ | 250 | 250 | .050 | .700 | I | High voltage; molded case | 27.00 | 25.00 | 23.20 |
| CK2015 | 0-25 | 0-37 | 1500 | $10^8$ | 200 | 100 | .015 | 0.75 | I | Crystal can with socket | 4.60 | 3.85 | 3.35 |
| CK2016■ | 150 | .2-1.2 | 1000 | $10^6$ | 150 | 100 | .010 | .250 | N | Crystal can with socket | 4.60 | 3.85 | 3.35 |
| CK2018 | 0-5 | 0-55 | 150 | $10^9$ | 200 | 100 | .010 | .175 | I | Crystal can with socket | 4.00 | 3.25 | 2.75 |
| CK2019 | 0-10 | 0-17 | 1000 | $10^6$ | 150 | 100 | .040 | 1.5 | I | Crystal can CdS with socket | 4.60 | 3.85 | 3.35 |
| CK2020 | 0-10 | 0-17 | 1500 | $10^6$ | 150 | 100 | .040 | 1.5 | I | 1 lamp/crystal; 2 cells CdS‡‡ | 8.00 | 6.50 | 5.50 |
| CK2021 | 0-10 | 0-17 | 500 | $10^7$ | 150 | 100 | .040 | .250 | I | 1 lamp/crystal; 2 cells CdSe‡‡ | 8.00 | 6.50 | 5.50 |
| CK2028A | 0-25 | 0-37 | 200 | $10^6$ | 100 | 100 | .050 | 1.5 | I | Crystal can CdS with socket | 6.00 | 5.25 | 4.75 |
| CK2029 | 0-10 | 0-35 | 2000 | $10^8$ | 250 | 250 | .020 | .160 | I | High voltage; flying leads | 18.00 | 14.00 | 11.00 |
| CK2030 | 0-10 | 0-17 | 700 | $10^7$ | 250 | 250 | .040 | .450 | I | High voltage; molded case | 24.50 | 20.00 | 16.70 |
| CK2033 | 0-10 | 0-17 | 3500♦ | $10^7$ | 200 | 100 | .050 | 1.5 | I | 1 lamp/2 cells CdS; 7-pin hdr. | 5.90 | 5.50 | 4.65 |
| CK2034 | 0-25 | 0-37 | 300 | $10^6$ | 100 | 100 | .060 | 1.4 | I | 1 lamp/2 cls. CdS; flying lds.†† | 8.00 | 6.50 | 5.50 |
| CK2035 | 120 | 1-3▲ | 1000 | $10^7$ | 250 | 200 | .010 | .125 | N | High voltage; flying leads | 18.00 | 14.00 | 11.00 |
| CK2036 | 0-10 | 0-17 | 3000 | $10^7$ | 200 | 100 | .040 | .250 | I | 1 lamp/2 cls.; flying lds.†† | 8.00 | 6.50 | 5.50 |
| CK2037 | 0-4 | 0-55 | 1000 | $10^6$ | 200 | 100 | .040 | 1.5 | I | TO-5 CdS | 8.75 | 7.15 | 6.00 |
| CK2042 | 0-10 | 0-17 | 1500 | $10^6$ | 150 | 100 | .050 | 1.5 | I | 1 lamp/3 cells CdS; 9-pin hdr.†† | 7.90 | 7.50 | 6.25 |
| CK2043 | 0-25 | 0-37 | 300 | $10^6$ | 150 | 100 | .040 | 1.3 | I | 1 lamp/3 cells CdS; 9-pin hdr.†† | 7.90 | 7.50 | 6.25 |
| CK2046 | 0-1 | 0-17 | 350 | $10^6$ | 100 | 100 | .030 | .090 | I | TO-5 | 9.60 | 7.75 | 6.60 |
| CK2051 | 0-10 | 0-17 | 2000 | $10^6$ | 200 | 100 | .040 | .350 | I | Crystal can CdS with socket | 4.00 | 3.25 | 2.75 |
| CK2052 | 0-25 | 0-37 | 300 | $10^6$ | 200 | 100 | .018 | 1.2 | I | Crystal can CdS with socket | 4.00 | 3.25 | 2.75 |
| CK2053 | 0-5 | 0-55 | 1250 | $10^6$ | 200 | 100 | .020 | 1.2 | I | Crystal can CdS with socket | 4.00 | 3.25 | 2.75 |
| CK2071 | 0-4 | 0-55 | 1000 | $10^6$ | 200 | 100 | .100 | .900 | I | TO-5 CdS | 8.75 | 7.15 | 6.00 |
| CK2072 | 0-4 | 0-17 | 1800 | $10^6$ | 200 | 100 | .015 | .400 | I | TO-5 CdS | 9.35 | 7.75 | 6.60 |

*Nominal On resistance = typical photocell resistance when nominal voltage is applied at control terminals, measured at 25° C; won't exceed max. value indicated. †Has negative temperature coefficient; typical values: 100 megohms at +25° C, 20 megs at +65° C and 1000 megs at −55° C measured with 50-volt signal. ‡Time required for voltage across photocell to fall to 10% of initial value, measured from instant that max. rated control voltage is applied to lamp. §Time required for voltage across photocell to rise to 90% of final value from instant that max. rated control voltage is removed from lamp. #Test conditions: Signal voltage, 50 volts; signal circuit load, 100,000 ohms. •DC or peak voltage; current-limiting resistor must be used in series with control lamp (typical value, 20,000 ohms; 100,000 ohms for CK1124). ▲Control current is linear with voltage over stated range, but light source may be operated below lower limit. ■Observe correct polarity to realize specified performance. ♦Tracking. ⌶Letter N indicates gas-discharge type light source; I, incandescent type. ⧗100 mW rating applies only to room ambient temperatures and below; max. dissipation, 25 mW at 65° C. **Depends upon rate of successive firing of lamp; initial switch-on time may vary up to 100 msec; specified values apply when control circuit is energized at 2 Hz or faster rate. ††Epoxy shell. ‡‡With socket.

# AC-DC Relays



## AC GENERAL PURPOSE RELAYS

rate in any position. Coils are for 60 Hz operation. Ratings d are continuous unless noted otherwise. **Breakdown Voltage:** V rms, 60 Hz, opposite polarity or to ground; 1000 V rms, Hz, open contacts same polarity. **Electrical Life:** 100,000 ations at rated load.

**Type 84**—Totally enclosed type with silver alloy contacts rated at 125/250 VAC. Models 84-922–928 rated 3 amps at VAC or 1.5 amps at 250 VAC pilot duty. All others: SPNO— mps, resistive; 8 amps (25 amps inrush) inductive. SPDT—8 s resistive; 8 amps (18 amps inrush) inductive. Models 01–908 have screw terminals; models 84-912–928 have ¼" terminals. **Size:** 2⅜" x 1⅝" x 1½" overall. Mounting hard- e included in boxed quantity only.

| art lo. | Con-tacts | Coil V (50/60 Hz) | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| -901 | SPNO | 6 | $3.21 | $2.89 | $2.57 | $2.25 | $2.08 | $1.45 |
| -902 | SPNO | 24 | 3.21 | 2.89 | 2.57 | 2.25 | 2.08 | 1.45 |
| -903 | SPNO | 120 | 3.54 | 3.19 | 2.83 | 2.48 | 2.29 | 1.60 |
| -904 | SPNO | 230/240 | 3.95 | 3.56 | 3.16 | 2.77 | 2.56 | 1.78 |
| -905 | SPDT | 6 | 3.52 | 3.17 | 2.82 | 2.46 | 2.28 | 1.59 |
| -906 | SPDT | 24 | 3.54 | 3.19 | 2.83 | 2.48 | 2.29 | 1.60 |
| -907 | SPDT | 120 | 3.83 | 3.45 | 3.06 | 2.68 | 2.48 | 1.73 |
| -908 | SPDT | 230/240 | 4.18 | 3.76 | 3.34 | 2.93 | 2.71 | 1.89 |
| -912 | SPNO | 24 | 3.19 | 2.87 | 2.55 | 2.23 | 2.06 | 1.44 |
| -913 | SPNO | 120 | 3.47 | 3.12 | 2.78 | 2.43 | 2.24 | 1.56 |
| -914 | SPNO | 230/240 | 3.83 | 3.45 | 3.06 | 2.68 | 2.48 | 1.73 |
| -916 | SPDT | 24 | 3.44 | 3.10 | 2.75 | 2.41 | 2.23 | 1.55 |
| -917 | SPDT | 120 | 3.77 | 3.39 | 3.02 | 2.64 | 2.44 | 1.70 |
| -918 | SPDT | 230/240 | 4.11 | 3.70 | 3.29 | 2.88 | 2.66 | 1.85 |
| -922 | SPNO | 24 | 3.14 | 2.83 | 2.51 | 2.20 | 2.03 | 1.41 |
| -923 | SPNO | 120 | 3.14 | 2.83 | 2.51 | 2.20 | 2.03 | 1.41 |
| -924 | SPNO | 230/240 | 3.88 | 3.49 | 3.10 | 2.72 | 2.51 | 1.75 |
| -926 | SPDT | 24 | 3.49 | 3.14 | 2.79 | 2.44 | 2.26 | 1.58 |
| -927 | SPDT | 120 | 3.77 | 3.39 | 3.02 | 2.64 | 2.44 | 1.70 |
| -928 | SPDT | 230/240 | 4.73 | 4.26 | 3.78 | 3.31 | 2.74 | 1.89 |

Flexible design permits use as replacement relay or original equipment in power and control circuits. Fine silver contacts ld alloy crossbar contacts). **Contact Rating:** Left stack, 15 ps SPDT at 125/250 VAC, non-inductive; right stack rating wn in table. **Electrical Life:** 100,000 operations, 6 operations/ nute, rated load. All relays have 9" coil lead wires. Quick- nect terminals on 15-amp poles; solder terminals on 3-amp es. Mounting bracket supplied (in boxed quantity only) to per- t front or rear mtg. Coils for 60 Hz operation. **Size:** 2⅛" x x 2" overall.

### TWO-POLE DOUBLE THROW

| Part lumber | Coil Volts | Right Stack Rating | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| 87-902 | 24 | 3 amps SPDT | $3.88 | $3.49 | $3.10 | $2.72 | $2.50 | $2.21 |
| 87-903 | 120 | | 4.20 | 3.78 | 3.36 | 2.94 | 2.75 | 2.42 |
| 87-904 | 240 | | 4.44 | 4.00 | 3.55 | 3.11 | 2.89 | 2.55 |
| 87-906 | 24 | 15 amps SPDT | 3.95 | 3.56 | 3.16 | 2.77 | 2.58 | 2.27 |
| 87-907 | 120 | | 4.28 | 3.85 | 3.42 | 3.00 | 2.79 | 2.46 |
| 87-908 | 240 | | 4.38 | 3.94 | 3.50 | 3.07 | 2.84 | 2.51 |

### THREE-POLE DOUBLE THROW

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 87-910 | 24 | 3 amps DPDT | $4.80 | $4.32 | $3.84 | $3.36 | $3.14 | $2.77 |
| 87-911 | 120 | | 4.76 | 4.28 | 3.81 | 3.33 | 3.11 | 2.74 |
| 87-912 | 240 | | 5.15 | 4.64 | 4.12 | 3.61 | 3.38 | 2.98 |

**Type 91**—Solenoid action type with quick-connect terminals; operates in any position. DPDT contact arrangement. **Power ting (A):** Enclosed fine silver contacts rated 15 amps, 277 AC, max., resistive; 12 amps (60 amps inrush), 125 VAC or 6 nps (35 amps inrush), 250 VAC, inductive. **Pilot Rating (B):** old alloy crossbar contacts rated 3 amps, 277 VAC, max., sistive; 125 VA, 1/10 hp, 125/250 VAC, inductive. **Number of perations Per Minute:** 6. **Size:** 2⅛" x 1⅞" x 2⅜". Quick-connect iring terminals included in boxed quantity only.

### AC GENERAL PURPOSE RELAYS (Cont'd)

| Part Number | Coil V‡ | Circuit Rating #1* | #2† | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|---|
| 91-901 | 24 | A | A | $6.15 | $5.54 | $4.92 | $4.31 | $2.79 | $2.46 |
| 91-902 | 120 | A | A | 6.32 | 5.69 | 5.06 | 4.42 | 2.86 | 2.53 |
| 91-903 | 230§ | A | A | 6.65 | 5.99 | 5.32 | 4.66 | 3.01 | 2.66 |
| 91-904 | 24 | A | B | 6.08 | 5.47 | 4.86 | 4.26 | 2.75 | 2.43 |
| 91-905 | 120 | A | B | 6.26 | 5.63 | 5.01 | 4.38 | 2.84 | 2.50 |
| 91-906 | 230§ | A | B | 6.57 | 5.91 | 5.26 | 4.60 | 2.98 | 2.63 |
| 91-907 | 24 | B | B | 5.60 | 5.04 | 4.48 | 3.92 | 2.54 | 2.24 |
| 91-908 | 120 | B | B | 6.27 | 5.64 | 5.02 | 4.39 | 2.84 | 2.51 |
| 91-909 | 230§ | B | B | 6.26 | 5.63 | 5.01 | 4.38 | 2.84 | 2.50 |

*Three terminals at the mounting hole side. †Three terminals at the coil terminal side. ‡50/60 Hz. §230/240 volts.

D **Type 92**—Solenoid action type with quick-connect terminals; operates in any position. 3PDT contact arrangement. **Power Rating (A):** Fine silver enclosed contacts rated 15 amps, 277 VAC, max., resistive; 12 amps (60 amps inrush), 125 VAC or 6 amps (35 amps inrush) 250 VAC, inductive. **Pilot Rating (B):** Gold alloy crossbar contacts rated 3 amps, 277 VAC, max., resistive; 125 VA, 1/10 hp, 125/250 VAC, inductive. **Size:** 2⅜" x 2⅜" x 2¾". Quick-connect wiring terminals included in boxed quantity only.

| Part Number | Coil V† | Circuit Rating #1 | #2 | #3 | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|---|---|
| 92-901 | 24 | A | A | A | $7.67 | $6.90 | $6.14 | $5.37 | $3.47 | $3.07 |
| 92-902 | 120 | A | A | A | 7.59 | 6.83 | 6.07 | 5.31 | 3.44 | 3.04 |
| 92-903 | 230* | A | A | A | 7.88 | 7.09 | 6.30 | 5.52 | 3.57 | 3.15 |
| 92-904 | 24 | A | B | A | 7.47 | 6.72 | 5.98 | 5.23 | 3.38 | 2.99 |
| 92-905 | 120 | A | B | A | 7.16 | 6.44 | 5.73 | 5.01 | 3.24 | 2.86 |
| 92-906 | 230* | A | B | A | 7.95 | 7.16 | 6.36 | 5.57 | 3.60 | 3.18 |
| 92-907 | 24 | B | A | B | 7.41 | 6.67 | 5.93 | 5.19 | 3.36 | 2.96 |
| 92-908 | 120 | B | A | B | 7.61 | 6.85 | 6.09 | 5.33 | 3.45 | 3.04 |
| 92-909 | 230* | B | A | B | 7.89 | 7.10 | 6.31 | 5.52 | 3.58 | 3.16 |
| 92-910 | 24 | B | B | B | 7.74 | 6.97 | 6.19 | 5.42 | 3.51 | 3.10 |
| 92-911 | 120 | B | B | B | 7.28 | 6.55 | 5.82 | 5.10 | 3.30 | 2.91 |
| 92-912 | 230* | B | B | B | 8.22 | 7.40 | 6.58 | 5.75 | 3.73 | 3.29 |

*230/240 volts. †50/60 Hz.

### QUICK-CONNECT SOCKET

Polarized to prevent improper assembly.
**Part No. 91-180-1**—Net, Lots of 1–24....**60c**; 25–49....**54c** 50–99..**48c**; 100–249..**42c**; 250–499..**39c**; 500–999..**37c**

## AC POWER RELAYS

E **Type 129**—Totally enclosed; silver alloy contacts rated 25 amps resistive or 18 amps inductive at 250 VAC max., 1 hp at 125 V or 2 hp at 250 V. **Size:** 2⅜" x 1⅞" x 1⅞" overall.

| Part Number | Con-tacts | Coil V‡ | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| 129-901 | SPNO | 6 | $4.44 | $4.00 | $3.55 | $3.11 | $2.70 | $2.22 |
| 129-902 | SPNO | 24 | 4.42 | 3.98 | 3.54 | 3.09 | 2.69 | 2.21 |
| 129-903 | SPNO | 120 | 4.69 | 4.22 | 3.75 | 3.28 | 2.86 | 2.35 |
| 129-904 | SPNO | 208* | 4.97 | 4.47 | 3.98 | 3.48 | 3.02 | 2.48 |
| 129-905† | SPDT | 6 | 5.59 | 5.03 | 4.47 | 3.91 | 3.40 | 2.79 |
| 129-906† | SPDT | 24 | 5.50 | 4.95 | 4.40 | 3.85 | 3.35 | 2.75 |
| 129-907† | SPDT | 120 | 5.80 | 5.22 | 4.64 | 4.06 | 3.53 | 2.90 |
| 129-908† | SPDT | 208* | 6.14 | 5.53 | 4.91 | 4.30 | 3.74 | 3.07 |
| 129-911§ | SPNO | 24 | 4.35 | 3.92 | 3.48 | 3.05 | 2.65 | 2.17 |
| 129-912§ | SPNO | 120 | 4.60 | 4.14 | 3.68 | 3.22 | 2.80 | 2.30 |
| 129-913§ | SPNO | 208* | 4.90 | 4.41 | 3.92 | 3.43 | 2.98 | 2.45 |
| 129-914†§ | SPDT | 24 | 5.59 | 5.03 | 4.47 | 3.91 | 3.40 | 2.79 |
| 129-915†§ | SPDT | 120 | 5.87 | 5.28 | 4.70 | 4.11 | 3.57 | 2.93 |
| 129-916†§ | SPDT | 208* | 6.07 | 5.46 | 4.86 | 4.25 | 3.70 | 3.04 |

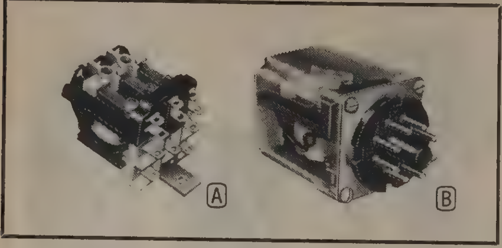
F **Type 129AR Add-A-Relay**—Same as Type 129 except has aluminum diecast base and bushing; rated 1 hp at 120 V, 1½ hp at 250 V. High impact phenolic enclosure; 8" color-coded leads. **Size:** 2¾" x 2⁹⁄₁₆" x 3¹⁄₁₆". Mounts in ½" dia. knock-out. Mounting hardware supplied. Meets standard code requirements. UL white card Listed.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 129AR-901 | SPNO | 24 | $6.74 | $6.07 | $5.39 | $4.72 | $4.10 | $3.37 |
| 129AR-902 | SPNO | 120 | 6.40 | 5.76 | 5.12 | 4.48 | 4.03 | 3.45 |
| 129AR-903 | SPNO | 208* | 7.18 | 6.46 | 5.74 | 5.03 | 4.37 | 3.59 |
| 129AR-904† | SPDT | 24 | 7.73 | 6.96 | 6.18 | 5.41 | 4.71 | 3.86 |
| 129AR-905† | SPDT | 120 | 7.73 | 6.96 | 6.18 | 5.41 | 4.71 | 3.86 |
| 129AR-906† | SPDT | 208* | 8.35 | 7.52 | 6.68 | 5.85 | 5.08 | 4.17 |

*208/230 volts. †All contact terminals must be wired to same polarity. ‡50/60 Hz. §Quick-connect ¼" tab terminals.

**ESSEX** RBM controls | RBM CONTROLS

# AC-DC Relays



## AC-DC GENERAL PURPOSE RELAYS

**Contact Rating:** Button: Fine silver contacts rated ⅙ hp, inductive, 10 amps, resistive at 120 VAC; ⅓ hp, inductive, 5 amps resistive at 240 VAC. Crossbar: Gold alloy contacts rated 1/10 hp, inductive, 5 amps, resistive at 120 VAC; ⅙ hp, inductive, 3 amps, resistive, at 240 VAC. Both types rated 5 amps resistive at 28 VDC. **Breakdown Voltage:** 1500 V rms, 60 Hz, opposite polarity or to ground; 1000 V rms, 60 Hz, open contacts with same polarity. **Coil Rating:** 1.5 watts DC; 3.0 watts nominal AC (4 watts maximum, 4.5 watts inrush). **Pick-Up:** 75% DC, 85% AC. **Maximum Temperature:** 160° F ambient. **Electrical Life:** 100,000 operations at rated load. **Mechanical Life:** 10 million operations, no load (60 per minute).

## OPEN TYPE SOLDER TERMINALS (FIG. A)

Designed for front mounting. Suitable also for single-hole screw or stud rear mounting. All terminals out front. One-piece molded bobbin and terminal board construction. Highly resistant to arc tracking. **Size:** 1¹⁵⁄₁₆" x 1⁵⁄₁₆" x 1⁵⁄₁₆".

### WITH 10-AMP BUTTON CONTACTS

| Part No. | Coil Voltages (50/60 Hz) | Contacts | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| 93-901 | 6 VAC | SPDT | $3.75 | $3.38 | $3.00 | $2.63 | $2.25 | $1.73 |
| 93-902 | 6 VAC | DPDT | 4.38 | 3.94 | 3.50 | 3.07 | 2.63 | 2.01 |
| 93-903 | 6 VAC | 3PDT | 4.88 | 4.39 | 3.90 | 3.42 | 2.93 | 2.24 |
| 93-985 | 12 VAC | SPDT | 3.78 | 3.40 | 3.02 | 2.65 | 2.27 | 1.74 |
| 93-986 | 12 VAC | DPDT | 4.38 | 3.94 | 3.50 | 3.07 | 2.63 | 2.01 |
| 93-987 | 12 VAC | 3PDT | 4.88 | 4.39 | 3.90 | 3.42 | 2.93 | 2.24 |
| 93-904 | 24 VAC | SPDT | 3.78 | 3.40 | 3.02 | 2.65 | 2.27 | 1.74 |
| 93-905 | 24 VAC | DPDT | 4.38 | 3.94 | 3.50 | 3.07 | 2.63 | 2.01 |
| 93-906 | 24 VAC | 3PDT | 4.88 | 4.39 | 3.90 | 3.42 | 2.93 | 2.24 |
| 93-907 | 120 VAC | SPDT | 3.78 | 3.40 | 3.02 | 2.65 | 2.27 | 1.74 |
| 93-908 | 120 VAC | DPDT | 4.38 | 3.94 | 3.50 | 3.07 | 2.63 | 2.01 |
| 93-909 | 120 VAC | 3PDT | 4.88 | 4.39 | 3.90 | 3.42 | 2.93 | 2.24 |
| 93-910 | 208/240 VAC | SPDT | 4.28 | 3.85 | 3.42 | 3.00 | 2.57 | 1.97 |
| 93-911 | 208/240 VAC | DPDT | 4.90 | 4.41 | 3.92 | 3.43 | 2.94 | 2.26 |
| 93-912 | 208/240 VAC | 3PDT | 5.40 | 4.86 | 4.32 | 3.78 | 3.24 | 2.49 |
| 93-913 | 6 VDC | SPDT | 3.78 | 3.40 | 3.02 | 2.65 | 2.27 | 1.74 |
| 93-914 | 6 VDC | DPDT | 4.38 | 3.94 | 3.35 | 3.07 | 2.63 | 2.01 |
| 93-915 | 6 VDC | 3PDT | 4.88 | 4.39 | 3.90 | 3.42 | 2.93 | 2.24 |
| 93-916 | 12 VDC | SPDT | 3.78 | 3.40 | 3.02 | 2.65 | 2.27 | 1.74 |
| 93-917 | 12 VDC | DPDT | 4.38 | 3.94 | 3.50 | 3.07 | 2.63 | 2.01 |
| 93-918 | 12 VDC | 3PDT | 4.88 | 4.39 | 3.90 | 3.42 | 2.93 | 2.24 |
| 93-919 | 24 VDC | SPDT | 3.78 | 3.40 | 3.02 | 2.65 | 2.27 | 1.74 |
| 93-920 | 24 VDC | DPDT | 4.38 | 3.94 | 3.50 | 3.07 | 2.63 | 2.01 |
| 93-921 | 24 VDC | 3PDT | 4.88 | 4.39 | 3.90 | 3.42 | 2.93 | 2.24 |
| 93-922 | 110 VDC | SPDT | 4.63 | 4.17 | 3.70 | 3.24 | 2.78 | 2.13 |
| 93-923 | 110 VDC | DPDT | 5.25 | 4.73 | 4.20 | 3.68 | 3.15 | 2.42 |
| 93-924 | 110 VDC | 3PDT | 5.63 | 5.07 | 4.50 | 3.94 | 3.44 | 2.63 |

### WITH 5-AMP CROSSBAR CONTACTS

| Part No. | Coil Voltages (50/60 Hz) | Contacts | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| 93-931 | 6 VAC | SPDT | $3.85 | $3.47 | $3.08 | $2.70 | $2.31 | $1.77 |
| 93-932 | 6 VAC | DPDT | 4.58 | 4.12 | 3.66 | 3.21 | 2.75 | 2.10 |
| 93-933 | 6 VAC | 3PDT | 5.23 | 4.71 | 4.18 | 3.66 | 3.14 | 2.41 |
| 93-988 | 12 VAC | SPDT | 3.85 | 3.47 | 3.08 | 2.70 | 2.31 | 1.77 |
| 93-989 | 12 VAC | DPDT | 4.58 | 4.12 | 3.66 | 3.21 | 2.75 | 2.10 |
| 93-990 | 12 VAC | 3PDT | 5.23 | 4.71 | 4.18 | 3.66 | 3.14 | 2.41 |
| 93-934 | 24 VAC | SPDT | 3.85 | 3.47 | 3.08 | 2.70 | 2.31 | 1.77 |
| 93-935 | 24 VAC | DPDT | 4.58 | 4.12 | 3.66 | 3.21 | 2.75 | 2.10 |
| 93-936 | 24 VAC | 3PDT | 5.23 | 4.71 | 4.18 | 3.66 | 3.14 | 2.41 |
| 93-937 | 120 VAC | SPDT | 3.88 | 3.49 | 3.10 | 2.72 | 2.33 | 1.78 |
| 93-938 | 120 VAC | DPDT | 4.60 | 4.14 | 3.68 | 3.22 | 2.76 | 2.12 |
| 93-939 | 120 VAC | 3PDT | 5.25 | 4.73 | 4.20 | 3.68 | 3.15 | 2.42 |
| 93-940 | 208/240 VAC | SPDT | 4.35 | 3.92 | 3.48 | 3.05 | 2.61 | 2.00 |
| 93-941 | 208/240 VAC | DPDT | 5.10 | 4.59 | 4.08 | 3.57 | 3.06 | 2.35 |
| 93-942 | 208/240 VAC | 3PDT | 5.68 | 5.11 | 4.54 | 3.98 | 3.41 | 2.61 |
| 93-943 | 6 VDC | SPDT | 3.88 | 3.49 | 3.10 | 2.72 | 2.33 | 1.78 |
| 93-944 | 6 VDC | DPDT | 4.58 | 4.12 | 3.66 | 3.21 | 2.75 | 2.10 |
| 93-945 | 6 VDC | 3PDT | 5.23 | 4.71 | 4.18 | 3.66 | 3.14 | 2.41 |
| 93-946 | 12 VDC | SPDT | 3.88 | 3.49 | 3.10 | 2.72 | 2.33 | 1.78 |
| 93-947 | 12 VDC | DPDT | 4.58 | 4.12 | 3.66 | 3.21 | 2.75 | 2.10 |
| 93-948 | 12 VDC | 3PDT | 5.23 | 4.71 | 4.18 | 3.66 | 3.14 | 2.41 |
| 93-949 | 24 VDC | SPDT | 3.88 | 3.49 | 3.10 | 2.72 | 2.33 | 1.78 |
| 93-950 | 24 VDC | DPDT | 4.58 | 4.12 | 3.66 | 3.21 | 2.75 | 2.10 |
| 93-951 | 24 VDC | 3PDT | 5.18 | 4.66 | 4.14 | 3.63 | 3.11 | 2.38 |
| 93-952 | 110 VDC | SPDT | 4.70 | 4.23 | 3.76 | 3.29 | 2.82 | 2.16 |
| 93-953 | 110 VDC | DPDT | 5.43 | 4.89 | 4.34 | 3.80 | 3.26 | 2.50 |
| 93-954 | 110 VDC | 3PDT | 6.08 | 5.47 | 4.86 | 4.26 | 3.65 | 2.79 |

## ENCLOSED TYPE PLUG-IN TERMINALS (FIG. B)

With 8-pin octal base for SPDT and DPDT poles; 11-pin base f 3PDT poles. **Size:** 2⅛" x 1⁷⁄₁₆" x 1⁹⁄₁₆".

### WITH 10-AMP BUTTON CONTACTS

| Part No. | Coil Voltages (50/60 Hz) | Contacts | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 50 99 |
|---|---|---|---|---|---|---|---|---|
| 93P-901 | 6 VAC | SPDT | $6.23 | $5.61 | $4.98 | $4.36 | $3.74 | $2. |
| 93P-902 | 6 VAC | DPDT | 7.48 | 6.73 | 5.98 | 5.24 | 4.49 | 3.4 |
| 93P-903 | 6 VAC | 3PDT | 8.73 | 7.86 | 6.98 | 6.11 | 5.26 | 4.0 |
| 93P-955 | 12 VAC | SPDT | 6.08 | 5.47 | 4.86 | 4.26 | 3.65 | 2.7 |
| 93P-956 | 12 VAC | DPDT | 7.25 | 6.53 | 5.80 | 5.08 | 4.35 | 3.3 |
| 93P-957 | 12 VAC | 3PDT | 8.53 | 7.68 | 6.82 | 5.97 | 5.16 | 3.9 |
| 93P-904 | 24 VAC | SPDT | 6.23 | 5.61 | 4.98 | 4.23 | 3.74 | 2.8 |
| 93P-905 | 24 VAC | DPDT | 7.48 | 6.73 | 5.98 | 5.24 | 4.49 | 3.4 |
| 93P-906 | 24 VAC | 3PDT | 8.80 | 7.92 | 7.04 | 6.16 | 5.28 | 4.0 |
| 93P-907 | 120 VAC | SPDT | 6.13 | 5.52 | 4.90 | 4.29 | 3.68 | 2.8 |
| 93P-908 | 120 VAC | DPDT | 7.43 | 6.69 | 5.94 | 5.20 | 4.46 | 3.4 |
| 93P-909 | 120 VAC | 3PDT | 8.80 | 7.92 | 7.04 | 6.16 | 5.28 | 4.0 |
| 93P-910 | 208/240 VAC | SPDT | 6.75 | 6.08 | 5.40 | 4.73 | 4.05 | 3.1 |
| 93P-911 | 208/240 VAC | DPDT | 7.98 | 7.18 | 6.38 | 5.59 | 4.79 | 3.6 |
| 93P-912 | 208/240 VAC | 3PDT | 9.35 | 8.42 | 7.48 | 6.55 | 5.61 | 4.3 |
| 93P-913 | 6 VDC | SPDT | 6.23 | 5.61 | 4.98 | 4.36 | 3.74 | 2.8 |
| 93P-914 | 6 VDC | DPDT | 7.53 | 6.78 | 6.02 | 5.27 | 4.51 | 3.4 |
| 93P-915 | 6 VDC | 3PDT | 8.80 | 7.92 | 7.04 | 6.16 | 5.28 | 4.0 |
| 93P-916 | 12 VDC | SPDT | 6.23 | 5.61 | 4.98 | 4.36 | 3.74 | 2.8 |
| 93P-917 | 12 VDC | DPDT | 7.78 | 7.00 | 6.22 | 5.45 | 4.67 | 3.5 |
| 93P-918 | 12 VDC | 3PDT | 8.80 | 7.92 | 7.04 | 6.16 | 5.28 | 4.0 |
| 93P-919 | 24 VDC | SPDT | 6.23 | 5.61 | 4.98 | 4.36 | 3.74 | 2.8 |
| 93P-920 | 24 VDC | DPDT | 7.48 | 6.73 | 5.98 | 5.24 | 4.49 | 3.4 |
| 93P-921 | 24 VDC | 3PDT | 8.80 | 7.92 | 7.04 | 6.16 | 5.28 | 4.0 |
| 93P-922 | 110 VDC | SPDT | 7.05 | 6.35 | 5.64 | 4.94 | 4.23 | 3.2 |
| 93P-923 | 110 VDC | DPDT | 8.33 | 7.50 | 6.66 | 5.83 | 5.00 | 3.8 |
| 93P-924 | 110 VDC | 3PDT | 9.65 | 8.69 | 7.72 | 6.76 | 5.79 | 4.4 |

### WITH 5-AMP CROSSBAR CONTACTS

| Part No. | Coil Voltages (50/60 Hz) | Contacts | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| 93P-931 | 6 VAC | SPDT | $6.30 | $5.67 | $5.04 | $4.41 | $3.78 | $2.9 |
| 93P-932 | 6 VAC | DPDT | 7.65 | 6.89 | 6.12 | 5.36 | 4.59 | 3.52 |
| 93P-933 | 6 VAC | 3PDT | 9.13 | 8.22 | 7.30 | 6.39 | 5.48 | 4.20 |
| 93P-958 | 12 VAC | SPDT | 6.15 | 5.54 | 4.92 | 4.31 | 3.69 | 2.83 |
| 93P-959 | 12 VAC | DPDT | 7.40 | 6.66 | 5.92 | 5.18 | 4.44 | 3.41 |
| 93P-960 | 12 VAC | 3PDT | 8.83 | 7.95 | 7.06 | 6.18 | 5.30 | 4.0 |
| 93P-934 | 24 VAC | SPDT | 6.30 | 5.67 | 5.04 | 4.41 | 3.78 | 2.90 |
| 93P-935 | 24 VAC | DPDT | 7.65 | 6.89 | 6.12 | 5.36 | 4.59 | 3.52 |
| 93P-936 | 24 VAC | 3PDT | 9.13 | 8.22 | 7.30 | 6.39 | 5.48 | 4.20 |
| 93P-937 | 120 VAC | SPDT | 5.80 | 5.22 | 4.64 | 4.06 | 3.48 | 2.67 |
| 93P-938 | 120 VAC | DPDT | 7.65 | 6.89 | 6.12 | 5.36 | 4.59 | 3.52 |
| 93P-939 | 120 VAC | 3PDT | 9.15 | 8.24 | 7.32 | 6.41 | 5.49 | 4.22 |
| 93P-940 | 208/240 VAC | SPDT | 6.68 | 6.01 | 5.34 | 4.68 | 4.01 | 3.07 |
| 93P-941 | 208/240 VAC | DPDT | 7.90 | 7.11 | 6.32 | 5.53 | 4.74 | 3.64 |
| 93P-942 | 208/240 VAC | 3PDT | 9.23 | 8.31 | 7.38 | 6.46 | 5.60 | 4.29 |
| 93P-943 | 6 VDC | SPDT | 5.80 | 5.22 | 4.64 | 4.06 | 3.48 | 2.67 |
| 93P-944 | 6 VDC | DPDT | 7.65 | 6.89 | 6.12 | 5.36 | 4.59 | 3.52 |
| 93P-945 | 6 VDC | 3PDT | 9.15 | 8.24 | 7.32 | 6.41 | 5.49 | 4.22 |
| 93P-946 | 12 VDC | SPDT | 6.30 | 5.67 | 5.04 | 4.41 | 3.78 | 2.90 |
| 93P-947 | 12 VDC | DPDT | 7.65 | 6.89 | 6.12 | 5.36 | 4.59 | 3.52 |
| 93P-948 | 12 VDC | 3PDT | 9.03 | 8.13 | 7.22 | 6.32 | 5.42 | 4.15 |
| 93P-949 | 24 VDC | SPDT | 5.80 | 5.22 | 4.64 | 4.06 | 3.48 | 2.67 |
| 93P-950 | 24 VDC | DPDT | 7.65 | 6.89 | 6.12 | 5.36 | 4.59 | 3.52 |
| 93P-951 | 24 VDC | 3PDT | 8.80 | 7.92 | 7.04 | 6.16 | 5.28 | 4.05 |
| 93P-952 | 110 VDC | SPDT | 6.13 | 5.52 | 4.90 | 4.29 | 3.68 | 2.81 |
| 93P-953 | 110 VDC | DPDT | 8.27 | 7.44 | 6.62 | 5.79 | 4.97 | 3.81 |
| 93P-954 | 110 VDC | 3PDT | 9.43 | 8.49 | 7.54 | 6.60 | 5.66 | 4.34 |

## OPEN TYPE PRINTED CIRCUIT RELAYS

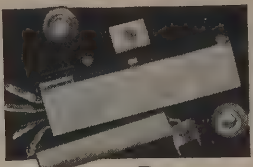
With 5-amp crossbar contacts. Similar in appearance to solder terminal type (Fig. A) but with printed circuit terminals. May be controlled by SCR, providing firing angle is no more than 10°. **Size:** 1¹⁵⁄₁₆" x 1⁵⁄₁₆" x 1⁵⁄₁₆".

| Part No. | Coil Voltages (50/60 Hz) | Contacts | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| 93-991 | 12 VAC | SPDT | $3.88 | $3.49 | $3.10 | $2.72 | $2.33 | $1.78 |
| 93-992 | 12 VAC | DPDT | 4.63 | 4.17 | 3.70 | 3.24 | 2.78 | 2.13 |
| 93-993 | 12 VAC | 3PDT | 5.28 | 4.75 | 4.22 | 3.70 | 3.17 | 2.43 |
| 93-964 | 24 VAC | SPDT | 3.88 | 3.49 | 3.10 | 2.72 | 2.33 | 1.78 |
| 93-965 | 24 VAC | DPDT | 4.63 | 4.17 | 3.70 | 3.24 | 2.78 | 2.13 |
| 93-966 | 24 VAC | 3PDT | 5.28 | 4.75 | 4.22 | 3.70 | 3.17 | 2.43 |
| 93-967 | 120 VAC | SPDT | 3.88 | 3.49 | 3.10 | 2.72 | 2.33 | 1.78 |
| 93-968 | 120 VAC | DPDT | 4.63 | 4.17 | 3.70 | 3.24 | 2.78 | 2.13 |
| 93-969 | 120 VAC | 3PDT | 5.28 | 4.75 | 4.22 | 3.70 | 3.17 | 2.43 |
| 93-976 | 12 VDC | SPDT | 3.88 | 3.49 | 3.10 | 2.72 | 2.33 | 1.78 |
| 93-977 | 12 VDC | DPDT | 4.63 | 4.17 | 3.70 | 3.24 | 2.78 | 2.13 |
| 93-978 | 12 VDC | 3PDT | 5.28 | 4.75 | 4.22 | 3.70 | 3.17 | 2.43 |
| 93-979 | 24 VDC | SPDT | 3.88 | 3.49 | 3.10 | 2.72 | 2.33 | 1.78 |
| 93-980 | 24 VDC | DPDT | 4.63 | 4.17 | 3.70 | 3.24 | 2.78 | 2.13 |
| 93-981 | 24 VDC | 3PDT | 5.28 | 4.75 | 4.22 | 3.70 | 3.17 | 2.43 |

**SEE FOLLOWING PAGE FOR QUICK-CONNECT TYPE ENCLOSED AC-DC GENERAL PURPOSE RELAYS**

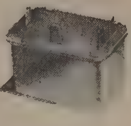
# AC-DC AND TIME DELAY RELAYS

A



B

C



D

## AC-DC GENERAL PURPOSE RELAYS (CONT'D)

### CLOSED TYPE QUICK-CONNECT TERMINALS (FIG. A)

closed relay designed for front mounting, or polarized mount-
in Type 93-153-1 socket (listed below). Quick-connect .20" x
7" terminals. Hi-impact case. **Size:** 2⅛" x 1⁷⁄₁₆" x 1⁹⁄₁₆".

### WITH 10-AMP BUTTON CONTACTS

| Part No. | Coil Voltages (50/60 Hz) | Con-tacts | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| 3Q-901 | 6 VAC | SPDT | $4.53 | $4.08 | $3.62 | $3.17 | $2.72 | $2.08 |
| 3Q-902 | 6 VAC | DPDT | 5.18 | 4.66 | 4.14 | 3.63 | 3.11 | 2.38 |
| 3Q-903 | 6 VAC | 3PDT | 5.65 | 5.09 | 4.52 | 3.96 | 3.39 | 2.60 |
| 3Q-955 | 12 VAC | SPDT | 4.33 | 3.90 | 3.46 | 3.03 | 2.60 | 1.99 |
| 3Q-956 | 12 VAC | DPDT | 5.18 | 4.66 | 4.14 | 3.63 | 3.11 | 2.38 |
| 3Q-957 | 12 VAC | 3PDT | 5.65 | 5.09 | 4.52 | 3.96 | 3.39 | 2.60 |
| 3Q-904 | 24 VAC | SPDT | 4.53 | 4.08 | 3.62 | 3.17 | 2.72 | 2.08 |
| 3Q-905 | 24 VAC | DPDT | 5.18 | 4.66 | 4.14 | 3.63 | 3.11 | 2.38 |
| 3Q-906 | 24 VAC | 3PDT | 5.65 | 5.09 | 4.52 | 3.96 | 3.39 | 2.60 |
| 3Q-907 | 120 VAC | SPDT | 4.53 | 4.08 | 3.62 | 3.17 | 2.72 | 2.08 |
| 3Q-908 | 120 VAC | DPDT | 5.18 | 4.66 | 4.14 | 3.63 | 3.11 | 2.38 |
| 3Q-909 | 120 VAC | 3PDT | 5.65 | 5.09 | 4.52 | 3.96 | 3.39 | 2.60 |
| 3Q-910 | 208/240 VAC | SPDT | 5.03 | 4.53 | 4.02 | 3.52 | 3.02 | 2.31 |
| 3Q-911 | 208/240 VAC | DPDT | 5.68 | 5.11 | 4.54 | 3.98 | 3.41 | 2.61 |
| 3Q-912 | 208/240 VAC | 3PDT | 6.18 | 5.56 | 4.94 | 4.33 | 3.71 | 2.84 |
| 3Q-913 | 6 VDC | SPDT | 4.53 | 4.08 | 3.62 | 3.17 | 2.72 | 2.08 |
| 3Q-914 | 6 VDC | DPDT | 5.18 | 4.66 | 4.14 | 3.63 | 3.11 | 2.38 |
| 3Q-915 | 6 VDC | 3PDT | 5.65 | 5.09 | 4.52 | 3.96 | 3.39 | 2.60 |
| 3Q-916 | 12 VDC | SPDT | 4.53 | 4.08 | 3.62 | 3.17 | 2.72 | 2.08 |
| 3Q-917 | 12 VDC | DPDT | 5.18 | 4.66 | 4.14 | 3.63 | 3.11 | 2.38 |
| 3Q-918 | 12 VDC | 3PDT | 5.65 | 5.09 | 4.52 | 3.96 | 3.39 | 2.60 |
| 3Q-919 | 24 VDC | SPDT | 4.48 | 4.03 | 3.58 | 3.14 | 2.69 | 2.06 |
| 3Q-920 | 24 VDC | DPDT | 5.18 | 4.66 | 4.14 | 3.63 | 3.11 | 2.38 |
| 3Q-921 | 24 VDC | 3PDT | 5.65 | 5.09 | 4.52 | 3.96 | 3.39 | 2.60 |
| 3Q-922 | 110 VDC | SPDT | 5.35 | 4.82 | 4.28 | 3.75 | 3.21 | 2.46 |
| 3Q-923 | 110 VDC | DPDT | 6.00 | 5.40 | 4.80 | 4.20 | 3.60 | 2.76 |
| 3Q-924 | 110 VDC | 3PDT | 6.48 | 5.83 | 5.18 | 4.54 | 3.89 | 2.98 |

### WITH 5-AMP CROSSBAR CONTACTS

| Part No. | Coil Voltages (50/60 Hz) | Con-tacts | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| 93Q-931 | 6 VAC | SPDT | $4.60 | $4.14 | $3.68 | $3.22 | $2.76 | $2.12 |
| 93Q-932 | 6 VAC | DPDT | 5.33 | 4.80 | 4.26 | 3.73 | 3.20 | 2.45 |
| 93Q-933 | 6 VAC | 3PDT | 5.98 | 5.38 | 4.78 | 4.19 | 3.59 | 2.75 |
| 93Q-958 | 12 VAC | SPDT | 4.60 | 4.14 | 3.68 | 3.22 | 2.76 | 2.12 |
| 93Q-959 | 12 VAC | DPDT | 5.33 | 4.80 | 4.26 | 3.73 | 3.20 | 2.45 |
| 93Q-960 | 12 VAC | 3PDT | 5.98 | 5.38 | 4.78 | 4.19 | 3.59 | 2.75 |
| 93Q-934 | 24 VAC | SPDT | 4.60 | 4.14 | 3.68 | 3.22 | 2.76 | 2.12 |
| 93Q-935 | 24 VAC | DPDT | 5.33 | 4.80 | 4.26 | 3.73 | 3.20 | 2.45 |
| 93Q-936 | 24 VAC | 3PDT | 5.98 | 5.38 | 4.78 | 4.19 | 3.59 | 2.75 |
| 93Q-937 | 120 VAC | SPDT | 4.60 | 4.14 | 3.68 | 3.22 | 2.76 | 2.12 |
| 93Q-938 | 120 VAC | DPDT | 5.33 | 4.80 | 4.26 | 3.73 | 3.20 | 2.45 |
| 93Q-939 | 120 VAC | 3PDT | 5.95 | 5.36 | 4.76 | 4.17 | 3.57 | 2.74 |
| 93Q-940 | 208/240 VAC | SPDT | 5.13 | 4.62 | 4.10 | 3.59 | 3.08 | 2.36 |
| 93Q-941 | 208/240 VAC | DPDT | 5.83 | 5.25 | 4.66 | 4.08 | 3.50 | 2.68 |
| 93Q-942 | 208/240 VAC | 3PDT | 6.48 | 5.83 | 5.18 | 4.54 | 3.89 | 2.98 |
| 93Q-943 | 6 VDC | SPDT | 4.60 | 4.14 | 3.68 | 3.22 | 2.76 | 2.12 |
| 93Q-944 | 6 VDC | DPDT | 5.33 | 4.80 | 4.26 | 3.73 | 3.20 | 2.45 |
| 93Q-945 | 6 VDC | 3PDT | 5.98 | 5.38 | 4.78 | 4.19 | 3.59 | 2.75 |
| 93Q-946 | 12 VDC | SPDT | 4.60 | 4.14 | 3.68 | 3.22 | 2.76 | 2.12 |
| 93Q-947 | 12 VDC | DPDT | 5.33 | 4.80 | 4.26 | 3.73 | 3.20 | 2.45 |
| 93Q-948 | 12 VDC | 3PDT | 5.98 | 5.38 | 4.78 | 4.19 | 3.59 | 2.75 |
| 93Q-949 | 24 VDC | SPDT | 4.60 | 4.14 | 3.68 | 3.22 | 2.76 | 2.12 |
| 93Q-950 | 24 VDC | DPDT | 5.33 | 4.80 | 4.26 | 3.73 | 3.20 | 2.45 |
| 93Q-951 | 24 VDC | 3PDT | 5.98 | 5.38 | 4.78 | 4.19 | 3.59 | 2.75 |
| 93Q-952 | 110 VDC | SPDT | 5.43 | 4.89 | 4.34 | 3.80 | 3.26 | 2.50 |
| 93Q-953 | 110 VDC | DPDT | 6.18 | 5.56 | 4.94 | 4.33 | 3.71 | 2.84 |
| 93Q-954 | 110 VDC | 3PDT | 6.83 | 6.15 | 5.46 | 4.78 | 4.10 | 3.14 |

### QUICK CONNECT SOCKET KITS

olarized to prevent improper assembly.

**it No. 93-153-1 Panel Mount**—With wiring terminals in boxed uantity only.

et Ea.: 1–24..**60c**; 25–49..**54c**; 50–99..**48c**; 100–249..**42c**
50–499....................**39c**; 500–999....................**37c**

## AC TIME DELAY RELAYS

Available in thermal, rectifier/capacitor and adjustable types, delay after energization or de-energization. Fixed timing cycle with non-instantaneous reset. Operate in any position. Quick-connect wiring terminals included for all types.

B **Type 59 Thermal Time Delay Relay**—Ambient compensated. **Time Delay After Energization:** Fixed; 15–45 seconds to close. **Reset Time:** Approximately 60 sec. Fine silver contact rated 3 amps, 125/250 VAC, pilot duty. **Electrical Life:** 100,000 operations, at rated load. **Breakdown Voltage:** 1500 V rms, opposite polarity or to ground: 1000 V rms, open contacts same polarity. **Size:** 3⅜" x 2⅛" x ⅞" overall. Two holes for #8 screw. Resilient mounting.

| Part No. | Operating Volts | W | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| 59-901 | 24 | 3.0 | $4.23 | $3.81 | $3.38 | $2.96 | $2.96 | $2.83 |
| 59-902 | 115/120 | 7.0 | 4.23 | 3.81 | 3.38 | 2.96 | 2.96 | 2.83 |
| 59-903 | 230/240 | 10.0 | 4.23 | 3.81 | 3.38 | 2.96 | 2.96 | 2.83 |

C **Type 84T Rectifier/Capacitor Time Delay Relay**—Totally enclosed. SPDT contacts rated 3 amps, 125 VAC; 1.5 amps, 250 VAC, inductive. Available in two actions: Delay after coil de-energized (Part No. with **D**) and delay after coil energized (Part No. with **E**). **Delay Time:** 2 sec, ±25%. **Reset Time:** Approximately 4 seconds. Life and breakdown voltage same as Type 59. **Size:** 2⅝" x 2¼" x 1½" overall. Two holes for 6-32NC-2 on 2.188" ctr.

| Part No. | Coil Volts | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| 84TE-902 | 115/120 | $8.13 | $7.32 | $6.50 | $5.69 | $5.57 | $4.65 |
| 84TE-903 | 230/240 | 8.13 | 7.32 | 6.50 | 5.69 | 5.57 | 4.65 |
| 84TD-902 | 115/120 | 8.13 | 7.32 | 6.50 | 5.69 | 5.63 | 4.80 |
| 84TD-903 | 230/240 | 8.13 | 7.32 | 6.50 | 5.69 | 5.63 | 4.80 |

D **Type 187 Solid-State Field-Adjustable Time Delay Relay**—Totally enclosed in metal case with flat bracket; quick-connect terminals. SPNO contacts rated 1 amp, 120 VAC inductive. Hidden trimming resistor for tamper-proof field timing adjustment. Can use types 93, 84, 91, 92, 129, 143 or 75 as slave relay. **Time Delay:** 0.5 to 90 seconds on pick-up. **Repeat:** ±2% at 25° C and nominal voltage. **Reset Time:** 100 msec. **Size:** 3" x 1¾" x 2¼".

| Part No. | Coil Voltage (50/60 Hz) | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| 187-901 | 24 VAC | $16.10 | $14.49 | $12.88 | $11.27 | $8.87 | $7.28 |
| 187-902 | 120 VAC | 16.27 | 14.64 | 13.02 | 11.39 | 8.93 | 7.34 |

## DC GENERAL PURPOSE RELAYS

Same as Types 84, 91 and 92 AC General Purpose Relays except for DC operation. See illustrations and specifications under AC General Purpose Relays.

| Part No. | Coil VDC | Coil Resis., Ohms† | Contact Rating* VDC | Contact Rating* Amps | Con-tacts | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|---|---|---|
| 84D-902 | 12 | 90.0 | 12 | 3 | SPDT | $3.54 | $3.19 | $2.83 | $2.48 |
| 84D-903 | 24 | 280.0 | 24 | 1.5 | SPDT | 3.54 | 3.19 | 2.83 | 2.48 |
| 91D-911 | 6 | 7.0 | 32 | 10‡ | DPDT | 5.97 | 5.37 | 4.78 | 4.18 |
| 91D-912 | 12 | 29.0 | 32 | 10‡ | DPDT | 6.06 | 5.45 | 4.85 | 4.24 |
| 91D-913 | 24 | 115.0 | 32 | 10‡ | DPDT | 6.27 | 5.64 | 5.02 | 4.39 |
| 92D-911 | 6 | 6.5 | 32 | 10‡ | 3PDT | 7.62 | 6.86 | 6.10 | 5.33 |
| 92D-912 | 12 | 26.0 | 32 | 10‡ | 3PDT | 7.76 | 6.98 | 6.21 | 5.43 |
| 92D-913 | 24 | 104.0 | 32 | 10‡ | 3PDT | 7.77 | 6.99 | 6.22 | 5.44 |

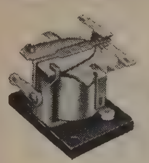
*Inductive. †At 25° C. ‡Resistive rating.

## LARGER QUANTITY DISCOUNTS

Additional discounts can be provided for quantities through 999 pieces. Write for complete pricing information.

**ESSEX** RBM controls

# DC Relays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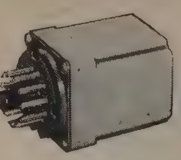
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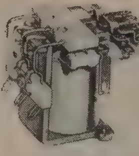
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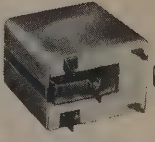
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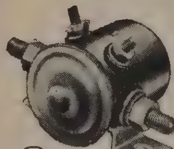
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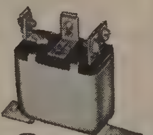
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## MINIATURE DC SENSITIVE RELAYS

Isolated gold alloy, crossbar contacts at 2 A, non-inductive, 28 VDC, 115 VAC. Molded combination coil bobbin and terminal block for minimum moisture absorption. Protective covers. Open and plug-in types. **Breakdown Voltage:** 1000 V rms, 60 Hz. **Operating Ambient:** −55° to +85° C. **Electrical Life:** 1,000,000 operations at 0.5 amp; 300,000 at 1.0 amp; 100,000 at 2.0 amps, all at non-inductive load. **Mechanical Life:** 100,000,000 at 180 operations/min., no load. **Operate Time:** 20 msec including bounce. **Vibration:** 2G, 10–55 cycles. **Shock:** 2G, operate; 10G, non-operate.

### SINGLE POLE DOUBLE THROW

**Coil Power:** 40 mW, min.; 1.5 W, max. **Overall Size:** 1⁵⁄₁₆″ x 1½″ x 1⁷⁄₁₆″, open type; 2″ x 1⅜″ x 1⅜″, plug-in type. MS25 has clearance for two #5 screws.

### TYPE MS25 SOLDER TERMINALS (FIG. A)

| Part No. | DC Magnet Coil at 25° C Nominal | Max. Pick-Up* | Resis., Ohms ±10% | Net Each, Lots of* 1-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|---|
| MS25-901 | 6 V | 4.5 V | 510 | $2.68 | $2.41 | $2.14 | $1.88 |
| MS25-902 | 12 V | 9.0 V | 2025 | 2.73 | 2.46 | 2.18 | 1.91 |
| MS25-903 | 24 V | 18.0 V | 8100 | 3.21 | 2.89 | 2.57 | 2.25 |
| MS25-904 | 3.7 mA | 2.8 mA | 5000 | 3.16 | 2.84 | 2.53 | 2.21 |
| MS25-905 | 2.7 mA | 2.0 mA | 10000 | 3.39 | 3.05 | 2.71 | 2.37 |
| MS25-906 | 2.1 mA | 1.6 mA | 15000 | 3.80 | 3.42 | 3.04 | 2.66 |

### TYPE MS25P PLUG-IN OCTAL BASE (FIG. B)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MS25P-901 | 6 V | 4.5 V | 510 | $6.77 | $6.09 | $5.42 | $4.74 |
| MS25P-902 | 12 V | 9.0 V | 2025 | 7.06 | 6.35 | 5.65 | 4.94 |
| MS25P-903 | 24 V | 18.0 V | 8100 | 7.50 | 6.75 | 6.00 | 5.25 |
| MS25P-904 | 3.7 mA | 2.8 mA | 5000 | 7.31 | 6.58 | 5.85 | 5.12 |
| MS25P-905 | 2.7 mA | 2.0 mA | 10000 | 7.58 | 6.82 | 6.06 | 5.31 |
| MS25P-906 | 2.1 mA | 1.6 mA | 15000 | 8.13 | 7.32 | 6.50 | 5.69 |

### TWO POLE DOUBLE THROW

**Coil Power:** 125 mW, min.; 1.5 W, max. **Overall Size:** 1⅝″ x 1⅛″ x 1¼″, open type; 2″ x 1⅜″ x 1⅜″, plug-in type. MS50 has two holes tapped for #4-40-NC-2.

### TYPE MS50 SOLDER TERMINALS (FIG. C)

| Part No. | DC Magnet Coil at 25° C Nominal | Max. Pick-Up* | Resis., Ohms ±10% | Net Each, Lots of* 1-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|---|
| MS50-901 | 6 V | 4.5 V | 160 | $4.90 | $4.41 | $3.92 | $3.43 |
| MS50-902 | 12 V | 9.0 V | 650 | 4.90 | 4.41 | 3.92 | 3.43 |
| MS50-903 | 24 V | 18.0 V | 2600 | 5.01 | 4.51 | 4.01 | 3.51 |
| MS50-904 | 6.7 mA | 5.0 mA | 5000 | 5.46 | 4.91 | 4.37 | 3.82 |
| MS50-905 | 4.7 mA | 3.5 mA | 10000 | 5.93 | 5.34 | 4.74 | 4.15 |
| MS50-906 | 3.9 mA | 2.9 mA | 15000 | 6.84 | 6.16 | 5.47 | 4.79 |

### TYPE MS50P PLUG-IN OCTAL BASE (FIG. B)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MS50P-901 | 6 V | 4.5 V | 160 | $8.49 | $7.64 | $6.79 | $5.94 |
| MS50P-902 | 12 V | 9.0 V | 650 | 8.49 | 7.64 | 6.79 | 5.94 |
| MS50P-903 | 24 V | 18.0 V | 2600 | 8.62 | 7.76 | 6.90 | 6.03 |
| MS50P-904 | 6,7 mA | 5.0 mA | 5000 | 9.09 | 8.18 | 7.27 | 6.36 |
| MS50P-905 | 4.7 mA | 3.5 mA | 10000 | 9.52 | 8.57 | 7.62 | 6.66 |
| MS50P-906 | 3.9 mA | 2.9 mA | 15000 | 10.40 | 9.36 | 8.32 | 7.28 |

### THREE POLE DOUBLE THROW

**Coil Power:** 200 mW, min.; 1.5 W, max. **Overall Size:** 1⅝″ x 1⅛″ x 1¼″, open type; 2″ x 1⅜″ x 1⅜″, plug-in type. MS50 has two holes tapped for #4-40-NC-2.

### TYPE MS50 SOLDER TERMINALS (FIG. C)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MS50-921 | 6 V | 4.5 V | 100 | $6.12 | $5.51 | $4.90 | $4.28 |
| MS50-922 | 12 V | 9.0 V | 400 | 6.12 | 5.51 | 4.90 | 4.28 |
| MS50-923 | 24 V | 18.0 V | 1600 | 5.89 | 5.30 | 4.71 | 4.12 |
| MS50-924 | 8.5 mA | 6.4 mA | 5000 | 6.71 | 6.04 | 5.37 | 4.70 |
| MS50-925 | 6.0 mA | 4.5 mA | 10000 | 7.14 | 6.43 | 5.71 | 5.00 |
| MS50-926 | 4.9 mA | 3.7 mA | 15000 | 8.03 | 7.23 | 6.42 | 5.62 |

### TYPE MS50P PLUG-IN 11-PIN BASE (FIG. B)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| MS50P-921 | 6 V | 4.5 V | 100 | $10.45 | $ 9.41 | $8.36 | $7.32 |
| MS50P-922 | 12 V | 9.0 V | 400 | 10.45 | 9.41 | 8.36 | 7.32 |
| MS50P-923 | 24 V | 18.0 V | 1600 | 10.45 | 9.41 | 8.36 | 7.32 |
| MS50P-924 | 8.5 mA | 6.4 mA | 5000 | 11.00 | 9.90 | 8.80 | 7.70 |
| MS50P-925 | 6.0 mA | 4.5 mA | 10000 | 11.29 | 10.16 | 9.03 | 7.90 |
| MS50P-926 | 4.9 mA | 3.7 mA | 15000 | 12.35 | 11.12 | 9.88 | 8.65 |

*Nominal drop-out approximately 35% of pick-up.

### TYPE MS64 ENCLOSED SPDT DC SENSITIVE RELAYS

For printed circuit (Fig. D) or bracket mounting (not illustrated). Isolated contacts; snap-on cover; molded construction. **Coil Power:** 50 mW min.; 1.0 W maximum. **Size:** 1³⁄₁₆″ x ¾″ x 1⅛″.

| Part No. | Mtg. | DC Magnet Coil† Nominal V | Max. Pick-Up V | Resis., Ohms ±10% | Net Each, Lots of* 1-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|---|---|
| MS64-901 | PC | 6 | 4.5 | 400 | $2.27 | $2.04 | $1.82 | $1.59 |
| MS64-902 | PC | 12 | 9.0 | 1600 | 2.42 | 2.18 | 1.94 | 1.69 |
| MS64-903 | PC | 24 | 18.0 | 6500 | 2.56 | 2.30 | 2.05 | 1.79 |
| MS64-904 | PC | 3* | 2.3* | 10000 | 2.82 | 2.54 | 2.26 | 1.97 |
| MS64-911 | Bkt. | 6 | 4.5 | 400 | 2.38 | 2.14 | 1.90 | 1.67 |
| MS64-912 | Bkt. | 12 | 9.0 | 1600 | 2.46 | 2.21 | 1.97 | 1.72 |
| MS64-913 | Bkt. | 24 | 18.0 | 6500 | 2.69 | 2.42 | 2.15 | 1.88 |
| MS64-914 | Bkt. | 3* | 2.3 | 10000 | 2.89 | 2.60 | 2.31 | 2.02 |

*mA rating. †At 25° C.

## MINIATURE SPDT OPEN FRAME RELAYS

### TYPE MS40 SOLDER TERMINALS (FIG. E)

**Coil Power:** 50 mW, min.; 1.0 W, max. Armature common to frame. **Overall Size:** 1⅛″ x 1⅛″ x ¹⁵⁄₁₆″. Two holes for #4-40-NC-2 on .687″ x .562″ centers.

| Part No. | DC Magnet Coil at 25° C Nominal mA | Max. Pick-Up, mA | Resis., Ohms ±10% | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|---|
| MS40-901 | 6 V* | 4.5 V* | 250 | $2.17 | $1.95 | $1.74 | $1.52 |
| MS40-902 | 13.5 | 10 | 500 | 2.17 | 1.95 | 1.74 | 1.52 |
| MS40-903 | 11.0 | 8.2 | 750 | 2.17 | 1.95 | 1.74 | 1.52 |
| MS40-904 | 12 V* | 7.0 V* | 1000 | 2.26 | 2.03 | 1.81 | 1.58 |
| MS40-905 | 7.7 | 5.8 | 1500 | 2.24 | 2.02 | 1.79 | 1.57 |
| MS40-906 | 6.0 | 4.5 | 2500 | 2.29 | 2.06 | 1.83 | 1.60 |
| MS40-907 | 4.3 | 3.2 | 5000 | 2.26 | 2.03 | 1.81 | 1.58 |
| MS40-908 | 24 V* | 19.5 V* | 7500 | 2.77 | 2.49 | 2.22 | 1.94 |
| MS40-909 | 3 | 2.3 | 10000 | 2.89 | 2.60 | 2.31 | 2.02 |

*Nominal and pick-up voltage.

## DC POWER CONTACTORS

F **Type 70**—Solenoid actuated DC power contactors feature drawn steel dust-proof enclosure, copper stud power and coil terminals, double break rotating disc movable contact, isolated coil terminals. **Magnet Coil Rating:** 9 watts. **Breakdown Voltage:** 500 V rms, 60 Hz. **Terminals:** SPDT has six; 70-913 to 70-920, three; 70-901 to 70-908, four. **Size:** 2½″ x 3½″ x 2½″ (SPDT, 3⅜″ x 3⁹⁄₁₆″ x 2½″). Mtg. holes on 2.109″ ctrs. Hardware included.

| Coil V | Contact Rating* NO | NC | Copper Contacts SPNO Pt. No. | Pt. No.• | Pt. No.▲ | Silver Contacts SPNO Pt. No. | SPDT# Pt. No. | SPDT Pt. No.■ |
|---|---|---|---|---|---|---|---|---|
| 6 | 80 A† | 60 A§ | 70-901 | 70-913 | 70-917 | 70-905 | 70-909 | 70-921 |
| 12 | 80 A‡ | 60 A | 70-902 | 70-914 | 70-918 | 70-906 | 70-910 | 70-922 |
| 24 | 50 A | 30 A | 70-903 | 70-915 | 70-919 | 70-907 | 70-911 | 70-923 |
| 36 | 50 A | 30 A | 70-904 | 70-916 | 70-920 | 70-908 | 70-912 | 70-924 |
| Net Ea.: 1–24 | | | $4.20 | $4.20 | $4.20 | $7.35 | $11.00 | $9.87 |
| 25–49 | | | 3.78 | 3.78 | 3.78 | 6.62 | 9.90 | 8.88 |
| 50–99 | | | 3.36 | 3.36 | 3.36 | 5.88 | 8.80 | 7.90 |
| 100–249* | | | 2.94 | 2.94 | 2.94 | 5.15 | 7.70 | 6.91 |

*Continuous; inductive load: 36 VDC max., copper or silver contacts. Inrush rating: †300 A; ‡150 A; §100 A; others same as continuous ratings listed. #Isolated coil. •Coil grounded to case. ▲Coil common to load. ■NO copper and NC silver.

G **Type 150**—Enclosed in metal case with side bracket; isolated coil. Quick-connect terminals. Hardware included. Contacts rated 7.5 to 25 amps at coil voltage shown. **Size:** 2¼″ x 1½″ x 2″.

| Part No. | Contacts Type | A | Coil V | Ohms | Net Each, Lots of* 1-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|---|---|
| 150-901 | SPNO | 25 | 6 | 18 | $3.00 | $2.70 | $2.40 | $2.10 |
| 150-902 | SPNO | 25 | 12 | 44 | 3.00 | 2.70 | 2.40 | 2.10 |
| 150-903 | SPNO | 12 | 24 | 176 | 3.00 | 2.70 | 2.40 | 2.10 |
| 150-904 | SPDT | 15 | 6 | 18 | 3.44 | 3.10 | 2.75 | 2.41 |
| 150-905 | SPDT | 15 | 12 | 44 | 3.44 | 3.10 | 2.75 | 2.41 |
| 150-906 | SPDT | 7.5 | 24 | 176 | 3.44 | 3.10 | 2.75 | 2.41 |

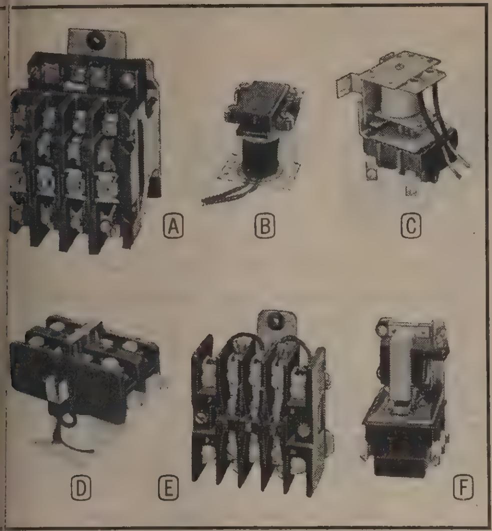
H **Type 60**—SPNO DC power contactor in metal enclosure. **Magnetic Coil Rating:** 2 watts. **Breakdown Voltage:** 1000 V rms, 60 Hz. **Electrical Life:** 100,000 operations, 4 operations/min., rated load. **Mechanical Life:** 250,000 operations at 4 operations/min., no load. **Size:** 2⅞″ x 1⅛″ x 2⅝″ overall. Two tapped holes for #8-32-NC-2 on 1.813″ centers; clearance for #8 screw on 2.563 centers. Screw terminals. Fine silver contacts.

| Part No. | Coil VDC | Coil Resis. Ohms* | Contact Rating Inductive VDC | Amps | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|---|---|
| 60-901 | 6 | 11 | 6 | 15 | $3.64 | $3.28 | $2.91 | $2.55 |
| 60-902 | 12 | 35 | 12 | 15 | 3.72 | 3.35 | 2.98 | 2.60 |
| 60-903 | 24 | 160 | 24 | 7.5 | 4.20 | 3.78 | 3.36 | 2.94 |

*At 25° C.

★LARGER QUANTITIES AVAILABLE ON REQUEST.

# AC Power Contactors



## AC POWER CONTACTORS

**Type 75**—DPNO; screw power terminals, #8 solid wire max. Quick connect or 13″ lead coil termination. Protective contact er. Hardware included. **Size:** 2½″ x 2⅛″ x 2¼″ overall.

**Type 80**—DPNO; screw power terminals, #8 solid wire max., 9″ coil lead wire termination. Hi-dielectric insulation; double ak contacts. **Size:** 3⅛″ x 2⅝″ x 2⅞″ overall.

**Type 143**—DPNO; screw power terminals, #10 solid wire max. Auxiliary quick-connect terminals; straight-thru wiring; ible break contacts. Hardware included in boxed quantity only. e: 3¼″ x 2⅜″ x 2½″.

**Type 85**—3PNO; screw terminals, #8 solid wire max. Double break contacts; ¼″ auxiliary wiring terminals. Straight-u wiring. Hi-dielectric insulation. Resilient mounting. **Size:** ″ x 3⅛″ x 2⅝″ overall.

**Type S30**—3PNO; solenoid actuated type. Screw power terminals, #8 solid wire max. Enclosed contacts. Double break o-Kiss'' contact action. Cast aluminum base. Laminated "C" gnet and self-aligning "T" armature. High dielectric arc resisnt molded contact block and carrier. Epoxy-clad magnet coil. silient mounting. **Size:** 3⅞″ x 2⅜″ x 2½″ overall.
**pe S40**—3PNO; similar to above except pressure connector wer terminals, #6 solid wire max. **Size:** 3⅞″ x 2¾″ x 2½″ overall.

ntact amp ratings listed are continuous unless noted otherwise.

| pe | Contact Rating (AC), Inductive |
|---|---|
|  | 1 hp/pole, 115/230 V; 2 pole, 2 hp/230 V or 18 amps cont. (90 amps inrush); 25 amps, 240 V/pole resistive. |
|  | 25 amps (150 amps inrush), 250 V maximum. |
| 3 | Type 143-901 to 143-903, 18 amps (90 amps inrush), 277 V; 25 amps, 277 V resistive. Type 143-914 to 143-916, 25 amps (150 amps inrush), 277 V; 35 amps resistive. at 277 VAC per pole. |
|  | 25 A (150 A inrush), 250 V; 12.5 A (75 A inrush), 600 V. |
| 0 | 30 A (180 A inrush), 250 V; 15 A (90 A inrush), 600 V. |
| 0 | 40 amps (200 amps inrush), 250 V max. |

### PRICES

| Part No. | Contacts | Coil Volts | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-999 |
|---|---|---|---|---|---|---|---|
| -901 | DPNO | 24 | $ 4.86 | $ 4.37 | $ 3.89 | $3.40 | $2.86 |
| -902 | DPNO | 115/120 | 4.86 | 4.37 | 3.89 | 3.40 | 2.86 |
| -903 | DPNO | 230/240 | 4.86 | 4.37 | 3.89 | 3.40 | 2.86 |
| -904 | DPNO | 24* | 4.86 | 4.37 | 3.89 | 3.40 | 2.86 |
| -905 | DPNO | 115/120* | 4.86 | 4.37 | 3.89 | 3.40 | 2.86 |
| -906 | DPNO | 230/240* | 4.86 | 4.37 | 3.89 | 3.40 | 2.86 |
| -901 | DPNO | 24 | 7.90 | 7.11 | 6.32 | 5.53 | 4.95 |
| -902 | DPNO | 120 | 7.90 | 7.11 | 6.32 | 5.53 | 4.95 |
| -904 | DPNO | 240 | 7.90 | 7.11 | 6.32 | 5.53 | 4.95 |
| 3-901 | 2PNO | 24 | 4.78 | 4.30 | 3.82 | 3.35 | 2.74 |
| 3-902 | 2PNO | 120 | 4.78 | 4.30 | 3.82 | 3.35 | 2.74 |
| 3-903 | 2PNO | 208/240 | 4.78 | 4.30 | 3.82 | 3.35 | 2.74 |
| 3-914 | 2PNO | 24 | 8.00 | 7.20 | 6.40 | 5.60 | 4.75 |
| 3-915 | 2PNO | 120 | 8.00 | 7.20 | 6.40 | 5.60 | 4.75 |
| 3-916 | 2PNO | 208/240 | 8.00 | 7.20 | 6.40 | 5.60 | 4.75 |
| -901 | 3PNO | 24 | 10.80 | 9.72 | 8.64 | 7.56 | 5.63 |
| -902 | 3PNO | 120 | 10.80 | 9.72 | 8.64 | 7.56 | 5.63 |
| -903 | 3PNO | 208/240 | 10.80 | 9.72 | 8.64 | 7.56 | 5.63 |
| 30-901 | 3PNO | 24 | 11.65 | 10.49 | 9.32 | 8.16 | 6.20 |
| 30-902 | 3PNO | 115 | 11.65 | 10.49 | 9.32 | 8.16 | 6.20 |
| 30-903 | 3PNO | 230 | 11.65 | 10.49 | 9.32 | 8.16 | 6.20 |
| 40-901 | 3PNO | 24 | 13.25 | 11.93 | 10.60 | 9.28 | 8.70 |
| 40-902 | 3PNO | 115 | 13.25 | 11.93 | 10.60 | 9.28 | 8.70 |
| 40-903 | 3PNO | 230 | 13.25 | 11.93 | 10.60 | 9.28 | 8.70 |

Quick-connect tab terminals; 75-901 to 75-903, 13″ leads.

## AC INDUSTRIAL CONTACTORS

Ⓐ Unique design permits common base, coil and magnet for contactor ratings of 10 amps (type C10), 15 amps (type C15 and CR15), 30 amps (type C30 and CR30) and 50 amps (type C50R). Double break contact action. Epoxy sealed molded magnet coil housing. Replaceable contacts and coil. Laminated corrosion resistant E-type magnet and self-aligning armature. Hi-dielectric arc resistant molded contact block and carrier. Magnet coil 50/60 Hz. Resilient mounting. All 10 and 15 A contacts can be converted to NC with screwdriver. Pressure type power terminals; #10 solid wire used on C10, C15 and CR15; #8 solid wire on C30; #6 stranded wire on types CR30 and C50R. Types CR15 and CR30 are suitable for motor reversing and transformer tap changing industrial applications; consist of two type C contactors mounted side-by-side on common steel base; hardened steel mechanical interlock prevents simultaneous closing of both contactors; no cross phase wiring. **Size:** 3⅝″ x 2¾″ x 3⅜″ overall; dual contactors (types CR15 and CR30), 3⅝″ x 5⁹⁄₁₆″ x 3⅜″ overall.

| Series | AC Contact Rating, HP 110 VAC 1-Ph. | 110 VAC 3-Ph. | 220 VAC 1-Ph. | 220 VAC 3-Ph. | 600 VAC 1-Ph. | 600 VAC 3-Ph. | Contact, Amps Resistive per Pole |
|---|---|---|---|---|---|---|---|
| C10 | ½ | ¾ | ¾ | 1 | 1 | 1 | 10 at 600 V |
| C15 | 1 | 1½ | 1½ | 2 | 1½ | 2 | 15 at 600 V |
| C30 | 2 | 3 | 3 | 7½ | 5 | 10 | 30 at 600 V |
| C50R | ..... | ..... | ..... | ..... | ..... | ..... | 50 at 480 V |
| CR15 | 1 | 1½ | 1½ | 2 | ..... | ..... | 15 at 600 V |
| CR30 | 2 | 3 | 3 | 7½ | ..... | ..... | 30 at 600 V |

### COIL VOLTAGES

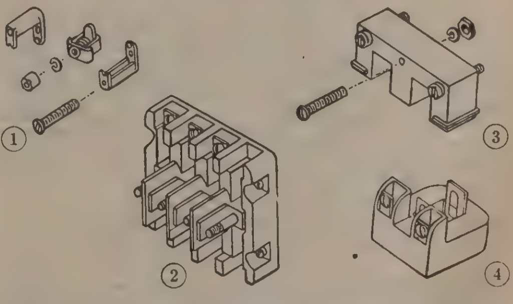
| Coil V* | 4PNO Part No. C10- | 4PNO Part No. C15- | 4PNO Part No. C30- | 4PNO Part No. C50R- | 4PNO Part No. CR15- | 4PNO Part No. CR30- |
|---|---|---|---|---|---|---|
| 24 | 901 | 901 | 901 | 901 | ........ | ........ |
| 110 | 902 | 902 | 902 | 902 | 901 | 901 |
| 220 | 903 | 903 | 903 | 903 | 902 | 902 |

*50/60 Hz.

### PRICES

| Net Ea., Lots of | Type C10 | Type C15 | Type C30 | Type C50R | Type CR15 | Type CR30 |
|---|---|---|---|---|---|---|
| 1-24 | $13.10 | $16.10 | $18.20 | $23.00 | $42.30 | $51.12 |
| 25-49 | 11.79 | 14.49 | 16.38 | 20.70 | 38.07 | 46.01 |
| 50-99 | 10.48 | 12.88 | 14.56 | 18.40 | 33.84 | 40.90 |
| 100-249 | 9.17 | 11.27 | 12.74 | 16.10 | 29.61 | 35.78 |
| 250-499 | 9.02 | 11.00 | 12.50 | 15.73 | 29.14 | 35.22 |
| 500-999 | 8.88 | 10.73 | 12.13 | 15.33 | 28.67 | 34.65 |

## TYPE C REPLACEMENT PARTS



### CONTACT ASSEMBLIES—FIGURE 1

| For Contactor Type | Use Contact Assembly Part No. | Replaces | Net Each, Lots of 1-24 | 25-999 |
|---|---|---|---|---|
| C10, 15, CR15* | CA-901 | 45997-3, -4 | $ 6.20 | $3.49 |
| C50R | CA-903 | 45997-22 | 10.40 | 5.85 |
| 109153† | CA-904 | 45997-16 | 8.56 | 4.82 |
| 109453† | CA-904 | 45997-20 | 8.56 | 4.82 |
| C30, CR30* | CA-904 | 45997-5 | 8.56 | 4.82 |

*Reversing type, two sets required. †Not standard items.

### ARMATURE AND CONTACT BLOCK

| Part No. | Figure | Description | Net Each, Lots of 1-24 | 25-999 |
|---|---|---|---|---|
| RP-901 | 3 | Armature and magnet | $4.28 | $2.41 |
| RP-902 | 2 | 4-pole } Contact block and carrier | 6.92 | 3.90 |
| RP-903 | 2 | 5-pole } Contact block and carrier | 7.83 | 4.41 |

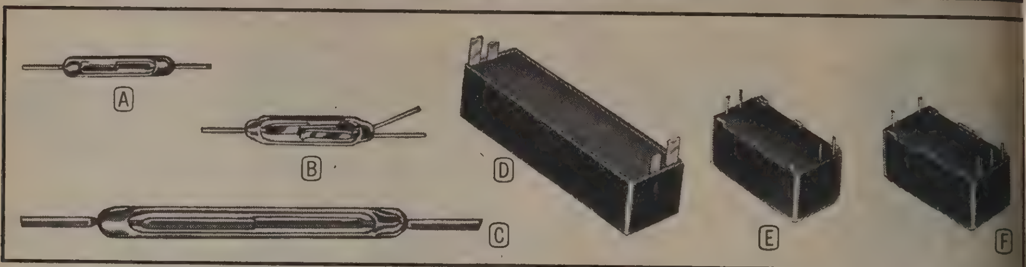
### MAGNET COILS—FIGURE 4

Standard and special magnet coils are not interchangeable.

| Volts 50/60 Hz | Standard Part No. | Standard Replaces | Special Part No. | Special Replaces | Net Each, Lots 1-24 | 25-999 |
|---|---|---|---|---|---|---|
| 24 | MC-901 | 45225-5 | MC-911 | 45225-35 | $4.88 | $2.75 |
| 110 | MC-902 | 45225-1 | MC-912 | 45225-31 | 4.88 | 2.75 |
| 220 | MC-903 | 45225-2 | MC-913 | 45225-32 | 4.88 | 2.75 |
| 440 | MC-904 | 45225-3 | MC-914 | 45225-33 | 4.88 | 2.75 |
| 550 | MC-905 | 45225-4 | MC-915 | 45225-34 | 4.88 | 2.75 |

**ESSEX** RBM controls

# Reed Relays



## GLASS REED SWITCHES

### MINIATURE SPNO BI-REED®

A Special alloy contacts rated at 15 VA, AC; 5 watts DC; ¼ amp max. up to 250 V, make and break; 1.0 amp at 250 V, no make or break, all at non-inductive load. **Contact Life:** 10 μA at 10 mV, 100 million operations; ⅛ amp at 32 V, 10 million operations, both at DC resistive load. **Operate Time:** 1 msec max. pull-in including bounce; .5 msec to release. **Coil Power:** 0.335 watt nom. **Breakdown Voltage:** 250 V rms, 60 Hz min. **Insulation Resistance:** 500K megs min. **Initial Contact Resistance:** 150 milliohms max. **Vibration:** 15G at 2000 cycles. **Shock:** 50G min., JAN S-44. **Ambient Temperature:** −55° to +85° C. **Size:** 0.100″ dia. x 0.75″ lg., 1.5″ over leads. Weight, 0.315 gm.

**Part No. BRM-902**—Net Each, Lots of 1–24............**$1.15**
25–49....**$1.04**; 50–99....**$0.92**; 100–249......**$0.81***

### MINIATURE SPDT TRI-REED®

B Special alloy contacts rated 15 VA, AC; 5 watts, DC; ¼ amp max. up to 125 VAC or 32 VDC, make and break; 1 amp, 125 VAC or 32 VDC, no make or break, all at non-inductive load. **Contact Life:** 10 μA at 10 mV, 100 million operations; ⅛ amp at 32 V, 10 million operations, all at DC resistive load. **Operate Time:** 1.0 msec max. pull-in including bounce; 0.5 msec to release. **Coil Power:** 0.335 watt nom. **Breakdown Voltage:** 250 V rms, 60 Hz min. **Insulation Resistance:** 100K megs min. **Initial Contact Resistance:** 150 milliohms max. **Vibration:** 15G, 2000 cycles. **Shock:** 50G min., JAN S-44. **Ambient Temperature:** −55° to +85° C. **Size:** 0.125″ diameter x 0.60″ long, 1.5″ over leads. Weight, .295 gm.

**Part No. TRM-901**—Net Each. Lots of 1–24............**$4.20**
25–49.....**$3.78**; 50–99.....**$3.36**; 100–249....**$2.94***

### STANDARD SPNO BI-REED

C Special alloy contacts rated 15 VA, AC; 15 watts, DC; 1.0 amp max. up to 250 V, make and break; 5 amps, 250 V, no make or break, all at non-inductive load. **Contact Life:** 10 μA at 10 mV, 200 million operations; ⅛ amp at 32 V, 125 million operations, both at DC resistive load. **Operate Time:** 2.0 msec max. pull-in including bounce; 0.5 msec to release. **Coil Power:** 0.360 watt nom. **Breakdown Voltage:** 500 V rms, 60 Hz min. **Insulation Resistance:** 500K megs min. **Initial Contact Resistance:** 50 milliohms max. **Vibration:** 20G, 750 cycles. **Shock:** 40G min., JAN S-44. **Ambient Temperature:** −55° to +85° C. **Size:** 0.200″ dia. x 2.1″ long, 3.35″ over leads. Weight, 2.5 gms.

**Part No. BRS-901**—Net Each, Lots of 1–24............**$1.00**
25–49.....**$0.90**; 50–99.....**$0.80**; 100–249....**$0.70***

## REED-PAK GLASS REED RELAYS

### STANDARD NORMALLY OPEN TYPE

### MAGNETICALLY SHIELDED

D Special alloy contacts rated 15 VA, AC; 15 watts, DC; 1 amp max. up to 250 V make and break; 5.0 amps, 250 V no make or break, non-inductive. **Breakdown Voltage:** 500 V rms, 60 Hz. **Contact Life:** 10 μA at 10 mV, 200 million operations; ⅛ amp at 32 V, 125 million operations, both at DC resistive load. **Initial Contact Resistance:** 50 milliohms max. **Insulation Resistance:** 500K megs min. **Vibration:** 20G, 750 cycles min. coil energized or de-energized. **Shock:** 40G min., JAN S-44.

### SPNO 125 mW NOMINAL PICK-UP

**Coil Power:** 3 watts max. **Operate Time:** 2 msec pull-in including bounce; 0.5 msec max. to release. **Size:** 2.55″ x .675″ x .625″ overall plus leads.

| Part No. | DC Magnet Coil at 25° C | | | | Net Each, Lots of* | | | |
|---|---|---|---|---|---|---|---|---|
| | Voltage, V | | Max. Pick-Up mA | Resis. Ohms, ±10% | 1-24 | 25-49 | 50-99 | 100-249 |
| | Pick-Up Max. | Drop-Out Min. | | | | | | |
| **BRSR1-901*** | 4.5 | 0.55 | 43.0 | 115 | $4.89 | $4.40 | $3.91 | $3.42 |
| **BRSR1-902†** | 9.0 | 1.10 | 22.5 | 445 | 5.00 | 4.50 | 4.00 | 3.50 |
| **BRSR1-903§** | 18.0 | 2.50 | 7.8 | 2550 | 5.31 | 4.78 | 4.25 | 3.72 |

### DPNO 250 mW NOMINAL PICK-UP

**Coil Power:** 3.2 watts max. **Operate Time:** 2 msec pull-in including bounce; 0.5 msec max. to release. **Size:** 2.55″ x .925″ x .625″ overall plus leads.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **BRSR2-901*** | 4.5 | 0.51 | 86.5 | 58 | $7.34 | $6.61 | $5.87 | $5.14 |
| **BRSR2-902†** | 9.0 | 1.00 | 45.0 | 220 | 7.44 | 6.70 | 5.95 | 5.21 |
| **BRSR2-903§** | 18.0 | 2.10 | 13.3 | 1500 | 7.60 | 6.84 | 6.08 | 5.32 |

**Nominal Coil Voltages:** *6 V; †12 V; §28 V.

## REED-PAK GLASS REED RELAYS (CONT'D)

### MINIATURE NORMALLY OPEN TYPE

### MAGNETICALLY SHIELDED

E Special alloy contacts rated 15 VA, AC; 5 watts, DC; ¼ amp max. up to 250 V make and break; 1.0 amp, 250 V no make or break. **Breakdown Voltage:** 250 V rms, 60 Hz open contacts, same polarity; 500 V rms, 60 Hz opposite polarity and to ground. **Contact Life:** 10 μA at 10 mV, 100 million operations; ⅛ amp at 32 V, 10 million operations, all at DC resistive load. **Initial Contact Resistance:** 150 milliohms max. **Insulation Resistance:** 500K megs min. **Vibration:** 15G, 2000 cycles min. coil energized or de-energized. **Shock:** 50G min., JAN S-44.

### SPNO 100 mW NOMINAL PICK-UP

**Coil Power:** 1.0 watt max. **Operate Time:** 1 msec pull-in including bounce; 0.5 msec max. to release. **Size:** 1$\frac{9}{64}$″ x $\frac{9}{16}$″ x $\frac{35}{64}$″ overall plus leads.

| Part No. | DC Magnet Coil at 25° C | | | | Net Each, Lots of* | | | |
|---|---|---|---|---|---|---|---|---|
| | Voltage V | | Max. Pick-Up mA | Resis. Ohms, ±10% | 1-24 | 25-49 | 50-99 | 100-249 |
| | Pick-Up Max. | Drop-Out Min. | | | | | | |
| **BRMR1-901*** | 3.25 | 0.8 | 27.0 | 105 | $4.15 | $3.74 | $3.32 | $2.91 |
| **BRMR1-902†** | 6.5 | 1.0 | 15.5 | 420 | 4.18 | 3.76 | 3.34 | 2.93 |
| **BRMR1-903§** | 15.2 | 2.5 | 6.5 | 2350 | 4.29 | 3.86 | 3.43 | 3.00 |

### DPNO 150 mW NOMINAL PICK-UP

**Coil Power** 1.5 watts max. **Operate Time:** 1 msec pull-in including bounce; 0.5 msec max. to release. **Size:** 1$\frac{9}{16}$″ x $\frac{47}{64}$″ x $\frac{35}{64}$″ overall plus leads.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **BRMR2-901*** | 3.25 | 0.8 | 46.5 | 70 | $6.10 | $5.49 | $4.88 | $4.27 |
| **BRMR2-902†** | 6.5 | 1.0 | 25.2 | 280 | 6.13 | 5.52 | 4.90 | 4.29 |
| **BRMR2-903§** | 15.2 | 2.5 | 9.8 | 1540 | 6.24 | 5.62 | 4.99 | 4.37 |

**Nominal Coil Voltages:** *6 V; †12 V; 28 V.

### MINIATURE DOUBLE THROW TYPE

### MAGNETICALLY SHIELDED

F Non-polarized TrueForm contacts in one capsule. Positive break before make. Special alloy contacts rated 15 VA, AC; 5 watts, DC; ¼ amp max. up to 125 VAC, 32 VDC make and break; 1.0 amp, 125 VAC, 32 VDC no make or break. **Breakdown Voltage:** 250 volts rms, 60 Hz. **Contact Life:** 10 μA at 10 mV, 100 million operations; ⅛ amp at 32 V, 10 million operations, both at DC resistive load. **Initial Contact Resistance:** 150 milliohms max. **Insulation Resistance:** 100K megs min. **Operate Time:** 1 msec pull-in including bounce; 0.5 msec max. to release. **Vibration:** 15G, 2000 cycles min. coil energized or de-energized. **Shock:** 50G, min., JAN S-44.

### SPDT 150 mW NOMINAL PICK-UP

**Coil Power:** 1.0 watt max. **Size:** 1$\frac{9}{64}$″ x $\frac{9}{16}$″ x $\frac{35}{64}$″ overall plus leads.

| Part No. | DC Magnet Coil at 25° C | | | | Net Each, Lots of* | | | |
|---|---|---|---|---|---|---|---|---|
| | Voltage, V | | Max. Pick-Up Ma | Resis. Ohms, ±10% | 1-24 | 25-49 | 50-99 | 100-249 |
| | Pick-Up Max. | Drop-Out Min. | | | | | | |
| **TRMR1-901*** | 4 | 1.5 | 42 | 105 | $8.06 | $7.25 | $6.45 | $5.64 |
| **TRMR1-902†** | 8 | 3 | 21 | 420 | 8.06 | 7.25 | 6.45 | 5.64 |
| **TRMR1-903§** | 19 | 6 | 8 | 2350 | 8.06 | 7.25 | 6.45 | 5.64 |

### DPDT 250 mW NOMINAL PICK-UP

**Coil Power:** 1.5 watts max. **Size:** 1$\frac{9}{16}$″ x $\frac{47}{64}$″ x $\frac{35}{64}$″ overall plus leads.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **TRMR2-901*** | 4 | 1.5 | 64 | 70 | $13.58 | $12.22 | $10.86 | $9.51 |
| **TRMR2-902†** | 8 | 3 | 32 | 280 | 13.58 | 12.22 | 10.86 | 9.51 |
| **TRMR2-903§** | 19 | 6 | 12 | 1540 | 13.58 | 12.22 | 10.86 | 9.51 |

**Nominal Coil Voltages:** * 6 V; †12 V; §28 V.

## ★LARGER QUANTITY DISCOUNTS

Additional discounts will be provided for quantities over 249 pieces; write for complete price information.

**Write or phone for RBM Standard Controls Catalog.**

# SIGMA Relays, Switches, Motors

## REED RELAYS

### IES 191 FORM A: SPST, DPST; FORM C: SPDT

dard 14 pin, dual in-line packaged reed relays feature fast onse, reliable performance, high sensitivity and isolation tance. Best suited for test and computer peripheral equipt. **Operating Time:** 1.0 msec max. at rated voltage. **Isolation tance:** $10^9$ ohms min. Internal diode, coil suppression, romagnetic and electrostatic shielding optional.

| Sigma No. | Nom. VDC | Resis. Ohms | Contacts | Rating Amps | Net Each |
|---|---|---|---|---|---|
| TE1A1-5S | 5 | 500 | 1A | 0.5 | $3.50 |
| TE1A1-5G | 5 | 200 | 1A | 0.5 | 3.30 |
| TE1A1-6S | 6 | 500 | 1A | 0.5 | 3.50 |
| TE1A1-6G | 6 | 200 | 1A | 0.5 | 3.50 |
| TE1A1-12G | 12 | 1250 | 1A | 0.5 | 3.50 |
| TE1A1-12L | 12 | 500 | 1A | 0.5 | 3.30 |
| TE2A1-5G | 5 | 200 | 2A | 0.5 | 5.50 |
| TE2A1-6G | 6 | 200 | 2A | 0.5 | 5.50 |
| TE2A1-12G | 12 | 500 | 2A | 0.5 | 5.50 |
| TE2A1-24L | 24 | 1200 | 2A | 0.5 | 6.00 |
| TE1C1-5S | 5 | 200 | 1C | 0.25 | 5.00 |
| TE1C1-5G | 5 | 150 | 1C | 0.25 | 4.80 |
| TE1C1-6S | 6 | 200 | 1C | 0.25 | 5.00 |
| TE1C1-6G | 6 | 150 | 1C | 0.25 | 5.00 |
| TE1C1-12G | 12 | 500 | 1C | 0.25 | 5.00 |
| TE1C1-24L | 24 | 1250 | 1C | 0.25 | 4.80 |

### OPTIONS

de Optional—For any of above relays. Add to net.....$1.00
ctromagnetic Shielding for above relays. Add to net.... .50
ctrostatic Shielding for above relays. Add to net....... .75

### SERIES 193

oice of 20 combinations of contacts (SPST thru 6PST, SPDT u 4PDT) in 4 standard case sizes. Form A capsules for single ow switching and patented Form C for double throw switching. nted circuit type pin contacts are on 1.000″ x 0.100″ PC grid cing. All cased relays are magnetically shielded for minimum eraction and housed in a molded plastic case. All units have ndoffs. **Contact Rating:** 0.5 amp.

| nclosed gma No. 193- | Open Sigma No. 193- | Coil Data | Contacts | Net Each | |
|---|---|---|---|---|---|
| | | Resis., Ohms at VDC Nom. | | Enclosed | Open |
| E1A3-*G | FP1A1-*G | 70 at 6 VDC | 1A | $ 3.50 | $ 3.20 |
| E1C3-*G | FP1C1-*G | 280 at 12 VDC | 1C | 4.65 | 4.35 |
| E2A3-*G | FP2A1-*G | 1500 at 24 VDC | 2A | 4.60 | 4.10 |
| E2C3-*G | FP2C1-*G | | 2C | 7.35 | 6.85 |
| E3A3-*G | FP3A1-*G | 30 at 6 VDC | 3A | 5.70 | 4.90 |
| E3C3-*G | FP3C1-*G | 120 at 12 VDC | 3C | 11.00 | 10.20 |
| E4A3-*G | FP4A1-*G | 640 at 24 VDC | 4A | 6.80 | 5.90 |
| E4C3-*G | FP4C1-*G | 19 at 6 VDC | 4C | 14.60 | 13.70 |
| E5A3-*G | FP5A1-*G | 77 at 12 VDC | 5A | 7.70 | 6.80 |
| E6A3-*G | FP6A1-*G | 410 at 24 VDC | 6A | 8.60 | 7.70 |

nsert nominal VDC after basic model no.; e.g., 193RE4C3-12G.

### SERIES 194

oice of 14 combinations of contacts (SPST thru 4PDT) in 3 ndard case sizes. Meets MIL-R-5757/29 specifications. Form A single throw switching and patented Form C for double throw itching. Printed circuit type pin contacts are .030″ in dia. and e on standard .100″ grid spacing. Relays are electrostatically d magnetically shielded to minimize the possibility of intertion or latching. Cases are made of tin-dipped steel. **Nom. Coil ltage:** 26.5 VDC. **Contact Rating:** 0.5 amp.

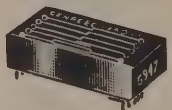
| Sigma No. | Govt's Designation | Contacts | Resis., Ohms | Net Each |
|---|---|---|---|---|
| 94HE1A-22001 | M5757/29-001 | 1A | 2350 | $ 5.90 |
| 94HE1C-22002 | M5757/29-002 | 1C | 1450 | 7.35 |
| 94HE2A-22003 | M5757/29-003 | 2A | 925 | 7.25 |
| 94HE1A1C-22004 | M5757/29-004 | 1A1C | 925 | 9.35 |
| 94HE2C-22005 | M5757/29-005 | 2C | 925 | 10.40 |
| 94HE3A-22006 | M5757/29-006 | 3A | 650 | 8.85 |
| 94HE2A1C-22007 | M5757/29-007 | 2A1C | 650 | 10.90 |
| 94HE1A2C-22008 | M5757/29-008 | 1A2C | 650 | 12.60 |
| 94HE3C-22009 | M5757/29-009 | 3C | 650 | 13.95 |
| 94HE4A-22010 | M5757/29-010 | 4A | 460 | 10.75 |
| 94HE3A1C-22011 | M5757/29-011 | 3A1C | 460 | 12.95 |
| 94HE2A2C-22012 | M5757/29-012 | 2A2C | 460 | 14.50 |
| 94HE1A3C-22013 | M5757/29-013 | 1A3C | 460 | 16.25 |
| 94HE4C-22014 | M5757/29-014 | 4C | 460 | 17.80 |

### SERIES 197

co size reed relay with straight terminal pins on standard 0.700″ 0.100″ grid spacing for printed circuit board mounting. Permits e with high density IC packaging. Five volt versions are comtible with DTL and TTL gates. **Pick-up Coil Power:** 32 or 80 W. **Min. Gap Breakdown Voltage:** 200 VDC.

| Sigma No. | Nom. VDC | Resis., Ohms | Contacts | Rating Amps | Net Each |
|---|---|---|---|---|---|
| 7TE1A1-5S | 5 | 500 | 1A | 0.5 | $3.45 |
| 7TE1A1-5G | 5 | 200 | 1A | 0.5 | 2.95 |
| 7TE1A1-6S | 6 | 500 | 1A | 0.5 | 3.45 |
| 7TE1A1-6G | 6 | 200 | 1A | 0.5 | 2.95 |
| 7TE1A1-12G | 12 | 1250 | 1A | 0.5 | 3.45 |
| 7TE1A1-12L | 12 | 500 | 1A | 0.5 | 2.95 |
| 7TE1C1-5G | 5 | 200 | 1C | 0.25 | 4.75 |
| 7TE1C1-6G | 6 | 200 | 1C | 0.25 | 4.75 |
| 7TE1C1-12G | 12 | 500 | 1C | 0.25 | 4.75 |

191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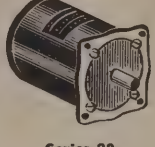

Series 20

## REED SWITCHES

Highly adaptable devices for control of low-power electric circuits. Faster than mechanically operated miniature snap-acting switches and less costly than solid-state switches. Highly sensitive and immune to contamination of contacts. Patented General Reed form C switch is not magnetically biased as other form C's on the market. It is a "true form C". **Min. Gap Breakdown Voltage:** 200 VDC. **Initial Contact Resistance:** 0.10 ohm max.

### FORM A—SPST

**Pull-in Range:** 20 to 90 ampere-turns.

| Sigma No. | Glass | | Overall Lgth. In. | Load | | | Net Each |
|---|---|---|---|---|---|---|---|
| | Dia. In. | Lgth. In. | | Amps Max. | Watts DC | VAC | |
| 3-A14-003 | .100 | .800 | 1.5* | 0.5 | 6 | 10 | $1.00 |
| 3-A14-007 | .100 | .800 | 1.5* | 1.0 | 8 | 12 | 1.00 |
| 3-A31-012 | .090 | .560 | 1.35† | 0.5 | 6 | 10 | 1.10 |
| 3-A31-013 | .090 | .560 | 1.35† | 1.0 | 8 | 12 | 1.10 |

*.022″ lead dia., center gap. †.022/.025″ lead dia., off set gap.

### FORM C—SPST

**Pull-in Range:** 40 to 90 ampere turns. All switches have off set location of gap.

| Sigma No. | Glass | | Overall Lgth. In. | Load | | | Net Each |
|---|---|---|---|---|---|---|---|
| | Dia. In. | Lgth. In. | | Amps Max. | Watts DC | VAC | |
| 3-C05-058 | .125 | .625 | 1.36* | 0.5 | 6 | 10 | $3.60 |
| 3-C05-059 | .125 | .625 | 1.36* | 0.75 | 10 | 15 | 3.60 |
| 3-C40-080 | .090 | .625 | 1.36† | 0.25 | 4 | 6 | 3.60 |

*.025″ lead dia. †.022″ lead dia.

## SERIES 20 MOTORS

### 1.8° STEPPING MOTORS

Two or four phase, converts digital pulse input to analog shaft output of 1.8° steps, ±3%. Listed torques rated with Bipolar Chopper Driver. Motor size is given by first four digits of Sigma Number; e.g., 2223 = 2.2″ x 2.3″ (dia. x length).

**Sigma No. 29-2D30R7-B RL Driver**—Input, ±30 VDC. Pulse trigger. Net Each..............................$127.00

**Sigma No. 29-2S65C10-B Bipolar Chopper Driver**—65 VDC at ⅔ of phase-current of motor. Net Each..............$420.00

| Sigma No. | Torque Oz-In. at 50 step/sec | Cur. Amps | Wt. Oz. | Net Each |
|---|---|---|---|---|
| 20-2223D200-F6 | 53 | 1.3 | 24 | $ 90.00 |
| 20-2223D200-F1.4 | 53 | 1.8 | 24 | 90.00 |
| 20-2235D200-F3.7 | 110 | 2.1 | 40 | 119.00 |
| 20-3424D200-F1.8 | 110 | 2.4 | 50 | 84.00 |
| 20-3424D200-F0.5 | 110 | 3.4 | 50 | 84.00 |
| 20-3437D200-F0.75 | 265 | 5.7 | 82 | 106.00 |
| 20-3450D200-F1.2 | 400 | 5.0 | 117 | 144.00 |
| 20-4275D200-F0.6 | 1500 | 7.5 | 240 | 375.00 |
| 20-4275D200-F1.2 | 1200 | 3.4 | 240 | 175.00 |

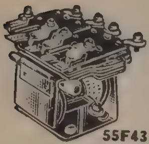
## AC SYNCHRONOUS MOTORS

Bidirectional, heavy duty motors have extremely efficient magnetic circuit for increased torque. Outperform other motors of same frame size. Static detent torque present when unenergized. Speed of motor is 72 rpm at 120 VAC, 60 Hz. Size of unit is given by first four digits of Sigma Number; e.g., 2223 = 2.2″ x 2.3″ (dia. x length).

| Sigma No. | Torque Oz-In. | Resis., per Phase Ohms | Current Nom. | Net Each |
|---|---|---|---|---|
| 20-2223S72-A120 | 44 | 965 | 105 mA | $55.00 |
| 20-2235S72-A120 | 80 | 750 | 600 mA | 85.00 |
| 20-3424S72-A120 | 90 | 250 | 165 mA | 48.00 |
| 20-3437S72-A120 | 210 | 100 | 350 mA | 80.00 |

# SIGMA Relays INDUSTRIAL, COMMERCIAL, MILITARY

## POWER RELAYS



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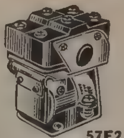

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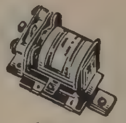


48F

### SERIES 55 DPDT, 3PDT, 4PDT AC AND DC RELAYS

Rugged, reliable relay for continuous heavy-duty, multipole switching of resistive loads to 15 amps at 230 VAC. Handles 60-amp inrush current without contact welding. Mechanical life at least 5 million operations. Temperature range, +14° to +158° F. Contact rating: Resistive, 15 A at 230 VAC, 10 A at 28 VDC; inductive, 7.5 A at 230 VAC, 5 A at 28 VDC. All unenclosed; screw mounted, **55F2:** 1 17/32" w. x 1 29/32" d. x 2 1/32" h. **55F23:** 2 13/64" w. x 2 3/32" d. x 2 3/32" h. **55F3:** 1 15/16" sq. x 2 7/32" h. **55F33:** 2 23/64" w. x 2 7/64" d. x 2 9/32" h. **55F4:** 2 13/32" w. x 1 15/16" d. x 2 21/64" h. **55F43:** 2 21/32" w. x 2 7/64" d. x 2 13/32" h. Weight, 8 oz., max.

**DPDT TYPE**

| Nom. Coil Volts* | Coil Ohms | Nom. Power | Net Each, Disc. Sch. 1* Solder Terminals* Sigma No. 55F2- | Net Each, Disc. Sch. 1* Screw Terminals* Sigma No. 55F23- |
|---|---|---|---|---|
| 115 AC | 635 | 5.6 VA | $ 8.90 | $ 8.90 |
| 230 AC | 3,150 | 5.6 VA | 8.90 | 8.90 |
| 12 DC | 80 | 1.92 W | 8.60 | 8.60 |
| 24 DC | 327 | 1.92 W | 8.60 | 8.60 |
| 110 DC | 6,250 | 1.92 W | 10.35 | 10.35 |

**3PDT TYPE**

| | | | Sigma No. 55F3- | Sigma No. 55F33- |
|---|---|---|---|---|
| 115 AC | 635 | 5.6 VA | $10.10 | $10.10 |
| 230 AC | 3,150 | 5.6 VA | 10.10 | 10.10 |
| 12 DC | 80 | 1.92 W | 9.80 | 9.80 |
| 24 DC | 327 | 1.92 W | 9.80 | 9.80 |
| 110 DC | 6,250 | 1.92 W | 11.55 | 11.55 |

**4PDT TYPE**

| | | | Sigma No. 55F4- | Sigma No. 55F43- |
|---|---|---|---|---|
| 115 AC | 635 | 5.6 VA | $11.90 | $11.90 |
| 230 AC | 3,150 | 5.6 VA | 11.90 | 11.90 |
| 12 DC | 80 | 1.92 W | 11.30 | 11.30 |
| 24 DC | 327 | 1.92 W | 11.30 | 11.30 |
| 110 DC | 6,250 | 1.92 W | 13.05 | 13.05 |

*When ordering, add suffix for desired voltage to Sigma No. shown; e.g., 55F23-**12 DC.**

### SERIES 57 SPDT, DPDT, 3PDT AC AND DC RELAYS

Snap-switch power relay for single or multiple switching of 10-to-15 ampere industrial loads as fractional horsepower motors, solenoids. Contact assembly is totally enclosed; snap-action precision switch featuring positive response to slowly-changing signals, isolation permitting reliable 3-phase switching of 5-to-15 amperes. All unenclosed, screw-mounted, screw terminals. **Load Rating:** Resistive, 15 amps at 230 VAC, 10 amps at 28 VDC; inductive (at 0.6 power factor), 7.5 amps at 230 VAC, 5 amps at 28 VDC. **Temperature Range:** +14° to +158° F. **Size:** 2 1/32" x 2 31/64" max. x 2 13/16" max. h. Weight, 6 to 11 oz.

**SPDT TYPE**

| Sigma No. and Nominal Coil Volts | Coil Ohms | Nominal Power | Net Each Disc. Sch. 3* |
|---|---|---|---|
| 57F1-115AC | 635 | 5.6 VA | $ 9.50 |
| 57F1-230AC | 3,150 | 5.6 VA | 9.50 |
| 57F1-12DC | 96 | 1.5 W | 9.20 |
| 57F1-24DC | 384 | 1.5 W | 9.20 |
| 57F1-110DC | 6,250 | 1.92 W | 10.95 |

**DPDT TYPE**

| | | | |
|---|---|---|---|
| 57F2-115AC | 332 | 7.5 VA | $11.55 |
| 57F2-230AC | 1,560 | 7.5 VA | 11.55 |
| 57F2-12DC | 72 | 2.0 W | 11.30 |
| 57F2-24DC | 274 | 2.0 W | 11.30 |
| 57F2-110DC | 5,500 | 2.2 W | 13.05 |

**3PDT TYPE**

| | | | |
|---|---|---|---|
| 57F3-115AC | 224 | 9.7 VA | $13.65 |
| 57F3-230AC | 980 | 9.7 VA | 13.65 |
| 57F3-12DC | 62 | 2.4 W | 13.35 |
| 57F3-24DC | 250 | 2.3 W | 13.35 |
| 57F3-110DC | 4,210 | 2.9 W | 15.10 |

## SENSITIVE RELAYS

### SERIES 48 SPDT LOW COST DC RELAYS

Excellent, low cost, sensitive relay for use in burglary, fire or police alarm systems requiring operation from 10 mW minimum input signal. Bridge-type contact structure. Solid contacts. Compliant armature for good contact wipe. Contact rating (at 28 VDC/115 VAC resistive): 2 amps. Temperature range, −4° to +158° F. **48F:** Unenclosed, screw mounting, solder terminals. Size, 1 17/64" w. x 2 9/32" d. x 1 7/16" h. Weight, 3 oz. **48RO:** Plastic dust cover, 8-pin octal plug. Size, 1 13/64" sq. x 2 7/64" h. Weight, 4 oz.

| Sigma Type No. | Coil Ohms | Pickup, Max. mADC | Dropout, Min. mADC | Net Each Disc. Sch. 1* |
|---|---|---|---|---|
| 48F-1,000 G-SIL | 1,000 | 3.2 | .32 | $6.70 |
| 48F-2,500 G-SIL | 2,500 | 2.0 | .2 | 6.70 |
| 48RO-1,000 G-SIL | 1,000 | 3.2 | .32 | 7.85 |
| 48RO-2,500 G-SIL | 2,500 | 2.0 | .2 | 7.85 |

**★QUANTITY DISCOUNTS ON ANOTHER SIGMA PAGE**

## GENERAL PURPOSE RELAYS

### SERIES 70 DPDT, 4PDT, 6PDT DC RELAYS AND SOCKETS

Miniature industrial relay for low-level to 5-amp multiple circuit switching. Choice of solder or printed circuit terminal sockets for fast, easy connection. UL and CSA approved. Interchangeable with similar commercial relays in communications, data processing, process control equipment and recording devices. Choice of voltage adjusted (standard or bifurcated contacts) or current sensitive adjusted. Voltage adjusted with bifurcated contacts rated at 50 million operations. Sensitive current-adjusted pick up from signals as low as 85 mW. Mechanical life of both types is 100 million operations. **Temperature Range:** +14° to +158° F.

**2-AMP STANDARD CONTACTS**

| Sigma No. and Nom. Coil Volts | Contacts | Coil Ohms | Nominal Power | Net Each |
|---|---|---|---|---|
| 70R2-6DC | DPDT | 52 | 700 mW | $3.25 |
| 70R2-12DC | DPDT | 185 | 700 mW | 3.25 |
| 70R2-24DC | DPDT | 700 | 700 mW | 3.25 |
| 70R2-48DC | DPDT | 2,500 | 700 mW | 3.35 |
| 70R2-110DC | DPDT | 15,000 | 700 mW | 4.70 |
| 70R4-6DC | 4PDT | 52 | 700 mW | 3.60 |
| 70R4-12DC | 4PDT | 185 | 700 mW | 3.60 |
| 70R4-24DC | 4PDT | 700 | 700 mW | 3.60 |
| 70R4-48DC | 4PDT | 2,500 | 700 mW | 3.80 |
| 70R4-110DC | 4PDT | 15,000 | 700 mW | 5.20 |
| 70R6-6DC | 6PDT | 25 | 1.4 W | 4.60 |
| 70R6-12DC | 6PDT | 90 | 1.4 W | 4.60 |
| 70R6-24DC | 6PDT | 430 | 1.4 W | 4.60 |
| 70R6-48DC | 6PDT | 1,550 | 1.4 W | 4.85 |
| 70R6-110DC | 6PDT | 9,000 | 1.4 W | 5.80 |

**3-AMP STANDARD SCO CONTACTS**

| | | | | |
|---|---|---|---|---|
| 70R2-6DC-SCO | DPDT | 52 | 700 mW | $3.35 |
| 70R2-12DC-SCO | DPDT | 185 | 700 mW | 3.35 |
| 70R2-24DC-SCO | DPDT | 700 | 700 mW | 3.35 |
| 70R2-48DC-SCO | DPDT | 2,500 | 700 mW | 3.45 |
| 70R2-110DC-SCO | DPDT | 15,000 | 700 mW | 4.80 |
| 70R4-6DC-SCO | 4PDT | 52 | 700 mW | 3.80 |
| 70R4-12DC-SCO | 4PDT | 185 | 700 mW | 3.80 |
| 70R4-24DC-SCO | 4PDT | 700 | 700 mW | 3.80 |
| 70R4-48DC-SCO | 4PDT | 2,500 | 700 mW | 4.00 |
| 70R4-110DC-SCO | 4PDT | 15,000 | 700 mW | 5.40 |
| 70R6-6DC-SCO | 6PDT | 25 | 1.4 W | 5.00 |
| 70R6-12DC-SCO | 6PDT | 90 | 1.4 W | 5.00 |
| 70R6-24DC-SCO | 6PDT | 430 | 1.4 W | 5.00 |
| 70R6-48DC-SCO | 6PDT | 1,550 | 1.4 W | 5.20 |
| 70R6-110DC-SCO | 6PDT | 9,000 | 1.4 W | 6.00 |

**2-AMP BIFURCATED CONTACTS**

| | | | | |
|---|---|---|---|---|
| 70R2T-6DC | DPDT | 52 | 700 mW | $3.65 |
| 70R2T-12DC | DPDT | 185 | 700 mW | 3.65 |
| 70R2T-24DC | DPDT | 700 | 700 mW | 3.65 |
| 70R2T-48DC | DPDT | 2,500 | 700 mW | 3.75 |
| 70R2T-110DC | DPDT | 15,000 | 700 mW | 5.10 |
| 70R4T-6DC | 4PDT | 52 | 700 mW | 4.20 |
| 70R4T-12DC | 4PDT | 185 | 700 mW | 4.20 |
| 70R4T-24DC | 4PDT | 700 | 700 mW | 4.20 |
| 70R4T-48DC | 4PDT | 2,500 | 700 mW | 4.30 |
| 70R4T-110DC | 4PDT | 15,000 | 700 mW | 5.60 |
| 70R6T-6DC | 6PDT | 25 | 1.4 W | 5.10 |
| 70R6T-12DC | 6PDT | 90 | 1.4 W | 5.10 |
| 70R6T-24DC | 6PDT | 430 | 1.4 W | 5.10 |
| 70R6T-48DC | 6PDT | 1,550 | 1.4 W | 5.20 |
| 70R6T-110DC | 6PDT | 9,000 | 1.4 W | 6.50 |

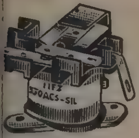
**1-AMP SENSITIVE TYPES**

| Sigma No. and Resis., Ohms | Contacts | Min. Dropout mADC | Pickup Power mW | Max. Pickup mADC | Net Each |
|---|---|---|---|---|---|
| 70R2S-1000 | DPDT | .85 | 85 | 8.5 | $3.60 |
| 70R2S-2500 | DPDT | .58 | 85 | 5.8 | 3.60 |
| 70R2S-5000 | DPDT | .41 | 85 | 4.1 | 4.00 |
| 70R2S-10,000 | DPDT | .31 | 85 | 3.1 | 4.40 |
| 70R2S-15,000 | DPDT | .26 | 85 | 2.6 | 4.80 |
| 70R4S-1000 | 4PDT | 1.3 | 175 | 13.0 | 4.00 |
| 70R4S-2500 | 4PDT | .84 | 175 | 8.4 | 4.00 |
| 70R4S-5000 | 4PDT | .62 | 175 | 6.2 | 4.40 |
| 70R4S-10,000 | 4PDT | .45 | 175 | 4.5 | 4.80 |
| 70R4S-15,000 | 4PDT | .35 | 175 | 3.5 | 5.10 |
| 70R6S-1000 | 6PDT | 1.6 | 250 | 16.0 | 5.10 |
| 70R6S-2500 | 6PDT | 1.0 | 250 | 10.0 | 5.10 |
| 70R6S-5000 | 6PDT | .72 | 250 | 7.2 | 5.60 |
| 70R6S-10,000 | 6PDT | .50 | 250 | 5.0 | 6.10 |
| 70R6S-15,000 | 6PDT | .42 | 250 | 4.2 | 6.40 |

**SOCKETS**

| Sigma No. | Description | Net Each |
|---|---|---|
| AD64 | Solder terminal socket for DPDT | $0.55 |
| AD65 | Solder terminal socket for 4PDT | .65 |
| AD66 | Solder terminal socket for 6PDT | .95 |
| AD67 | PC terminal socket for DPDT | .55 |
| AD68 | PC terminal socket for 4PDT | .65 |
| AD69 | PC terminal socket for 6PDT | .95 |

# SIGMA Relays INDUSTRIAL, COMMERCIAL, MILITARY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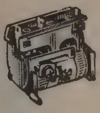
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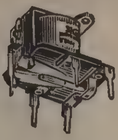
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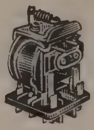
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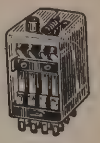
50RO1


67R4

## GENERAL PURPOSE RELAYS

### ERIES 11 SPDT SMALL, LOW-COST RELAYS

ted for 1-amp switching at 28 VDC/115 VAC resistive. DC ration from sliding-current or on-off 50 mW signals; AC opera- from .3 VA on-off signals. Good environmental capability. nperature range, −40° to +122° F. U/L and CSA Listed. enclosed. **Type 11FZ and 11F:** Screw mounting; 5 solder ter- nals. Size, $1\frac{7}{32}$" w. x $1\frac{3}{16}$" d. x $1\frac{1}{16}$" h. **Type 11F2:** Same, with ulated base. Size, $1\frac{7}{32}$" w. x $1\frac{17}{32}$" d. x $1\frac{3}{16}$" h. **Type 11FP:** oulder lug mounting; printed circuit terminals. Size, $1\frac{7}{32}$" sq. x " h. Weight, 1.2 oz. max.

AC TYPES

| Sigma Type No. | Coil Ohms | Pickup Max., mA | Nominal Volts | Net Each, Disc. Sched. *: AC, 1; DC, 2 |
|---|---|---|---|---|
| Z-25-ACS SIL | 25 | ........ | 6 | $4.55 |
| Z-550-ACS SIL | 550 | ........ | 24 | 4.70 |
| Z-9,000-ACS SIL | 9,000 | ........ | 115 | 5.35 |

DC TYPES

| | | | | |
|---|---|---|---|---|
| -100-G SIL | 100 | 22.0 | ........ | $3.00 |
| -250-G SIL | 250 | 14.0 | 6 | 2.95 |
| -550-G SIL | 550 | 9.5 | ........ | 2.95 |
| F-1,000-G SIL | 1,000 | 7.0 | 12 | 2.95 |
| F-1,500-G SIL | 1,500 | 5.8 | ........ | 2.95 |
| F-2,300-G SIL | 2,300 | 4.6 | ........ | 2.95 |
| F-6,000-G SIL | 6,000 | 2.9 | 24 | 3.20 |
| F-9,000-G SIL | 9,000 | 2.4 | ........ | 3.50 |
| F2-1,000-G SIL | 1,000 | 7.0 | 12 | 3.20 |
| F2-2,300-G SIL | 2,300 | 4.6 | ........ | 3.20 |
| F2-6,000-G SIL | 6,000 | 2.9 | 24 | 3.20 |
| F2-9,000-G SIL | 9,000 | 2.4 | ........ | 3.85 |
| FP-1,000-G SIL | 1,000 | 7.0 | 12 | 3.00 |
| FP-1,500-G SIL | 1,500 | 5.8 | ........ | 3.20 |
| FP-2,300-G SIL | 2,300 | 4.6 | ........ | 3.00 |
| FP-6,000-G SIL | 6,000 | 2.9 | 24 | 3.50 |

### SERIES 59 SPDT SNAP-SWITCH DC RELAYS

ependable, low-cost relay for commercial applications where onomy and size determine choice. Snap-switch contact assembly ovides positive operation from on-off or slowly changing signals. ntact rating, 2 amps at 28 VDC/115 VAC resistive. Mechanical e, 1 million operations. Temperature range, +14° to +158° F. L and CSA Listed. **Type 59F1D:** Unenclosed, screw mounting, der terminals. Size, $1\frac{1}{8}$" w. x $\frac{29}{32}$" d. x $1\frac{3}{64}$" h. Weight, .8 oz. **pe 59AO1D:** Metal dust cover, 8-pin octal plug. Size, $1\frac{5}{16}$" . x $1\frac{19}{32}$" h. Weight, 1.5 oz.

| Sigma No. | Nom. Coil VDC | Coil Ohms | Net Each, Disc. Sch. 2* |
|---|---|---|---|
| 59F1D-6DC | 6 | 120 | $2.45 |
| 59F1D-12DC | 12 | 465 | 2.45 |
| 59F1D-24DC | 24 | 1,800 | 2.45 |
| 59AO1D-6DC | 6 | 120 | 4.20 |
| 59AO1D-12DC | 12 | 465 | 4.20 |
| 59AO1D-24DC | 24 | 1,800 | 4.20 |

### SERIES 65 SPDT COMMERCIAL DC RELAYS

nall, low-cost commercial relay offering positive response to v-power signals. Excellent adjustment stability, sturdy con- ruction, 5-million operation mechanical life. Typical applica- ns: Remote TV channel selectors, vending machines, semi-auto- atic home slide projectors, automatic toys and games. Contact ting, 3 amp at 28 VDC/115 VAC resistive. Nominal power, 90 W. Temperature range, +14° to +158° F. All unenclosed, screw ounting. **65F1A:** Solder terminals. Size, $1\frac{1}{16}$" w. x $1\frac{3}{16}$" d. x $\frac{63}{64}$" h. **FP1A:** Printed-circuit terminals. Size, $1\frac{1}{16}$" w. x $1\frac{3}{16}$" d. x $1\frac{1}{4}$" h. eight, 1 oz.

| Sigma No. | DC Volts | Coil Ohms | Net Each, Disc. Sch. 2* |
|---|---|---|---|
| 65F1A-6DC | 6 | 410 | $1.60 |
| 65F1A-12DC | 12 | 1,640 | 1.60 |
| 65F1A-24DC | 24 | 6,560 | 1.60 |
| 65FP1A-6DC | 6 | 410 | 1.70 |
| 65FP1A-12DC | 12 | 1,640 | 1.70 |
| 65FP1A-24DC | 24 | 6,560 | 1.70 |

### ★QUANTITY DISCOUNT SCHEDULES

| Disc. Sch. 1 | | Disc. Sch. 2 | | Disc. Sch. 3 | | Disc. Sch. 4 | |
|---|---|---|---|---|---|---|---|
| Lots of | Dis- count | Lots of | Dis- count | Lots of | Dis- count | Lots of | Dis- count |
| 1–24 | Net | 1–99 | Net | 1–24 | Net | 1–9 | Net |
| 5–49 | −5% | 100–499 | −10% | 25–49 | −5% | 10–24 | −10% |
| 0–74 | −10% | 500–2499 | −30% | 50–74 | −10% | 25–49 | −20% |
| 5–99 | −20% | | | 75–99 | −15% | 50–99 | −30% |
| 0–249 | −30% | | | 100–499 | −25% | 100–249 | −35% |
| 0–499 | −35% | | | | | 250 Up | −40% |

### SERIES 50 SPDT, DPDT, 3PDT AC AND DC RELAYS

Highly efficient, compact, low-cost relay for switching of industrial loads of 5 amps to activate small solenoids or other relays. Mechanical life, 10 million operations. 50ROL types have indicating lamp which lights when coil is energized. U/L and CSA Listed. Temperature range: 50F, +14° to +158° F; 50RO and 50ROL, to +131° F. **50F:** Unenclosed, screw mounting, solder terminals. Size, $1\frac{11}{64}$" sq. x $1\frac{15}{16}$" h. Weight, 2 oz. **50RO and 50ROL:** Plastic dust cover. Size, $1\frac{3}{8}$" sq. x $2\frac{3}{32}$" h. **50RO1 and 50RO2:** 8-pin octal plug; **50RO3**, standard 11-pin plug. Weight, 3 oz. **Note:** Silver-cadmium-oxide contacts, rated 10 amps at 28 VDC/115 VAC resistive, are available on all relays listed below. To order, add suffix **SCO** to number (e.g., 50F1-6AC-**SCO**); add **10c** to prices shown for SPDT types; **15c** to DPDT; **20c** to 3PDT.

SPDT TYPES

| Nom. Coil Volts* | Coil Ohms | Nominal Power | Net Each, Disc. Sch. 1* Unenclosed* Sigma No. 50F1- | Net Each, Disc. Sch. 1* Enclosed* Sigma No. 50RO1- |
|---|---|---|---|---|
| 6 AC | 5.8 | 2.2 VA | $3.25 | $5.70 |
| 12 AC | 23.5 | 2.2 VA | 3.25 | 5.70 |
| 24 AC | 95 | 2.2 VA | 3.25 | 5.70 |
| 115 AC | 2,300 | 2.2 VA | 3.25 | 5.70 |
| 230 AC | 7,500 | 2.2 VA | 3.80 | 6.10 |
| 6 DC | 23.5 | 1.5 W | 3.20 | 5.55 |
| 12 DC | 95 | 1.5 W | 3.20 | 5.55 |
| 24 DC | 430 | 1.5 W | 3.20 | 5.55 |
| 48 DC | 1,630 | 1.5 W | 3.20 | 5.55 |
| 110 DC | 10,000 | 1.5 W | 3.85 | 6.05 |

DPDT TYPES

| Nom. Coil Volts* | Coil Ohms | Nominal Power | Net Each, Disc. Sch. 1* Unenclosed* Sigma No. 50F2- | Net Each, Disc. Sch. 1* Enclosed* Sigma No. 50RO2- |
|---|---|---|---|---|
| 6 AC | 5.8 | 2.2 VA | $4.00 | $6.30 |
| 12 AC | 23.5 | 2.2 VA | 4.00 | 6.30 |
| 24 AC | 95 | 2.2 VA | 4.00 | 6.30 |
| 115 AC§ | 2,300 | 2.2 VA | 4.00 | 6.30 |
| 230 AC | 7,500 | 2.2 VA | 4.40 | 6.75 |
| 6 DC | 23.5 | 1.5 W | 3.60 | 6.30 |
| 12 DC | 95 | 1.5 W | 3.60 | 6.30 |
| 24 DC† | 430 | 1.5 W | 3.60 | 6.30 |
| 48 DC | 1,630 | 1.5 W | 3.60 | 6.30 |
| 110 DC | 10,000 | 1.5 W | 4.25 | 6.70 |

3PDT TYPES

| Nom. Coil Volts* | Coil Ohms | Nominal Power | Net Each, Disc. Sch. 1* Unenclosed* Sigma No. 50F3- | Net Each, Disc. Sch. 1* Enclosed* Sigma No. 50RO3- |
|---|---|---|---|---|
| 6 AC | 5.8 | 2.2 VA | $4.40 | $7.25 |
| 12 AC | 23.5 | 2.2 VA | 4.40 | 7.25 |
| 24 AC | 95 | 2.2 VA | 4.40 | 7.25 |
| 115 AC# | 2,300 | 2.2 VA | 4.40 | 7.25 |
| 230 AC | 7,500 | 2.2 VA | 4.85 | 7.80 |
| 6 DC | 23.5 | 1.5 W | 4.05 | 7.25 |
| 12 DC | 95 | 1.5 W | 4.05 | 7.25 |
| 24 DC‡ | 430 | 1.5 W | 4.05 | 7.25 |
| 48 DC | 1,630 | 1.5 W | 4.05 | 7.25 |
| 110 DC | 10,000 | 1.5 W | 4.55 | 7.70 |

*To order, add suffix for voltage to Sigma No.; e.g., 50RO1-6AC.
†Available as **50ROL2-24DC-SCO**—Net Each.......... **$7.65***
‡Available as **50ROL3-24DC-SCO**—Net Each.......... **8.65***
§Available as **50ROL2-115AC-SCO**—Net Each.......... **7.65***
#Available as **50ROL3-115AC-SCO**—Net Each.......... **8.65***

### SERIES 67 4PDT MINIATURE AC AND DC RELAYS

Miniature, rugged relays. Solder or printed-circuit terminal sockets for fast chassis top mounting and easy wiring. Relay and sockets interchangeable with comparable types. Plastic dust cover, stud mounting, 14-pin plug. **Contact Rating:** 3 amps at 28 VDC/115 VAC resistive. **Temperature Range:** −4° to +140° F. **Operations at Rated Load:** 100,000 min.; 100 million mechanical DC types; 50 million AC types. U/L and CSA Listed. **Size:** $1\frac{7}{64}$" w. x $\frac{55}{64}$" d. x $1\frac{19}{64}$" h. Weight, $1\frac{1}{4}$ oz.

| Sigma No. and Volts | Coil Ohms | Nominal Power | Net Each Disc. Sch. 1* |
|---|---|---|---|
| 67R4-12AC | 43 | 1.2 VA | $5.00 |
| 67R4-24AC | 160 | 1.2 VA | 5.00 |
| 67R4-115AC | 3,900 | 1.2 VA | 5.40 |
| 67R4-6DC | 40 | 900 mW | 4.40 |
| 67R4-12DC | 160 | 900 mW | 4.40 |
| 67R4-24DC | 650 | 900 mW | 4.40 |
| 67R4-48DC | 2,600 | 900 mW | 4.60 |
| 67R4-110DC | 11,000 | 900 mW | 5.10 |
| AD28 | Solder terminal socket for 67R4 | | .60* |
| AD29 | PC terminal socket for 67R4 | | .60* |

*No quantity discount offered.

# SIGMA Relays INDUSTRIAL, COMMERCIAL, MILITARY

## GENERAL PURPOSE RELAYS

### SERIES 62 DPDT, 4PDT, 6PDT UNIVERSAL-MOUNTING DC RELAYS...PLUS SOCKETS

Economical, low-level to 5-amp multiple circuit switching. Sockets designed for fast, easy connection. Interchangeable with similar commercial relays in communications, data processing, process control equipment. One million operations at max. load; 100 million mechanical. **Terminals:** DPDT type has 8-pin plug; 4PDT, 14-pin plug; 6PDT, 20-pin plug. **Temperature Range:** +14° to +158° F. Plastic dust cover, stud mounting. **Size:** All types: 1 17/64" h. x 49/64" d.; **62R2**, 61/64" w.; **62R4**, 1 3/16" w.; **62R6**, 1 25/64" w. Weight, 1 oz.

#### 2-AMP STANDARD CONTACTS

Power rating, 2 amps at 28 VDC and 115 VAC resistive.

| Sigma No. and Nom. Coil Volts | Contacts | Coil Ohms | Nominal Power | Net Each Disc. Sch. 1* |
|---|---|---|---|---|
| **62R2-6DC** | DPDT | 52 | 700 mW | **$3.05** |
| **62R2-12DC** | DPDT | 185 | 700 mW | **3.05** |
| **62R2-24DC** | DPDT | 700 | 700 mW | **3.05** |
| **62R2-48DC** | DPDT | 2,500 | 700 mW | **3.15** |
| **62R2-110DC** | DPDT | 15,000 | 700 mW | **4.50** |
| **62R4-6DC** | 4PDT | 52 | 700 mW | **3.40** |
| **62R4-12DC** | 4PDT | 185 | 700 mW | **3.40** |
| **62R4-24DC** | 4PDT | 700 | 700 mW | **3.40** |
| **62R4-48DC** | 4PDT | 2,500 | 700 mW | **3.60** |
| **62R4-110DC** | 4PDT | 15,000 | 700 mW | **5.00** |
| **62R6-6DC** | 6PDT | 25 | 1.4 W | **4.40** |
| **62R6-12DC** | 6PDT | 90 | 1.4 W | **4.40** |
| **62R6-24DC** | 6PDT | 430 | 1.4 W | **4.40** |
| **62R6-48DC** | 6PDT | 1,550 | 1.4 W | **4.65** |
| **62R6-110DC** | 6PDT | 9,000 | 1.4 W | **5.60** |

#### 5-AMP STANDARD SCO CONTACTS

Power rating, 5 amps at 28 VDC; 4 amps at 115 VAC resistive.

| Sigma No. and Nom. Coil Volts | Contacts | Coil Ohms | Nominal Power | Net Each Disc. Sch. 1* |
|---|---|---|---|---|
| **62R2-6DC-SCO** | DPDT | 52 | 700 mW | **$3.15** |
| **62R2-12DC-SCO** | DPDT | 185 | 700 mW | **3.15** |
| **62R2-24DC-SCO** | DPDT | 700 | 700 mW | **3.15** |
| **62R2-48DC-SCO** | DPDT | 2,500 | 700 mW | **3.25** |
| **62R2-110DC-SCO** | DPDT | 15,000 | 700 mW | **4.60** |
| **62R4-6DC-SCO** | 4PDT | 52 | 700 mW | **3.60** |
| **62R4-12DC-SCO** | 4PDT | 185 | 700 mW | **3.60** |
| **62R4-24DC-SCO** | 4PDT | 700 | 700 mW | **3.60** |
| **62R4-48DC-SCO** | 4PDT | 2,500 | 700 mW | **3.80** |
| **62R4-110DC-SCO** | 4PDT | 15,000 | 700 mW | **5.20** |
| **62R6-6DC-SCO** | 6PDT | 25 | 1.4 W | **4.80** |
| **62R6-12DC-SCO** | 6PDT | 90 | 1.4 W | **4.80** |
| **62R6-24DC-SCO** | 6PDT | 430 | 1.4 W | **4.80** |
| **62R6-48DC-SCO** | 6PDT | 1,550 | 1.4 W | **5.00** |
| **62R6-110DC-SCO** | 6PDT | 9,000 | 1.4 W | **5.80** |

#### BIFURCATED CONTACTS

Power rating, 2 amps at 28 VDC; 1 amp at 115 VAC resistive. Life, 50 million operations, switching dry circuit loads; 10 million at max. load from low-power transistor drive and minimum coil heating.

| Sigma No. and Nom. Coil Volts | Contacts | Coil Ohms | Nominal Power | Net Each Disc. Sch. 1* |
|---|---|---|---|---|
| **62R2T-6DC** | DPDT | 52 | 700 mW | **$3.45** |
| **62R2T-12DC** | DPDT | 185 | 700 mW | **3.45** |
| **62R2T-24DC** | DPDT | 700 | 700 mW | **3.45** |
| **62R2T-48DC** | DPDT | 2,500 | 700 mW | **3.55** |
| **62R2T-110DC** | DPDT | 15,000 | 700 mW | **4.90** |
| **62R4T-6DC** | 4PDT | 52 | 700 mW | **4.00** |
| **62R4T-12DC** | 4PDT | 185 | 700 mW | **4.00** |
| **62R4T-24DC** | 4PDT | 700 | 700 mW | **4.00** |
| **62R4T-48DC** | 4PDT | 2,500 | 700 mW | **4.10** |
| **62R4T-110DC** | 4PDT | 15,000 | 700 mW | **5.40** |
| **62R6T-6DC** | 6PDT | 25 | 1.4 W | **4.90** |
| **62R6T-12DC** | 6PDT | 90 | 1.4 W | **4.90** |
| **62R6T-24DC** | 6PDT | 430 | 1.4 W | **4.90** |
| **62R6T-48DC** | 6PDT | 1,550 | 1.4 W | **5.00** |
| **62R6T-110DC** | 6PDT | 9,000 | 1.4 W | **6.30** |

#### SENSITIVE TYPES

Power rating, 1 amp at 28 VDC and 115 VAC resistive. Life, 1 million operations at maximum load.

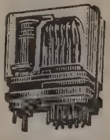
| Sigma No. and Resis., Ohms | Contacts | Min. Dropout mADC | Pickup Power mW | Max. Pickup mADC | Net Ea., Disc. Sch. 1* |
|---|---|---|---|---|---|
| **62R2S-1000** | DPDT | .85 | 85 | 8.5 | **$3.40** |
| **62R2S-2500** | DPDT | .58 | 85 | 5.8 | **3.40** |
| **62R2S-5000** | DPDT | .41 | 85 | 4.1 | **3.80** |
| **62R2S-10,000** | DPDT | .31 | 85 | 3.1 | **4.20** |
| **62R2S-15,000** | DPDT | .26 | 85 | 2.6 | **4.60** |
| **62R4S-1000** | 4PDT | 1.3 | 175 | 13.0 | **3.80** |
| **62R4S-2400** | 4PDT | .84 | 175 | 8.4 | **3.80** |
| **62R4S-5000** | 4PDT | .62 | 175 | 6.2 | **4.20** |
| **62R4S-10,000** | 4PDT | .45 | 175 | 4.5 | **4.60** |
| **62R4S-15,000** | 4PDT | .35 | 175 | 3.5 | **4.90** |
| **62R6S-1000** | 6PDT | 1.6 | 250 | 16.0 | **4.90** |
| **62R6S-2500** | 6PDT | 1.0 | 250 | 10.0 | **4.90** |
| **62R6S-5000** | 6PDT | .72 | 250 | 7.2 | **5.40** |
| **62R6S-10,000** | 6PDT | .50 | 250 | 5.0 | **5.90** |
| **62R6S-15,000** | 6PDT | .42 | 250 | 4.2 | **6.20** |

#### SOCKETS

Include grounding clip and hold-down spring.

| Sigma No. | Description | Net Each, Sch. 1* |
|---|---|---|
| **AD22** | Solder terminal socket for DPDT | **$0.55** |
| **AD41** | PC terminal socket for DPDT* | **.55** |
| **AD24** | Solder terminal socket for 4PDT | **.65** |
| **AD42** | PC terminal socket for 4PDT* | **.65** |
| **AD26** | Solder terminal socket for 6PDT* | **.95** |
| **AD43** | PC terminal socket for 6PDT* | **.95** |

*.100" grid.


**62R6 and Socket**

**68R**

**63RO4**

### SERIES 68 SPDT, DPDT, 3PDT UNIVERSAL-MOUNTING AC AND DC RELAYS, PLUS SOCKETS

Versatile, low cost and high efficiency for production-line switching of light to medium power loads. Fast installation; .187" terminals may be soldered, quick-connected, or plugged into standard sockets. Life, 1 million operations at 28 VDC; ½ million at 115 VAC. Mechanical life, 10 million operations. U/L Listed. **Contacts:** Rated 10 amps. SPDT has 5 terminals; DPDT, 8 terminals; 3PDT, 11 terminals. **Temperature Range:** AC types SPDT and DPDT, −49° F to +131° F; 3PDT to +113° F; DC types to +158° F. **Size:** 1.531" w. x 1.406" d. x 1.906" h. in polycarbonate dust cover. Wt., 2.9 oz. max.

#### DC TYPES

Nominal power rating, 1.2 watts for all types.

| Sigma No. and Nom. Coil Volts | Contacts | Coil Ohms | Pickup V Max. | Net Ea., Disc. Sch. 1* |
|---|---|---|---|---|
| **68R1-6DC-SCO** | SPDT | 32 | 4.5 | **$3.40** |
| **68R1-12DC-SCO** | SPDT | 120 | 9 | **3.40** |
| **68R1-24DC-SCO** | SPDT | 470 | 18 | **3.40** |
| **68R1-48DC-SCO** | SPDT | 1,800 | 36 | **3.40** |
| **68R1-110DC-SCO** | SPDT | 10,000 | 83 | **3.85** |
| **68R2-6DC-SCO** | DPDT | 32 | 4.5 | **3.85** |
| **68R2-12DC-SCO** | DPDT | 120 | 9 | **3.85** |
| **68R2-24DC-SCO** | DPDT | 470 | 18 | **3.85** |
| **68R2-48DC-SCO** | DPDT | 1,800 | 36 | **3.85** |
| **68R2-110DC-SCO** | DPDT | 10,000 | 83 | **4.40** |
| **68R3-6DC-SCO*** | 3PDT | 32 | 4.5 | **4.40** |
| **68R3-12DC-SCO*** | 3PDT | 120 | 9 | **4.40** |
| **68R3-24DC-SCO*** | 3PDT | 470 | 18 | **4.40** |
| **68R3-48DC-SCO*** | 3PDT | 1,800 | 36 | **4.40** |
| **68R3-110DC-SCO*** | 3PDT | 10,000 | 83 | **4.85** |

#### AC TYPES

Nominal power rating, 2.1 VA SPDT and DPDT; 2.5 VA, 3PDT.

| Sigma No. and Nom. Coil Volts | Contacts | Coil Ohms | Pickup V Max. | Net Ea., Disc. Sch. 1* |
|---|---|---|---|---|
| **68R1-6AC-SCO** | SPDT | 6 | 5.1 | **$3.50** |
| **68R1-12AC-SCO** | SPDT | 21 | 10.2 | **3.50** |
| **68R1-24AC-SCO** | SPDT | 75 | 20.4 | **3.50** |
| **68R1-115AC-SCO** | SPDT | 2,250 | 98 | **3.50** |
| **68R1-230AC-SCO** | SPDT | 9,110 | 196 | **3.85** |
| **68R2-6AC-SCO** | DPDT | 6 | 5.1 | **4.30** |
| **68R2-12AC-SCO** | DPDT | 21 | 10.2 | **4.30** |
| **68R2-24AC-SCO** | DPDT | 75 | 20.4 | **4.30** |
| **68R2-115AC-SCO** | DPDT | 2,250 | 98 | **4.30** |
| **68R2-230AC-SCO** | DPDT | 9,110 | 196 | **4.75** |
| **68R3-6AC-SCO*** | 3PDT | 4.5 | 5.1 | **4.85** |
| **68R3-12AC-SCO*** | 3PDT | 19 | 10.2 | **4.85** |
| **68R3-24AC-SCO*** | 3PDT | 74 | 20.4 | **4.85** |
| **68R3-115AC-SCO*** | 3PDT | 2,000 | 98 | **4.85** |
| **68R3-230AC-SCO*** | 3PDT | 7,500 | 196 | **5.30** |

*Also available with top mounting flange (total height, 2.90") molded on to case, at same price; to order, use prefix **68R34-** (e.g., **68R34**-6AC-SCO).

#### SOCKETS

| Sigma No. | Terminals and Use | Net Each, Sch. 1* |
|---|---|---|
| **AD40** | Solder term.; all but 68R34 | **$0.75** |
| **AD51** | PC terms.; all but 68R34 | **.85** |

### SERIES 63 DPDT, 4PDT TELEPHONE-TYPE DC RELAYS

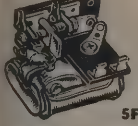
Compact, telephone-type relay for reliable, minimum-distortion switching of low-level audio signals and use in logic circuitry. Good sensitivity, low and stable contact resistance; 10-million operation life. Contact ratings: 2 amps at 115 VAC; 1 amp at 28 VDC; .6 amp at 48 VDC. Nominal power: 720 mW. Temperature range, +14° to +158° F. **63RO2:** Plastic dust cover; 8-pin octal plug. Size, 1 13/32" w. x 1 19/32" d. x 2¼" h. Weight, 4 oz. **63RO4:** Plastic dust cover; 20-pin plug (must be used with socket AD35). Size, 1 13/32" w. x 1 13/16" d. x 2¼" h. Weight, 4 oz.

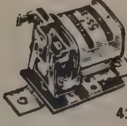
| Sigma No. and Volts | Contacts | Coil Ohms | Net Each Disc. Sch. 1* |
|---|---|---|---|
| **63RO2-6DC** | DPDT | 50 | **$ 9.90** |
| **63RO2-12DC** | DPDT | 200 | **9.90** |
| **63RO2-24DC** | DPDT | 800 | **9.90** |
| **63RO2-48DC** | DPDT | 3,200 | **9.90** |
| **63RO4-6DC** | 4PDT | 50 | **12.80** |
| **63RO4-12DC** | 4PDT | 200 | **12.80** |
| **63RO4-24DC** | 4PDT | 800 | **12.80** |
| **63RO4-48DC** | 4PDT | 3,200 | **12.80** |
| **AD35** | Sigma socket for 63RO4 relays | | **.50*** |

*No quantity discount offered.

**★QUANTITY DISCOUNTS ON ANOTHER SIGMA PAGE**

# SIGMA Relays INDUSTRIAL, COMMERCIAL, MILITARY


5F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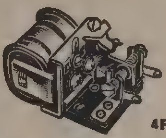
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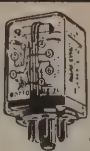

42RO

## SENSITIVE RELAYS

### RIES 5 SPDT HIGH-SENSITIVITY DC RELAYS

xceptionally versatile, rugged relay; highly sensitive, precise, e. Unusually high contact forces at inputs as low as 1 mW stment SS; 5 mW, S), gradually changing or on-off. Useful verload-underload detection. Reacts without amplification to te variations from normal. Withstands heavy voltage or nt 30-to-1 overloads. Contact ratings, S, 1 amp; SS, .25 amp; 28 VDC/115 VAC resistive. All types are U/L Listed se in burglary protection equipment. Temperature range: S, to +158° F; SS, +50° to +140° F. **5F:** Unenclosed, screw nting, solder terminals. Size, 1⅜″ w. x 1¾″ d. x 1½″ h. ht, 4¼ oz. **5JO:** Hermetically sealed; 8-pin plug. Size, sq. x 2⅝″ h. Weight, 7¼ oz. **5R:** Dust cover; 5-pin plug, 8-pin. Size, 1 9/16″ sq. x 2 9/32″ h. Weight, 5¾ oz.

| Sigma Type No. | Coil Ohms | Pickup, Max. mADC | Dropout, Min. mADC | Net Ea., Disc. Sch. 1* |
|---|---|---|---|---|
| 000 S-SIL | 1,000 | 2.3 | .80 | $11.35 |
| ,500 S-SIL | 2,500 | 1.4 | .50 | 11.35 |
| ,000 S-SIL | 5,000 | 1.0 | .40 | 12.15 |
| 0,000 S-SIL | 10,000 | .70 | .25 | 13.30 |
| 6,000 S-SIL | 16,000 | .55 | .20 | 14.35 |
| ,000 SS-PAL | 1,000 | 1.0 | .40 | 12.90 |
| 0,000 SS-PAL | 10,000 | .30 | .13 | 14.80 |
| 1,000 S-SIL | 1,000 | 2.3 | .80 | 20.85 |
| 2,500 S-SIL | 2,500 | 1.4 | .50 | 20.85 |
| 5,000 S-SIL | 5,000 | 1.0 | .40 | 21.65 |
| 10,000 S-SIL | 10,000 | .70 | .25 | 22.75 |
| 16,000 S-SIL | 16,000 | .55 | .20 | 24.00 |
| ,000 S-SIL | 1,000 | 2.3 | .80 | 14.35 |
| ,500 S-SIL | 2,500 | 1.4 | .50 | 14.35 |
| ,000 S-SIL | 5,000 | 1.0 | .40 | 15.10 |
| 0,000 S-SIL | 10,000 | .70 | .25 | 16.20 |
| 6,000 S-SIL | 16,000 | .55 | .20 | 17.45 |
| ,000 SS-PAL | 1,000 | 1.0 | .40 | 17.00 |
| 0,000 SS-PAL | 10,000 | .30 | .13 | 19.20 |
| -1,000 S-SIL | 1,000 | 2.3 | .80 | 15.45 |
| -2,500 S-SIL | 2,500 | 1.4 | .50 | 15.45 |
| -5,000 S-SIL | 5,000 | 1.0 | .40 | 16.25 |
| -10,000 S-SIL | 10,000 | .70 | .25 | 17.45 |
| -16,000 S-SIL | 16,000 | .55 | .20 | 18.75 |

### IES 41 SPDT INDUSTRIAL AC AND DC RELAYS

ged, versatile industrial relay. One-billion-operation me-ical life. Balanced design for coil overload capacity 4-6 times d input; long contact life. Operates from on-off AC or DC als, gradually changing DC signals. Pickup power: Adjust-t S: 40 mW; ACS: .2 VA; ACG: .4 VA. Contact rating: ACG, nps at 28 VDC/115 VAC; S, ACS: 2 amps. Temperature e, −67° to +185° F except plastic covers, to +158° F. All and dust-covered types are U/L and CSA Listed. **41F, Z:** Unenclosed, screw mounting, solder terminals. Size, 1 17/64″ 2 9/32″ d. x 1 7/16″ h. **41RO, 41ROZ:** Dust cover, 8-pin octal plug. , 1 21/64″ sq. x 2 1/16″ h. **41RO6:** Plastic dust cover, 8-pin octal . Size, 1 23/64″ sq. x 2 7/64″ h. **41JOZ:** Hermetically sealed, 8-pin l plug. Size, 1⅝″ sq. x 2⅝″ h. **41R, 41RZ:** Dust cover, 5-pin . Size, 41R-1 15/16″ sq. x 1 17/32″ h.; 41RZ-1 17/32″ sq. x 1 15/16″ h. ghts: Enclosed, 5¼ oz. max.; unenclosed, 2½ oz.

#### AC TYPES

| Sigma Type No. | Coil Ohms | Nominal Volts | Pickup Max.† | Net Ea., Sch. 1* |
|---|---|---|---|---|
| Z-10 ACG-BSL | 10 | 6 | 4 V | $ 5.00 |
| Z-200 ACG-BSL | 200 | 24 | 18 V | 5.25 |
| Z-5,000 ACG-BSL | 5,000 | 115 | 90 V | 5.25 |
| Z-35 ACS-SIL | 35 | 6 | 4 V | 5.80 |
| Z-10,000 ACS-SIL | 10,000 | 115 | 85 V | 6.45 |
| OZ-10,000 ACS-SIL | 10,000 | 115 | 85 V | 15.90 |
| OZ-12,000 ACS-SIL | 12,000 | 150 | 95 V | 15.90 |
| OZ-5,000 ACG-BSL | 5,000 | 115 | 90 V | 7.40 |
| Z-5,000 ACG-BSL | 5,000 | 115 | 90 V | 7.40 |

#### DC TYPES

| | | | | |
|---|---|---|---|---|
| -200 S-SIL | 200 | 6 | 15 mA | $5.55 |
| -500 S-SIL | 500 | .......... | 9.0 mA | 5.55 |
| -1,000 S-SIL | 1,000 | 12 | 6.5 mA | 5.55 |
| -2,500 S-SIL | 2,500 | .......... | 4.0 mA | 5.80 |
| -5,000 S-SIL | 5,000 | 24 | 3.0 mA | 5.80 |
| -10,000 S-SIL | 10,000 | .......... | 2.0 mA | 6.10 |
| -200 G-BSL* | 200 | 12 | 32 mA | 5.25 |
| -1,000 G-BSL* | 1,000 | 24 | 14 mA | 5.25 |
| -5,000 G-BSL* | 5,000 | .......... | 6.5 mA | 5.45 |
| -1,000 S-SIL | 1,000 | 12 | 6.5 mA | 8.25 |
| -5,000 S-SIL | 5,000 | 24 | 3.0 mA | 8.50 |
| -8,000 S-SIL | 8,000 | .......... | 2.3 mA | 8.85 |
| O-1,000 S-SIL | 1,000 | 12 | 6.5 mA | 8.50 |
| O-2,500 S-SIL | 2,500 | .......... | 4.0 mA | 8.50 |
| O-5,000 S-SIL | 5,000 | 24 | 3.0 mA | 9.00 |
| O-10,000 S-SIL | 10,000 | .......... | 2.0 mA | 9.35 |
| O6-500 S-SIL | 500 | .......... | 9.0 mA | 8.25 |
| O6-1,000 S-SIL | 1,000 | 12 | 6.5 mA | 7.90 |
| O6-2,500 S-SIL | 2,500 | .......... | 4.0 mA | 7.90 |
| O6-5,000 S-SIL | 5,000 | 24 | 3.0 mA | 8.10 |

### SERIES 4 SPDT PLATE CIRCUIT DC RELAYS

Stable, precise, low cost. For vacuum tube and transistor drives, applications requiring high dropout or narrow differential, and operation from gradually changing or on-off signals. Ideal for circuits where energizing current does not drop to zero. Pickup power, 20 mW. Contact rating, 2 amps at 28 VDC/115 VAC resistive. Temperature range, +32° to +122° F. **4F:** Unenclosed, screw mounting, solder terminals. Size, 1¾″ w. x 1½″ d. x 1 15/32″ h. Weight, 2¼ oz. **4R:** U/L Listed for use in burglary protection equipment. Dust cover, 5-pin plug. Size, 1 9/16″ sq. x 2 19/32″ h. Weight, 3¾ oz.

| Sigma Type No. | Coil Ohms | Pickup, Max. mADC | Dropout Min. mADC | Net Each Disc. Sch. 1* |
|---|---|---|---|---|
| 4F-1,000 S-SIL | 1,000 | 4.5 | 2.0 | $ 8.00 |
| 4F-2,500 S-SIL | 2,500 | 3.0 | 1.3 | 8.00 |
| 4F-5,000 S-SIL | 5,000 | 2.0 | .90 | 8.40 |
| 4F-8,000 S-SIL | 8,000 | 1.6 | .75 | 8.70 |
| 4F-10,000 S-SIL | 10,000 | 1.4 | .65 | 8.70 |
| 4R-1,000 S-SIL | 1,000 | 4.5 | 2.0 | 10.90 |
| 4R-2,500 S-SIL | 2,500 | 3.0 | 1.3 | 12.00 |
| 4R-5,000 S-SIL | 5,000 | 2.0 | .90 | 11.25 |
| 4R-8,000 S-SIL | 8,000 | 1.6 | .75 | 11.55 |
| 4R-10,000 S-SIL | 10,000 | 1.4 | .65 | 11.55 |

### SERIES 42 DPDT AC AND DC RELAYS

For general-purpose applications from alarm and control systems to demand meters and timing circuits. Combines sensitivity from 100 mW with rugged design for 1 billion operation mechanical life (1 million under load). Low power minimizes coil load in circuits with limited load-handling ability. Excellent stability, high circuit isolation; coil overload capacity 4 to 6 times rated input. High release for use in circuits with high idle current. Pickup power: Adjustment S: 100 mW; G: 200 mW; ACS: .3 VA; ACG; .5 VA. Contact ratings (at 28 VDC/115 VAC resistive): ACG, G: 5 A; ACS, S: 2 A. Dust-covered and open types U/L and CSA Listed. Temperature range, −67° to +185° F except plastic covers, to +158° F. **42RO, 42ROZ:** Plastic dust cover, 8-pin octal plug. Size, 1 23/64″ sq. x 2 7/64″ h. **42RO6, 42RO6Z:** Differ in wiring only. **42JOZ:** Hermetically sealed, 8-pin plug. Size, 1⅝″ sq. x 2⅝″ h. **42F:** Unenclosed, stud mounting, solder terminals. 1 1/16″ w. x 1 19/32″ d. x 1 13/32″ h. Weight, 2½ to 5¼ oz.

#### AC TYPES

| Sigma Type No. | Coil Ohms | Nominal Volts | Pickup Max.† | Net Ea., Disc. Sch. 1* |
|---|---|---|---|---|
| 42JOZ-4,000 ACG-SIL | 4,000 | 115 VAC | 90 V | $14.50 |
| 42ROZ-8 ACG-SIL | 8 | 6 VAC | 4 V | 8.40 |
| 42ROZ-50 ACG-SIL | 50 | 12 VAC | 9 V | 8.40 |
| 42ROZ-200 ACG-SIL | 200 | 24 VAC | 18 V | 8.40 |
| 42ROZ-4,000 ACG-SIL | 4,000 | 115 VAC | 90 V | 8.40 |
| 42ROZ-7,000 ACS-SIL | 7,000 | 115 VAC | 90 V | 10.05 |
| 42RO6Z-8 ACG-SIL | 8 | 6 VAC | 4 V | 8.75 |
| 42RO6Z-4,000 ACG-SIL | 4,000 | 115 VAC | 90 V | 8.40 |

#### DC TYPES

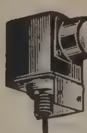
| | | | | |
|---|---|---|---|---|
| 42F-150 G-SIL | 150 | .......... | 38 mA | $6.55 |
| 42F-500 G-SIL | 500 | .......... | 20 mA | 6.55 |
| 42F-1,000 G-SIL | 1,000 | 24 VDC | 14 mA | 6.55 |
| 42F-2,500 G-SIL | 2,500 | 48 VDC | 9.0 mA | 6.55 |
| 42RO-50 G-SIL | 50 | 6 VDC | 65 mA | 8.85 |
| 42RO-100 G-SIL | 100 | .......... | 45 mA | 8.85 |
| 42RO-200 G-SIL | 200 | 12 VDC | 32 mA | 8.40 |
| 42RO-500 G-SIL | 500 | .......... | 20 mA | 8.40 |
| 42RO-1,000 G-SIL | 1,000 | 24 VDC | 14 mA | 8.40 |
| 42RO-2,500 G-SIL | 2,500 | 48 VDC | 9.0 mA | 8.40 |
| 42RO-5,000 G-SIL | 5,000 | .......... | 6.5 mA | 8.75 |
| 42RO-10,000 G-SIL | 10,000 | .......... | 4.5 mA | 8.95 |
| 42RO-12,000 G-SIL | 12,000 | .......... | 4.0 mA | 9.40 |
| 42RO-100 S-SIL | 100 | .......... | 32 mA | 9.65 |
| 42RO-150 S-SIL | 150 | 6 VDC | 26 mA | 9.25 |
| 42RO-200 S-SIL | 200 | .......... | 22 mA | 9.65 |
| 42RO-500 S-SIL | 500 | 12 VDC | 14 mA | 9.25 |
| 42RO-1,000 S-SIL | 1,000 | .......... | 10 mA | 9.25 |
| 42RO-2,500 S-SIL | 2,500 | 24 VDC | 6.2 mA | 9.25 |
| 42RO-5,000 S-SIL | 5,000 | .......... | 4.5 mA | 9.55 |
| 42RO-10,000 S-SIL | 10,000 | .......... | 3.1 mA | 9.85 |
| 42RO6-50 G-SIL | 50 | 6 VDC | 65 mA | 8.85 |
| 42RO6-500 G-SIL | 500 | .......... | 20 mA | 8.40 |
| 42RO6-1,000 G-SIL | 1,000 | 24 VDC | 14 mA | 8.40 |
| 42RO6-2,500 G-SIL | 2,500 | 48 VDC | 9.0 mA | 8.40 |
| 42RO6-5,000 G-SIL | 5,000 | .......... | 6.5 mA | 8.75 |
| 42RO6-10,000 G-SIL | 10,000 | .......... | 4.5 mA | 8.95 |
| 42RO6-500 S-SIL | 500 | 12 VDC | 14 mA | 9.65 |
| 42RO6-1,000 S-SIL | 1,000 | .......... | 10 mA | 9.25 |
| 42RO6-2,500 S-SIL | 2,500 | 24 VDC | 6.2 mA | 9.25 |

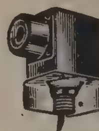
*Pickup power, 200 mW; contact rating 10 amps. †Dropout will always be higher than 20% of max. pickup.

**★SEE PREVIOUS PAGE FOR QUANTITY DISCOUNTS**

# SIGMA OPTO-ELECTRONIC COMPONENTS, PHOTOCONTROL SYSTEM

8R

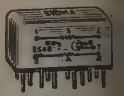

8L3


8P3, 8P8

8P7

8P4

321


301R

301T1

## SERIES 8 PHOTOCONTROL SYSTEMS

Low cost, compact systems for light-beam control of moving objects. Range from 12 in. to 25 ft.; speeds up to 1200 operations per minute. Integral and remote systems. Replaceable incandescent lamps operate at low voltage for maximum life.

### INTEGRAL 2-PART SYSTEMS—SPDT AND DPDT

### 12-FT. RANGE—115 VAC—60 Hz

**Receivers 8P8, 8P9, 8P10 High Speed Types and 8P3, 8P5, 8P6 General Purpose Types:** Temperature range, +32° F to +112° F. Housing, NEMA Types 1 and 12. Mounting: 8P3, 8P8: Bracket, ½″ conduit, AWG #18 leads 19″ max.; 8P6 and 8P10: Bracket and 5-pin plug; 8P5 and 8P9: Bracket and 8-pin octal plug. Size, 1²⁹⁄₃₂″ w. x 3⁷⁄₁₆″ d. x 2½″ h. Weight: 8P3, 8P8, 13 oz.; others, 9 oz.

**Receivers 8R Miniature, Low-Cost Plug-In Types:** Temperature range, −40° to +140° F. Housing, NEMA Types 1 and 12. Mounting, 5-pin plug. Min. Operations: Electrical, 1 million; mechanical, 1 billion. Requires 5 ft-candle to operate; 8RCO1A releases at 0.1 ft-candle, 8RCO2A at 0.5 ft-candle. 8RCO1A U/L and CSA Listed, 8RCO2A for high ambient light conditions. Size, 1⁹⁄₁₆″ sq. x 2⁹⁄₃₂″ h. Wt., 3 oz.

**Light Source 8L3:** Used with all types. Lamp life, 10,000 hours. Mounting, bracket, ½″ conduit, AWG #18 leads 19″ max. Size, 1²⁹⁄₃₂″ w. x 3⁷⁄₁₆″ d. x 2½″ h. Weight, 13 oz.

| Sigma Number* | Oper. per Min. | Contact Rating (Resis.) At 28 VDC & 115 VAC | Contact Rating (Resis.) At 230 VAC | Net Each, Disc. Sch. 1* |
|---|---|---|---|---|
| 8P3-115 | 600 | 10 amps | 5 amps | $24.35 |
| 8P3-230 | 600 | 10 amps | 5 amps | 24.35 |
| 8P8-115 | 1200 | 5 amps | 2.5 amps | 48.75 |
| 8P8-230 | 1200 | 5 amps | 2.5 amps | 48.75 |
| 8P5-115† | 600 | 10 amps | 5 amps | 24.35 |
| 8P5-230† | 600 | 10 amps | 5 amps | 24.35 |
| 8P9-115† | 1200 | 5 amps | 2.5 amps | 48.75 |
| 8P9-230† | 1200 | 5 amps | 2.5 amps | 48.75 |
| 8P6-115 | 600 | 10 amps | 5 amps | 23.30 |
| 8P6-230 | 600 | 10 amps | 5 amps | 23.30 |
| 8P10-115 | 1200 | 5 amps | 2.5 amps | 46.55 |
| 8P10-230 | 1200 | 5 amps | 2.5 amps | 46.55 |
| 8RCO1A | 120 | 3 amps | .............. | 20.15 |
| 8RCO2A | 120 | 3 amps | .............. | 20.15 |
| 8L3-115 | Light Source | | | 17.70 |
| 8L3-230 | Light Source | | | 17.70 |

*Source voltage 115 VAC, except **-230** types (230 VAC). †DPDT; all others SPDT.

### REMOTE 3-PART SYSTEMS—DPDT

**Subminiature Receiver 8P7 and Light Source 8L7:** Smallest units available. Range, 12″; 600 operations per minute. Lamp life, 4,000 hours. Polycarbonate housing. Mounting: Bracket, leads #22 AWG 10″ min. Size, ⁵⁄₁₆″ dia. x 1½″ l. Weight: 8P7, .32 oz., 8L7, .26 oz.

**Miniature Receiver 8P4 and Light Source 8L4:** Adjustable focus light source. Operates 25 feet from 5.5 V amplifier terminal with 4,000-hr. lamp life; 15 feet from 4.5 V amplifier terminal with 40,000-hr. lamp life. Operations per minute, 600. Black anodized aluminum housing. Mounting: Bracket, ⅜″ conduit, leads #18 AWG 10″ min. Size: 8P4, 1″ dia. x 2⁷⁄₁₆″ l.; 8L4, 1″ dia. x 2¹¹⁄₁₆″ l. Weight: 8P4, 2.9 oz.; 8L4, 2.7 oz.

**Amplifiers 8A and 8A3:** For use with 8P7–8L7 and 8P4–8L4. Solid state circuitry. DPDT output contacts. Temperature range, +32° F to +122° F. Weight, 2 lbs. **No. 8A** amplifier has plug-in replaceable relay rated for 10 million mechanical operations; contact rating, 5 amps at 28 VDC or 115/230 VAC. **No. 8A3** time delay amplifier has variable delay, 50 milliseconds to 20 seconds with ±10% repeatability; contact rating, 10 amps at 28 VDC or 115 VAC, 5 amps at 230 VAC.

**Housing AT373-1:** For use with 8A or 8A3 amplifier. JIC, oil-tight, weatherproof. Size, 10¹⁵⁄₁₆″ w. x 4¼″ d. x 11½″ h. Weight, 9¼ lbs.

| Sigma No. | Description | Net Ea., Sch. 1* | Sigma No. | Description | Net Ea., Sch. 1* |
|---|---|---|---|---|---|
| 8P7 | Receiver | $16.10 | 8A | Amplifier | $66.50 |
| 8L7 | Lt. source | 11.65 | 8A3 | Amplifier | 89.10 |
| 8P4 | Receiver | 17.70 | AT373-1 | Housing (no discount) | 17.50 |
| 8L4 | Lt. source | 15.50 | | | |

### ★QUANTITY DISCOUNT SCHEDULES

| Disc. Sch. 1 | | Disc. Sch. 2 | | Disc. Sch. 3 | | Disc. Sch. 4 | |
|---|---|---|---|---|---|---|---|
| Lots of | Discount | Lots of | Discount | Lots of | Discount | Lots of | Discount |
| 1–24 | Net | 1–99 | Net | 1–24 | Net | 1–9 | Net |
| 25–49 | −5% | 100–499 | −10% | 25–49 | −5% | 10–24 | −10% |
| 50–74 | −10% | 500–2499 | −30% | 50–74 | −10% | 25–49 | −20% |
| 75–99 | −20% | | | 75–99 | −15% | 50–99 | −30% |
| 100–249 | −30% | | | 100–499 | −25% | 100–249 | −35% |
| 250–499 | −35% | | | | | 250 Up | −40% |

## OPTO-ELECTRONIC SWITCHING DEVICES, DIGITAL DISPLAY

### SIGMA 7 MODEL 321

### DIGITAL TRANSLATOR-DISPLAY

Provides both code translation and numeric display in a si low-cost, opto-electronic module. No need for high-volt switching transistors and separate supply. Photocondu matrix, coupled optically to incandescent lamps controlled binary-coded-decimal input circuits, generates decimal out Reads 0 thru 9 on integral 7-bar neon display, lighted dire from 120 VAC, 60 Hz. Photocell-lamp combinations are Dat opto-electronic switching devices. **Temperature Range:** −40 to +50° C. **Custom readouts for temperature, pressure, volu etc. available on special order.**

| Negative-Buffered Sigma Number | Negative-Buffered Input VDC | Positive-Buffered Sigma Number | Positive-Buffered Input VDC | Input Logic | Decimal | Net Dis Sch. |
|---|---|---|---|---|---|---|
| 321-B1-N6 | 6 | 321-C1-N6 | 6 | Current Source | No | $44. |
| 321-B1-N12 | 12 | 321-C1-N12 | 12 | | No | 44. |
| 321-B1-P6 | 6 | 321-C1-P6 | 6 | | Yes | 48. |
| 321-B1-P12 | 12 | 321-C1-P12 | 12 | | Yes | 48. |
| 321-B2-N6 | 6 | 321-C2-N6 | 6 | Current Sink | No | 44. |
| 321-B2-N12 | 12 | 321-C2-N12 | 12 | | No | 44. |
| 321-B2-P6 | 6 | 321-C2-P6 | 6 | | Yes | 46. |
| 321-B2-P12 | 12 | 321-C2-P12 | 12 | | Yes | 46. |
| Non-Buffered | | | | | | |
| 321-AO-N6 | 6 | 321-AO-N12 | 12 | Not Appli. | No | 38. |
| 321-AO-P6 | 6 | 321-AO-P12 | 12 | | Yes | 38. |

### DATACEL® SERIES 301 SWITCHING DEVICE

### 1-, 2-, 4-POLE

Solid state switching for data processing input-output, autom test and machine control equipment; electronic instrumentat telephone switching; digital circuitry. Switching functions: Is tion interface, logic, data sampling, noiseless potentiometer, signal level, automatic feedback. Input-output circuit isolat Miniature lamp coupled optically to 1, 2 or 4 photoconduc cells, each functioning as bilateral switch. Input and output el AC or DC. Off or dark resistance 10 megohms min.; steady s low as 200 ohms; switching ratios in order of $10^5$. Printed cir mounting. Socket conversion to solder terminals. **Output Rat** 250 V each cell. **Temperature Range:** −40° to +50° C. S ½″ sq. x 1″ l. Weight, ¼ oz.

#### 1-POLE TYPES

| Sigma No. | Lamp Input* Volts | Lamp Input* Cur., mA | Photocell Output On Resistance $R_L$ Max. | Photocell Output $P_D$ Ea. Cell mW | Net Di Sch |
|---|---|---|---|---|---|
| 301R1-6 | 6 | 40 | 400 ohms | 500 | $2. |
| 301R1-12 | 12 | 19 | 500 ohms | 500 | 2. |
| 301R1-24 | 24 | 40 | 200 ohms | 175 | 2. |
| 301R1-150 | 150 | 2 | 500 ohms | 500 | 2. |
| 301T1-6B1 | 6 | 50 | 400 ohms | 400 | 1. |
| 301T1-12B1 | 12 | 24 | 400 ohms | 400 | 1. |
| 301T1-120A1 | 120 | 1.3 | 1200 ohms | 400 | 1. |
| 301T1-150A1 | 150 | 2 | 500 ohms | 400 | 1. |

#### 2-POLE TYPES

| Sigma No. | Lamp Input* Volts | Lamp Input* Cur., mA | Photocell Output On Resistance $R_L$ Max. | Photocell Output $P_D$ Ea. Cell mW | Net Di Sch |
|---|---|---|---|---|---|
| 301R2-6 | 6 | 40 | 400 ohms | 400 | $4. |
| 301R2-12 | 12 | 19 | 500 ohms | 400 | 4. |
| 301R2-24 | 24 | 40 | 200 ohms | 175 | 4. |
| 301R2-150 | 150 | 2 | 500 ohms | 400 | 4. |
| 301T2-6B1 | 6 | 50 | 1000 ohms | 200 | 1. |
| 301T2-12B1 | 12 | 24 | 1000 ohms | 200 | 1. |
| 301T2-120A1 | 120 | 1.3 | 3000 ohms | 200 | 1. |
| 301T2-150A1 | 150 | 2 | 1200 ohms | 200 | 1. |

#### 4-POLE TYPES

| Sigma No. | Lamp Input* Volts | Lamp Input* Cur., mA | Photocell Output On Resistance $R_L$ Max. | Photocell Output $P_D$ Ea. Cell mW | Net Di Sch |
|---|---|---|---|---|---|
| 301R4-6 | 6 | 80 | 650 ohms | 175 | $6. |
| 301R4-12 | 12 | 38 | 1000 ohms | 175 | 6. |
| 301R4-24 | 24 | 40 | 500 ohms | 75 | 6. |

*6, 12 and 24 V are incandescent; 150 V, neon (requires 150 V or AC peak to fire, and resistor in series with neon lamp to l current to 2 mA). 120 V input is neon, particularly suited 100–130 VAC line, use 47K external series resistors.

**GENERAL TIME**
A Talley Industries Company

# Solid State Timers

## INDUSTRIAL CONTROLS DIVISION

**Rear Mount Type**

**Plug-in Type**

tile standard timers meet the broadest range of applications. in or Rear Mount types; solid state timers for delay, interval, O.D. (delay on de-energization) timing modes. **Features:** otional repeat accuracy; transient protection; eleven time s; isolated outputs; AC or DC input; relay or solid state h; low operating temperature and no first cycle effect. UL CSA recognized. **Repeat Accuracy:** ±2% of set point under ant voltage and temperature; under 1 second, a constant of msec applies. **Temperature Range:** +10° C to +55° C ent. **Size:** Plug-in, 2.50″ w. x 1.875″ d. x 4.505″ h. (including h. knob and .580″ plug length) max.; Rear Mount, 3⁷⁄₁₆″ w. x d. (plus knob, .625″) x 4⅜″ h.

### TERMINATION

**-in Type:** 8-pin plug; except Series 2112 w/relay 11-pin plug. **Mount Type:** 8 terminals, delay mode w/relay; 10 terminals, val or D.O.D. w/relay; 4 terminals, delay mode solid state at; 6 terminals, interval or D.O.D. solid state output.

### HOW TO ORDER

**SPECIFY SERIES:**
**Series 2111 Plug-in Type or Series 2211 Rear Mount Type:** DELAY Mode Timer. Delay period starts on application of voltage. At end of set delay, integral relay or solid state switch energizes. When input voltage is removed, the output relay or switch de-energizes and timer resets.

**Series 2112 Plug-in Type or Series 2212 Rear Mount Type:** INTERVAL or D.O.D. Mode Timer. For these modes, input voltage is supplied to timer always with interval mode, on closure of a momentary or sustained switch, integral relay or solid state switch energizes the load for time period selected; at the end of timing period, the relay or switch de-energizes and load is removed from line. In D.O.D. mode, on closure of a control switch, the output relay or solid state switch energizes; timing period begins when control switch is opened; at end of timed interval, the relay or switch de-energizes.

**ADD INPUT SUFFIX:** Suffix **-1P** for 117 volts AC/DC, 50/60 Hz and 3.5 watts max.; e.g., 2111-**1P.** Suffix **-1C** for 24 volts AC/DC, 50/60 Hz and 3.5 watts max.; e.g., 2212-**1C.**

**ADD OUTPUT SUFFIX:** e.g., 2112-1P-**F.**

| Suffix | Type | Volts | Amps & Load | Contacts |
|---|---|---|---|---|
| **-F** | With Relay | 117 VAC<br>117 VAC<br>28 VDC | 10 A resistive; 5 A induct.<br>2.5 A resistive<br>10 amps resistive | DPDT |
| **-Y** | Solid State | 117 to 24* VAC | 1 amp inductive or resis.* | SPST |

*20 VAC minimum.

**ADD TIME RANGE (FINAL) SUFFIX:** e.g., 2112-1C-Y-**118.** Minimum reset time, 300 msec for lower third of time band on Type 2111; 100 msec, all others.

| Suffix | Time Setting | | Suffix | Time Setting | |
|---|---|---|---|---|---|
| | Max. | Min. | | Max. | Min. |
| **-001** | 1 sec | .10 sec | **-060** | 60 sec | 3.0 sec |
| **-003** | 3 sec | .15 sec | **-118** | 3 min | 9.0 sec |
| **-005** | 5 sec | .25 sec | **-130** | 5 min | 15.0 sec |
| **-010** | 10 sec | .50 sec | **-160** | 10 min | 60 sec |
| **-015** | 15 sec | .75 sec | **-190** | 15 min | 90 sec |
| **-030** | 30 sec | 1.50 sec | | | |

## INDUSTRIAL PRICES

### PLUG-IN TIMERS

**ES 2111-1CF**—Relay output, 24 V AC/DC, 8-pin plug.

| me nge fix* | Net Each, Lots of | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250 Up |
| 1 to 8 | $22.35 | $21.75 | $21.20 | $20.10 | $17.85 | $16.75 | $15.60 |
| 0 | 23.30 | 22.65 | 22.05 | 20.90 | 18.65 | 17.45 | 16.30 |
| 0 | 28.25 | 27.60 | 27.05 | 25.60 | 23.00 | 21.85 | 20.45 |
| 0 | 29.75 | 29.10 | 28.35 | 26.95 | 24.40 | 23.00 | 21.55 |

**IES 2111-1PF**—Relay output, 117 V AC/DC, 8-pin plug.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 to 8 | $22.95 | $22.35 | $21.80 | $20.65 | $18.35 | $17.20 | $16.05 |
| 0 | 23.95 | 23.25 | 22.65 | 21.45 | 19.15 | 17.95 | 16.75 |
| 0 | 28.95 | 28.30 | 27.70 | 26.25 | 23.55 | 22.40 | 20.95 |
| 0 | 30.50 | 29.80 | 29.05 | 27.60 | 25.00 | 23.55 | 22.10 |

**IES 2111-1CY**—Solid state output, 24 V AC/DC, 8-pin plug.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 to 8 | $27.30 | $26.60 | $25.95 | $24.55 | $21.85 | $20.45 | $19.10 |
| 0 | 28.40 | 27.55 | 26.85 | 25.45 | 22.70 | 21.30 | 19.85 |
| 0 | 33.65 | 32.90 | 32.20 | 30.50 | 27.35 | 26.00 | 24.35 |
| 0 | 35.45 | 34.65 | 33.75 | 32.05 | 29.05 | 27.35 | 25.70 |

**IES 2111-1PY**—Solid state output, 117 V AC/DC, 8-pin plug.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 to 8 | $28.00 | $27.25 | $26.60 | $25.20 | $22.40 | $21.00 | $19.60 |
| 0 | 29.00 | 28.15 | 27.40 | 25.95 | 23.15 | 21.70 | 20.25 |
| 0 | 34.35 | 33.55 | 32.85 | 31.15 | 27.95 | 26.55 | 24.85 |
| 0 | 36.15 | 35.35 | 34.45 | 32.75 | 29.65 | 27.95 | 26.20 |

**IES 2112-1CF**—Relay output, 24 V AC/DC, 11-pin plug.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 to 8 | $26.25 | $25.50 | $24.95 | $23.60 | $21.00 | $19.50 | $18.35 |
| 0 | 27.25 | 26.40 | 25.75 | 24.40 | 21.80 | 20.20 | 19.05 |
| 0 | 32.60 | 31.60 | 30.75 | 29.20 | 26.35 | 24.60 | 23.20 |
| 0 | 34.10 | 33.00 | 32.05 | 30.40 | 27.45 | 25.60 | 24.15 |

**IES 2112-1PF**—Relay output, 117 V AC/DC, 11-pin plug.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 to 8 | $26.95 | $26.20 | $25.60 | $24.25 | $21.55 | $20.00 | $18.85 |
| 0 | 27.95 | 27.10 | 26.45 | 25.05 | 22.35 | 20.75 | 19.55 |
| 0 | 33.35 | 32.30 | 31.45 | 29.85 | 26.95 | 25.15 | 23.75 |
| 0 | 34.90 | 33.75 | 32.80 | 31.10 | 28.10 | 26.20 | 24.70 |

**IES 2112-1CY**—Solid state output, 24 V AC/DC, 8-pin plug.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 to 8 | $31.20 | $30.30 | $29.60 | $28.05 | $24.95 | $23.15 | $21.80 |
| 0 | 32.30 | 31.30 | 30.55 | 28.95 | 25.80 | 23.95 | 22.60 |
| 0 | 37.90 | 36.70 | 35.75 | 33.90 | 30.60 | 28.55 | 27.00 |
| 0 | 39.65 | 38.35 | 37.25 | 35.35 | 31.90 | 29.75 | 28.05 |

**IES 2112-1PY**—Solid state output, 117 V AC/DC, 8-pin plug.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 to 8 | $31.90 | $31.00 | $30.30 | $28.70 | $25.50 | $23.65 | $22.30 |
| 0 | 33.00 | 32.00 | 31.20 | 29.55 | 26.35 | 24.50 | 23.05 |
| 0 | 38.60 | 37.40 | 36.40 | 34.55 | 31.20 | 29.10 | 27.50 |
| 0 | 40.40 | 39.10 | 38.00 | 36.00 | 32.55 | 30.35 | 28.60 |

### REAR MOUNT TIMERS

**SERIES 2211-1CF**—Relay output, 24 V AC/DC, 8 terminals.

| Time Range Suffix* | Net Each, Lots of | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250 Up |
| -001 to -118 | $23.00 | $22.40 | $21.85 | $20.70 | $18.40 | $17.25 | $16.10 |
| -130 | 24.00 | 23.35 | 22.70 | 21.55 | 19.20 | 18.00 | 16.80 |
| -160 | 29.10 | 28.45 | 27.85 | 26.35 | 23.70 | 22.50 | 21.05 |
| -190 | 30.65 | 30.00 | 29.20 | 27.75 | 25.15 | 23.70 | 22.20 |

**SERIES 2211-1PF**—Relay output, 117 V AC/DC, 8 terminals.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| -001 to -118 | $23.65 | $23.00 | $22.45 | $21.30 | $18.90 | $17.70 | $16.55 |
| -130 | 24.70 | 23.94 | 23.35 | 22.10 | 19.75 | 18.50 | 17.25 |
| -160 | 29.80 | 29.15 | 28.55 | 27.25 | 24.25 | 23.05 | 21.55 |
| -190 | 31.40 | 30.70 | 29.95 | 28.45 | 25.75 | 24.25 | 22.75 |

**SERIES 2211-1CY**—Solid state output, 24 V AC/DC, 4 terminals.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| -001 to -118 | $28.10 | $27.40 | $26.70 | $25.30 | $22.50 | $21.10 | $19.70 |
| -130 | 29.25 | 28.40 | 27.65 | 26.20 | 23.40 | 21.95 | 20.45 |
| -160 | 34.65 | 33.90 | 33.15 | 31.40 | 28.25 | 26.80 | 25.10 |
| -190 | 36.60 | 35.70 | 34.75 | 33.00 | 29.95 | 28.15 | 26.45 |

**SERIES 2211-1PY**—Solid state output, 117 V AC/DC, 4 terminals.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| -001 to -118 | $28.85 | $28.10 | $27.40 | $25.95 | $23.05 | $21.65 | $20.20 |
| -130 | 29.85 | 29.00 | 28.20 | 26.70 | 23.85 | 22.35 | 20.85 |
| -160 | 35.35 | 34.55 | 33.80 | 32.05 | 28.80 | 27.35 | 25.60 |
| -190 | 37.20 | 36.40 | 35.50 | 33.70 | 30.55 | 28.75 | 27.00 |

**SERIES 2212-1CF**—Relay output, 24 V AC/DC, 10 terminals.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| -001 to -118 | $27.00 | $26.25 | $25.70 | $24.30 | $21.60 | $20.10 | $18.90 |
| -130 | 28.05 | 27.20 | 26.50 | 25.15 | 22.45 | 20.80 | 19.60 |
| -160 | 33.55 | 32.55 | 31.70 | 30.10 | 27.15 | 25.35 | 23.90 |
| -190 | 35.15 | 34.00 | 33.00 | 31.30 | 28.30 | 26.35 | 24.85 |

**SERIES 2212-1PF**—Relay output, 117 V AC/DC, 10 terminals.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| -001 to -118 | $27.75 | $27.00 | $26.35 | $24.95 | $22.20 | $20.60 | $19.40 |
| -130 | 28.75 | 27.90 | 27.25 | 25.80 | 23.00 | 21.35 | 20.15 |
| -160 | 34.35 | 33.25 | 32.40 | 30.75 | 27.75 | 25.90 | 24.45 |
| -190 | 35.95 | 34.75 | 33.80 | 32.05 | 28.95 | 27.00 | 25.45 |

**SERIES 2212-1CY**—Solid state output, 24 V AC/DC, 6 terminals.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| -001 to -118 | $32.15 | $31.20 | $30.50 | $28.90 | $25.70 | $23.85 | $22.45 |
| -130 | 33.25 | 32.25 | 31.45 | 29.80 | 26.55 | 24.65 | 23.30 |
| -160 | 39.00 | 37.80 | 36.80 | 34.90 | 31.50 | 29.40 | 27.80 |
| -190 | 40.80 | 39.50 | 38.35 | 36.40 | 32.85 | 30.65 | 28.85 |

**SERIES 2212-1PY**—Solid state output, 117 V AC/DC, 6 terminals

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| -001 to -118 | $32.85 | $31.90 | $31.20 | $29.55 | $26.25 | $24.35 | $22.95 |
| -130 | 34.00 | 32.95 | 32.15 | 30.45 | 27.15 | 25.25 | 23.75 |
| -160 | 39.75 | 38.50 | 37.50 | 35.60 | 32.10 | 29.95 | 28.30 |
| -190 | 41.60 | 40.25 | 39.15 | 37.10 | 33.50 | 31.25 | 29.45 |

time range table for maximum and minimum time settings; and all the ranges and respective times.

# GENERAL TIME Timers

A Talley Industries Company

INDUSTRIAL CONTROLS DIVISION

## SERIES DA TIME-DELAY TIMERS

### REAR MOUNTING

**Type DA11:** Manually adjustable by knob. Apply wherever delay, interval or repeat cycle timing functions are required (repeat cycle requires two units). Internal clutch engages and disengages when motor is energized and de-energized. Resets to start position when power is removed. SPDT switch rated 20 amps at 125 or 250 VAC resistive; solder lug terminals. Min. setting, 0 sec. Repeat accuracy, ±¾ of 1% of total time range. Timing motor rated 5 watts max. at 120 VAC, 60 Hz. UL Recognized. Size, 3⅜" w. x 2¹³⁄₁₆" d. x 3⅛" h. Weight, 1 lb.

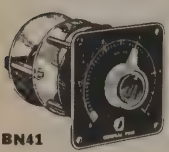
**Type DA21:** Same as DA11 but with locknut adjustment to eliminate tampering. UL Recognized.

**When ordering, specify model number, voltage, and frequency.**

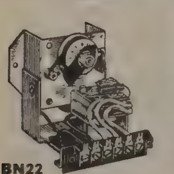
| Model Number | | Max. Time Setting | Max. Reset Time |
|---|---|---|---|
| Manual Adj. | Locknut Adj. | | |
| DA11-036 | ............... | 5.7 sec | .25 sec |
| DA11-031 | DA21-001 | 14 sec | 1.0 sec |
| DA11-032 | DA21-002 | 57 sec | 1.5 sec |
| DA11-035 | DA21-005 | 114 sec | 9.0 sec |
| DA11-033 | DA21-003 | 4.5 min | 15 sec |
| DA11-034 | DA21-004 | 9.5 min | 120 sec |

| Net Each, Lots of | | | | | | |
|---|---|---|---|---|---|---|
| 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250 Up |
| $18.47 | $17.55 | $16.62 | $15.70 | $14.77 | $13.85 | $12.93 |

## SERIES BN ADJUSTABLE RESET TIMERS



**BN41**



**BN22**

Panel or rear mounting; interval or delay timing. Built-in relay, adjustable time range. Apply to machine tools, production and processing equipment or other operations requiring a compact, dependable unit for direct control of electrical loads.

**BN41 (Interval) and BN42 (Delay) Panel Mount**—Dial and setting knob with readout of elapsed time by pointer in center of knob. SPDT relay rated 10 amps at 125 or 250 VAC. Timing motor rated 5 watts max. at 120 VAC, 60 Hz. Repeat accuracy, ±¾ of 1% of total time range. Screw terminal block. Size, 3⁵⁄₁₆" sq. x 4⅜" deep, behind panel. Requires 3³⁄₁₆" dia. mounting hole.

**BN25 (Interval) and BN22 (Delay) Rear Mount**—Same specifications as BN41 and BN42 except have chassis or back panel mount. Locknut setting adjustment, where only occasional time period changes are required. UL Recognized. Size, 3.375" w. x 4.202" h. x 3.750" d.

### PANEL MOUNTING

| Model No. | | Time Setting | | Max. Reset Time | Dial Grads. | |
|---|---|---|---|---|---|---|
| Interval | Delay | Max. | Min. | | Major | Minor |
| BN41-001 | BN42-001 | 6 sec | .3 sec | .5 sec | 1 sec | .1 sec |
| BN41-003 | BN42-003 | 15 sec | .8 sec | 1.0 sec | 1 sec | .2 sec |
| BN41-004 | BN42-004 | 30 sec | 1.5 sec | 1.5 sec | 5 sec | .5 sec |
| BN41-005 | BN42-005 | 60 sec | 3.0 sec | 1.5 sec | 10 sec | 1.0 sec |
| BN41-006 | BN42-006 | 120 sec | 6.0 sec | 10 sec | 20 sec | 2.0 sec |
| BN41-007 | BN42-007 | 5 min | .2 min | 15 sec | 1 min | .1 min |
| BN41-008 | BN42-008 | 10 min | .4 min | 120 sec | 1 min | .2 min |

### REAR MOUNTING

| Model No. | | Time Setting | | Max. Reset Time | Dial Grads. | |
|---|---|---|---|---|---|---|
| Interval | Delay | Max. | Min. | | Major | Minor |
| BN25-006 | BN22-006 | 5.4 sec | .3 sec | .5 sec | 1 sec | .1 sec |
| BN25-001 | BN22-001 | 13.5 sec | .7 sec | .5 sec | 1 sec | .5 sec |
| BN25-002 | BN22-002 | 54 sec | 3.0 sec | 1.5 sec | 5 sec | 1.0 sec |
| BN25-005 | BN22-005 | 108 sec | 6.0 sec | 2.5 sec | 10 sec | 1.0 sec |
| BN25-003 | BN22-003 | 4.5 min | 15 sec | 5.0 sec | 1 min | 5.0 sec |
| BN25-004 | BN22-004 | 9.5 min | 30 sec | 120 sec | 1 min | 5.0 sec |

| Mounting Type | Net Each, Lots of | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250 Up |
| Panel | $31.56 | $29.98 | $28.40 | $26.82 | $25.25 | $23.67 | $22.09 |
| Rear | 26.18 | 24.87 | 23.56 | 22.25 | 20.94 | 19.64 | 18.33 |

ELECTROMECHANICAL TIMERS
ARE AVAILABLE FOR OPERATION
FROM 240 VAC
PRICES ON REQUEST

## SERIES DP11 RESET TIMERS

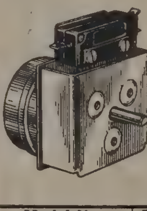
### PANEL MOUNTING

Adjustable time range by simple poi knob. Apply wherever delay, interva repeat cycle timing are needed (re cycle requires two timers). Readou elapsed time by pointer in center of k Unit resets to start position when pow removed. SPDT switch rated 10 amp 125 or 250 VAC resistive. Timing m rated 5 watts max. at 120 VAC, 60 Repeat accuracy, ±1% of total range. Screw terminals. Size, 3⁵⁄₁₆" s 3⁹⁄₃₂" deep, behind panel. Requires 3 dia. mounting hole cut. **When order specify model number, voltage, frequency.**

| Model Number | Time Setting | | Max. Reset Time | Dial Grads. | |
|---|---|---|---|---|---|
| | Max. | Min. | | Major | Min |
| DP11-007 | 6 sec | .3 sec | .5 sec | 1 sec | 1.0 s |
| DP11-001 | 15 sec | .8 sec | 1.0 sec | 1 sec | .2 s |
| DP11-006 | 30 sec | 1.5 sec | 1.5 sec | 5 sec | .5 s |
| DP11-002 | 60 sec | 3.0 sec | 1.5 sec | 10 sec | 1.0 s |
| DP11-005 | 120 sec | 6.0 sec | 10 sec | 20 sec | 2.0 s |
| DP11-003 | 5 min | .2 min | 15 sec | 1 min | .1 n |
| DP11-004 | 10 min | .4 min | 120 sec | 1 min | .2 n |

| Net Each, Lots of | | | | | | |
|---|---|---|---|---|---|---|
| 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250 |
| $22.44 | $21.32 | $20.20 | $19.07 | $17.95 | $16.83 | $15. |

## SERIES AB HAND-SET INTERVAL TIMERS



Rotation energizes the load and tim motor, which are de-energized on rele when motor drives timer to zero. Set can be changed during cycle without d age. Mount behind panel, using t equally spaced .180" dia. tapped holes .562" radius. Setting shaft, ¼" dia. fla to .156" for ½". Flat is located 180° f "0" time. SPDT switch rated 25 amp 125 or 250 VAC resistive. Timing m rated 3.5 watts at 120 VAC, 60 Hz. Sp terminals, ¼". Size, 2½" w. x 3³⁄₁₆" d. h. UL Recognized. Weight, 1 lb. **W ordering, specify model number, vol and frequency.**

| Model No. | Time Range | Model No. | Time Ra |
|---|---|---|---|
| AB51-001 | 1 min | AB51-006 | 2 hrs |
| AB51-002 | 6 min | AB51-007 | 6 hrs |
| AB51-003 | 15 min | AB51-008 | 8 hrs |
| AB51-004 | 30 min | AB51-010 | 12 hrs |
| AB51-005 | 60 min | AB51-016 | 24 hrs |

| Net Each, Lots of | | | | | | |
|---|---|---|---|---|---|---|
| 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250 |
| $8.42 | $8.00 | $7.58 | $7.15 | $6.73 | $6.31 | $5. |

### ACCESSORIES

**Model No. AT5-901**—Dial. Net Each..................**$1**

**Model No. 55-121**—Knob. Net Each..................

## SERIES BJ PUSHBUTTON INTERVAL TIMERS

Dependable, rugged panel-mount ti Timing interval is initiated by manu setting knob to selected position manually depressing the pushbutton. control of mixers, ovens, tumbling plating equipment, copy machines, ph graphic equipment, etc. Readout of ela time by pointer in center of setting k Instant reset to start position a matically. SPDT switch rated 15 amp 125 or 250 VAC resistive. Timing m rated 5 watts max. at 120 VAC, 60 Repeat accuracy, ±½ of 1% of full scale. Combination spade solder lugs. Size, 3⁵⁄₁₆" sq. x 2²³⁄₃₂" deep, behind panel. Requ 3³⁄₁₆" dia. mounting hole. UL Recognized. Weight, 1½ lbs. **W ordering, specify model number, voltage, and frequency.**

| Model No. | Time Setting | | Dial Grads. | |
|---|---|---|---|---|
| | Max. | Min. | Major | Mino |
| BJ12-004 | 30 sec | 1.5 sec | 5 sec | .5 sec |
| BJ12-005 | 60 sec | 3.0 sec | 10 sec | 1.0 sec |
| BJ12-006 | 120 sec | 6.0 sec | 20 sec | 2.0 sec |
| BJ12-007 | 5 min | .2 min | 1 min | .1 mi |
| BJ12-008 | 10 min | .4 min | 1 min | .2 mi |
| BJ12-009 | 15 min | .8 min | 1 min | .2 mi |
| BJ12-010 | 30 min | 1.5 min | 5 min | .5 mi |
| BJ12-011 | 60 min | 3.0 min | 10 min | 1.0 mi |

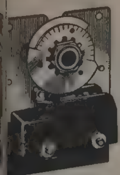
| Net Each, Lots of | | | | | | |
|---|---|---|---|---|---|---|
| 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250 |
| $21.04 | $19.99 | $18.93 | $17.89 | $16.83 | $15.77 | $14. |

# GENERAL TIME
A Talley Industries Company

# Timers

## INDUSTRIAL CONTROLS DIVISION

### SERIES RG21 REPEAT-CYCLE TIMERS



Cam-actuated, single switch timers for rear mounting. Run continuously, repeating a set cycle of make-break switching operations as long as motor is energized. Also operates a single time cycle. Cam adjustable from 7° min. to 169° max. (±3%). SPDT switch rated 20 amps resistive. Timing motor rated 3.7 watts max. at 120 VAC, 60 Hz. Solder lug terminals. 6″ leads. UL Recognized. Size, 2⁵⁄₁₆″ w. x 2½″ d. x 3⅛″ h. Weight, 1 lb.

| odel | Time* | Model | Time* | Model | Time* |
|---|---|---|---|---|---|
| G21-090 | 7½ sec | RG21-093 | 1 min | RG21-096 | 15 min |
| G21-100 | 10 sec | RG21-101 | 2 min | RG21-097 | 30 min |
| G21-091 | 15 sec | RG21-094 | 5 min | RG21-098 | 60 min |
| 21-092 | 50 sec | RG21-095 | 10 min | RG21-099 | 4 hrs |

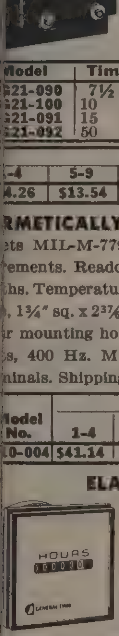
| Net Each, Lots of | | | | | | |
|---|---|---|---|---|---|---|
| -4 | 5-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250 Up |
| 4.26 | $13.54 | $12.84 | $12.12 | $11.41 | $10.69 | $9.98 |

### RMETICALLY SEALED MILITARY TYPE INDICATOR

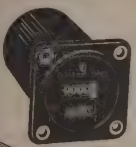
ets MIL-M-7793C and MIL-E-5272C re-
rements. Readout, four digits (hours) plus
ths. Temperature range, −55° C to +85° C.
, 1¾″ sq. x 2³⁷⁄₆₄″ deep with 1½″ dia. barrel.
r mounting holes on 1⁵⁄₁₆″ centers. For 115
s, 400 Hz. MIL-STD-MS-28053-5 solder
ninals. Shipping Weight, ¾ lb.

| odel No. | Net Each, Lots of 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250 Up |
|---|---|---|---|---|---|---|---|
| 0-004 | $41.14 | $39.08 | $37.03 | $34.97 | $32.91 | $30.86 | $28.80 |

### ELAPSED TIME INDICATORS



EF27



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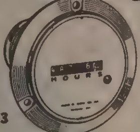


EF13

ER30

de variety of meters available for any application where ac-
ate time readings are required. All are synchronous motor
ven. Round, square bezel, panel mount and rear mount avail-
e. Can be resettable or non-resettable, and readout is digital
h a range of five figures plus tenths; in hours and tenths or
nutes and tenths. All units operate at 120 VAC, 60 Hz. Operat-
temperature, −12° C to +55° C. Registers hours and tenths
ess otherwise noted. UL Recognized.

| odel No.* | Bezel | Depth | Dia. of Unit | Max. Motor Rating, W | Leads or Terminals |
|---|---|---|---|---|---|
| F13 NR | 2⅞″ rd. | 1⁵¹⁄₆₄″ | 2¹⁷⁄₆₄″ | 2.5 | 6″ leads |
| F27 NR | 2⅜″ sq. | 1²³⁄₃₂″ | 2.077″ | 5.0 | 6″ leads |
| D71 NR | 1¾″ sq. | 2³⁷⁄₆₄″ | 1¹⁷⁄₃₂″ | 2.5 | 11¼″ leads |
| D72 NR | 1¾″ sq. | 2³⁷⁄₆₄″ | 1¹⁷⁄₃₂″ | 2.5 | Solder |
| N30 NR | 3″ sq. | 3⁵⁄₁₆″ | 2²²⁄₃₂″ | 3.7 | 8-32 studs |
| R30 R | 3″ sq. | 3⁵⁄₁₆″ | 2²²⁄₃₂″ | 3.7 | 8-32 studs |
| R35 R | 3½″ rd. | 3⁵⁄₁₆″ | 2²²⁄₃₂″ | 3.7 | 8-32 studs |
| N35 NR | 3½″ rd. | 3⁵⁄₁₆″ | 2²²⁄₃₂″ | 3.7 | 8-32 studs |

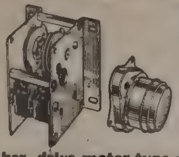
R indicates non-reset; R, reset type.

| odel No. | Net Each, Lots of 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250 Up |
|---|---|---|---|---|---|---|---|
| F1333† | $10.52 | $ 9.99 | $ 9.47 | $ 8.94 | $ 8.42 | $ 7.89 | $ 7.36 |
| F1335 | 10.52 | 9.99 | 9.47 | 8.94 | 8.42 | 7.89 | 7.36 |
| F2733† | 12.39 | 11.77 | 11.15 | 10.53 | 9.91 | 9.30 | 8.67 |
| F2735 | 12.39 | 11.77 | 11.15 | 10.53 | 9.91 | 9.30 | 8.67 |
| D7112 | 24.54 | 23.32 | 22.09 | 20.87 | 19.64 | 18.40 | 17.18 |
| D7212 | 26.65 | 25.31 | 23.98 | 22.65 | 21.32 | 19.99 | 18.66 |
| N3010† | 18.70 | 17.77 | 16.83 | 15.90 | 14.96 | 14.03 | 13.09 |
| N3012 | 18.70 | 17.77 | 16.83 | 15.90 | 14.96 | 14.03 | 13.09 |
| N3510† | 18.70 | 17.77 | 16.83 | 15.90 | 14.96 | 14.03 | 13.09 |
| N3512 | 18.70 | 17.77 | 16.83 | 15.90 | 14.96 | 14.03 | 13.09 |
| R3020† | 27.12 | 25.76 | 24.41 | 23.05 | 21.69 | 20.34 | 18.99 |
| R3022 | 27.12 | 25.76 | 24.41 | 23.05 | 21.69 | 20.34 | 18.99 |
| R3520† | 27.12 | 25.76 | 24.41 | 23.05 | 21.69 | 20.34 | 18.99 |
| R3522 | 27.12 | 25.76 | 24.41 | 23.05 | 21.69 | 20.34 | 18.99 |

egisters minutes and tenths.

**240 VAC ELECTROMECHANICAL TIMERS AVAILABLE, PRICES ON REQUEST.**

### SERIES RE62 REPEAT CYCLE MULTI-CAM TIMERS



Same specifications as RG21, except 2 to 6 switches may be actuated during cycle. Run continuously, repeating set cycles of multiple switching operations as long as motor is energized. Complete unit requires one motor and one or more switch stacks. Spanner wrench included to adjust cams. Two-switch unit size, 2⁵⁄₁₆″ h. x 3⁵⁄₃₂″ w. x 3⁹⁄₁₆″ d.; add ¹¹⁄₁₆″ to depth for each additional switch. UL Recognized. **When ordering, specify switch stack model number, drive motor type number, voltage, and frequency.**

#### SWITCH STACKS

| Model No. RE- | * | Net Each, Lots of 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250 Up |
|---|---|---|---|---|---|---|---|---|
| 62-091 | 2 | $13.23 | $12.56 | $11.91 | $11.24 | $10.58 | $ 9.92 | $ 9.26 |
| 63-092 | 3 | 17.67 | 16.79 | 16.13 | 15.03 | 14.14 | 13.24 | 12.38 |
| 64-093 | 4 | 22.11 | 21.00 | 19.91 | 18.80 | 17.69 | 16.58 | 15.49 |
| 65-094 | 5 | 27.02 | 25.66 | 24.32 | 22.97 | 21.62 | 20.26 | 18.92 |
| 66-095 | 6 | 31.46 | 29.89 | 28.33 | 26.74 | 25.17 | 23.60 | 22.03 |

*Number of switches.

#### DRIVE MOTOR SPECIFICATION

Order one with switch stacks for complete unit.

| Model | Time* | Model | Time* | Model | Time* |
|---|---|---|---|---|---|
| MP10-390 | 7½ sec | MP10-393 | 1 min | MP10-396 | 15 min |
| MP10-400 | 10 sec | MP10-401 | 2 min | MP10-397 | 30 min |
| MP10-391 | 15 sec | MP10-394 | 5 min | MP10-398 | 60 min |
| MP10-392 | 30 sec | MP10-395 | 10 min | MP10-399 | 4 hrs |

*Cam shaft speed for one revolution.

#### DRIVE MOTOR INDUSTRIAL PRICING

| Net Each, Lots of | | | | | | |
|---|---|---|---|---|---|---|
| 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250 Up |
| $6.88 | $6.53 | $6.18 | $5.84 | $5.50 | $5.16 | $4.81 |

### NEW MINIATURE ELAPSED TIME INDICATORS AND EVENTS COUNTERS

95C

95B

16B

B16C

Conform to MIL-M-7793D stds.; MS numbers shown where applicable. Choice of square or round case with 4-digit readout and operation indicators. AC units rated 0.75 W nom. for 115 and 26 volts, 400 Hz; DC units, 60 mW max. avg. at 23–29 volts; events counters, 1.5 W max, 23–29 VDC with 20 cps count rate. **Max. Readout:** 9999.

#### SQUARE CASE ELAPSED TIME INDICATORS

**Size:** .500″ (±.015″) sq. x 1.094″ lg. max. plus 7⁄32″ term. Wt., .75 oz. max. Fixed flange types have ⅛″ pos.

| Model Number | MIL Spec. | Volts | Flange Type | Temp. Range Min. | Temp. Range Max. |
|---|---|---|---|---|---|
| 95C8CE | MS17322-6 | 115 AC | Fixed | −55°C | +85°C |
| 95C8CE-50 | MS17322-6A | 115 AC | Fixed | −65°C | +125°C |
| 95C8CE-200 | MS27651 | 115 AC | Fixed | −65°C | +125°C |
| 95C8A | MS17322-8 | 115 AC | None | −55°C | +85°C |
| 95C8A-50 | MS17322-8A | 115 AC | None | −65°C | +125°C |
| 95C8C2 | MS17322-10 | 115 AC | Movable | −65°C | +125°C |
| 25C8CE-200 | MS27650-4 | 26 AC | Fixed | −65°C | +125°C |
| 25C8CE | ............. | 26 AC | Any | −65°C | +125°C |
| 25C8A | ............. | 26 AC | None | −65°C | +125°C |

#### ROUND CASE ELAPSED TIME INDICATORS

**Size:** AC units .690″ dia. max. x 1.760″ lg. max. plus ¼″ term.; wt., 1 oz. max. DC units .690″ dia. max. x 2.082″ lg. max. plus .312″ term.; wt., 1.75 oz. max. Fixed flange types have ⅛″ pos.

| | | | | | |
|---|---|---|---|---|---|
| 95B8CE | MS17322-2 | 115 AC | Fixed | −55°C | +85°C |
| 95B8CE-50 | MS17322-2A | 115 AC | Fixed | −65°C | +125°C |
| 95B8A | MS17322-4 | 115 AC | None | −55°C | +85°C |
| 95B8A-50 | MS17322-4A | 115 AC | None | −65°C | +125°C |
| 95B8C2 | MS17322-9 | 115 AC | Movable | −65°C | +125°C |
| 25B8CE | ............. | 26 AC | Any | −65°C | +125°C |
| 25B8A | ............. | 26 AC | None | −65°C | +125°C |
| 16B8CE-70 | MS17321-2 | 28 DC | Fixed | −55°C | +100°C |
| 16B8A-70 | MS17321-4 | 28 DC | None | −55°C | +100°C |
| 16B8C2 | MS17321-9 | 28 DC | Movable | −55°C | +100°C |

#### SQUARE CASE EVENTS COUNTERS

**Size:** .500″ (±.015″) sq. x 1.094″ lg. max. plus 7⁄32″ term. Wt., .75 oz. Fixed flange type has ⅛″ pos.

| | | | | | |
|---|---|---|---|---|---|
| B16C8A | ............. | 28 DC | None | −65°F | +257°F |
| B16C8CE | ............. | 28 DC | Fixed | −65°F | +257°F |
| B16C8C2 | ............. | 28 DC | Movable | −65°F | +257°F |

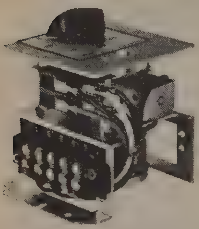
#### INDUSTRIAL PRICING

| Model No. | Net Each, Lots of 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250 Up |
|---|---|---|---|---|---|---|---|
| 95C, 25C | $ 53.00 | $ 39.00 | $ 32.00 | $ 25.00 | $22.00 | $18.00 | $16.50 |
| 95B, 25B | 54.00 | 40.00 | 33.00 | 26.00 | 23.00 | 19.00 | 17.50 |
| 16B | 155.00 | 132.00 | 117.00 | 103.00 | 91.00 | 80.00 | 72.00 |
| B16C | 68.00 | 53.00 | 43.00 | 35.50 | 30.00 | 25.00 | 22.00 |

# CRAMER DIV. CONRAC CORP. Precision Timing Devices

## ORDERING DATA

### TYPE 472



To order see Cramer No. for respective time range and model, in table at right. **Discount "D".**

| Time Ranges | List Price* | |
|---|---|---|
| | 472A-E | 472A-A |
| Sec | $32.00 | $27.75 |
| Min | 32.00 | 27.75 |
| Hrs | 34.25 | 30.00 |

### TYPE 3800

Specify Cramer No. from table below for time range desired. **Discount "B".**

| Cramer No. | Time Range | List Price* |
|---|---|---|
| 10097 | 1 sec | $35.75 |
| 10098 | 10 sec | 35.75 |
| 10099 | 30 sec | 35.75 |
| 10100 | 60 sec | 35.75 |
| 10101 | 5 min | 35.75 |

Type 524

## NEW TYPE 472 BRACKET MOUNT RESET TIMER

External clutch reset timers provide interval or delay timing with choice of momentary or sustained contact control. Individual load, motor and instantaneous switches allow wiring flexibility; unique differential clutch assures reliable, long-life operation. **Model 472A-E**—Eight-place terminal strip; incorporates one load, one motor and one instantaneous switch. **Model 472A-A**—Five-place terminal switch with one load and one motor switch only. **Full-Scale Reset:** Within ½ sec. **Load Switches:** SPDT, rated 10 amps resistive at 125/250 VAC. **Power Input:** 115 VAC, 60 Hz. **Size:** $3\frac{21}{32}$″ w. x $2\frac{7}{8}$″ d. x $3\frac{27}{32}$″ h. UL Recognized.

| Model | Cramer No. | Time Range | Cramer No. | Time Range | Cramer No. | Time Range |
|---|---|---|---|---|---|---|
| 472A-E | 10018 | 15 sec | 10021 | 5 min | 10024 | 60 min |
| 472A-E | 10019 | 30 sec | 10022 | 15 min | 10025 | 5 hrs |
| 472A-E | 10020 | 60 sec | 10023 | 30 min | 10026 | 24 hrs |
| 472A-A | 10027 | 15 sec | 10029 | 5 min | 10031 | 30 min |
| 472A-A | 10028 | 60 sec | 10030 | 15 min | 10032 | 60 min |

## NEW TYPE 474 PANEL MOUNT RESET TIMER

External clutch reset timers provide interval or delay timing with choice of momentary or sustained contact control. Individual load, motor and instantaneous switches allow wiring flexibility; unique differential clutch assures reliable, long-life operation. **Model 474A-AE**—Nine-place terminal block; incorporates one load, one motor and one instantaneous switch. With pilot light. **Model 474A-A**—One load and one motor switch only. **Full-Scale Reset:** Within ½ sec. **Load Switches:** SPDT, rated 10 amps resistive at 125/250 VAC. **Power Input:** 115 VAC, 60 Hz. **Size:** Mounts in $3\frac{5}{16}$″ dia. panel cutout. UL Recognized.

| | | | | | | |
|---|---|---|---|---|---|---|
| 474A-AE | 10033 | 15 sec | 10036 | 5 min | 10039 | 60 min |
| 474A-AE | 10034 | 30 sec | 10037 | 15 min | 10040 | 5 hrs |
| 474A-AE | 10035 | 60 sec | 10038 | 30 min | 10041 | 24 hrs |
| 474A-A | 10042 | 15 sec | 10044 | 5 min | 10046 | 30 min |
| 474A-A | 10043 | 60 sec | 10045 | 15 min | 10047 | 60 min |

## TYPE 3800 SOLID STATE RESET TIMER

Compact, adjustable solid state timer plugs into standard octal socket; can be connected for either interval or delay timing as required. All solid state timing circuit activates DPDT relay contacts at end of set time and resets when control power is removed. **Repeat Accuracy:** When used under constant conditions of nominal voltage, normal room temperature and time between operations, second and subsequent operations will be within 2% of each other. **Recycle Time:** 150 msec nom. **Contact Rating:** DPDT, 10 amps with resistive load. **Power Input:** 115 VAC, 60 Hz.

## TYPE 527 SINGLE POLE CYCLE TIMER

For on-off control of load in continuously repeating cycle. Compact, low cost units are complete with SPDT switch, adjustable cam and highly accurate synchronous motor. Cam adjustable over 3% to 97% of total cycle. **Load Switch Rating:** 20 amps non-inductive at 125/250/480 VAC. **Power Input:** 115 VAC, 60 Hz. **Size:** $2\frac{11}{16}$″ w. x $2\frac{11}{32}$″ d. x 3″ h. UL Recognized.

## TYPE 524 SINGLE POLE CYCLE TIMER

Complete timer consists of chassis incorporating baseplate, cam and switch plus motor and gear rack; selection of 16 gear racks and 12 motor speeds available. Cam is adjustable for operation from 2% to 98% of time cycle. **Repeat Accuracy:** ±0.9°. **Switch:** SPDT, rated 20 amps non-inductive at 125/250/480 VAC. **Power Input:** 115 VAC, 60 Hz. **Size:** $2\frac{3}{4}$″ w. x $3\frac{5}{16}$″ d. x $2\frac{17}{32}$″ h. UL Recognized.

## TYPE 540 MULTIPOLE CYCLE TIMER

Controls 2 to 10 independent circuits; cams are individually adjustable over approximately 2% to 98% of total cycle and can provide any desired sequence or program. Complete timer consists of chassis, motor and gear rack. Chassis incorporates baseplate, cams and switches. **Repeat Accuracy:** ±1.8°. **Load Switches:** SPDT, rated 15 amps non-inductive at 115 VAC. **Power Input:** 115 VAC, 60 Hz. UL Recognized.

## ORDERING DATA

### TYPE 474

To order see Cramer No
for respective time rang
and model, in table a
left. **Discount "D".**

| Time Ranges | List Price* | |
|---|---|---|
| | 474A-AE | 474A- |
| Sec | $43.75 | $38.50 |
| Min | 43.75 | 38.50 |
| Hrs | 46.00 | 41.25 |

### TYPE 527

Specify Cramer No. from
table below for time rang
desired. **Discount "C".**

| Cramer No. | Time Range | List Price |
|---|---|---|
| 10048 | 60 sec | $14.2 |
| 10049 | 5 min | 14.2 |
| 10050 | 30 min | 14.2 |
| 10051 | 60 min | 14.2 |

Type 540

## MODELS 524 AND 540 CYCLE TIMER ORDERING INFORMATION

Choose basic chassis, either single pole Model 524 or multipole Model 540, then select desired cycle time and order appropriate gea
rack and motor from table below. **Example:** For 6-pole Model 540 with 60 sec cycle time, order **Cramer No. 10138** 6-pole chassis plu
gear rack **Cramer No. 10159** plus motor **Cramer No. 10145** and add indvidual prices for total price. **Discount "A".**

**Cramer No. 10107 Model 524 Single Pole Cycle Timer Chassis Only**—List Price*.......................**$10.7**

### MODEL 540 MULTIPOLE CYCLE TIMER CHASSIS ONLY

| Cramer No. | Circuits | Overall Length | List Price* | Cramer No. | Circuits | Overall Length | List Price* |
|---|---|---|---|---|---|---|---|
| 10136 | 2 pole | $4\frac{9}{16}$″ | $19.75 | 10139 | 8 pole | $7\frac{9}{16}$″ | $52.75 |
| 10137 | 4 pole | $5\frac{9}{16}$″ | 30.00 | 10140 | 10 pole | $8\frac{9}{16}$″ | 66.00 |
| 10138 | 6 pole | $6\frac{9}{16}$″ | 41.25 | | | | |

### GEAR RACKS AND MOTORS, BOTH MODELS

**Any Gear Rack,** List Price*..............................**$3.00** **Any Motor,** List Price*..............................**$7.5**

| Gear Racks, Cramer No. | | Cycle Times | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model 524 | Model 540 | Secs | Secs | Secs | Secs | Secs | Min. | Min. | Min. | Min. | Hrs. | Hrs. | Hrs. |
| 10120 | 10153 | 3.0 | 6.0 | 12.0 | 15.0 | 30.0 | 1.5 | 3.0 | 12.0 | 36.0 | 1.5 | 3.0 | 12.0 |
| 10121 | 10154 | 3.5 | 7.0 | 14.0 | 17.5 | 35.0 | 1.75 | 3.5 | 14.0 | 42.0 | 1.75 | 3.5 | 14.0 |
| 10122 | 10155 | 4.0 | 8.0 | 16.0 | 20.0 | 40.0 | 2.0 | 4.0 | 16.0 | 48.0 | 2.0 | 4.0 | 16.0 |
| 10123 | 10156 | 4.5 | 9.0 | 18.0 | 22.5 | 45.0 | 2.25 | 4.5 | 18.0 | 54.0 | 2.25 | 4.5 | 18.0 |
| 10124 | 10157 | 5.0 | 10.0 | 20.0 | 25.0 | 50.0 | 2.5 | 5.0 | 20.0 | 60.0 | 2.5 | 5.0 | 20.0 |
| 10125 | 10158 | 5.5 | 11.0 | 22.0 | 27.5 | 55.0 | 2.75 | 5.5 | 22.0 | 66.0 | 2.75 | 5.5 | 22.0 |
| 10126 | 10159 | 6.0 | 12.0 | 24.0 | 30.0 | 60.0 | 3.0 | 6.0 | 24.0 | 72.0 | 3.0 | 6.0 | 24.0 |
| 10127 | 10160 | 6.5 | 13.0 | 26.0 | 32.5 | 65.0 | 3.25 | 6.5 | 26.0 | 78.0 | 3.25 | 6.5 | 26.0 |
| 10128 | 10161 | 7.0 | 14.0 | 28.0 | 35.0 | 70.0 | 3.5 | 7.0 | 28.0 | 84.0 | 3.5 | 7.0 | 28.0 |
| 10129 | 10162 | 7.5 | 15.0 | 30.0 | 37.5 | 75.0 | 3.75 | 7.5 | 30.0 | 90.0 | 3.75 | 7.5 | 30.0 |
| 10130 | 10163 | 8.0 | 16.0 | 32.0 | 40.0 | 80.0 | 4.0 | 8.0 | 32.0 | 96.0 | 4.0 | 8.0 | 32.0 |
| 10131 | 10164 | 8.5 | 17.0 | 34.0 | 42.5 | 85.0 | 4.25 | 8.5 | 34.0 | 102.0 | 4.25 | 8.5 | 34.0 |
| 10132 | 10165 | 9.0 | 18.0 | 36.0 | 45.0 | 90.0 | 4.5 | 9.0 | 36.0 | 108.0 | 4.5 | 9.0 | 36.0 |
| 10133 | 10166 | 9.5 | 19.0 | 38.0 | 47.5 | 95.0 | 4.75 | 9.5 | 38.0 | 114.0 | 4.75 | 9.5 | 38.0 |
| 10134 | 10167 | 10.0 | 20.0 | 40.0 | 50.0 | 100.0 | 5.0 | 10.0 | 40.0 | 120.0 | 5.0 | 10.0 | 40.0 |
| 10135 | 10168 | 10.5 | 21.0 | 42.0 | 52.5 | 105.0 | 5.25 | 10.5 | 42.0 | 126.0 | 5.25 | 10.5 | 42.0 |
| **Motor Speed, rpm** | | 40 | 20 | 10 | 8 | 4 | 1⅓ | ⅔ | ⅙ | 1/18 | 1/45 | ⅔* | ⅙* |
| **Model 524, Motor No.:** | | 10108 | 10109 | 10110 | 10111 | 10112 | 10113 | 10114 | 10115 | 10116 | 10117 | 10118 | 10119 |
| **Model 540, Motor No.:** | | 10141 | 10142 | 10143 | 10144 | 10145 | 10146 | 10147 | 10148 | 10149 | 10150 | 10151 | 10152 |

*rph. ***See Quantity Discount Multipliers on another page.**

# Precision Timing Devices

## RDERING DATA
### TYPE 400

ify Cramer No. from e below for time range red. **Discount "D".**

| mer lo. | Time Range | List Price* |
|---|---|---|
| 006 | 6 sec | $50.25 |
| 007 | 30 sec | 48.25 |
| 008 | 60 sec | 48.25 |
| 009 | 5 min | 48.25 |
| 010 | 60 min | 50.25 |
| 011 | 5 hrs | 50.25 |

### TYPE 3810

cify Cramer No. from e below for time range red. **Discount "C".**

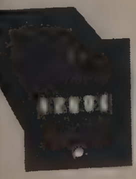
| amer No. | Time Range | List Price* |
|---|---|---|
| 102 | 1 sec | $22.50 |
| 103 | 10 sec | 22.50 |
| 104 | 30 sec | 22.50 |
| 105 | 60 sec | 22.50 |
| 106 | 5 min | 22.50 |

### TYPE 620H

ailable as described. order, specify **Cramer 10169. Discount "B".**

**t Price*. . . . $34.35**

### TYPE 767E



ailable as described. order, specify **Cramer 10096. Discount "D".**

**t Price*. . . . . $10.75**

## TYPE 400 PLUG-IN RESET TIMER WITH PILOT LIGHT

General purpose, motor-driven timer plugs in for instant interchangeability and simplified maintenance. Easily adjusted, instantly read, provides accurate, adjustable interval or timing delay between the operation of a control circuit and the closing of load circuits. Choice of 6 full scale time ranges. Two load and instantaneous switches for wide wiring flexibility. **Accuracy:** Within ±0.5% of full scale. **Motor Voltages:** 115 VAC, 60 Hz. **Power Input:** 2.7 watts, motor; 5 watts, clutch at rated voltage, 60 Hz. **Switches:** Load switches are snap-action SPDT, rated 10 amps resistive and ⅓ hp at 125/250 VAC; ½ amp at 250 VDC; ¼ amp at 250 VDC. Instantaneous switches are open blade, rated 10 amps resistive and ⅓ hp at 125/250 VAC; ½ amp at 250 VDC. **Terminals:** Spring-loaded connectors with #6–32 binding head screws to meet UL spacing. **Size:** 3⅞″ sq. x 4$\frac{5}{32}$″ d. behind panel.

## TYPE 241 INTERVAL TIMER

Automatic reset, interval timer has pushbutton start for operating mixers, ovens, copy machines and similar equipment. Easy, rapid accurate setting with friction coupled set knob; full view, protected dial; handy timing progress pointer has automatic return. **Repeat Accuracy:** ±0.25% of full scale on timers with ranges of 60 seconds or longer; ±0.5% full scale on timers of shorter ranges. **Power Required:** For 115 VAC operation only at 60 Hz; input is 4.75 VA at rated voltage, 60 Hz. **Contacts:** Rated 15 amps at 125 volts; 10 amps at 250 volts, non-inductive load. SPDT snap action type made of silver-cadmium oxide. **Terminals:** Screw lugs, side or rear connected. **Size:** 3¼″ dia. x 3⅛″ d. behind panel. Mounts 3 6-32 screws on 1.687″ radius.

## TYPE 3810 SOLID STATE TIME DELAY RELAY

Low cost, industrial design is interchangeable with several commonly-used electromechanical timers. Choice of 5 time ranges. Bracket mounting. Sustained control signal initiates time; contacts transfer at end of time delay and timer resets upon removal of control voltage. **Repeat Accuracy:** Within 4% under normal conditions. **Recycle Time:** 150 msec nominal. **Contacts:** SPDT rated 10 amps, resistive. **Temperature Range:** +10° C to +50° C. **Power Input:** 115 VAC, 50/60 Hz. **Size:** 3.312″ w. x 2.750″ d. x 2.125″ h., overall. Six mounting holes $\frac{3}{16}$″ dia. spaced 1.125″ x 1.125″ (inline) x 2.750″.

## TYPES 635 AND 636 ELAPSED TIME INDICATORS

**Type 635**—Compact, non-resettable indicators available in five case styles. Large 1″ dia. number wheels provide excellent readability. Quick start and stop induction motor gives higher accuracy than hysteresis motors at no extra cost; four time ranges available on six-digit register. **Mounting Size:** 3½″ units mount in 2.82″ dia. panel cutout; 2½″ models mount in 2.22″ dia. panel cutout. **Total Count:** 99,999.9 minutes, 999,999 minutes, 99,999.9 hrs. or 999,999 hrs. **Power Input:** 115 VAC, 60 Hz. **Type 636**—Similar to above, but not available in case style **G**; has unique pushbutton reset without danger of overshoot; five-digit count register. **Total Count**—9,999.9 sec, 999.99 min., 9,999.9 min. or 9,999.9 hrs. Both types UL Recognized.

| Cramer No. | Type and Case Style* | Total Count | Cramer No. | Type and Case Style* | Total Count |
|---|---|---|---|---|---|
| 10052 | 635E | 999,999 min | 10070 | 635G | 999,999 hrs |
| 10053 | 635E | 99,999.9 min | 10071 | 635G | 99,999.9 hrs |
| 10054 | 635E | 999,999 hrs | 10072 | 636X | 9,999.9 sec |
| 10055 | 635E | 99,999.9 hrs | 10073 | 636X | 999.99 min |
| 10056 | 635Y | 999,999 min | 10074 | 636X | 9,999.9 min |
| 10057 | 635Y | 99,999.9 min | 10075 | 636X | 9,999.9 hrs |
| 10058 | 635Y | 999,999 hrs | 10076 | 636E | 9,999.9 sec |
| 10059 | 635Y | 99,999.9 hrs | 10077 | 636E | 999.99 min |
| 10060 | 635S | 999,999 min | 10078 | 636E | 9,999.9 min |
| 10061 | 635S | 99,999.9 min | 10079 | 636E | 9,999.9 hrs |
| 10062 | 635S | 999,999 hrs | 10080 | 636Y | 9,999.9 sec |
| 10063 | 635S | 99,999.9 hrs | 10081 | 636Y | 999.99 min |
| 10064 | 635X | 999,999 min | 10082 | 636Y | 9,999.9 min |
| 10065 | 635X | 99,999.9 min | 10083 | 636Y | 9,999.9 hrs |
| 10066 | 635X | 999,999 hrs | 10084 | 636S | 9,999.9 sec |
| 10067 | 635X | 99,999.9 hrs | 10085 | 636S | 999.99 min |
| 10068 | 635G | 999,999 min | 10086 | 636S | 9,999.9 min |
| 10069 | 635G | 99,999.9 min | 10087 | 636S | 9,999.9 hrs |

*Suffix **X** indicates 2½″ round bezel, **G** utility type 2½″ round bezel (different type of bezel and sealing arrangement); **Y**, 2½″ square bezel; **E**, 3½″ round bezel; **S**, 3½″ square bezel.

## TYPE 620H MIL ELAPSED TIME INDICATOR

Unit is listed on MIL Q.P.L.; meets MIL-M-28053-5, MIL-M-7793 and MIL-E-5757. **Power Input:** 115 VAC, 400 Hz. **Registration:** 9,999.9 hours. **Size:** 1.709″ sq. bezel x 1.546″ d. Four mounting holes on 1.312″ centers.

## TYPE 767E MINIATURE ELECTRONIC COUNTER

High speed, non-reset, panel mounted impulse counter operates on minimum input power and with low temperature rise. Ideal for use in modern high density equipment; banks of counters can be installed in small panel space and conveniently wired to monitor any desired number of check points. Five-digit register provides for total count to 99,999 at rates up to 600 counts per minute. **Operating Voltage:** 24 VDC. **Size:** Body, $\frac{27}{32}$″ sq. x 3$\frac{29}{32}$″ d.; bezel, 1$\frac{3}{16}$″ x 1$\frac{15}{32}$″. Weight, 5½ oz.

## TYPE 691 ELECTRIC STOP CLOCK

Precision time totalizer measures elapsed time to .01 sec accuracy. Built-in pushbutton or remote control 1/10-sec reset. **Reset Solenoid Duty Cycle:** 20% on, 80% off; max. 5 sec on. **Power Input:** 115 VAC, 60 Hz.

### ★QUANTITY DISCOUNT MULTIPLIERS

| Discount | Multiplier for Lots of | | | | | Discount | Multiplier for Lots of | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1-4 | 5-9 | 10-24 | 25-49 | 50-99 | | 1-4 | 5-9 | 10-24 | 25-49 | 50-99 |
| **A** | 1.00 | 1.00 | .85 | .79 | .76 | **C** | 1.00 | 1.00 | 1.00 | .90 | .85 |
| **B** | 1.00 | 1.00 | .90 | .85 | .80 | **D** | 1.00 | .82 | .79 | .76 | .73 |

## ORDERING DATA
### TYPE 241

Specify Cramer No. from table below for time range desired. **Discount "A".**

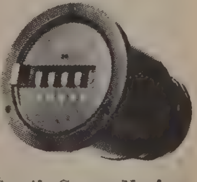
| Cramer No. | Time Range | List Price* |
|---|---|---|
| 10000 | 60 sec | $33.50 |
| 10001 | 5 min | 33.50 |
| 10002 | 15 min | 33.50 |
| 10003 | 60 min | 33.50 |
| 10004 | 5 hrs | 33.50 |
| 10005 | 24 hrs | 33.50 |

### TYPE 635

Specify Cramer No. from table at left for case style and total count desired.

| Case Suffix | List* |
|---|---|
| X, E, S, Y | $17.00 |
| G | 11.75 |

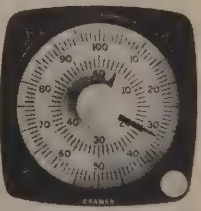
### TYPE 636



Specify Cramer No. from table at left for case style and total count desired.

**List Price*. . . . . $28.25**

### TYPE 691



Specify Cramer No. from table below for time range desired. **Discount "A".**

| Cramer No. | Time Range | List Price* |
|---|---|---|
| 10092 | 60 sec | $85.00 |
| 10093 | 60 min | 85.00 |
| 10094 | 60 min* | 85.00 |
| 10095 | 60 sec† | 85.00 |

*With min and seconds dial. †28 VDC, clutch and reset.

# ALCOSWITCH® MINIATURE PUSHBUTTON AND TOGGLE SWITCHES

## MST MINIATURE TOGGLE SWITCHES

Slim, bat handle toggle switches for miniature applications with limited back-of-panel clearance. Terminals and contacts are solid silver (center terminal, copper with silver plate). Case material, black phenolic resin; ¼-40 threaded bushing. Rated 5 amps at 115 VAC. Offering high capacity for small size, SPDT and DPDT types have life cycle of over 80,000 on-off operations; 3PDT and 4PDT, over 20,000 on-off operations. High voltage barriers between terminals and contacts; one piece body. Suffix **49** indicates miniature flat handle type.

| Alcoswitch No. | Contacts | Application | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|
| **MST-105D** | SPDT | On-none-on | $1.45 | $0.97 | $0.87 | $0.73 |
| **MST-105E** | SPDT | On-off-on | 1.75 | 1.17 | 1.05 | .88 |
| **MST-105F** | SPDT | None-on-on† | 1.75 | 1.17 | 1.05 | .88 |
| **MST-105G** | SPDT | On†-off-on† | 1.75 | 1.17 | 1.05 | .88 |
| **MST-105H** | SPDT | On-off-on† | 1.75 | 1.17 | 1.05 | .88 |
| **MST-115D*** | SPDT | On-none-on | 1.50 | 1.01 | .90 | .76 |
| **MST-205N** | DPDT | On-none-on | 1.95 | 1.30 | 1.17 | .97 |
| **MST-205P** | DPDT | On-off-on | 2.35 | 1.57 | 1.41 | 1.18 |
| **MST-205PA** | DP3T‡ | On-on-on | 2.65 | 1.77 | 1.59 | 1.33 |
| **MST-205R** | DPDT | None-on-on† | 2.35 | 1.57 | 1.41 | 1.18 |
| **MST-205S** | DPDT | On†-off-on† | 2.35 | 1.57 | 1.41 | 1.18 |
| **MST-205SA** | DP3T‡ | On†-on-on† | 2.95 | 1.97 | 1.77 | 1.47 |
| **MST-205T** | DPDT | On-off-on† | 2.35 | 1.57 | 1.41 | 1.18 |
| **MST-205TA** | DP3T‡ | On-on-on† | 2.95 | 1.97 | 1.77 | 1.47 |
| **MST-215N*** | DPDT | On-none-on | 2.00 | 1.34 | 1.20 | 1.00 |
| **MST-305D** | 3PDT | On-none-on | 3.45 | 2.31 | 2.07 | 1.73 |
| **MST-305E** | 3PDT | On-off-on | 3.75 | 2.51 | 2.25 | 1.88 |
| **MST-305F** | 3PDT | None-on-on† | 3.75 | 2.51 | 2.25 | 1.88 |
| **MST-305H** | 3PDT | On-off-on† | 3.75 | 2.51 | 2.25 | 1.88 |
| **MST-315D*** | 3PDT | On-none-on | 3.50 | 2.35 | 2.10 | 1.76 |
| **MST-405N** | 4PDT | On-none-on | 4.35 | 2.91 | 2.61 | 2.18 |
| **MST-405P** | 4PDT | On-off-on | 4.85 | 3.25 | 2.91 | 2.43 |
| **MST-415N*** | 4PDT | On-none-on | 4.40 | 2.95 | 2.64 | 2.21 |
| **MST-105D49** | SPDT | On-none-on | 1.95 | 1.47 | 1.37 | 1.23 |
| **MST-105E49** | SPDT | On-off-on | 2.25 | 1.67 | 1.55 | 1.33 |
| **MST-105G49** | SPDT | On†-off-on† | 2.25 | 1.67 | 1.55 | 1.33 |
| **MST-205N49** | DPDT | On-none-on | 2.45 | 1.80 | 1.67 | 1.47 |
| **MST-205P49** | DPDT | On-off-on | 2.85 | 2.07 | 1.91 | 1.68 |

**Alcoswitch Sampler Kit A**—Includes one of each: MST-105D, -105E, -205N, -205PA, -305D and -405N. Net Each.... **$14.00**

## MSTA MINIATURE TOGGLE SWITCHES

Turret type terminals permanently sealed to case for PC usage. High temp., high impact, low loss case. Rated 6 amps. Mechanical shoulder at bottom of mounting bushing.

| | | | | | | |
|---|---|---|---|---|---|---|
| **MSTA-106D** | SPDT | On-none-on | $1.80 | $1.23 | $1.08 | $0.90 |
| **MSTA-106E** | SPDT | On-off-on | 2.25 | 1.53 | 1.35 | 1.125 |
| **MSTA-106F** | SPDT | None-on-on† | 2.25 | 1.53 | 1.35 | 1.125 |
| **MSTA-106G** | SPDT | On†-off-on† | 2.25 | 1.53 | 1.35 | 1.125 |
| **MSTA-106H** | SPDT | On-off-on† | 2.25 | 1.53 | 1.35 | 1.125 |
| **MSTA-206N** | DPDT | On-none-on | 2.35 | 1.60 | 1.41 | 1.18 |
| **MSTA-206P** | DPDT | On-off-on | 2.85 | 1.90 | 1.71 | 1.42 |
| **MSTA-206R** | DPDT | None-on-on† | 2.85 | 1.90 | 1.71 | 1.42 |
| **MSTA-206S** | DPDT | On†-off-on† | 2.85 | 1.90 | 1.71 | 1.42 |
| **MSTA-206T** | DPDT | On-off-on† | 2.85 | 1.90 | 1.71 | 1.42 |
| **MSTA-206PA** | DP3T | On-on-on | 3.15 | 2.14 | 1.89 | 1.58 |
| **MSTA-306D** | 3PDT | On-none-on | 4.05 | 2.75 | 2.43 | 2.03 |
| **MSTA-306E** | 3PDT | On-off-on | 4.45 | 3.03 | 2.67 | 2.23 |
| **MSTA-406N** | 4PDT | On-none-on | 5.10 | 3.47 | 3.06 | 2.55 |
| **MSTA-406P** | 4PDT | On-off-on | 5.65 | 3.84 | 3.39 | 2.83 |
| **MSTA-406PA** | 4P3T | On-on-on | 6.15 | 4.18 | 3.69 | 3.08 |

## SERIES "E" WATERPROOF TOGGLE SWITCHES

New case design with high voltage barriers, low loss, high impact materials. Turret terminals. Bonded silver contacts rated 6 amps at 125 VAC. Neoprene "O" rings, permanently sealed terminals.

| | | | | | | |
|---|---|---|---|---|---|---|
| **MSTE-106D** | SPDT | On-none-on | $1.95 | $1.33 | $1.17 | $0.975 |
| **MSTE-106E** | SPDT | On-off-on | 2.55 | 1.72 | 1.53 | 1.28 |
| **MSTE-106F** | SPDT | None-on-on† | 2.55 | 1.72 | 1.53 | 1.28 |
| **MSTE-106G** | SPDT | On†-off-on† | 2.55 | 1.72 | 1.53 | 1.28 |
| **MSTE-106H** | SPDT | On-off-on† | 2.55 | 1.72 | 1.53 | 1.28 |
| **MSTE-206N** | DPDT | On-none-on | 2.55 | 1.72 | 1.53 | 1.28 |
| **MSTE-206P** | DPDT | On-off-on | 3.15 | 2.14 | 1.89 | 1.58 |
| **MSTE-206PA** | DP3T‡ | On-on-on | 3.45 | 2.35 | 2.07 | 1.73 |
| **MSTE-206R** | DPDT | None-on-on† | 3.15 | 2.14 | 1.89 | 1.58 |
| **MSTE-206S** | DPDT | On†-off-on† | 3.15 | 2.14 | 1.89 | 1.58 |
| **MSTE-206T** | DPDT | On-off-on† | 3.15 | 2.14 | 1.89 | 1.58 |
| **MSTE-306D** | 3PDT | On-none-on | 4.25 | 2.89 | 2.55 | 2.13 |
| **MSTE-306E** | 3PDT | On-off-on | 4.75 | 3.23 | 2.85 | 2.38 |
| **MSTE-406N** | 4PDT | On-none-on | 5.35 | 3.64 | 3.21 | 2.68 |
| **MSTE-406P** | 4PDT | On-off-on | 5.95 | 4.05 | 3.57 | 2.98 |
| **C-10•** | Plastic cap# | | .04 | .028 | .025 | .022 |
| **C-17•** | Flat top cap# | | .06 | .028 | .025 | .022 |
| **N-1A•** | ¼-40 Perfect fit nut | | .04 | .04 | .036 | .033 |

**Alcoswitch Sampler Kit B**—Includes one of each: MSTE-106D, -106E, -206N, -206PA, -306D and -406N. Net Each.... **$16.00**

## MCT MINIATURE TOGGLE SWITCHES

New design cylindrical case for positive feel and reliability in smallest size possible. All metal with high impact terminal insulator for use in all environmental conditions. Rated 10 A at 125 VAC. Contact material is silver on copper; internal contact resistance, under 20 milliohms; life, 40,000 on-off operations. UL Approved types available on special order.

| | | | | | | |
|---|---|---|---|---|---|---|
| **MCT-110D▲** | SPDT | On-none-on | $1.95 | $1.33 | $1.17 | $0.975 |
| **MCT-210N▲** | DPDT | On-none-on | 2.55 | 1.72 | 1.53 | 1.28 |
| **MCTG-110D■** | SPDT | On-none-on | 1.95 | 1.33 | 1.17 | .975 |
| **MCTG-210N■** | DPDT | On-none-on | 2.55 | 1.72 | 1.53 | 1.28 |

*With white cap. †Momentary positions. ‡Usable as SP3T; wiring on request. #For MST, A, E; specify red, white, black, blue, gray, green, yellow or pink. •Pkg. of 25. ▲With miniature bushings. ■With standard 15⁄32″ bushings.

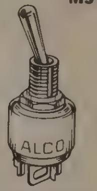
MST-115D

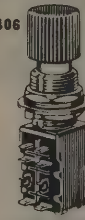
MST-305

MSTE-406

MSTL-10

MSTG-206


MCT-110D


MSPN-206

## MSTG "MUSTANG" TOGGLE SWITCHES

Features a standard 15⁄32″ hole mounting, but with a rear spac requirement of a miniature switch. Case construction of low loss high impact and temperature materials with turret terminals an bonded silver contacts. Rated 6 amps at 125 VAC.

| Alcoswitch No. | Contacts | Application | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|
| **MSTG-106D** | SPDT | On-none-on | $2.15 | $1.43 | $1.29 | $1.08 |
| **MSTG-106E** | SPDT | On-off-on | 2.75 | 1.87 | 1.65 | 1.38 |
| **MSTG-206N** | DPDT | On-none-on | 2.75 | 1.87 | 1.65 | 1.38 |
| **MSTG-206P** | DPDT | On-off-on | 3.35 | 2.28 | 2.01 | 1.68 |
| **MSTG-206PA** | DP3T* | On-on-on | 3.65 | 2.48 | 2.19 | 1.83 |
| **MSTG-306D** | 3PDT | On-none-on | 4.45 | 3.03 | 2.67 | 2.23 |
| **MSTG-306E** | 3PDT | On-off-on | 4.95 | 3.37 | 2.97 | 2.48 |
| **MSTG-406N** | 4PDT | On-none-on | 5.55 | 3.77 | 3.33 | 2.78 |
| **MSTG-406P** | 4PDT | On-off-on | 6.15 | 4.18 | 3.69 | 3.08 |
| **C-15†** | Plastic cap‡ | | .06 | .04 | .036 | .03 |
| **N-1B†** | 15⁄32″ Perfect fit nut | | .08 | .056 | .05 | .04 |

*Usable as SP3T; wiring on request. †Pkg. of 25. ‡Specify re white, black, blue or green.

**Alcoswitch Sampler Kit C**—Includes one of each: MSTG-206N -206P, -206PA, -306D and -406N. Net Each.......... **$16.0**

## MSTL MINIATURE LOCKING SWITCHES

Accident-proof "lever-lock" toggles for hazardous switchin operations. Low-loss, high-impact ½″ case has high voltag barriers. Rated 6 amps at 125 VAC. With positive grip handle

| | | | | | | |
|---|---|---|---|---|---|---|
| **MSTL-106D** | SPDT | On-none-on | $3.15 | $2.14 | $1.89 | $1.58 |
| **MSTL-106E** | SPDT | On-off-on | 3.85 | 2.57 | 2.31 | 1.92 |
| **MSTL-106F** | SPDT | None-on-on† | 3.85 | 2.57 | 2.31 | 1.92 |
| **MSTL-106G** | SPDT | On†-off-on† | 3.85 | 2.57 | 2.31 | 1.92 |
| **MSTL-206N** | DPDT | On-none-on | 3.85 | 2.57 | 2.31 | 1.92 |
| **MSTL-206P** | DPDT | On-off-on | 4.45 | 3.03 | 2.67 | 2.23 |
| **MSTL-206PA** | DP3T | On-on-on | 4.75 | 3.23 | 2.85 | 2.38 |
| **MSTL-206R** | DPDT | None-on-on† | 4.45 | 3.03 | 2.67 | 2.23 |
| **MSTL-206S** | DPDT | On†-off-on† | 4.45 | 3.03 | 2.67 | 2.23 |
| **MSTL-306D** | 3PDT | On-none-on | 5.65 | 3.84 | 3.39 | 2.83 |
| **MSTL-306E** | 3PDT | On-off-on | 6.25 | 4.24 | 3.75 | 3.13 |
| **MSTL-406N** | 4PDT | On-none-on | 6.95 | 4.73 | 4.17 | 3.48 |
| **MSTL-406P** | 4PDT | On-off-on | 7.45 | 5.06 | 4.47 | 3.73 |
| **MSTL-406PA** | 4P3T | On-on-on | 7.95 | 5.40 | 4.77 | 3.98 |
| **C-16** | Extra anodized cap* | | .18 | .12 | .11 | .10 |

*Natural anodized cap furnished; extra C-16 anodized caps—specify red, black or blue. †Momentary positions.

**Alcoswitch Sampler Kit P**—Includes one of each: MSTL-106D -106E, -206N, -206P; and three C-16 caps. Net Each.. **$12.0**

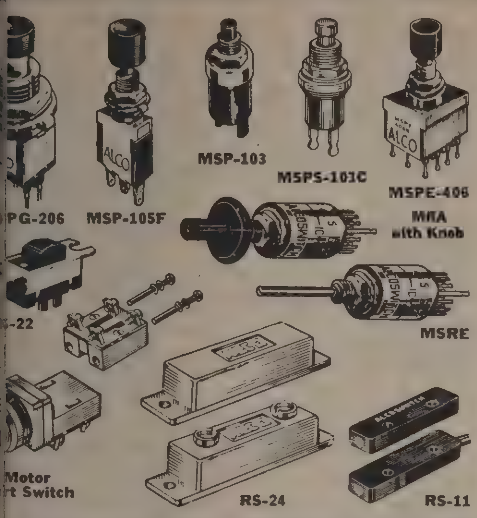
## MSPN PUSHBUTTON SWITCHES

Alco® lighted snap-action switches rated 6 amps at 125 VAC o 3 amps at 250 VAC. Built to withstand abuse; feature a met construction, phenolic miniature case and solid silver contact Choice of round or square shapes plastic buttons in nine differen shades at extra cost. Employ standard T-1¾ grooved lamp easily replaceable from the front without use of special tool Mounts in a 15⁄32″ dia. hole. Life cycle of over 20,000 operation Units come with two hex nuts, locating ring and lock washe

| | | | | | | |
|---|---|---|---|---|---|---|
| **MSPN-206N*** | DPDT | Push-on-off | $4.80 | $3.26 | $2.88 | $2.4 |
| **MSPN-206R*** | DPDT | Momentary | 4.80 | 3.26 | 2.88 | 2.4 |
| **RS** | ½″ Round button† | | .10 | .608 | .06 | .05 |
| **RM** | ⅝″ Round button† | | .12 | .082 | .072 | .06 |
| **RL** | ¾″ Round button† | | .15 | .102 | .09 | .07 |
| **SS** | ½″ Square button† | | .10 | .068 | .06 | .05 |
| **SM** | ⅝″ Square button† | | .12 | .082 | .072 | .06 |
| **SL** | ¾″ Square button† | | .15 | .102 | .09 | .07 |
| **CGR-½** | ½″ Round guard‡ | | .30 | .204 | .18 | .15 |
| **CGR-⅝** | ⅝″ Round guard‡ | | .40 | .27 | .24 | .20 |
| **CGR-¾** | ¾″ Round guard‡ | | .50 | .33 | .30 | .25 |
| **CGS-½** | ½″ Square guard§ | | .30 | .204 | .18 | .15 |
| **CGS-⅝** | ⅝″ Square guard§ | | .40 | .27 | .24 | .20 |
| **CGS-¾** | ¾″ Square guard§ | | .50 | .33 | .30 | .25 |
| **379** | Lamp; 6.3 V, .2 A | | .85# | .57• | .43 | .40 |
| **386** | Lamp; 14.0 V, .08 A | | .90# | .60• | .45 | .42 |
| **388** | Lamp; 28.0 V, .04 A | | .95# | .63• | .47 | .44 |

*Less colored button and lamp. †Specify color—transparen red, amber, blue, green or clear; translucent: Red, yellow, gree or white. ‡Chromed brass. §Chromed plastic. Lots of #1–9, •10–9

# LCOSWITCH® ROTARY, SLIDE, PUSHBUTTON, PROXIMITY & FOOT SWITCHES



## P SERIES MINIATURE PUSHBUTTON SWITCHES

-105, MSP-205—Rated 5 A at 115 VAC. Solid silver contacts
terminals; black phenolic resin case; bushing size, ¼-40 with
vay. Life cycle, over 20,000 on-off operations. **MSPE**—Water-
version of above. Rated 6 A resistive and 2 A inductive at
VAC; 4 A resistive and 2 A inductive at 30 VDC. Has "O"
waterseals between handle and bushing, and between bushing
e and mounting panel; turret terminals. Bushing size, ¼-40;
nts in D-hole. **MSP-103**—Rated 3 A at 125 VAC; silver plated
s contacts and terminals. Dia., .472″; depth behind panel,
; plunger travel, .098″. One-piece ¼-40 mounting bushing.
**S-103C**—Similar to MSP-103, but rated 0.5 A at 125 VAC
.310″ dia.

| coswitch No. | Con-tacts | Application | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|
| -105D* | SPDT | Push on-off | $2.15 | $1.46 | $1.29 | $1.08 |
| -105F* | SPDT | Momentary | 2.15 | 1.46 | 1.29 | 1.08 |
| -205N* | DPDT | Push on-off | 2.95 | 2.01 | 1.77 | 1.48 |
| -205R* | DPDT | Momentary | 2.95 | 2.01 | 1.77 | 1.48 |
| PE-106D* | SPDT | Push on-off | 2.55 | 1.72 | 1.53 | 1.28 |
| PE-106F* | SPDT | Momentary | 2.55 | 1.72 | 1.53 | 1.28 |
| PE-206N* | DPDT | Push on-off | 3.45 | 2.35 | 2.07 | 1.73 |
| PE-206R* | DPDT | Momentary | 3.45 | 2.35 | 2.07 | 1.73 |
| PE-406N* | 4PDT | Push on-off | 5.95 | 4.05 | 3.57 | 2.98 |
| PE-406R* | 4PDT | Momentary | 5.95 | 4.05 | 3.57 | 2.98 |
| -103B† | SOST§ | Norm. closed | .65 | .44 | .39 | .33 |
| -103C‡ | SPST§ | Norm. open | .65 | .44 | .39 | .33 |
| -103C-B† | SPST§ | Norm. open | .65 | .44 | .39 | .33 |
| PS-103C‡ | SPST§ | Norm. open | .50 | .34 | .30 | .25 |
| 2* | Extra plastic button | | .05 | .036 | .032 | .03 |
| 3* | Large button | | .09 | .06 | .054 | .05 |
| | Chrome button (thin) | | .06 | .04 | .036 | .033 |
| L | Chrome button | | .09 | .06 | .054 | .05 |
| 2# | Plain guard for C-12 | | .25 | .17 | .15 | .13 |
| 2-K# | Knurl guard for C-12 | | .30 | .20 | .18 | .15 |
| 3# | Plain guard for C-13 | | .25 | .17 | .15 | .13 |
| 3-K# | Knurl guard for G-13 | | .30 | .20 | .18 | .15 |

ecify red, green or black plastic button. †With black button.
th red button. §Not for use with accessories listed below.
d suffix to specify finish: **-C** for chrome, **-A** for natural alumi-
, **-B** for black.

**switch Sampler Kit D**—Includes one of each: MSP-105F,
R, -105D and -205N. Net Each........................**$8.00**

**switch Sampler Kit M**—Includes one of each: MSPE-106F,
R, -106D and -206N. Net Each........................**$9.00**

**switch Sampler Kit S**—Includes one of each: MSPE-406R
MSPE-406N. Net Each........................**$9.00**

## MSPG "MUSTANG" PUSHBUTTON SWITCHES

e 15/32″ bushings with an ultra-miniature ½″ case. Other
ifications are same as MSPE series, less the waterproof fea-
. Supplied with red or black plastic button, specify color.

| | | | | | | |
|---|---|---|---|---|---|---|
| PG-206N | DPDT | Push-on-off | $3.15 | $2.14 | $1.89 | $1.58 |
| PG-206R | DPDT | Momentary | 3.15 | 2.14 | 1.89 | 1.58 |

## MSRE WATERPROOF ROTARY SWITCHES

-adjustable. Similar to MRA Series but sealed with internal
external "O" rings. Rear terminals permanently sealed.
shaft. Ideal for printed circuits. Less knob.

| coswitch No. | Description | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|
| RE-1-10 | 1 pole; 10 positions | $5.35 | $3.64 | $3.21 | $2.68 |
| RE-2-5 | 2 poles; 5 positions | 5.35 | 3.64 | 3.21 | 2.68 |
| RE-3-3 | 3 poles; 3 positions | 5.35 | 3.64 | 3.21 | 2.68 |
| RE-4-2 | 4 poles; 2 positions | 5.35 | 3.64 | 3.21 | 2.68 |

**switch Sampler Kit H**—Includes one of each: MSRE-1-10,
, -3-3 and -4-2. Net Each........................**$17.00**

## MRA ADJUSTABLE-STOP ROTARY SWITCHES

Miniature (.986″ max. behind panel depth x .512″ dia.) rotary switches rated 500 mA at 125 VAC. Features: Adjustable-stop; non-shorting; 36° spacing; up to 4 poles on single deck; solid silver terminals and contacts. Types with suffix **S**, ⅛″ dia. slotted shaft; others, 5/32″ dia. shaft; knob. Bushing, ¼-40 x .255″ lg.

| Alcoswitch No. MRA- | Posi-tions | Knob Supplied | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|
| 1-10 | 2–10 | Yes | $4.35 | $2.96 | $2.61 | $2.18 |
| 2-5 | 2–5 | Yes | 4.35 | 2.96 | 2.61 | 2.18 |
| 3-3 | 2–3 | Yes | 4.35 | 2.96 | 2.61 | 2.18 |
| 4-2* | 2 | Yes | 4.35 | 2.96 | 2.61 | 2.18 |
| 1-10S | 2–10 | No | 4.25 | 2.89 | 2.55 | 2.13 |
| 1-10SC | Cont. | No | 4.25 | 2.89 | 2.55 | 2.13 |
| 2-5S | 2–5 | No | 4.25 | 2.89 | 2.55 | 2.13 |
| 3-3S | 2–3 | No | 4.25 | 2.89 | 2.55 | 2.13 |
| 4-2S* | 2 | No | 4.25 | 2.89 | 2.55 | 2.13 |
| 4-3S | 3 | No | 4.75 | 3.23 | 2.85 | 2.38 |
| 1-10S-PC | 2–10 | No | 4.95 | 3.37 | 2.97 | 2.48 |
| 1-10SC-PC | 2–10 | No | 4.95 | 3.37 | 2.97 | 2.48 |
| 2-5S-PC | 2–5 | No | 4.95 | 3.37 | 2.97 | 2.48 |
| 3-3S-PC | 2–3 | No | 4.95 | 3.37 | 2.97 | 2.48 |
| 4-2S-PC* | 2 | No | 4.95 | 3.37 | 2.97 | 2.48 |

*Fixed, use prefix **MSRA-**.

**Series MRA-1-12S 12-Position Rotary Switches.** Slightly larger than MRA diameter with ⅛″ shaft, and has 30° spacing. Other specifications similar to MRA Series. Knobs not included. Type MRA-1-12S can be converted to an adjustable-stop switch when used with KCVS-500 knob (see knob listings).

| Alcoswitch No. | Description | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|
| MRA-1-12S | With stop | $4.75 | $3.23 | $2.85 | $2.38 |
| MRA-1-12SC | Cont. rotation | 4.75 | 3.23 | 2.85 | 2.38 |
| MRA-1-12S-PC | With stop | 5.45 | 3.71 | 3.27 | 2.73 |
| MRA-1-12SC-PC | Cont. rotation | 5.45 | 3.71 | 3.27 | 2.73 |

## MINIATURE MOTOR START POWER SWITCHES

Oil-tight pushbutton switches offer compact size, flexibility and low cost. Mount in 1″ hole, providing savings up to 60% less panel space. Positive double-break silver contacts rated to carry 6 amps, 230 VAC. Supplied with single (NO-NC) block; additional (NO-NC) contact block also available to convert switches to double pole. Metal enclosures available on request. Three way selector switch has a bar knob with pointer, available in black only. Key/lock switch prevent unwanted operations of machines.

| | | | | | |
|---|---|---|---|---|---|
| SW-251* | Standard button | $2.95 | $1.97 | $1.77 | $1.48 |
| SW-251D* | Mushroom button | 3.35 | 2.23 | 2.01 | 1.68 |
| SW-251L* | Long button | 3.10 | 2.07 | 1.86 | 1.56 |
| SWS-251 | Selector, On-off-on | 3.35 | 2.23 | 2.01 | 1.68 |
| SWK-251 | Key/Lock switch | 7.95 | 5.30 | 4.77 | 3.98 |
| SU-251 | NO-NC block | 1.85 | 1.23 | 1.11 | .93 |
| C-251-00† | On-off buttons | .35 | .23 | .21 | .18 |
| C-251-SS† | Stop-start buttons | .35 | .23 | .21 | .18 |
| C-251-HL | High-low btns., pair | .35 | .23 | .21 | .18 |
| C-251-UD | Up-down btns., pair | .35 | .23 | .21 | .18 |

*Equipped with snap-on colored buttons, specify red, black or green. †Standard snap-on buttons with legend for SW-251 switches.

## PROXIMITY MAGNETIC SWITCHES

Uses replaceable dry reed switch. Reliable, long life (over 5 million operations). Alnico V magnet actuates within 1″. Rated 0.5 A break, 1.0 A carry.

| | | | | | |
|---|---|---|---|---|---|
| RS-24-NO | Norm. open (apart) | $2.85 | $1.90 | $1.71 | $1.42 |
| RS-24-NC | Norm. closed (apart) | 3.15 | 2.14 | 1.89 | 1.58 |

## MINIATURE PROXIMITY MAGNETIC SWITCHES

Dry reed switch actuated by Alnico V magnet within .39″. Has 8″ leads. Rated .15 A break, .5 A carry at 50 VDC; 200 VDC breakdown. Life, 10 million cycles. Size, 1.102″ x .335″.

| | | | | | |
|---|---|---|---|---|---|
| RS-11-NO | Norm. open (apart) | $2.75 | $1.87 | $1.65 | $1.38 |
| RS-11-NC | Norm. closed (apart) | 3.05 | 2.08 | 1.83 | 1.53 |

## MINIATURE SLIDE SWITCHES

Min. 2-circuit anti-tease design (NO, NC only) rated 2 amps, 120 VAC; ½ amp, 120 VDC. Phenolic base and slide block. Gold on nickel on silver-plated brass contacts. Life, 250,000 operations. Size, .500″ x .305″ x .257″ with two .687″ mtg. centers.

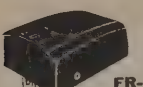
| Alco-switch No. MSS- | Con-tacts | Description | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|
| 22 | SPST | Slide switch | $1.75 | $1.17 | $0.88 | $0.73 |
| 44 | SPST | Slide switch | 3.15 | 2.11 | 1.58 | 1.31 |

## MINIATURE PRINTED CIRCUIT SLIDE SWITCHES

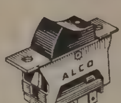
Mount directly to PC board. Rated 0.3 amp, 125 VAC. Life, 15,000 cycles at rated load. Silver-plated contacts except where noted gold (gold-plated nickel); movable contacts beryllium plated brass. MSS-4300, -6200, 4-40 screw holes; others tab.

| | | | | | | |
|---|---|---|---|---|---|---|
| 1200R | SPDT | Right angle | $0.60 | $0.41 | $0.36 | $0.30 |
| 1200RG | SPDT | Right angle, gold | .80 | .55 | .48 | .40 |
| 2200 | DPDT | Upright | .65 | .44 | .39 | .33 |
| 2200G | DPDT | Upright, gold | 1.05 | .72 | .63 | .53 |
| 2220 | DPDT | Upright, med. handle | .65 | .44 | .39 | .33 |
| 2250 | DPDT | Long handle | .70 | .48 | .42 | .35 |
| 2250RG | DPDT | Right angle, long handle, gold | 1.20 | .82 | .72 | .60 |
| 2250G | DPDT | Long handle, gold | 1.10 | .75 | .66 | .55 |
| 2250R | DPDT | Rt. angle, lg. handle | .80 | .55 | .48 | .40 |
| 4200 | 4PDT | Upright | .75 | .51 | .45 | .38 |
| 4200R | 4PDT | Right angle | .85 | .58 | .51 | .43 |
| 4300 | 4P3T | Upright | 1.05 | .72 | .63 | .53 |
| 4300R | 4P3T | Right angle | 1.15 | .78 | .69 | .58 |
| 4350R | 4P3T | Rt. angle, lg. handle | 1.20 | .82 | .72 | .60 |
| 6200 | 6PDT | Upright | .95 | .65 | .57 | .48 |

# ALCOSWITCH® RELAYS, TERMINAL STRIPS, SWITCHES AND ACCESSORIES



FR-103



MSL-203N

## ISOLATION RELAYS

Ideal for remote control applications, eliminating shock hazards. Combines isolated step-down transformer and sensitive low voltage relay in a single laminated core. Low voltage circuit can be run through ordinary surface wiring with low current drain. Max. load, 7 amps at 117 VAC, 60 Hz, except types with suffix **-230**, 3.5 amps at 230 VAC, 60 Hz.

**Alcoswitch No. FR-102**—SPDT basic. Net Each........**$4.45**

**Alcoswitch No. FR-102-230**—230-V version of above. Net. **4.85**

**Alcoswitch No. FRE-103**—Plug-in outlet combined with SPDT relay (same as FR-102). Provides actuating voltage to an alarm or remote accessory. Has 3-way receptacle to select NO or NC circuit. Side jack serves as plug-in for remote sensor unit. Net Each........................................**$4.95**

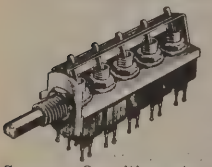
**Alcoswitch No. FRP-104**—Same as FR-102, but plug-in octal base relay enclosed in plastic dust cover. Net Each..........**$5.45**

**Alcoswitch No. FR-105**—Similar to FR-102, but more compact. Black plastic case is contoured to save space; 6″ leads. Net Each........................................**$3.85**

**Alcoswitch No. FR-105-230**—230-V version of above. Net. **4.25**

## ALCOSWITCH ACCESSORIES

### CONVERSION UNIT FOR ROTARY OPERATION



Incorporates unique method of ganging miniature toggle switches to control multiple circuits simultaneously. Operating as a 2 or 3-position rotary switch, unit can gang up to five toggle switches. Consumes minimum of behind-panel space. Also offers advantages of completely enclosed contacts and heavier current capabilities. Accommodates most miniature bat handle switches having ¼″ bushings, and any number of pole configurations. Serves as 3-position rotary switch when used with center-off or on-on-on toggles, or as 2-position rotary when used with single or double-throw toggles.

**Alcoswitch No. CNV-1 Conversion Unit**—
Net Each, Lots of: 1–24............**95c**; 25–99............**63c**
Lots of: 100–499....................**57c**; 500–999..........**48c**

### DECORATIVE MOUNTING NUTS

| Alco-switch No. | Size | Description | Net Ea., Lots of‡ 25-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|
| **N-1** | ¼-40 | Standard knurl | 4c | 3.6c | 3.3c |
| **N-1A** | ¼-40 | "Perfect-Fit" knurl | 5.6c | 5c | 4.4c |
| **N-1A-B** | ¼-40 | "Perfect-Fit" knurl, black | 5.6c | 5c | 4.4c |
| **N-1B** | 15/32″ | "Perfect-Fit" knurl | 8.4c | 7.2c | 6.6c |
| **N-1C** | ⅜″ | "Perfect-Fit" knurl | 6.8c | 6c | 5.5c |
| **N-2** | ¼-40 | Standard hex nut | 2.8c | 2.5c | 2.2c |
| **N-3** | ¼-40 | Decorative mtg. nut | 5.6c | 5c | 4.4c |
| **N-4** | ¼-40 | Decorative mtg. nut | 8.4c | 7.2c | 6.6c |
| **MAN-1** | ....... | Mounting adapter nut | 17.5c | 15c | 13.8c |

### COLOR-CODED PLASTIC CAPS

For bat handle toggles. Widely used in aircraft, computer and hazardous applications.

| Alcoswitch No. | For Use With | Net Each, Lots of‡ 25-99 | 100-499 | 500-999 |
|---|---|---|---|---|
| **C-10*** | All bat-handle toggles | **2.8c** | **2.5c** | **2.2c** |
| **C-15†** | Mustang Series toggles | **4c** | **3.6c** | **3.3c** |
| **C-17** | Same as C-10, cone shaped | **2.8c** | **2.5c** | **2.2c** |

*Specify black, blue, red, gray, white, pink, yellow or green. †Specify black, blue, red, white or green. ‡Std. pkg. 25.

**Alcoswitch Sampler Kit R**—Includes 250 miniature C-10 and 50 standard C-15 caps in assorted colors for toggle switches. Net Each................................................**$8.00**

### INSTALLATION WRENCH

A spanner wrench for Alcoswitches. Long tapered arm extends at slight angle to permit user to tighten lower mounting nut.

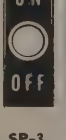
**Alcoswitch No. W-1 Installation Wrench**—Net Each......**25c**

### SWITCH PLATES

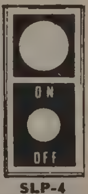
Stamped aluminum plates for miniature and standard size switches. SLP-4 accepts ⅜″ ALCO pilot lights.

| Alco-switch No. | For Bush. Dia. | No. of Plates | Net Each, Lots of 1-24 | 25-99 | 100-499 |
|---|---|---|---|---|---|
| **SP-3*** | ¼″ | 5 | **75c** | **55c** | **50c** |
| **SP-4*** | 15/32″ | 5 | **75c** | **55c** | **50c** |
| **SLP-4*** | ¼″ | 5 | **90c** | **65c** | **61c** |

*Consists of 3 on-off, 1 on-on, and 1 PRW-off plates.



SP-3



SLP-4

**Alcoswitch Sampler Kit N**—Contains 25 each SP-3 miniature and SP-4 standard switch plates: 15 each on-off, 5 each on-on, 5 each pwr-off. Net Each................................................**$9.00**

## ROCKER AND LEVER SWITCHES

**MSLN**—Illuminated rocker switches feature convenient front-panel lamp replacement; snaps into .655″ x .728″ hole. Rated 6 amps at 125 VAC. Supplied with one red, green, amber or white lens cap; specify. For use with Alco No. 378 (6.3 V), 362 (14.0 V) or 388SC (28.0 V) lamps. **MSL**—Economy version of above; mounts in .49″ x .59″ hole; molded silver contacts and terminals. **MSD**—Same as MSL, but with lever actuator. Specify red, black or white lever. **HSL**—UL Approved rocker switches rated 10 amps at 125 VAC, 6 amps at 250 VAC; over 100,000 operations. Black with tab terminals and extra-wide surface silver-clad contacts.

| Alco No. | Description | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|
| **MSLN-206N** | DPDT, on-none-on | $4.45 | $3.03 | $2.67 | $2.23 |
| **MSLN-206P** | DPDT, on-off-on | 4.75 | 3.23 | 2.85 | 2.38 |
| **MSLN-206R** | DPDT, none-on-on* | 4.75 | 3.23 | 2.85 | 2.38 |
| **MSL-106D** | SPDT, on-none-on | 1.65 | 1.12 | .99 | .83 |
| **MSL-106E** | SPDT, on-off-on | 1.95 | 1.33 | 1.17 | .975 |
| **MSL-206N** | DPDT, on-none-on | 2.15 | 1.43 | 1.29 | 1.08 |
| **MSL-206P** | DPDT, on-off-on | 2.55 | 1.72 | 1.53 | 1.28 |
| **MSD-106D** | SPDT, on-none-on, lever | 1.65 | 1.12 | .99 | .83 |
| **MSD-106E** | SPDT, on-off-on, lever | 1.95 | 1.33 | 1.17 | .975 |
| **MSD-206N** | DPDT, on-none-on, lever | 2.15 | 1.43 | 1.29 | 1.08 |
| **MSD-206P** | DPDT, on-off-on, lever | 2.55 | 1.72 | 1.53 | 1.28 |
| **HSL-110A** | SPST, push on-off | .85 | .578 | .51 | .425 |
| **HSL-110D** | SPDT, push on-on | .95 | .646 | .57 | .475 |

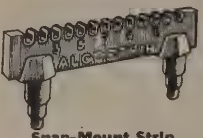
*Momentary position.

## MSH LEVER AND MSL ROCKER SWITCHES

Versatile DPDT switches available with long lever or rocker actuators; contacts are silver plated. Rated 3 A at 125 VAC Life, 25,000 cycles.

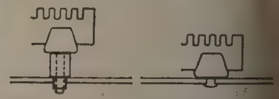
| | | | | | |
|---|---|---|---|---|---|
| **MSH-203N** | Lever actuator | $1.25 | $0.85 | $0.75 | $0.63 |
| **MSL-203N** | Rocker actuator | 1.15 | .78 | .69 | .58 |

## ALCOSTRIP CERAMIC TERMINAL STRIPS



Snap-Mount Strip

Mounting Suggestions



Elevated    Flush (Cut & Fuse)

Ceramic-base terminal strips with copper plate inserts that are silver-plated and tinned to facilitate soldering of components and leads without harm to terminal strip. Features permanent bond between metal and ceramic. Ceramic strips withstand extremely high temperatures. Available in thread or snap mounting. Standard 2-56 threaded studs are extra long for cutting to any required dimension. Board ht. 0.590″ (above studs); board depth, 0.119″ at top, sloping to 0.276″ at bottom. Depth of slots, 0.197″. **Dielectric Strength:** More than 10 seconds at 1500 VDC between terminals. **Insulated Resistance:** Over 1000 megohms at 500 VDC megger. **Dip Solder Test:** No exfoliation at 250° C for 5 seconds. **Materials:** Terminal Strip, steatite; bushing, polypropolyne.

### THREAD MOUNT TYPES

| Alco No. | No. of Terminal Slots | Size, Inches Overall Width | Mtg. Ctrs. | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| **MEP-2** | 2 | 0.650 | ...... | $0.36 | $0.24 | $0.216 | $0.198 |
| **MEP-4** | 4 | 1.161 | 0.512 | .45 | .30 | .27 | .248 |
| **MEP-6** | 6 | 1.673 | 1.024 | .60 | .40 | .36 | .33 |
| **MEP-8** | 8 | 2.185 | 1.535 | .75 | .50 | .45 | .413 |
| **MEP-10** | 10 | 2.697 | 2.047 | .87 | .58 | .522 | .479 |
| **MEP-12** | 12 | 3.209 | 2.560 | .99 | .66 | .594 | .545 |

**Alco Sampler Kit J**—Two each of above. Net Each.....**$6.00**

### SNAP MOUNT TYPES

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **MEP-NB-3** | 3 | 0.600 | ...... | $0.48 | $0.32 | $0.288 | $0.264 |
| **MEP-NB-5** | 5 | 0.885 | 0.490 | .66 | .44 | .396 | .363 |
| **MEP-NB-7** | 7 | 1.165 | 0.490 | .81 | .54 | .486 | .446 |
| **MEP-NB-9** | 9 | 1.445 | 0.750 | .87 | .58 | .522 | .479 |
| **MEP-NB-13** | 13 | 2.140 | 1.500 | 1.11 | .74 | .666 | .611 |
| **MEP-NB-16** | 16 | 2.440 | 1.500 | 1.35 | .90 | .81 | .743 |
| **MEP-NB-20** | 20 | 3.020 | 2.520 | 1.65 | 1.10 | .99 | .908 |

**Alco Sampler Kit K**—Two each of above. Net Each...**$10.00**

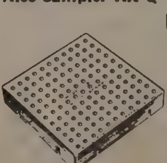
### SNAP MOUNT TYPES FOR AXIAL COMPONENTS

Similar to above but have round silver-plated inserts swedged to ceramic base. Mount on single strip or between pair of parallel strips, horizontal or vertical assembly. With hardware.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **MEH-NB-9** | 9 | 3.000 | 2.500 | $0.80 | $0.53 | $0.48 | $0.44 |
| **MEH-NB-18** | 18 | 3.000 | 2.500 | 1.45 | .96 | .87 | .798 |
| **MEH-NB-19** | 19 | 3.000 | 1.750 | 1.45 | .96 | .87 | .798 |
| **MEH-NB-40** | 40 | 3.000 | 2.500 | 2.20 | 1.46 | 1.32 | 1.21 |

**Alco Sampler Kit Q**—Four each of above. Net Each.....**$9.00**

### DESIGN BOARDS



Plug-in termnial strips are ideal for breadboarding which may be quickly inserted or removed as desired to simplify circuit design. A matching circuit board (5″ x 6″) is provided to form a base for experimental design work.

**Alco Model CB-1 Board**—Net Each..**95c**

**Alco Kit CB-2**—Includes 16 strips in 8 different sizes and one board. Net Each......................**$10.95**

# LCOSWITCH® KEYBOARD SWITCHES

## REED SWITCH OPERATED KEYBOARD BANKS

ned for high reliability in data processing equipment. Short s provide smooth operation of switch plunger, resulting in the finest keyboard actions available; also suitable for test ment, communications gear, etc. All details designed for pressure (5 oz.), operator convenience and positive input of with long life under conditions of heavy office usage. Highly nt single pole open circuit reed switches assure reliability xtremely long life; square light gray keys (19/32″) have industry ard 0–9 marking and format. All switch positions have a tive lockout" between sections and rows, which prevents than one position from operating at the same time. Up to 12 hes may be installed in the basic module in any combination, ling momentary or lockout design. Contacts are normally Rated 100 mA at 48 V. Mechanical life, 1 million cycles; switch life, 10 million cycles. Full stroke travel, 7/32″; travel ntact, 5/32″. Symbols, 3/16″ high, black; keys, gray. Size, w. x 3.62″ d. x 2.25″ h. (1⅝″ below or behind panel).

| switch No. | Description | Net Each, Lots of 1-24 | 25-99 | 100-499 |
|---|---|---|---|---|
| 032 | Lockout 0–9, "0" triple bar | $28.50 | ...... | ....... |
| 033 | Lockout 0–9 and period | 28.50 | ...... | ....... |
| 034 | Lockout 1–12, numerals | 29.95 | ...... | ....... |
| 035 | Momentary 1–12, numerals | 28.50 | ...... | ....... |
| 032PC* | Lockout 0–9, "0" triple bar | 29.50 | ...... | ....... |
| 033PC* | Lockout 0–9 and period | 29.50 | ...... | ....... |
| 034PC* | Lockout 1–12, numerals | 30.95 | ...... | ....... |
| 035PC* | Momentary 1–12, numerals | 29.50 | ...... | ....... |

h printed circuit connectors.

## MOMENTARY MODULAR SECTIONS

le concept allows design engineer to create his own custom button layouts. Highly efficient single pole, normally open switches used throughout for reliability and extremely long Light pressure (5 oz.) and short strokes result in optimum tor convenience and positive data input. Basic module allows f one to three switches in either momentary or alternate n-on push-off" action. Stacking allows any number of switch ons to be used in a group by themselves or with matching oard assemblies SB-032 to SB-035 (above). Standard size h keys are available separately, either as single or extended which span two or three switch positions; use of wider keys es possible 2- or 3-pole switch functions. Rated 100 mA at ; normally open. Life, 1 million cycles. Full travel, 7/32″; travel ntact, 5/32″. Depth required, 1⅝″. Supplied less keys; see g below to order.

| oswitch No. | Description | Net Each, Lots of 1-24 | 25-99 | 100-499 |
|---|---|---|---|---|
| 1E | 1-pole, end, momentary | $2.90 | $2.32 | ...... |
| 1C | 1-pole, center, momentary | 2.90 | 2.32 | ...... |
| 2E | 2-pole, end, momentary | 4.80 | 3.84 | ...... |
| 3C | 3-pole, ctr. and ends, mom. | 6.70 | 5.36 | ...... |
| 4C | 4-pole, momentary | 8.60 | 6.88 | ...... |
| -1C | 1-pole, locking | 3.90 | 3.12 | ...... |
| -2E | 2-pole, locking and mom. | 5.80 | 4.64 | ...... |

## LOCKING MODULAR SECTIONS (INTERLOCK)

lar in appearance and specifications to Series SB (above), with bar installed that proivdes a single locking operation. all length depends on the number of switches involved, each ed 0.700″ apart. Removal of locking bar converts this switch a momentary type. Supplied less keys; see listing below der.

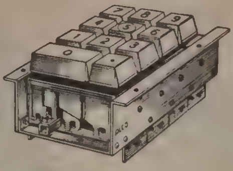
| oswitch No. | Description | Net Each, Lots of 1-24 | 25-99 | 100-499 |
|---|---|---|---|---|
| 1 | Momentary | $ 2.70 | $ 2.16 | ....... |
| L-1 | One position | 2.95 | 2.36 | ....... |
| L-2 | Two positions | 4.95 | 3.96 | ....... |
| L-3 | Three positions | 6.90 | 5.52 | ....... |
| L-4 | Four positions | 8.90 | 7.12 | ....... |
| L-5 | Five positions | 10.85 | 8.68 | ....... |
| L-6 | Six positions | 12.85 | 10.28 | ....... |
| L-7 | Seven positions | 14.80 | 11.84 | ....... |
| L-8 | Eight positions | 16.80 | 13.44 | ....... |
| L-9 | Nine positions | 18.75 | 15.00 | ....... |
| L-10 | Ten positions | 20.75 | 16.60 | ....... |
| L-12 | Twelve positions | 24.70 | 19.76 | ....... |

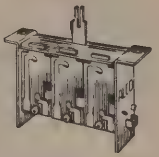
mentary type; all others locking.

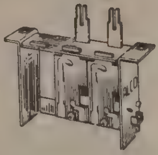
## KEYS FOR ABOVE SWITCHES*

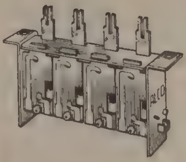
| oswitch No. | Description | Net Each, Lots of 1-24 | 25-99 | 100-499 |
|---|---|---|---|---|
| B-1 | Single key only | $0.15 | $0.12 | $0.105 |
| B-2 | Double key only | .25 | .20 | .175 |
| B-3 | Triple key only | .35 | .28 | .245 |
| -BKT | Mounting brackets (pair) | 1.95 | 1.56 | 1.37 |

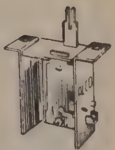
ecify light gray, dark gray, white, blue, red or black.


SB-033


SB-1C


SB-2E


SB-4C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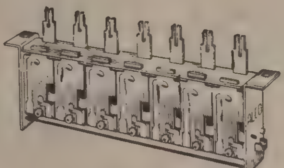
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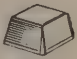
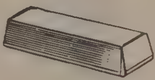
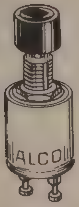
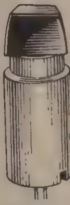

SBB-1


SBB-3



MSPM


RSM

## MAGNETIC REPULSION PUSHBUTTON SWITCHES

SPST momentary keyboard switches designed for data entry in modern electronic equipment; ceramic magnets eliminate springs and allow an unusual light and snappy touch with little change in pressure over very long periods of service. Contacts are glass-encapsulated reeds for long life; plunger is keyed and non-rotating; metal case withstands abuse and serves as a shield. Rated 100 mA at 50 VDC; resistance, 100 milliohms. Contact bounce, 1 msec; plunger travel, 5/64″. Operating force, under 2 oz. Life, 10 million cycles.

| Alcoswitch No. | Description | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|
| MSPM-101B* | NC; solder lugs | $4.25 | $3.40 | $2.98 | $2.76 |
| MSPM-101C† | NO; solder lugs | 3.90 | 3.12 | 2.73 | 2.54 |
| MSPM-101B-1* | NC; .110″ terminal | 4.25 | 3.40 | 2.98 | 2.76 |
| MSPM-101C-1† | NO; .110″ terminal | 3.90 | 3.12 | 2.73 | 2.54 |
| C-12‡ | Extra button | .05 | .036 | .032 | .03 |

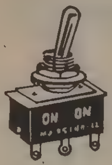
*Supplied with C-12 black button. †Supplied with C-12 red button. ‡Packages of 25; specify red, black or green.

## BASE MOUNTED KEYBOARD PUSHBUTTON SWITCH

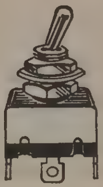
Reed-actuated, low profile single-pole normally open unit provides the low operating force (1.2 oz.) and high reliability required in keyboards; suitable for 0.75″ matrix, free from interaction between units. Hamlin reed switch is molded in high quality glass-filled nylon and metal resin; actuated by permanent magnet. Rated 10 watts, 500 mA at 50 V. Contact resistance, 150 milliohms. Life, 10 million operations. Total stroke, 0.140″; minimum pre-travel, 0.060″; minimum overtravel, 0.030″; minimum travel after release, 0.032″.

| | | | | | |
|---|---|---|---|---|---|
| RSM-41 | Keyboard switch | $1.95 | $1.46 | $1.36 | ...... |
| RSM-61 | Keyboard switch, flat based | 1.95 | 1.46 | 1.36 | ...... |
| RSB-1 | Blank key | .15 | .12 | .105 | ...... |
| RSB-1N | Two shot molded keys, specify 0 to 9 | .20 | .16 | .14 | ...... |

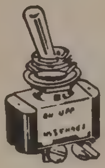
# Arrow-Hart MILITARY AND COMMERCIAL SWITCHE



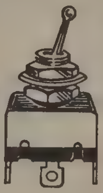
25098



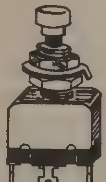
TC-3-M



35058



TC-3



PM-3

## MIL APPROVED TOGGLE SWITCHES

### MS-25098 AND MS-25100

Wiping contacts; phenolic base. Sleeve, 15⁄32″ dia. Non-ferrous material satin chr finish. Solder lug terminals. Supplied with 2 hex nuts, 1 locating ring and 1 shakep lockwasher.

| A-H Number | MS Number | Toggle Lever Position | | | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | One Extreme | Ctr. | Other Extreme | 1-24 | 25-49 | 50-99 | 100-499 | 5 U |
| 25098-AM | MS-25098-22 | On | None | Off | $2.45 | $2.26 | $1.89 | $1.70 | $1 |
| 25098-DM | MS-25098-23 | On | None | On | 2.65 | 2.44 | 2.04 | 1.83 | 1 |
| 25100-AM | MS-25100-22 | On | None | Off | 3.01 | 2.78 | 2.32 | 2.08 | 1 |
| 25100-DM | MS-25100-23 | On | None | On | 3.21 | 2.96 | 2.47 | 2.22 | 1 |

### SUBMINIATURE MS-75028 AND MS-75029

Butt type contacts. Sleeve, ¼″ dia. Combination solder-quick connect terminals. C anodized aluminum finish; aluminum exposed parts. Supplied with 2 hex nuts, 1 l washer and 2 locating rings.

| A-H Number | MS Number | Circuit | Toggle Lever Position | | | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | One Extreme | Ctr. | Other Extreme | 1-24 | 25-99 | 100-499 | 5 U |
| TS-1-M | MS-75028-22 | SPST | Off | None | On | $3.00 | $2.40 | $2.25 | $2 |
| TC-3-M | MS-75028-21 | SPDT | On | Off | On | 3.20 | 2.56 | 2.40 | 2 |
| TE-3-M | MS-75028-31 | SPDT | On* | Off | On† | 3.40 | 2.72 | 2.55 | 2 |
| TG-3-M | MS-75028-27 | SPDT | On* | Off | On* | 3.40 | 2.72 | 2.55 | 2 |
| TM-3-M | MS-75028-26 | SPDT | On* | None | On | 3.40 | 2.72 | 2.55 | 2 |
| TS-3-M | MS-75028-23 | SPDT | On | None | On | 3.20 | 2.56 | 2.40 | 2 |
| TS-2-M | MS-75029-22 | DPST | Off | None | On | 3.60 | 2.88 | 2.70 | 2 |
| TC-6-M | MS-75029-21 | DPDT | On | Off | On | 4.10 | 3.28 | 3.08 | 2 |
| TE-6-M | MS-75029-31 | DPDT | On* | Off | On† | 5.20 | 4.16 | 3.90 | 3 |
| TG-6-M | MS-75029-27 | DPDT | On* | Off | On* | 5.20 | 4.16 | 3.90 | 3 |
| TM-6-M | MS-75029-26 | DPDT | On* | None | On† | 5.20 | 4.16 | 3.90 | 3 |
| TS-6-M | MS-75029-23 | DPDT | On | None | On | 4.10 | 3.28 | 3.08 | 2 |

*Momentary. †Maintained.

## COMMERCIAL 35058 AND 35059 TOGGLE SWITCHES

Butt type contacts; phenolic base. Sleeve, 15⁄32″ dia. Non-ferrous material satin chr finish exposed parts. Screw terminal. Supplied with 2 hex nuts, 1 locating ring ar shakeproof lockwasher.

### SINGLE POLE

| A-H Number | Level Travel | | | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|---|
| | Up | Ctr. | Down | 1-24 | 25-49 | 50-99 | 100-499 | 5 U |
| 35058-EM | On | Off | On | $2.22 | $2.05 | $1.71 | $1.53 | $1 |
| 35058-WM | On | None | Off | 1.83 | 1.69 | 1.41 | 1.27 | 1 |
| 35058-DM | On | None | On | 2.22 | 2.05 | 1.71 | 1.53 | 1 |
| 35058-AM | On | Off | None | 1.83 | 1.69 | 1.41 | 1.27 | 1 |
| 35058-CM | On | Off* | None | 2.03 | 1.87 | 1.56 | 1.40 | 1 |
| 35058-FM | On | None | On* | 2.41 | 2.23 | 1.86 | 1.67 | 1 |
| 35058-GM | On* | Off | On* | 2.41 | 2.23 | 1.86 | 1.67 | 1 |
| 35058-BM | None | Off | On* | 2.03 | 1.87 | 1.56 | 1.40 | 1 |
| 35058-XM | On | None | Off* | 2.03 | 1.87 | 1.56 | 1.40 | 1 |
| 35058-YM | Off | None | On* | 2.03 | 1.87 | 1.56 | 1.40 | 1 |
| 35058-HM | On | Off | On* | 2.41 | 2.23 | 1.86 | 1.67 | 1 |

### DOUBLE POLE

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 35059-EM | On | Off | On | $2.97 | $2.74 | $2.29 | $2.06 | $1 |
| 35059-WM | On | None | Off | 2.46 | 2.27 | 1.89 | 1.70 | 1 |
| 35059-DM | On | None | On | 2.97 | 2.74 | 2.29 | 2.06 | 1 |
| 35059-AM | On | Off | None | 2.46 | 2.27 | 1.89 | 1.70 | 1 |
| 35059-CM | On | Off* | None | 2.97 | 2.74 | 2.29 | 2.06 | 1 |
| 35059-FM | On | None | On* | 3.21 | 2.96 | 2.47 | 2.22 | 1 |
| 35059-GM | On* | Off | On* | 3.21 | 2.96 | 2.47 | 2.22 | 1 |
| 35059-BM | None | Off | On* | 2.97 | 2.74 | 2.29 | 2.06 | 1 |
| 35059-XM | On | None | Off* | 2.97 | 2.74 | 2.29 | 2.06 | 1 |
| 35059-YM | Off | None | On* | 2.97 | 2.74 | 2.29 | 2.06 | 1 |
| 35059-HM | On | Off | On* | 3.21 | 2.96 | 2.47 | 2.22 | 1 |

*Momentary.

## COMMERCIAL SUBMINIATURE SWITCHES

### 2 AND 3 POSITION TOGGLE TYPE

Butt-type contacts; sleeve, ¼″ dia. Combination solder-quick connect terminals; PC on request. Stainless steel ball lever. Gold anodized aluminum exposed parts. Rated at 5 A, 125 VAC; 5 A, 29 VDC. Supplied with 2 hex nuts, 1 locating ring and 1 lock ring.

| A-H Number | Circuit | Toggle Lever Position | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|
| | | | 1-24 | 25-99 | 100-499 | 500 Up |
| TS-1 | SPST | Off-none-on | $2.80 | $2.24 | $2.10 | $1.96 |
| TS-3 | SPDT | On-none-on | 3.00 | 2.40 | 2.25 | 2.10 |
| TM-3 | SPDT | On*-none-on | 3.20 | 2.56 | 2.40 | 2.24 |
| TS-2 | DPST | Off-none-on | 3.40 | 2.72 | 2.55 | 2.38 |
| TS-6 | DPST | On-none-on | 3.90 | 3.12 | 2.93 | 2.73 |
| TM-6 | DPDT | On*-none-on | 5.00 | 4.00 | 3.75 | 3.50 |
| TC-3 | SPDT | On-off-on | 3.00 | 2.40 | 2.25 | 2.10 |
| TE-3 | SPDT | On-none-on | 3.20 | 2.56 | 2.40 | 2.24 |
| TG-3 | SPDT | On*-off-on* | 3.20 | 2.56 | 2.40 | 2.24 |
| TC-6 | DPDT | On-off-on | 3.90 | 3.12 | 2.93 | 2.73 |
| TE-6 | DPDT | On*-off-on† | 5.00 | 4.00 | 3.75 | 3.50 |
| TG-6 | DPDT | On*-off-on* | 5.00 | 4.00 | 3.75 | 3.50 |

*Momentary. †Maintained.

### PUSHBUTTON TYPE

Butt-type contacts; sleeve, ¼″ dia. Momentary action. Comb tion solder-quick connect terminals. Anodized aluminum exp parts. Rated at 2 A, 29 VDC; 1 A, 115 VAC. Supplied wi hex nuts, 1 locating ring and 1 lock ring.

| A-H Number | Circuit | Sleeve Length Inches | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|
| | | | 1-24 | 25-99 | 100-499 | 5 U |
| PM-3 | SPDT | ¼ | $2.86 | $2.29 | $2.15 | $2 |
| PM-6 | DPDT | ¼ | 3.51 | 2.81 | 2.63 | 2 |
| PM-7 | TPST-NO | ¼ | 3.31 | 2.65 | 2.48 | 2 |
| PM-8 | TPST-NC | ¼ | 4.65 | 3.72 | 3.49 | 3 |
| PMQ-3* | SPDT | ¼ | 3.25 | 2.60 | 2.44 | 2 |

*Rated at 7 A, 125 VAC; 5 A, 250 VAC; 5 A, 29 VDC. S acting butt-type contacts.

**ALL SWITCHES ARE LISTED BY**

**UNDERWRITER LABORATORIES**

# MIL and JAN Toggle Switches

## HEAVY DUTY TOGGLE SWITCHES SINGLE, DOUBLE AND 4-POLE

ıse in DC circuits; or, AC circuits in frequencies up to 1600 Rugged. positive action. Built for extra long life to meet nment, industrial and commercial requirements for high ility. Metal top eliminates spring holes; encloses switch d panel. **Features:** Aircraft lubricant for operation in temper- s −85° F to +185° F. Withstand high humidity. Meets our salt-spray test QQ-M-151a. No momentary make or or mechanical damage under stringent shake tests and 75 G test. Tested to make and break at 50% overload for brief ds due to size, solid coin silver contacts and rocker arms. act resistance, under 0.005 ohm. Dielectric exceeds 1,000 V 30 Hz at sea level. Screw terminals and solder lugs withstand pull test. **Series MS35058, MS35059:** With lever seal for dust and 15 ft. water submersion tests. Screw terminals; rable finish. Meets MIL-S-3950A specifications. **Series ST40, 0, 52:** Heavy-duty type; solder and screw terminals. Meet S-23 specifications. **Series MS25068:** Extra heavy duty nals, 4-pole construction for single hole mounting. Silicone er bushing seals. Surpass rigorous electrical endurance re- ments. Molded, hi-arc resistant bodies. MIL-S-3950A for ls with suffix -21 or higher.
**inal Ratings:** 20 amps at 125 VAC; 10 amps at 250 VAC. **ch Movement:** Opposite to that of the lever. **Finish:** Dull nickel-plating to government specifications. **Hardware:** Two nuts, one internal-tooth lockwasher and locking ring (not ied in bulk shipments).

### 4PST EIGHT TERMINALS

| -S-3950A ircuit | Screw Terminal No. | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2-24 | 25-49 | 50-99 | 100-249 |
| -Off-X | MS25068-24 | $5.50 | $4.50 | $3.89 | $3.28 | $2.59 |
| -Off*-X | MS25068-25 | 6.30 | 5.30 | 4.60 | 3.86 | 3.21 |
| Off-On* | MS25068-28 | 6.30 | 5.30 | 4.60 | 3.86 | 3.21 |

### 4PDT TWELVE TERMINALS

| -S-3950A ircuit | Screw Terminal No. | 1 | 2-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|
| Off-On | MS25068-21 | $6.22 | $5.22 | $4.52 | $3.81 | $3.16 |
| X-On | MS25068-23 | 6.30 | 5.30 | 4.60 | 3.86 | 3.21 |
| X-On* | MS25068-26 | 7.19 | 6.19 | 4.88 | 4.10 | 3.41 |
| -Off-On* | MS25068-27 | 7.19 | 6.19 | 4.88 | 4.10 | 3.41 |
| Off-On* | MS25068-31 | 7.19 | 6.19 | 4.88 | 4.10 | 3.41 |

MS25068 -27

ST40A

ST12D, ST22N

### SPST TWO TERMINALS

| MIL-S-3950C Circuit | Screw Term. No. | 1 | 2-9 | 10-29 | 30-99 | 100-249 |
|---|---|---|---|---|---|---|
| On-X-Off | MS35058-22 | $1.96 | $1.46 | $1.28 | $1.10 | $0.92 |
| On-Off-X | MS35058-24 | 1.96 | 1.46 | 1.28 | 1.10 | .92 |
| On-Off*-X | MS35058-25 | 2.24 | 1.74 | 1.52 | 1.30 | 1.08 |
| X-Off-On* | MS35058-28 | 2.24 | 1.74 | 1.52 | 1.30 | 1.08 |
| On-X-Off* | MS35058-29 | 2.17 | 1.67 | 1.46 | 1.25 | 1.04 |
| Off-X-On* | MS35058-30 | 2.17 | 1.67 | 1.46 | 1.25 | 1.04 |

### SPDT THREE TERMINALS

| MIL-S-3950C Circuit | Screw Term. No. | 1 | 2-9 | 10-29 | 30-99 | 100-249 |
|---|---|---|---|---|---|---|
| On-Off-On | MS35058-21 | $2.24 | $1.74 | $1.52 | $1.30 | $1.08 |
| On-X-On | MS35058-23 | 2.24 | 1.74 | 1.52 | 1.30 | 1.08 |
| On-X-On* | MS35058-26 | 2.37 | 1.87 | 1.64 | 1.40 | 1.17 |
| On*-Off-On* | MS35058-27 | 2.37 | 1.87 | 1.64 | 1.40 | 1.17 |
| On-Off-On* | MS35058-31 | 2.37 | 1.87 | 1.64 | 1.40 | 1.17 |

### DPST FOUR TERMINALS

| MIL-S-3950C Circuit | Screw Term. No. | 1 | 2-9 | 10-29 | 30-99 | 100-249 |
|---|---|---|---|---|---|---|
| On-X-Off | MS35059-22 | $2.56 | $2.06 | $1.88 | $1.50 | $1.21 |
| On-Off-X | MS35059-24 | 2.56 | 2.06 | 1.88 | 1.50 | 1.21 |
| On-Off*-X | MS35059-25 | 3.33 | 2.83 | 2.56 | 2.02 | 1.65 |
| X-Off-On* | MS35059-28 | 3.05 | 2.55 | 2.33 | 1.85 | 1.50 |
| On-X-Off* | MS35059-29 | 3.15 | 2.65 | 2.42 | 1.93 | 1.56 |
| Off-X-On* | MS35059-30 | 2.89 | 2.39 | 2.18 | 1.74 | 1.40 |

### DPDT SIX TERMINALS

| MIL-S-3950C Circuit | Screw Term. No. | 1 | 2-9 | 10-29 | 30-99 | 100-249 |
|---|---|---|---|---|---|---|
| On-Off-On | MS35059-21 | $2.89 | $2.39 | $2.18 | $1.74 | $1.40 |
| On-X-On | MS35059-23 | 2.89 | 2.39 | 2.18 | 1.74 | 1.40 |
| On-X-On* | MS35059-26 | 3.23 | 2.73 | 2.49 | 1.98 | 1.58 |
| On*-Off-On* | MS35059-27 | 3.33 | 2.83 | 2.56 | 2.02 | 1.65 |
| On-Off-On* | MS35059-31 | 3.23 | 2.73 | 2.49 | 1.98 | 1.58 |

| AN-S-23 rcuit and angement | Screw Terminal No. | Net Each, Lots of | | | | | Solder Terminal No. | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2-24 | 25-49 | 50-99 | 100-249 | | 1 | 2-24 | 25-49 | 50-99 | 100-249 |
| 2-Term. | | | | | | | | | | | | |
| -X-Off | ST40A | $1.75 | $1.25 | $1.13 | $0.98 | $0.83 | ST42A | $1.61 | $1.11 | $0.98 | $0.85 | $0.72 |
| -X-Off* | ST40B | 2.02 | 1.52 | 1.33 | 1.14 | .95 | ST42B | 1.79 | 1.29 | 1.13 | .97 | .81 |
| -X-On* | ST40C | 2.02 | 1.52 | 1.33 | 1.14 | .95 | ST42C | 1.69 | 1.19 | 1.05 | .91 | .77 |
| 3-Term. | | | | | | | | | | | | |
| -X-On | ST40D | 2.03 | 1.53 | 1.35 | 1.17 | .99 | ST42D | 1.78 | 1.28 | 1.10 | .96 | .81 |
| -Off-On | ST40E | 2.03 | 1.53 | 1.35 | 1.17 | .99 | ST42E | 1.78 | 1.28 | 1.10 | .96 | .81 |
| -X-On* | ST40F | 2.28 | 1.78 | 1.56 | 1.33 | 1.11 | ST42F | 1.90 | 1.40 | 1.24 | 1.07 | .91 |
| *-Off-On* | ST40G | 2.18 | 1.68 | 1.48 | 1.28 | 1.09 | ST42G | 1.90 | 1.40 | 1.24 | 1.07 | .91 |
| -Off-On* | ST40H | 2.28 | 1.78 | 1.56 | 1.33 | 1.11 | ST42H | 1.90 | 1.40 | 1.24 | 1.07 | .91 |
| 4-Term. | | | | | | | | | | | | |
| -X-Off | ST50K | 2.39 | 1.89 | 1.41 | 1.20 | .96 | ST52K | 2.23 | 1.73 | 1.29 | 1.08 | .86 |
| -X-Off* | ST50L | 2.81 | 2.31 | 1.72 | 1.43 | 1.14 | ST52L | 2.52 | 2.02 | 1.52 | 1.27 | 1.00 |
| -X-On* | ST50M | 2.81 | 2.31 | 1.72 | 1.43 | 1.14 | ST52M | 2.52 | 2.02 | 1.52 | 1.27 | 1.00 |
| T 6-Term. | | | | | | | | | | | | |
| -X-On | ST50N | 2.71 | 2.21 | 1.66 | 1.38 | 1.10 | ST52N | 2.42 | 1.92 | 1.45 | 1.21 | .96 |
| -Off-On | ST50P | 2.71 | 2.21 | 1.66 | 1.38 | 1.10 | ST52P | 2.42 | 1.92 | 1.45 | 1.21 | .96 |
| -X-On* | ST50R | 3.00 | 2.50 | 1.89 | 1.58 | 1.26 | ST52R | 2.74 | 2.24 | 1.67 | 1.40 | 1.12 |
| *-Off-On* | ST50S | 3.10 | 2.60 | 1.99 | 1.67 | 1.33 | ST52S | 2.84 | 2.34 | 1.75 | 1.47 | 1.18 |
| -Off-On* | ST50T | 3.00 | 2.50 | 1.89 | 1.58 | 1.26 | ST52T | 2.74 | 2.24 | 1.67 | 1.40 | 1.12 |

## MEDIUM DUTY TOGGLE SWITCHES (INCLUDING MS25098 AND MS25100)

e-hole, flush-mounting switches for DC or AC circuits up to Hz. Molded bodies fully enclosed. Rugged, positive action for extra long life. **Features:** Aircraft lubricant to withstand eratures −85° F to +185° F. Withstand tropical humidity. 100-hour salt-spray test QQ-M-151a. No momentary make eak or mechanical damage during shake tests or 75 G drop Silver-plated stationary contacts; phosphor-bronze movable cts; meet 50% overload for brief periods. Dielectric exceeds V rms, 60 Hz at sea level. Contact resistance well under ohm military requirement. Terminals withstand 5-lb. pull. **nal Ratings:** 6 amps at 125 VAC; 3 amps at 250 VAC. **h Movement:** Same direction as that of the lever. **Finish:** nickel-plate. **Hardware:** Two hex nuts, one internal tooth asher and locking ring (not supplied in bulk shipments). **MS25098 and MS25100:** Unique internal design results in ssing MIL-S-3950A endurance tests. Sand and dust bushing case to terminal seal. Bushing, 15⁄32″ lg. **Series ST12 thru** Meet JAN-S-23 specs. Double-grip, self-wiping contacts; ded bushings, 15⁄32″ or ¼″ lg.; rear or side solder terminals.

### SPST TWO TERMINALS

| -S-3950A ircuit | No. | 1 | 2-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|
| X-Off | MS25098-22 | $2.19 | $1.69 | $1.35 | $1.27 | $1.17 |
| X-Off* | MS25098-29 | 2.67 | 2.17 | 1.77 | 1.65 | 1.49 |
| X-On* | MS25098-30 | 2.67 | 2.17 | 1.77 | 1.65 | 1.49 |

### SPDT THREE TERMINALS

| -S-3950A ircuit | No. | 1 | 2-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|
| X-On | MS25098-23 | $2.44 | $1.94 | $1.55 | $1.45 | $1.31 |

### DPST FOUR TERMINALS

| -S-3950A ircuit | No. | 1 | 2-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|
| X-Off | MS25100-22 | $2.93 | $2.43 | $1.95 | $1.83 | $1.66 |
| X-Off* | MS25100-29 | 3.34 | 2.84 | 2.27 | 2.13 | 1.94 |
| X-On* | MS25100-30 | 3.34 | 2.84 | 2.27 | 2.13 | 1.94 |

### DPDT SIX-TERMINALS

| -S-3950A ircuit | No. | 1 | 2-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|
| X-On | MS25100-23 | $3.13 | $2.63 | $2.11 | $1.98 | $1.81 |

### SPST TWO TERMINALS

| Circuit and Arrangement | JAN-S-23 No. | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2-24 | 25-49 | 50-99 | 100-249 |
| On-X-Off | ST12A | $1.70 | $1.20 | $0.88 | $0.80 | $0.75 |
| On-X-Off* | ST12B | 1.95 | 1.45 | 1.06 | .97 | .91 |
| Off-X-On* | ST12C | 2.05 | 1.55 | 1.14 | 1.04 | .97 |
| On-X-Off | ST13A† | 1.74 | 1.24 | .91 | .83 | .78 |
| On-X-Off | ST16A‡ | 2.03 | 1.53 | 1.12 | 1.02 | .96 |
| On-X-Off* | ST16B‡ | 2.09 | 1.59 | 1.17 | 1.06 | 1.00 |
| Off-X-On* | ST16C‡ | 2.09 | 1.59 | 1.17 | 1.06 | 1.00 |
| On-X-Off | ST17A†‡ | 1.78 | 1.28 | .94 | .86 | .80 |

### SPDT THREE TERMINALS

| Circuit and Arrangement | JAN-S-23 No. | 1 | 2-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|
| On-X-On | ST12D | $1.89 | $1.39 | $1.02 | $0.93 | $0.87 |
| On-X-On | ST13D† | 1.93 | 1.43 | 1.05 | .96 | .90 |
| On-X-On | ST16D‡ | 1.93 | 1.43 | 1.05 | .96 | .90 |
| On-X-On | ST17D†‡ | 2.07 | 1.57 | 1.15 | 1.05 | .98 |

### DPST FOUR TERMINALS

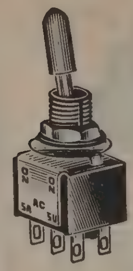
| Circuit and Arrangement | JAN-S-23 No. | 1 | 2-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|
| On-X-Off | ST22K | $2.15 | $1.65 | $1.21 | $1.10 | $1.03 |
| On-X-Off* | ST22L | 2.40 | 1.90 | 1.39 | 1.27 | 1.19 |
| Off-X-On* | ST22M | 2.40 | 1.90 | 1.39 | 1.27 | 1.19 |
| On-X-Off | ST23K† | 2.19 | 1.69 | 1.24 | 1.13 | 1.06 |
| On-X-Off | ST26K‡ | 2.29 | 1.79 | 1.31 | 1.20 | 1.12 |
| On-X-Off* | ST26L‡ | 2.44 | 1.94 | 1.42 | 1.30 | 1.22 |
| Off-X-On* | ST26M‡ | 2.54 | 2.04 | 1.49 | 1.36 | 1.28 |
| On-X-Off | ST27K†‡ | 2.33 | 1.83 | 1.34 | 1.22 | 1.15 |

### DPDT SIX TERMINALS

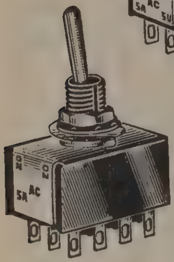
| Circuit and Arrangement | JAN-S-23 No. | 1 | 2-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|
| On-X-On | ST22N | $2.30 | $1.80 | $1.32 | $1.20 | $1.12 |
| On-X-On | ST23N† | 2.34 | 1.84 | 1.34 | 1.23 | 1.15 |
| On-X-On | ST26N‡ | 2.30 | 1.80 | 1.32 | 1.20 | 1.13 |
| On-X-On | ST27N†‡ | 2.44 | 1.94 | 1.42 | 1.30 | 1.22 |

*Momentary position. †Bushing ¼″ long. ‡Side-connected terminals.

# J-B-T® Subminiature Switches



JMT-223 COLOR CAP



JMT-423

***COLOR CAPS**

To order, add suffix (as indicated below) to switch number desired (e.g., JMT-123-**W-CAP-10A**). Add **2c** each to prices shown; **$10.00** per 1000 in bulk.

| Color | Suffix W-CAP- | Color | Suffix W-CAP- |
|---|---|---|---|
| White | 10A | Orange | 10F |
| Blue | 10B | Yellow | 10G |
| Red | 10C | Green | 10H |
| Black | 10D | Violet | 10I |
| Brown | 10E | Gray | 10J |

## SERIES JMT SUBMINIATURE TOGGLE SWITCHES

Combine drastic reduction in size and weight with trouble-free construction. Ideal for manus controlled, low current, solid state devices and miniaturized circuitry. Used in computers, aircr electronic instruments, geophysical and portable equipment of all kinds. Mount in single hole ¼"-40NS-2A bushing .352" lg. with keyway. Solder terminals firmly staked to withstand repea soldering; electrical continuity of terminal is to opposite throw of lever. Distinctive green phen body. Bat handle .400" lg. **Series JMT-100:** SPDT action. Body .500" x .260" x .505" deep behind p (including terminals). Wt., 0.19 oz. **Series JMT-200:** DPDT action. Body .500" x .450" x .505" d behind panel (incl. terminals). Wt., 0.23 oz. **Series JMT-300:** 3PDT action. Body .652" x .500" x . deep behind panel (including terminals). Wt., 0.28 oz. **Series JMT-400:** 4PDT action. Body .84 .500" x .571" deep behind panel (including terminals). Wt., 0.32 oz.

### SPECIFICATIONS

**Electrical Characteristics:** Rated 5 amps nom. resistive, 125 VAC and 24 VDC. Initial contact r tance, 5 milliohms max., at 3 VDC, 100 mA. Insulation resistance, 10,000 megohms min. Dielec strength, 1 kV rms at sea level. Life, 100,000 make-and-break, min. for suffix -23 models; all ot 60,000, under load. **Physical Characteristics:** Coin silver switching contacts and rockers. Bri chrome-plated brass bat handle. Phenolic case and cradle. Bushing, locking ring (1 supplied) and nuts (2 supplied) are nickel-plated brass. Clamp and internal-tooth lockwasher chromate treate stainless steel. **Circuitry:** As indicated in table, below. However, they may also be used as (single throw) by wiring only to applicable terminals. Example: JMT-123 connects as an On switch by using center terminals and terminals on one end only.

| Positions | SPDT Series JMT-100 | | | | | DPDT Series JMT-200 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | J-B-T No.* | Net Each, Lots of | | | | J-B-T No.* | Net Each, Lots of | | | |
| | | 1 | 2-9 | 10-29 | 30-99 | | 1 | 2-9 | 10-29 | 30 |
| On-Off-On | JMT-121 | $2.45 | $1.95 | $1.43 | $1.30 | JMT-221 | $3.05 | $2.55 | $1.87 | $1. |
| On-None-On | JMT-123 | 2.15 | 1.65 | 1.21 | 1.10 | JMT-223 | 2.65 | 2.15 | 1.58 | 1. |
| On-None-On† | JMT-126 | 2.45 | 1.95 | 1.43 | 1.30 | JMT-226 | 3.05 | 2.55 | 1.87 | 1. |
| On†-Off-On† | JMT-127 | 2.60 | 2.10 | 1.54 | 1.40 | JMT-227 | 3.20 | 2.70 | 1.98 | 1. |
| On-Off-On† | JMT-131 | 2.60 | 2.10 | 1.54 | 1.40 | JMT-231 | 3.20 | 2.70 | 1.98 | 1. |
| None-On-On† | JMT-134 | 2.45 | 1.95 | 1.43 | 1.30 | JMT-234 | 3.05 | 2.55 | 1.87 | 1. |
| On-On-On | ........ | ...... | ...... | ...... | ...... | JMT-232 | 3.35 | 2.85 | 2.09 | 1. |
| On-On-On† | ........ | ...... | ...... | ...... | ...... | JMT-233 | 3.65 | 3.15 | 2.31 | 2. |
| On†-On-On† | ........ | ...... | ...... | ...... | ...... | JMT-235 | 3.60 | 3.10 | 2.26 | 2. |

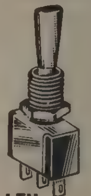
| | 3PDT Series JMT-300 | | | | | 4PDT Series JMT-400 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| On-Off-On | JMT-321 | $4.75 | $4.25 | $3.12 | $2.84 | JMT-421 | $5.95 | $5.45 | $4.00 | $3. |
| On-None-On | JMT-323 | 4.35 | 3.85 | 2.82 | 2.57 | JMT-423 | 5.35 | 4.85 | 3.56 | 3. |
| On†-Off-On† | JMT-327 | 4.90 | 4.40 | 3.23 | 2.93 | JMT-427 | 6.10 | 5.60 | 4.10 | 3. |
| On-Off-On† | JMT-331 | 4.90 | 4.40 | 3.23 | 2.93 | JMT-431 | 6.10 | 5.60 | 4.10 | 3. |
| None-On-On† | JMT-334 | 5.00 | 4.50 | 3.30 | 3.00 | JMT-434 | 6.40 | 5.90 | 4.32 | 3. |
| On-On-On | ........ | ...... | ...... | ...... | ...... | JMT-432 | 6.50 | 6.00 | 4.40 | 4. |
| On-On-On† | ........ | ...... | ...... | ...... | ...... | JMT-433 | 6.75 | 6.25 | 4.57 | 4. |
| On†-On-On† | ........ | ...... | ...... | ...... | ...... | JMT-435 | 6.90 | 6.40 | 4.70 | 4. |

*See color cap ordering information table. †Momentary position.

## VARIATIONS OF SERIES JMT SUBMINIATURE TOGGLE SWITCHES*

**Series LFH—with Flat Handle:** Identical to JMT series above, except for flat handle (paddle) lever, permanently pinned for proper alignment in operating plane. Handle is satin chrome finish with matching dress nut construction and ratings same as JMT series. Available in all circuit configurations of JMT series, including 3PDT and 4PDT, and with MPC type printed circuit terminals.

| Positions | SPDT Series LFH-100 Flat Handle | | | | | DPDT Series LFH-200 Flat Handle | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | J-B-T No. | Net Each, Lots of | | | | J-B-T No. | Net Each, Lots of | | | |
| | | 1 | 2-9 | 10-29 | 30-99 | | 1 | 2-9 | 10-29 | 30-99 |
| On-Off-On | LFH-121 | $3.45 | $2.95 | $2.23 | $2.00 | LFH-221 | $4.05 | $3.55 | $2.67 | $2.20 |
| On-None-On | LFH-123 | 3.15 | 2.65 | 2.01 | 1.80 | LFH-223 | 3.65 | 3.15 | 2.38 | 2.13 |
| On†-Off-On† | LFH-127 | 3.60 | 3.10 | 2.34 | 2.10 | LFH-227 | 4.20 | 3.70 | 2.78 | 2.50 |



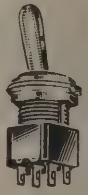
LFH

**Series LL—with Locking Lever:** Identical to JMT series, but with self-locking levers that cannot be accidentally shifted. Spring-loaded locking mechanism must be released by pulling out the top of the lever against spring tension. Construction and ratings same as JMT series. Supplied with natural aluminum caps; also available with colored caps. Available thru 4 poles.

| | SPDT Series LL-100 Locking | | | | | DPDT Series LL-200 Locking | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| On-Off-On | LL-121 | $4.20 | $3.70 | $3.30 | $2.59 | LL-221 | $4.85 | $4.35 | $3.90 | $3.04 |
| On-None-Off | LL-122 | 3.60 | 3.10 | 2.80 | 2.12 | LL-222 | 4.20 | 3.70 | 3.35 | 2.59 |
| On-None-On | LL-123 | 3.60 | 3.10 | 2.80 | 2.12 | LL-223 | 4.20 | 3.70 | 3.35 | 2.59 |

**Series 15—with 15/32" Bushing:** Combines the behind-panel space-saving feature of JMT series, with front-of-panel appearance of standard size toggle switches. Characteristics and ratings same as JMT series, except for the larger bushing and lever. Also available with flat handle.

| | SPDT Series 15-100 with 15/32" Bushing | | | | | DPDT Series 15-200 with 15/32" Bushing | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| On-Off-On | 15-121 | $2.80 | $2.30 | $1.68 | $1.53 | 15-221 | $3.40 | $2.90 | $2.12 | $1.93 |
| On-None-On | 15-123 | 2.50 | 2.00 | 1.46 | 1.32 | 15-223 | 3.00 | 2.50 | 1.83 | 1.66 |
| On-None-On† | 15-126 | 2.80 | 2.30 | 1.68 | 1.53 | 15-226 | 3.40 | 2.90 | 2.12 | 1.93 |
| On†-Off-On† | 15-127 | 2.95 | 2.45 | 1.79 | 1.63 | 15-227 | 3.55 | 3.05 | 2.23 | 2.03 |



15

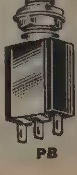
**Series MPC—Printed Circuit Switches:** Same as JMT series, but with terminals for direct insertion into printed circuit boards. Terminals are gold plated for easy soldering. Construction and ratings identical to JMT, except for terminals. Also available with special modifications (flat handle, locking lever, large 15/32" bushing, etc.).

| | SPDT Series MPC-100 Printed Circuit | | | | | DPDT Series MPC-200 Printed Circuit | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| On-Off-On | MPC-121 | $2.55 | $2.05 | $1.53 | $1.38 | MPC-221 | $3.15 | $2.65 | $1.97 | $1.78 |
| On-None-On | MPC-123 | 2.25 | 1.75 | 1.31 | 1.18 | MPC-223 | 2.75 | 2.25 | 1.68 | 1.51 |
| On-None-On† | MPC-126 | 2.55 | 2.05 | 1.53 | 1.38 | MPC-226 | 3.15 | 2.65 | 1.97 | 1.78 |
| On†-Off-On† | MPC-127 | 2.70 | 2.20 | 1.64 | 1.48 | MPC-227 | 3.30 | 2.80 | 2.08 | 1.88 |

MPC

**Series PB—Pushbutton Switches:** SPDT pushbutton-actuated subminiature switches with 100,000 cycles average life under load—5 amps at 125 VAC. Coin silver contacts and rocker; silver plated center terminal. Bushing and plunger are nickel-plated brass. High-strength plastic body with anodized natural aluminum knob (anodized colored knobs available). Mount in ¼" D-hole.

| | Series PB-100 Maintained Action | | | | | Series PB-100 Momentary Action | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SPDT | PB-123 | $2.45 | $1.95 | $1.47 | $1.30 | PB-126 | $2.45 | $1.95 | $1.47 | $1.30 |

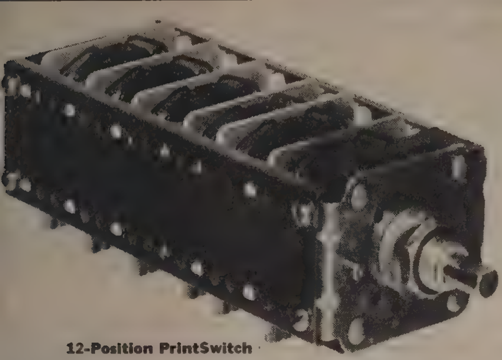


PB

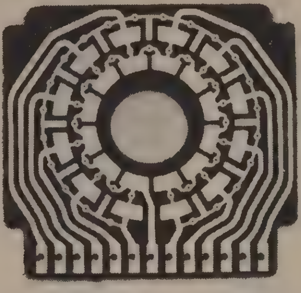
*Prices given are for typical models within each series. Each series (except PB) is available in every circuit configuration of the JMT series, above, and with other variations. **Write for prices on all unlisted types.** †Momentary position (spring return).

# &K Rotary PrintSwitches, Kit

## 12 POSITION ROTARY PRINTSWITCH



12-Position PrintSwitch



Stator Board

K now offers 12-position Rotary PrintSwitches with printed it wafers. The new "Universal Pattern" wafer allows custom ned rotary switches to be delivered quickly at stock prices. the only general purpose switch permitting shorting and shorting circuits in combination with the same contact. ting contacts can be made to lead or lag, relative to each other fferent poles. Indexing mechanism consists of an outer mold-vith an index profile on its inner edge and a shaft-driven inner ing containing two opposed index rollers which are spring-ed against the index. Rotor assembly gold-clad contacts napped into the appropriate position in the plastic rotor. sion positioning between stator board and rotor contacts nates alignment problems commonly associated with wafer hes. True wiping action reduces electrical noise and avoids act bounce. Stator board consists of an inner common track an outer array of stator contacts and intercontact pads. The between each pad has been designed to allow the rotor contact idge smoothly from one to the next, and yet be sufficiently to maintain high insulation resistance throughout life. **tive Contact Rating:** 5 VA DC at 300 volts max. or 1 amp ; 10 VA AC at 300 volts max. or 1 amp max. for 20,000 s at 100° C. **Contact Resistance:** 60 milliohms max. initial. **ctric Strength:** 1000 VDC. **Insulation Resistance:** 500 meg-s min. **No. of Positions:** 12 (30° indexing) stops as required. **Strength:** 15 in.-lb. **Operating Torque per Board:** ½ in.-oz. ontact per board. **Size:** 1.77″ x 1.5″ x 1.10″ long, single board nbly. Add 0.2″ to length for each additional wafer. **Termina-:** On 0.100″ centers. Complete with 1 hex nut, 1 locking ring 1 lock washer.

### ROTARY PrintSwitch PRICING

| . of Wafers* | Net Each, Lots of | | | |
|---|---|---|---|---|
| | 1-24 | 25-99 | 100-249 | 250 Up |
| | $ 7.00 | $ 5.75 | $ 4.75 | $ 3.50 |
| | 10.00 | 8.25 | 6.75 | 5.00 |
| | 13.00 | 10.75 | 8.75 | 6.50 |
| | 16.00 | 13.25 | 10.75 | 8.00 |
| | 19.00 | 15.75 | 12.75 | 9.50 |
| | 22.00 | 18.25 | 14.75 | 11.00 |
| | 25.00 | 20.75 | 16.75 | 12.50 |
| | 28.00 | 23.25 | 18.75 | 14.00 |
| | 31.00 | 25.75 | 20.75 | 15.50 |
| | 34.00 | 28.25 | 22.75 | 17.00 |
| es/Wafer† | .30 | .25 | .20 | .15 |
| ermination† | .30 | .25 | .20 | .15 |

pole per wafer is standard. †Add for additional Poles per er and P termination: X no. of wafers.

### ORDERING INFORMATION

| 9 | 01 | W | 112 | S | A | M |
|---|---|---|---|---|---|---|
| Ⓐ | Ⓑ | Ⓒ | Ⓓ | Ⓔ | Ⓕ | Ⓖ |

Ⓐ All C & K PrintSwitches have prefix **9**.

Ⓑ **Number of Wafers per Individual Switch:** Use two-digit number **01** thru **10**. For more than ten wafers, contact C & K.

Ⓒ **Stator Board Terminations: E,** edge connector; **P,** wire wrap/printed circuit; **W,** direct wiring.

Ⓓ **Standard Stator Boards:** All supplied with adjustable stops.

| C & K Type | No. of Poles | No. of Ways | No. of Positions | Pole Termination No. |
|---|---|---|---|---|
| 112 | 1 | 12 | 12 | 13 |
| 205 | 2 | 5 | 5 | 7, 13 |
| 206 | 2 | 5 | 6* | 7, 13 |
| 303 | 3 | 3 | 3 | 5, 9, 13 |
| 304 | 3 | 3 | 4* | 5, 9, 13 |
| 402 | 4 | 2 | 2 | 4, 7, 10, 13 |
| 403 | 4 | 2 | 3* | 4, 7, 10, 13 |
| 602 | 6 | On/off | 2 | 1, 3, 5, 7, 9, 11 |

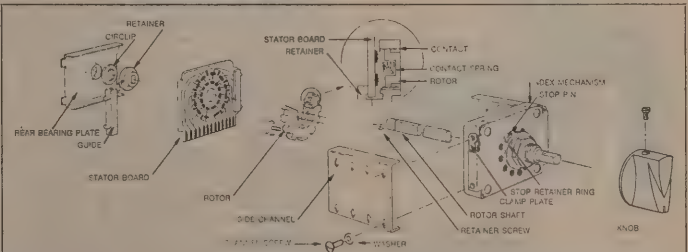
*Includes off in first position.

Ⓔ Specify **N** for non-shorting or **S** for shorting.

Ⓕ **Spindles:** 0.250″ dia. **A,** flatted (0.219″ flat, 0.710″ length from bushing flange); **B,** round (0.710″ length from bushing flange); **C,** long round (2.0″ length from bushing flange).

Ⓖ **Torque (Index Mechanism): L,** light, 20/40 in.-oz., **M** medium 40/60 in.-oz.; **H,** heavy 60/100 in.-oz.

## ROTARY PRINTSWITCH KIT



ry PrintSwitch kit contains everything needed to custom de-and custom build complete switches to fill every special de-pment and prototype requirements. Ideal way to try-before-buy in production quantities. Kit switches differ only in method ssembly from production switches as they have the same rical and mechanical properties. Switching circuits are pro-d by removing unwanted interconnections from stator boards, ing an almost unlimited scope to circuit designers. Kit ches can be easily disassembled and revised stator boards rted as your prototype requirements change. Additional stator boards are available on request. Each kit contains sufficient components to make three different 12-position switches. Kit Contents: Ten stator boards, three index mechanisms, rotor assembly materials and all necessary channels, screws, knobs, etc. A small drill and screwdriver are also included. Switches are made by simply using the tools supplied to remove unwanted interconnections on the stator boards. Components are then assembled. No soldering is required.

**C & K Rotary PrintSwitch Kit**—Net Each . . . , . . . . . . . **$30.00**

# C&K MOMENTARY PUSHBUTTON SWITCHES

## SUBMINIATURE BUTT CONTACT

## SPST MOMENTARY PUSHBUTTON SWITCHES

8531, 8533

8532, 8534

SPST momentary contact switches available NO and NC with and without overtravel and pretravel. **Model 8531:** NO with 0.020 min. overtravel; total travel, 0.110; actuation force, 8 oz. ±4. **Model 8532:** NO; total travel, 0.060; actuation force, 10 oz. ±4. **Model 8533:** NC with 0.020 min. pretravel; total travel, 0.055; actuation force, 8 oz. ±4. **Model 8534:** NC; total travel, 0.040; actuation force, 8.5 oz. ±4. **Contact Ratings:** Coin silver contacts rated 1 amp resistive load at 115 VAC or 28 VDC or 0.5 amp at 250 VAC. Optional brass contacts with gold plate over nickel rated 0.4 volt-amp max. at 20 VAC/VDC max. **Insulation Resistance:** 10,000 megohms min. **Dielectric Strength:** 1,000 V rms at sea level. **Electric Life:** One million make-and-break cycles. **Initial Contact Resistance:** 10 milliohms max. **Materials and Finishes:** Red phenolic base with black phenolic pushbutton; red pushbutton available, specify. Coin silver solder terminals. Brass cadmium plated bushing; brass nickel plated hex nut and nickel plated CRS internal tooth lockwasher normally supplied. Dress nuts available on request. **Size:** Models 8531 and 8533, 0.375″ dia. x 1.047″ h. overall; Models 8532 and 8534, 0.375″ dia. x 0.935″ h. overall. Require ¼″ dia. mounting hole. **NOTE:** Button caps soon to be available for 8500 Series pushbutton switches.

| C & K Model | Net Each, Lots of | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1-24 | 25-99 | 100-499 | 500-999 | 1000-4999 | 5000-9999 | 10M Up |
| 8531 | $0.90 | $0.60 | $0.53 | $0.46 | $0.42 | $0.40 | $0.38 |
| 8532 | .90 | .60 | .53 | .46 | .42 | .40 | .38 |
| 8533 | .90 | .60 | .53 | .46 | .42 | .40 | .38 |
| 8534 | .90 | .60 | .53 | .46 | .42 | .40 | .38 |

Following options available; add desired suffix to Model No. Example: 8531**E.**

| C & K Suffix | Description | Add On, Each | |
|---|---|---|---|
| | | 1-999 | 1000 Up |
| B | Brass w gold plate over nickel contacts | No Charge | |
| C | Printed circuit terminal | 10c | 10c |
| E | Terminal seal (.062″ epoxy height) | 10c | 10c |
| G | Silver w/gold plate over nickel contacts | 25c | 20c |
| ...... | Specify red plunger | No Charge | |

## MICROMINIATURE BUTT CONTACT

## SPST MOMENTARY PUSHBUTTON SWITCHES

8631

8632, 8633

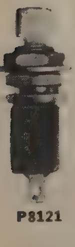
SPST momentary contact pushbutton switches available NO with or without overtravel and NC. **Model 8631:** NO; total travel, 0.040 ±0.015; actuation force, 5 oz. ±3. Coin silver contacts rated ½ amp resistive load at 115 VAC or 28 VDC; ¼ amp at 250 VAC. Electric life, one million make-and-break cycles. Size, 0.251″ dia. x 0.635″ h. overall. **Model 8632:** NO with .015 min. overtravel; total travel, 0.080 ±0.025; actuation force, 5 oz. ±3. Coin silver contacts rated ½ amp resistive load at 115 VAC or 28 VDC; ¼ amp at 250 VAC. Electric life, 100,000 make-and-break cycles. Size, 0.251″ dia. x 0.755″ h. overall. **Model 8633:** NC; total travel, 0.040 ±0.015; actuation force, 5 oz. ±3. Coin silver contacts rated ¼ amp resistive load at 115 VAC or 28 VDC; ⅛ amp at 250 VAC. Electric life, 250,000 make-and-break cycles. Size, 0.251″ dia. x 0.745″ h. overall. **Insulation Resistance:** 10,000 megohms min. **Dielectric Strength:** 500 V rms at sea level. **Initial Contact Resistance:** 10 milliohms max. **Materials and Finishes:** Red phenolic base with black phenolic pushbutton (red pushbutton available, specify). Coin silver solder terminals. Brass cadmium plated mounting bushing; brass nickel plated hex nut supplied. Require ¹¹⁄₆₄″ dia. mounting hole. **NOTE:** Button caps soon to be available for 8600 Series pushbutton switches.

| C & K Model | Net Each, Lots of | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1-24 | 25-99 | 100-499 | 500-999 | 1000-4999 | 5000-9999 | 10M Up |
| 8631 | $1.15 | $0.77 | $0.67 | $0.58 | $0.53 | $0.50 | $0.48 |
| 8632 | 1.30 | .86 | .77 | .67 | .60 | .57 | .55 |
| 8633 | 1.60 | 1.06 | .94 | .81 | .73 | .70 | .67 |

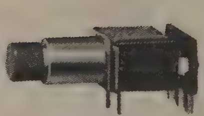
Following options available; add desired suffix to Model No. Example: 8631**B.**

| C & K Suffix | Description | Add On, Each | |
|---|---|---|---|
| | | 1-999 | 1000 Up |
| B | Brass w/gold plate over nickel contacts | No Charge | |
| E | Terminal seal (.062″ epoxy height) | 10c | 10c |
| G | Silver w/gold plate over nickel contacts | 25c | 20c |
| ...... | Specify red plunger | No Charge | |

## MINIATURE MOMENTARY PUSHBUTTON SWITCHES



P8121



P8121R

Double-throw, momentary pushbutton switches available in a choice of one, two, three or four poles. Single pole switch available as right angle mounting; has PC mounting terminal support of half-hard brass electrotin plated; PC board is G10 epoxy with 1 oz. electrotin plated copper; projecting fingers, only have copper both sides; circuit on PC board has copper outside only. Gold contact surfaces on copper alloy terminals with epoxy sealed terminals. Designed for use in dry (very low energy) circuits. Stainless steel housing on red phenolic case for good appearance and rugged, long lasting construction. **Contact Rating:** 1 amp resistive load at 115 VAC or 28 VDC. **Insulation Resistance:** 1,000 megohms min. **Dielectric Strength:** 1,000 V rms at sea level. **Electric Life:** 60,000 cycles min. at full load. **Mechanical Life:** 100,000 make-and-break cycles min. **Plunger Force:** 10 lbs. max. allowable. **Mounting Bushing:** Cadmium plated with clear chromate over brass; high torque to withstand 12 in.-lb. with no distortion or loosening of parts. **Pushbutton:** White nylon. White nylon press fit cap 0.200″ dia. x 0.155″ h. normally supplied. If specified, 0.200″ dia. x 0.155″ h. or 0.375″ dia. x 0.250″ h. press fit caps in black, red, orange, yellow, green, blue, brown or gray available at no extra cost. **Standard Hardware:** Complete with 2 hex mounting nuts, 1 internal tooth lockwasher and 1 locking ring. Dress nuts available on request. **Size:** P8121 SPDT, 0.500″ w. x 0.270″ d. x 1³⁄₃₂″ h. overall; P8121R SPDT, 0.500″ w. x 0.284″ h. x 1.046″ lg. overall; P8221 DPDT, 0.500″ w. x 0.450″ d. x 1³⁄₃₂″ h. overall; P8321 3PDT, 0.500″ w. x 0.650″ d. x 1⁵⁄₃₂″ h. overall; P8421 4PDT, 0.500″ w. x 0.850″ d. x 1⁵⁄₃₂″ h. overall.

Following options available; add desired suffix to Model No. Example: P8121**C.**

| C & K Suffix | Description | Add On/Pole | |
|---|---|---|---|
| | | 1-999 | 1000 Up |
| C | Printed circuit terminals | 10c | 10c |
| I | Epoxy potted base | 25c | 20c |

| C & K Model | Poles and Throw | Net Each, Lots of | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-499 | 500-999 | 1000-4999 | 5000-9999 | 10M Up |
| P8121 | SPDT | $2·55 | $1·70 | $1·52 | $1·27 | $1·17 | $1·11 | $1·06 |
| P8121R | SPDT | 3·05 | 2·20 | 2·15 | 2·10 | 1·90 | 1·80 | 1·60 |
| P8221 | DPDT | 3·45 | 2·30 | 2·06 | 1·71 | 1·58 | 1·49 | 1·41 |
| P8321 | 3PDT | 4·80 | 3·20 | 2·87 | 2·38 | 2·21 | 2·08 | 1·98 |
| P8421 | 4PDT | 6·05 | 4·10 | 3·61 | 3·00 | 2·79 | 2·61 | 2·48 |

# SUBMINIATURE TOGGLE, ROCKER AND PADDLE HANDLE SWITCHES

niniature toggle, rocker and paddle handle switches combine maximum performance minimum size. Stainless steel housing on general purpose red phenolic case. Basic els available with UL Listing. **Contact Ratings:** Coin silver contacts rated 5 amps tive load at 115 VAC or 28 VDC; 2 amps at 250 VAC. Brass contacts plated with millionths gold over nickel rated 0.4 volt-amp at 20 volts max. AC/DC. Coin silver ed with 100 millionths gold over nickel rated at 0.4 VA at 20 volts max. AC/DC or ps resistive load at 115 VAC or 28 VDC; 2 amps at 250 VAC. **Electric Life:** 100,000 e-and-break cycles minimum on all models ending in 01 only; all other models 40,000 es. **Initial Contact Resistance For Silver:** 10 milliohms max. at 2–4 VDC, 1 amp. **lation Resistance:** 1,000 megohms min. **Dielectric Strength:** 1,000 V rms at sea level. **nting Bushing:** Cadmium plated with clear chromate over brass. **Operating Lever:** ht chrome plated brass. **Standard Hardware:** Complete with 2 hex mounting nuts; ernal tooth lockwasher and 1 locking ring. Dress nuts available on request. Available long or standard vinyl color caps at no extra cost. Specify length, standard or long; , black, brown, red, orange, yellow, green, blue, gray or white. **Size:** SPDT, 0.500″ w. 270″ d. x 1.265″ h. overall; DPDT, 0.500″ w. x 0.450″ d. x 1.265″ h. overall; 3PDT, )″ w. x 0.650″ d. x 1.331″ h. overall; 4PDT, 0.500″ w. x 0.850″ d. x 1.331″ h. overall. ning ¼-40NS-2A-THD; keyway 0.040″ w.

**V TO ORDER:** Specify toggle switch Part No.; add option suffixes required. Options vn at extra cost are in lots of 1–999; 1,000 Up on request; add to toggle switch price.

| 7101 | L | D | P | C | G | E |
|---|---|---|---|---|---|---|
| ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ |

**Model Number:** 7101 SPDT on-none-on.

**Toggles: M**, .200″ short; **S**, .410″ standard; **L**, .840″ long standard; **L1**, .642″ long; **L2**, .550″ long; **P**, .450″ flatted; **P1**, .750″ flatted. Add .070″ if used in conjunction **D** bushing. **P** and **P1** add **50c** per switch to basic price.

**Bushings: Y**, .350″ standard; **Y1**, .437″ long pinned; **D**, .280″ short; **H**, .360″ high torque; **U**, .350″ with .173″ thread length. **Y1**, add **50c** per switch to basic price.

**Pinning: P**, for antirotation of toggle. Available for all toggle and bushing combinations. Add **50c** per switch to basic price.

**Terminals: Z**, .156″ standard; **C**, .250″ printed ckt.; **W**, .750″ wire wrap; **W1**, .964″ wire wrap. **C**, **W**, and **W1** add **10c** per pole to basic price.

**Terminal Material: B**, gold plate over brass; **G**, gold plate over silver; **Q**, coin silver (90% Ag, 10% Cu); **WG***, gold plate over silver printed ckt.; **WQ***, coin silver % Ag, 10% Cu) printed ckt. **G**, add **25c** per pole; **WG**, add **75c** per pole; **WQ**, add **50c** pole to basic price.

**Seal: E**, epoxy terminal seal; **I**, epoxy potted base. **E**, add **10c** per pole; **I**, add **25c** per pole to basic price.

nfiguration of special printed ckt. terminals **WG** and **WQ** is same as **W**. See Item 5.

CIAL CONFIGURATION OPTIONS: Following are available as listed. **shproof: CKW** prefix; special "O" ring sealing around toggle and bushing for tight l seal. **Right Angle Mounting: A** (horizontal) or **AV** (vertical). For printed circuit inals **R** (horizontal) or **VW** (vertical) mounting. Terminal support is half-hard brass rotin plated. Contacts and terminal supplied are brass with 100 millionths gold plate. -threaded bushing is standard; available with toggle and bushing options except and **Y1**. Printed circuit **R** and **VW** only: PC board is G10 epoxy with 1 oz. electrotin ed copper: Projecting fingers only have copper both sides. Circuit on PC board has per outside only. ¹⁵⁄₃₂″ **Bushing with Large Toggle: T**, bright chrome plated toggle. **r Lock: K**, all models except 08. Supplied with natural aluminum cap; anodized red, or black available on request. **Rocker Switches: J1** rocker switch; **J3** large rocker ch and **J10** special large rocker. **Paddle Handles: J2** paddle handle and **J4** large dle handle. Unless otherwise specified, black nylon rocker and paddle is supplied. er rocker and paddle colors available at no extra charge. Specify red, blue, white, n, orange or yellow. Special colors molded to order also available on request at additional cost. **Bezel:** For **J1** rocker switch and **J2** paddle handles. Accommodates panel knesses from .062″ to .125″. **Add** appropriate price below to desired toggle switch and prefix or suffix to number.

| K fix | Models Available | Add'l Net Each 1-24 | 25-99 | 100-499 | C & K Suffix | Models Available | Add'l Net Each 1-24 | 25-99 | 100-499 |
|---|---|---|---|---|---|---|---|---|---|
| V* | All Models | $0.35 | $0.35 | $0.35 | K | All except 08 | $1.25 | $1.00 | $0.80 |
| W | 7101 only | 1.20 | 1.15 | ..... | J1, J3 | All Models | .35 | .35 | .35 |
| W | 7103 thru 7109 | 1.33 | 1.27 | ..... | J10 | All Models | .35 | .35 | .35 |
|  | All SPDT, DPDT | .35 | .35 | .35 | J2, J4 | All Models | .35 | .35 | .35 |
|  | All Models | .35 | .35 | .35 | Bezel† | J1 or J2 | .35 | .35 | .35 |
|  | All Models | .75 | .75 | .75 |  |  |  |  |  |

efix (**CKW 7101**). †Order by part no.: **7645-1**, bright chrome plate; **7645-2**, black; **-3**, satin chrome plate. Bezel material, spring steel enamel.

### BUSHING MOUNT TOGGLE SWITCHES

| & K No. | Contacts | Application | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 | 1M-4999 | 5M-9999 | 10M Up |
|---|---|---|---|---|---|---|---|---|---|
|  | SPDT | On-none-on | $1.50 | $1.00 | $0.88 | $0.76 | $0.69 | $0.66 | $0.63 |
|  | SPDT | On-off-on | 1.77 | 1.18 | 1.06 | .89 | .82 | .78 | .75 |
|  | SPDT | On†-off-on† | 1.77 | 1.18 | 1.06 | .89 | .82 | .78 | .75 |
|  | SPDT | On-off-on† | 1.77 | 1.18 | 1.06 | .89 | .82 | .78 | .75 |
|  | SPDT | On-none-on† | 1.77 | 1.18 | 1.06 | .89 | .82 | .78 | .75 |
|  | SPDT | None-on-on† | 1.77 | 1.18 | 1.06 | .89 | .82 | .78 | .75 |
|  | DPDT | On-none-on | 1.95 | 1.30 | 1.18 | .94 | .91 | .88 | .84 |
|  | DPDT | On-off-on | 2.32 | 1.55 | 1.39 | 1.18 | 1.08 | 1.03 | .99 |
|  | DPDT | On†-off-on† | 2.32 | 1.55 | 1.39 | 1.18 | 1.08 | 1.03 | .99 |
|  | DPDT | On-off-on† | 2.32 | 1.55 | 1.39 | 1.18 | 1.08 | 1.03 | .99 |
|  | DPDT | On-none-on† | 2.32 | 1.55 | 1.39 | 1.18 | 1.08 | 1.03 | .99 |
|  | DPDT | None-on-on† | 2.32 | 1.55 | 1.39 | 1.18 | 1.08 | 1.03 | .99 |
|  | DPDT* | On-on-on | 2.60 | 1.73 | 1.56 | 1.29 | 1.20 | 1.14 | 1.09 |
|  | DPDT* | On-on-on† | 2.87 | 1.92 | 1.72 | 1.43 | 1.32 | 1.26 | 1.20 |
|  | DPDT* | On†-on-on† | 2.87 | 1.92 | 1.72 | 1.43 | 1.32 | 1.26 | 1.20 |
|  | 3PDT | On-none-on | 3.50 | 2.34 | 2.12 | 1.77 | 1.63 | 1.55 | 1.48 |
|  | 3PDT | On-off-on | 3.78 | 2.52 | 2.28 | 1.88 | 1.76 | 1.66 | 1.59 |
|  | 3PDT | On†-off-on† | 3.78 | 2.52 | 2.28 | 1.88 | 1.76 | 1.66 | 1.59 |
|  | 3PDT | On-off-on† | 3.78 | 2.52 | 2.28 | 1.88 | 1.76 | 1.66 | 1.59 |
|  | 3PDT | On-none-on† | 3.78 | 2.52 | 2.28 | 1.88 | 1.76 | 1.66 | 1.59 |
|  | 3PDT | None-on-on† | 3.78 | 2.52 | 2.28 | 1.88 | 1.76 | 1.66 | 1.59 |
|  | 4PDT | On-none-on | 4.41 | 2.88 | 2.67 | 2.23 | 2.10 | 2.00 | 1.86 |
|  | 4PDT | On-off-on | 4.86 | 3.29 | 2.93 | 2.43 | 2.26 | 2.15 | 2.04 |
|  | 4PDT | On†-off-on† | 4.86 | 3.29 | 2.93 | 2.43 | 2.26 | 2.15 | 2.04 |
|  | 4PDT | On-off-on† | 4.86 | 3.29 | 2.93 | 2.43 | 2.26 | 2.15 | 2.04 |
|  | 4PDT | On-none-on† | 4.86 | 3.29 | 2.93 | 2.43 | 2.26 | 2.15 | 2.04 |
|  | 4PDT | None-on-on† | 4.86 | 3.29 | 2.93 | 2.43 | 2.26 | 2.15 | 2.04 |
|  | 4PDT* | On-on-on | 6.27 | 3.92 | 3.78 | 3.13 | 2.91 | 2.78 | 2.63 |
|  | 4PDT* | On-on-on† | 6.27 | 3.92 | 3.78 | 3.13 | 2.91 | 2.78 | 2.63 |
|  | 4PDT* | On†-on-on† | 6.27 | 3.92 | 3.78 | 3.13 | 2.91 | 2.78 | 2.63 |

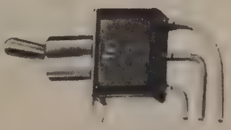
ecial purpose, three position on-on-on types. †Momentary positions.

7100

7200

7300

7400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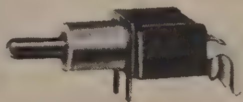
7100R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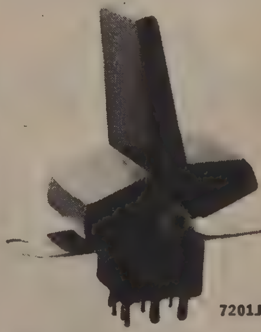

7201J4

7101J1
Bezel Mounting

# McGill Manufacturing Co. FORMERLY HI-TEK CORP. SUBMINIATURE SNAP-ACTION SWITCHES

## MODEL 21 SUBMINIATURE BASIC SWITCHES

SPDT contacts rated 5 amps silver, 1 amp solid gold, 10 amps silver alloy. **Operating Temperature:** −65° F to +185° F except No. 772-19510, −65° F to +250° F. **Minimum Life:** 50,000 operations at rated load, 10,000,000 operations at no load. **Operating Force:** 3 oz. to 5 oz. except No. 872-19001 low force type, 3 oz. max. **Release Force:** 1 oz. min. **Pretravel:** .030″ max. **Overtravel:** .005″ min. **Movement Differential:** .004″ max. except Nos. 872-19002 and 872-19003, .001″ max. **Silver Contact Ratings:** UL, 5 amps at 125 or 250 VAC. At 30 VDC: 3 amps inductive at sea level, 2.5 amps inductive at 50,000 ft.; 5 amps resistive at sea level or at 50,000 ft. Nos. 872-19002 and -19003 rated 5 amps at 125 or 250 VAC. Nos. 772-16910 and 772-16920 UL rated 10 amps or ¼ hp at 125 or 250 VAC. **Gold Contact Ratings:** 0.5 amp inductive, 1 amp resistive at 30 VDC; UL rated 1 amp at 125 VAC. Bifurcated contact Nos. 872-19005, -19006 and -19007 are not UL rated. **Mounting:** Accept .087″ max. dia. pins or screws on .375″ centers. **Size:** .250″ w. x .786″ d. x .356″ h.

### 5 AMP UL APPROVED TYPES WITH SILVER CONTACTS

| Hi-Tek Number | Terminals | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 | 1000-2499 |
|---|---|---|---|---|---|---|
| 772-15510 | Single turret | $1.15 | $0.90 | $0.79 | $0.75 | $0.70 |
| 772-15520 | Double turret | 1.15 | .90 | .79 | .75 | .70 |
| 772-15530 | Solder post | 1.25 | .98 | .86 | .81 | .76 |
| 772-19510 | Single turret | 1.15 | .90 | .79 | .75 | .70 |

### 5 AMP MIL-S-8805/MS-25085 TYPES WITH SILVER CONTACTS

| | | | | | | |
|---|---|---|---|---|---|---|
| 772-17510 | Single turret | $1.25 | $0.98 | $0.86 | $0.81 | $0.76 |
| 772-17520 | Double turret | 1.25 | .98 | .86 | .81 | .76 |
| 772-17530 | Solder post | 1.25 | .98 | .86 | 81 | .76 |

### 1 AMP TYPES WITH SOLID GOLD CONTACTS

| | | | | | | |
|---|---|---|---|---|---|---|
| 772-18210 | Single turret | $2.35 | $1.83 | $1.62 | $1.53 | $1.43 |
| 772-18220 | Double turret | 2.35 | 1.83 | 1.62 | 1.53 | 1.43 |
| 772-18230 | Solder post | 2.35 | 1.83 | 1.62 | 1.53 | 1.43 |

### 10 AMP TYPES WITH SILVER/CADMIUM OXIDE ALLOY CONTACTS

| | | | | | | |
|---|---|---|---|---|---|---|
| 772-16910 | Single turret | $1.45 | $1.13 | $1.00 | $0.94 | $0.88 |
| 772-16920 | Double turret | 1.45 | 1.13 | 1.00 | .94 | .88 |

### 1 AMP LOW FORCE TYPE WITH SILVER CONTACTS

| | | | | | | |
|---|---|---|---|---|---|---|
| 872-19001 | Solder post | $1.65 | $1.29 | $1.14 | $1.07 | $1.01 |

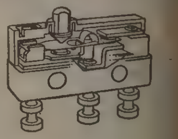
### 5 AMP LOW MOVEMENT DIFFERENTIAL TYPES WITH SILVER CONTACTS

| | | | | | | |
|---|---|---|---|---|---|---|
| 872-19002 | Solder post | $2.50 | $1.95 | $1.73 | $1.63 | $1.53 |
| 872-19003 | Single turret | 2.40 | 1.87 | 1.66 | 1.56 | 1.46 |

### 1 AMP TYPES WITH BIFURCATED BLADE CONTACTS

| | | | | | | |
|---|---|---|---|---|---|---|
| 872-19005 | Single turret | $3.10 | $2.42 | $2.14 | $2.02 | $1.89 |
| 872-19006 | Double turret | 3.10 | 2.42 | 2.14 | 2.02 | 1.89 |
| 872-19007 | Solder post | 3.20 | 2.50 | 2.21 | 2.08 | 1.95 |

**Basic Model 21, Double Turret Terminals**



Model 21 Roller Lever

Model 21 Lever

### MODEL 21 SWITCHES WITH FIXED INTEGRAL ACTUATOR

Silver contact switches rated 5 amps; see Basic Switches above for complete electrical specifications. Choice of three actuators and three terminal variations. **Operating Force:** 7 oz. max. **Release Force:** 2 oz. min. **Pretravel:** .219″ max. **Overtravel:** .030″ min.

| Hi-Tek Number | Actuator | Terminals | Fixed Actuator Length | Max. Mov. Diff. | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 | 1000-2499 |
|---|---|---|---|---|---|---|---|---|---|
| 772-15511 | Lever | Single turret | .190″ | .030″ | $1.75 | $1.37 | $1.21 | $1.14 | $1.07 |
| 772-15521 | Lever | Double turret | .190″ | .030″ | 1.75 | 1.37 | 1.21 | 1.14 | 1.07 |
| 772-15531 | Lever | Solder post | .190″ | .030″ | 1.75 | 1.37 | 1.21 | 1.14 | 1.07 |
| 772-15512 | Roller lev. | Single turret | .120″ | .025″ | 2.10 | 1.64 | 1.45 | 1.37 | 1.28 |
| 772-15522 | Roller lev. | Double turret | .120″ | .025″ | 2.10 | 1.64 | 1.45 | 1.37 | 1.28 |
| 772-15532 | Roller lev. | Solder post | .120″ | .025″ | 2.10 | 1.64 | 1.45 | 1.37 | 1.28 |
| 872-15001 | Nylon roller | Solder post | .120″ | .025″ | 2.40 | 1.87 | 1.66 | 1.56 | 1.46 |

### MODEL 21 SWITCHES WITH INTEGRAL HINGED LEVERS

Low force, long life switches with 5-amp SPDT silver contacts Choice of seven corrosion-resistant actuators with metal pivots; single turret terminals are standard. See Basic Switches above for contact ratings and mounting information. **Temperature Range:** −65° F to +250° F. **Basic Switch Size:** .250″ w. x .786″ d. x .586″ h. overall.

| Hi-Tek Number | Actuator | Force, Grams Max. Oper. | Force, Grams Min. Release | Max. Pre-travel | Min. Over-travel | Fixed Actuator Length | Max. Mov. Diff. | Net Each Lots of, 1-24 | 25-99 | 100-499 | 500-999 | 1000-2499 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 772-15513 | Lever | 40 | 7 | .085″ | .020″ | .28″ | .019″ | $1.35 | $1.05 | $0.93 | $0.88 | $0.82 |
| 772-15514 | Lever | 30 | 5 | .120″ | .030″ | .56″ | .027″ | 1.35 | 1.05 | .93 | .88 | .82 |
| 772-15515 | Lever | 15 | 2 | .310″ | .050″ | 1.76″ | .077″ | 1.35 | 1.05 | .93 | .88 | .82 |
| 772-15516 | Simul. roller lever | 40 | 7 | .085″ | .020″ | .25″ | .019″ | 1.45 | 1.13 | 1.00 | .94 | .88 |
| 772-15517 | Simul. roller lever | 30 | 5 | .120″ | .030″ | .53″ | .027″ | 1.45 | 1.13 | 1.00 | .94 | .88 |
| 772-15518 | Bronze roller lever | 40 | 7 | .085″ | .020″ | .25″ | .019″ | 1.60 | 1.25 | 1.10 | 1.04 | .98 |
| 772-15519 | Bronze roller lever | 30 | 5 | .120″ | .030″ | .53″ | .027″ | 1.60 | 1.25 | 1.10 | 1.04 | .98 |

## MODEL 24 MINIATURE SWITCHES

**Basic Model, Single Turret Term.**

**Basic Model, Wire-Wrap Term.**

**Basic Model, Quick-connect Term.**

**Lever Model, Double Turret Term.**

**Simul. Roller Model, Double Turret Term.**

**SPDT Contacts:** Rated 2 amps silver, 1 amp gold-plated fine silver. **Operating Temperature:** −65° F to +185° F. **Minimum Life:** 25,000 operations at rated load; 100,000 operations at no load. **Operating Force:** 4 oz. max. **Release Force:** 0.75 oz. min. **Pretravel:** .015″ max. **Overtravel:** .003″ min. **Movement Differential:** .004″ max. **Contact Ratings:** Silver, 2 amps resistive and 1 amp inductive at 30 VDC and 2 amps at 125 VAC; gold-plated fine silver, 1 amp resistive and 0.5 amp inductive at 30 VDC and 2 amps at 125 VAC.
®Registered Gardner-Denver Corp. T.M.

### SILVER CONTACTS

| Hi-Tek Number | Terminals | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 | 1000-2499 |
|---|---|---|---|---|---|---|
| 772-49510 | Single turret | $3.25 | $2.54 | $2.24 | $2.11 | $1.98 |
| 772-49520 | Double turret | 3.00 | 2.34 | 2.07 | 1.95 | 1.83 |
| 772-49540 | Quick-connect spade | 3.25 | 2.54 | 2.24 | 2.11 | 1.98 |
| 772-49570 | Wire-wrap® | 3.25 | 2.54 | 2.24 | 2.11 | 1.98 |

### GOLD-PLATED FINE SILVER CONTACTS

| | | | | | | |
|---|---|---|---|---|---|---|
| 772-49110 | Single turret | $4.00 | $3.12 | $2.76 | $2.60 | $2.44 |
| 772-49120 | Double turret | 3.75 | 2.93 | 2.59 | 2.44 | 2.29 |
| 772-49140 | Quick-connect spade | 4.00 | 3.12 | 2.76 | 2.60 | 2.44 |
| 772-49170 | Wire-wrap® | 4.00 | 3.12 | 2.76 | 2.60 | 2.44 |

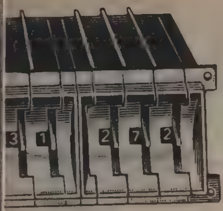
### MODEL 24 SWITCHES WITH INTEGRAL HINGED LEVERS

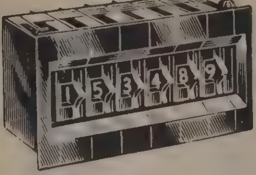
SPDT silver contacts; see Model 24 Miniature Switches above for ratings. Single turret terminals are standard.

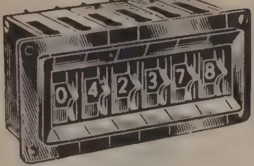
| Hi-Tek Number | Actuator | Force, Grams Max. Oper. | Force, Grams Min. Release | Max. Pre-travel | Min. Over-travel | Actuator Length | Max. Mov. Diff. | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 | 1000-2499 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 772-49523 | Lever | 36 | 5 | .052″ | .014″ | .07″ | .014″ | $3.50 | $2.73 | $2.42 | $2.28 | $2.14 |
| 772-49524 | Lever | 31 | 4 | .063″ | .017″ | .11″ | .017″ | 3.50 | 2.73 | 2.42 | 2.28 | 2.14 |
| 772-49525 | Lever | 20 | 3 | .097″ | .026″ | .22″ | .026″ | 3.50 | 2.73 | 2.42 | 2.28 | 2.14 |
| 772-49526 | Simul. roller lever | 36 | 5 | .052″ | .014″ | .04″ | .014″ | 3.75 | 2.93 | 2.59 | 2.44 | 2.29 |
| 772-49527 | Simul. roller lever | 22 | 3 | .086″ | .023″ | .15″ | .023″ | 3.75 | 2.93 | 2.59 | 2.44 | 2.29 |

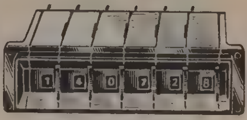
# IMLEC THUMBWHEEL SWITCHES AND ACCESSORIES

## THUMBWHEEL SWITCHES


S and SE


IF


IR


E

cially designed printed circuit switches are made of high ility materials to ensure long operational life for use in instru- ts, process control and other equipment. Available in five erent types with a selection of both binary and decimal out- s. Extended boards are available for mounting of resistors or diodes. Internal illumination of switch is available from an optional lamp. **Current Rating:** 0.5 amp maximum per switch. **Working Voltage:** 200 VAC or DC max. **Power Rating:** 24 watts maximum per switch. **Insulation Resistance:** 1000 megohms. **Contact Resistance:** 0.1 ohm.

### STANDARD RANGE "TYPE S"

r-mounted black switch with black thumbwheel, white char- ers on black background. Illumination optional from a small p soldered to the case of switch. Lamps available in 6 or 12 s. **Life:** 100,000 cycles through 360°. **Outputs:** Decimal, D 1248 or BCD 1248 with complements. **Temperature:** 0° to C, suitable for normal industrial and commercial environ- nts. **Size:** 2.81" d. x 2.28" h. (each switch .5" wide).

### STANDARD ECONOMY RANGE "TYPE SE"

mb wheel switch for maximum economy. Replaces rotary type tches to give finger tip control. Dark gray in color, rear panel nting and solder pad connections. Optional illumination by 12-volt lamp. **Life:** 250,000 operations min. **Stops:** Any posi- . **Output:** 0–9 decimal. **Temperature:** 0° to 55° C, suitable normal industrial and commercial environments. **Size:** Same tandard range.

### INTERMEDIATE RANGE "TYPE IF"

Edge operated, front mounting type thumbwheel switch has large character read-out. Switches molded from black polycarbonate, glossy or matte finish. Illumination of characters can be provided by a sub-miniature lamp replaceable from top of switch; available in 6 or 12 volts. **Life:** 1 million operations min. **Stops:** Any position. **Outputs:** Decimal, BCD 1248 or BCD 1248 with complements. **Size:** 2.28" d. (.60" for ext. board extra) x 2.125" h. (.5" wide each switch). Switch bank mounted with clips; no screws required.

### INTERMEDIATE RANGE "TYPE IR"

Same as above, except rear mounting type. **Size:** Same as front mounting type except 1.875" h.

### MINIATURE RANGE "TYPE E"

Molded from black ABS plastic with black wheels and white characters. Illumination optional with rear-mounted, miniature, flange-base lamp. **Life:** 100,000 cycles through 360°. **Outputs:** Decimal, BCD 1248, BCD 1248 with complements. **Size:** Character, .188" h.; switch, 1.67" d. x 1.125" h. (each switch .5" wide).

## THUMBWHEEL SWITCH PRICING

| ImLec Number | Description | Net Each* | | | | |
|---|---|---|---|---|---|---|
| | | Standard Range | | Intermediate Range | | Miniature Range |
| | | Type S | Type SE | Type IF | Type IR | Type E |
| ***110ND** | 10-position decimal, single pole | $2·75 | $2·00 | $2·75 | $2·75 | $2·75 |
| ***110NDE** | 10-position decimal, ext. board | 3·25 | ........ | 3·25 | 3·25 | † |
| ***102ND** (+, −) | 2-position decimal (+, −) | 3·25 | ........ | 3·25 | 3·25 | 3·25 |
| ***112ND** | 12-position decimal | 3·25 | ........ | ........ | ........ | ........ |
| ***112NDE** | 12-position decimal, ext. board | † | ........ | ........ | ........ | ........ |
| ***116ND** | 16-position decimal | 3·25 | ........ | 3·00 | 3·00 | ........ |
| ***116NDE** | 16-position decimal, ext. board | 3·75 | ........ | 3·50 | 3·50 | ........ |
| ***116ND** (+, −) | 16-position, stopped (+, −) | 3·75 | ........ | 3·50 | 3·50 | ........ |
| ***205ND** | 5-position decimal, double pole | 4·50 | ........ | ........ | ........ | ........ |
| ***210ND** | 10-position decimal, double pole | 5·25 | ........ | ........ | ........ | ........ |
| ***B10N1248** | 10-position BCD, single pole | 4·25 | ........ | 3·75 | 3·75 | 3·50 |
| ***B10N1248E** | 10-position BCD, ext. board | 4·50 | ........ | 5·00 | 5·00 | 4·00 |
| ***B12N1248** | 12-position BCD | 4·75 | ........ | ........ | ........ | ........ |
| ***B12N1248E** | 12-position BCD, ext. board | † | ........ | ........ | ........ | ........ |
| ***B16N1248** | 16-position BCD | 5·00 | ........ | † | † | ........ |
| ***B16N1248E** | 16-position BCD, ext. board | † | ........ | † | † | ........ |
| ***BC10N1248** | 10-position BCD, complements, single pole | 4·75 | ........ | 3·75 | 3·75 | 4·00 |
| ***BC10N1248E** | 10-position BCD, ext. board, complements | 5·25 | ........ | 5·00 | 5·00 | 4·50 |
| ***BC12N1248** | 12-position BCD, complements | 5·25 | ........ | ........ | ........ | ........ |
| ***BC12N1248E** | 12-position BCD, ext. board, complements | † | ........ | ........ | ........ | ........ |
| ***BC16N1248** | 16-position BCD, complements | 5·50 | ........ | † | † | ........ |
| ***BC16N1248E** | 16-position BCD, ext. board, complements | † | ........ | † | † | ........ |

## THUMBWHEEL SWITCH ACCESSORIES

| | | | | | | |
|---|---|---|---|---|---|---|
| ***EP** | End plates (PR) | $0·75 | $0·75 | $1·50 | $0·75 | $0·50 |
| ***DP** | Divider plate | ·75 | ........ | ........ | ........ | ·50 |
| ***HB** | Blank body, ¼" spacer | ·75 | ........ | ·75 | ·75 | ........ |
| ***BB** | Blank body, ½" spacer | ·75 | ........ | ·75 | ·75 | ·50 |
| **ASL** | Illumination of legend‡ | 1·50 | ·75 | ·75 | ·75 | 1·50 |
| **ASS** | Stopping of switch | ·50 | ·25 | ·25 | ·25 | ·25 |
| **ASD** | Decimal point on switch or spacer | ·50 | ·50 | ·50 | ·50 | ·50 |
| **G** | Ganging shaft | ·50 | ·50 | ........ | ........ | ........ |
| **H** | Hardware (specify S or E type)§ | ·75 | ·75 | ........ | ........ | ·75 |
| **IH** | Hardware (for I type)§ | ........ | ........ | 1·50 | 1·50 | ........ |
| **A** | Assembly of bank | ·50 | ·50 | ·50 | ·50 | ·50 |
| **CN** | Connectors | † | † | † | † | † |
| **ASM** | Matte finish | ........ | ........ | ·50 | ·50 | ·50 |

dd prefix for range required; e.g., **S110ND**. †Write for price and delivery. ‡Specify 6, 12 or 24 volts for S Type switches; lamp is luded if illumination is ordered. On I and E type switches, lamp fitting is provided but bulb is not; T-1 lamp may be ordered sepa- ely at **25c** for 5-volt lamp, **50c** for 12- or 24-volt lamp. §Specify hardware by total number of switches, spacers or dividers in bank; ., H-5 contains 5 units. End plates are provided for in length.

## ★QUANTITY DISCOUNT PRICING

| uantity | Discount | Quantity | Discount | Quantity | Discount | Quantity | Discount | Quantity | Discount |
|---|---|---|---|---|---|---|---|---|---|
| 1–24 | None | 25–99 | 5% | 100–249 | 10% | 250–499 | 15% | 500–999 | 20% |

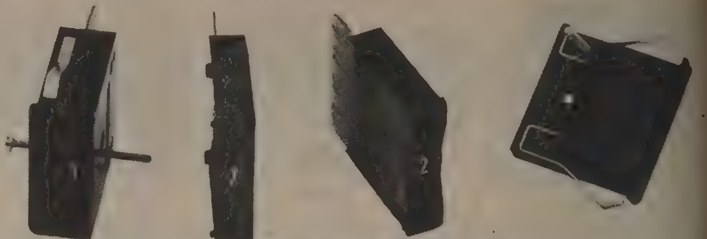
**MANUFACTURED IN ENGLAND BY BIRCH-STOLEC, LTD.**

**INTERSWITCH**

# THUMBWHEEL SWITCHES AND ACCESSORIES

## THUMBWHEEL SWITCHES

Complete Assembly


Modules and End Plates

- **SMALLEST PANEL AREA**
- **SIMPLEST MOUNTING**
- **SNAPS INTO RECTANGULAR CUTOUT**
- **HIGHLY LEGIBLE READOUT**
- **FEATHERWEIGHT ACTION**
- **WIDEST RANGE OF CODES, STYLES AND OPTIONS**

Unique modern design provides dependable operation and unequalled stability of the switch electrical characteristics. Small size (Type M is the thinnest switch module available); highly legible readout; featherweight action; smooth transition and positive detent make the feel of these switches so easy and fast that many engineers call them the only "finger wheel" switches. For use in computers, machine tools, data handling and test equipment. "Snap-in" mounting into a rectangular cutout in the panel requires no separate mounting hardware. Switch assembly consists of two end plates with cam spring retention and the number of switch modules desired. High strength plastic housing and end plates have integrated bezel for enhanced appearance with natural finger stop. Positive indexing; binary coded decimal or decimal output are standard stock items. **Current Capacity:** 1 amp max. **Contact Rating:** 0.1 amp resistive. **Working Voltage:** 0.5 to 50 VAC or DC max. **Contact Resistance:** .07 ohm, including PC board. **Temperature Rating:** −40° to +85° C. **Terminals:** Solder or edge connector. **Operating Life:** 1 million or more operations. **Size:** Type M, 1.5″ d. x 1.3″ h. x 5/16″ (8 mm) w.; Type H, 1.5″ d. x 1.3″ h. x 3/8″ (10 mm) w.; Type B, 2.7″ d. x 2.3″ h. x 1/2″ (12.5 mm) w.

| Module Description | Type M (5/16″ wide) | | | | Type H (3/8″ wide) | | | | Type B (1/2″ wide) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Interswitch Number | Net Each, Lots of 1-9 | 10-49 | 50-99 | Interswitch Number | Net Each, Lots of 1-9 | 10-49 | 50-99 | Interswitch Number | Net Each, Lots of 1-9 | 10-49 | 50-99 |
| DPDT x 5 | **MB001** | $ 5.85 | $5.55 | $5.25 | **HB001** | $ 6.85 | $ 6.50 | $6.15 | **BB001** | $6.35 | $6.05 | $5.70 |
| 10-position Decimal | **MB010** | 4.85 | 4.60 | 4.35 | **HB010** | 5.55 | 5.25 | 5.00 | **BB010/S** | 4.85 | 4.60 | 4.35 |
| 11-position Decimal | **MB011** | 4.85 | 4.60 | 4.35 | **HB011** | 5.55 | 5.25 | 5.00 | **BB011/S** | 4.85 | 4.60 | 4.35 |
| 10-position BCD 1, 2, 4, 8 | **MB031** | 6.85 | 6.50 | 6.15 | **HB031** | 7.65 | 7.25 | 6.90 | **BB031/S** | 7.35 | 7.00 | 6.60 |
| 10-position BCD 1, 2, 4, 8* | **MB031/L** | 7.35 | 7.00 | 6.60 | **HB031/L** | 8.15 | 7.75 | 7.35 | **BB031/LS** | 7.85 | 7.45 | 7.05 |
| BCD 1, 2, 4, 8 True, Not True | **MB140** | 8.85 | 8.40 | 8.00 | **HB140** | 9.85 | 9.35 | 8.85 | .......... | ...... | ...... | ...... |
| Complement BCD 1, 2, 4, 8 | **MB161** | 6.85 | 6.50 | 6.15 | **HB161** | 7.85 | 7.45 | 7.05 | **BB031/S** | 7.35 | 7.00 | 6.60 |
| BCD 1, 2, 4, 8 with complement | **MB531** | 9.85 | 9.35 | 8.85 | **HB531** | 10.35 | 9.85 | 9.35 | **BB031/S** | 7.35 | 7.00 | 6.60 |
| BCD 1, 2, 4, 8 with complement* | **MB531/L** | 10.35 | 9.85 | 9.35 | **HB531/L** | 10.85 | 10.35 | 9.80 | **BB031/LS** | 7.85 | 7.45 | 7.05 |
| End hardware (assembled) | **MBW** | 2.00 | 2.00 | 2.00 | **HBW** | 2.25 | 2.25 | 2.25 | **BBW** | 2.25 | 2.25 | 2.25 |
| Blank spacer | **MBY** | .75 | .75 | .75 | **HBY** | .95 | .95 | .95 | **BBY** | .75 | .75 | .75 |
| Division plate (pair) | **MBV** | 1.00 | 1.00 | 1.00 | **HBV** | 1.25 | 1.25 | 1.25 | **BBV** | 1.00 | 1.00 | 1.00 |

*Long PC board for insertion of diodes, etc. between switch outputs and terminals.

## CONNECTORS

Designed especially for the Type M and Type H thumbwheel switches. Available in printed circuit board mounting, conventional solder lugs or wire-wrap terminals. Features a low contact resistance made of beryllium copper in tuning-fork style. Capable of withstanding 500 insertions and withdrawal cycles. Contacts are gold plated. The body is of polycarbonate thermosetting plastic. **Working Voltage:** 50 VAC/DC max. **Current Rating:** 1 amp. **Contact Resistance:** .15 ohm.

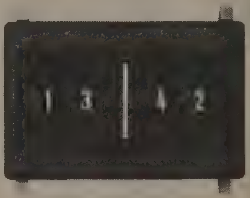
| Interswitch Number | Description | Net Ea. 1-249 |
|---|---|---|
| **CU400215U*** | Solder lugs, with mtg. ears | $1.00 |
| **CU400216U*** | Wire wrap, with mtg. ears | 1.00 |
| **CU400217U** | Solder lugs, without mtg. ears | 1.00 |
| **CU400218U*** | Wire wrap, without mtg. ears | 1.00 |
| **CU400354U** | Printed circuit leads | 1.00 |

*Allow an extra week for delivery; others available from stock immediately.

## OPTIONS AND ACCESSORIES

Apart from the ability to stack switches side by side in unlimited combinations up to a maximum of 60 units; standard auxiliary modules are available to implement your requirements for special functions and arrays.

| Suffix | Description | Net Ea. 1-299 |
|---|---|---|
| ......... | **Spacers:** Without inscription is standard. Spacers with white line or decimal point are popular. Custom marking also available. Width of spacer is same as of switch module. | See table above |
| ......... | **Division Plates:** For segregating digit-groups, includes retaining springs. Each pair equals the width of one switch module. | See table above |
| /A | **Dial Stops:** Factory-adjustable to any position. Indicated by a suffix to switch module part number. | $0.50 |
| /D | **Decimal Point:** Hot stamped on switch housing. | .25 |
| /G | **Illuminated Decimal Point:** Plastic rod light conductor. | .50 |
| /1 | **Green Colored Thumbwheel** | .50 |
| /2 | **Yellow Colored Thumbwheel** | .50 |
| /3 | **Red Colored Thumbwheel** | .50 |
| /4 | **Blue Colored Thumbwheel** | .50 |
| /5 | **White Colored Thumbwheel** | .50 |
| /M | **Special Wheel Markings:** Set up charge $10 per order. | .50 |
| /H | **Provision for Illuminating Dial:** By pilot lamp not supplied with above module. | .75 |
| /B | **Blind Slave Modules:** Ganged switches without thumbwheels. | Same as Switch Module |



Typical Assembly of
Type M Thumbwheel Switches

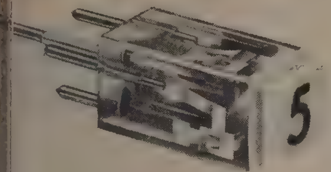
**Other Special Order Options:** Selection of over 230 binary codes.

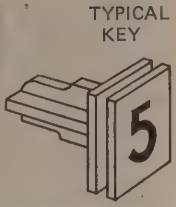
| Description | Net Ea. |
|---|---|
| **Make-Before-Break Contacts** | Write for full information and pricing |
| **Dial-Only Modules:** Ten-position (0–9) only. | |
| **Double Characters:** Same height as single characters. | |
| **Seven Characters per Position (Type R):** Double width housing for multi-characters. | |
| **Special Colored Characters:** Thermally-bonded colored ink characters. | |

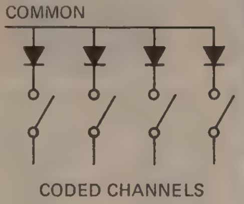
**NTERSWITCH**

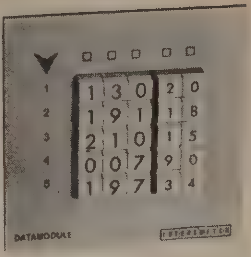
# DATA MODULES AND MATRIX BOARDS

## DATA MODULES









input device compared to thumbwheel switches or matrix ls that make it a very versatile device for test equipment, ine tool controls and other programming applications. In- sive and miniature coding device uses binary coding tech- s. Data module consists of four miniature contact switches, silicon diodes and a plastic housing. The programming keys te the switches when inserted in the data module body. Keys numerals 0 to 15 are available; i.e., a #3 key closes the 1 and 2 a #14 key closes the 2, 4 and 8 lines. Numerical characters andard in 7mm (.276″) height to offer a large numeric readout e smallest possible area. Each switch has four output ter- s and common. Data programming module is a lowest- on denominator panel element for data entry. Wiping action p during key insertion ensures contact reliability. For quick, -free programming of many characters at once, flexible- c program-storing templates enable a complete set of keys inserted or removed simultaneously. Switch body is available or without four internally mounted 1N4148 silicon diodes. modules are designed to mount on a printed circuit board protrude through a rectangular cutout in the front panel.

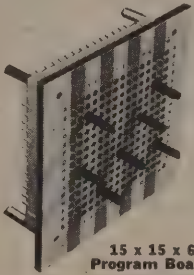
**Working Current:** 1 amp max. **Working Voltage:** 50 VAC/DC max. **Contact Resistance:** 50 milliohms. **Temperature Rating:** −20° to +70° C. **Operating Life:** 10,000 switching cycles min. **Keys:** White plastic with black numerals. Other colors and inscriptions also available on special order. **Codes:** 8-4-2-1; Excess 3; Aiken 2-4-2-1 or virtually any 4-bit binary code. **Body Size:** 12mm (0.469″) square x 22mm (.844″) (not including terminals).

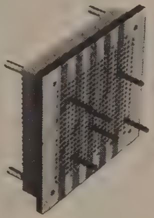
| Interswitch Number | Description | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|
| 675-022-131 | With 4 silicon diodes | $4.50 | $4.25 | $4.05 | $3.80 |
| 675-022-100 | Without diodes | 3.00 | 2.85 | 2.70 | 2.55 |
| 675-043-190* | Keys | .18 | .17 | .16 | .15 |
| 42-00023 | Keys, set of 10 (0–9) | 1.80 | 1.70 | 1.60 | 1.50 |
| 42-00024 | Keys, set of 6 (10–15) | 1.08 | 1.02 | .96 | .90 |

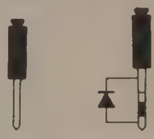
*Add to part number the key number (0–15) desired, e.g., 675-043-190-**02** for number **2** marked on the face of the key.

## MATRIX PROGRAM BOARDS, PROGRAMMING PINS

0 x 10 x 4.5
gram Board


15 x 15 x 6
Program Board


20 x 20 x 3
Program Board


Programming Pins

### MATRIX PROGRAM BOARDS

t advanced, reliable and convenient device that is fundamental e programming of thousands of different kinds of instruments, puters, machines and control systems. Important application ntages are design simplicity, programming ease and flexi- , high area and volumetric density, visual presentation of it linkages. Standard matrix boards are an array of X and Y linates that locate circuit intersections. The horizontal con- bars, "rows", are mounted directly behind the panel and are ified by letters; the vertical contact bars, "columns", are nted beneath the horizontal bars and are identified by numbers. Each contact bar has a solder terminal at the rear of the matrix. Board features gold plated beryllium contact strips, gold-plated terminals and an imprinted panel. The front panel is a laminated board, composed of multiple layers of paper and phenolic resin. The top layer, covering the imprinted paper foil, is a transparent melamine resin. **Current Rating (per contact bar):** 10 amps for 6mm spacing; 5 amps for 3mm or 4.5mm spacing. **Working Voltage:** 220 VAC/DC max. **Contact Resistance:** 7 milliohms with short circuit pins. **Terminals:** Solder lug.

| Interswitch Number | Description* | Marking† | Size Overall | Stock Item | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|---|---|---|
| 76-11-080-02 | 10 x 10 x 4.5 | With | 2.76″ square | Yes | $ 22.00 | $ 19.80 | $ 17.60 | $ 16.50 |
| 74-11-800-02 | 15 x 15 x 6 | With | 5.2″ square | Yes | 53.90 | 48.50 | 43.15 | 38.50 |
| 73-11-008-02 | 20 x 20 x 3 | With | 3.42″ square | Yes | 48.97 | 44.10 | 39.20 | 36.75 |
| 74-11-031-01 | 10 x 10 x 6 | Without | 4.96″ square | No | 19.00 | 19.00 | 19.00 | 19.00 |
| 74-11-082-01 | 20 x 20 x 6 | Without | 7.32″ square | No | 102.30 | 92.10 | 81.85 | 76.75 |
| 74-11-037-01 | 31 x 15 x 6 | Without | 10.16″ x 6.14″ | No | 94.00 | 84.60 | 75.20 | 70.50 |
| 74-11-039-02 | 31 x 31 x 6 | With | 10.16″ square | No | 169.20 | 152.30 | 135.35 | 127.90 |

ws x columns x spacing (in mm) between centers of holes. †Alpha numeric printing embedded in the light gray panel surface.

### PROGRAMMING PINS

dard elements for use with matrix program boards. **Shorting** : For direct connection between horizontal and vertical con- bars. Stocked in black and red colored handles. Also available shorter handles in brown, yellow, green, blue, gray or white 's on special order. **Diode Pins:** Have a 1N4148 fast switching n diode to control current direction and prevent sneak paths een rows and columns when inserted in any hole. Stocked in k and red colored handles with the diodes soldered anode-to- naking the polarity from column (+) to row (−). Diode pins ng opposite current direction, other color handles (specified e) or different diodes also available on special order. CUSTOM ESSORIES: **Dummy Plugs:** Insulated plugs used to connect dden intersections. **Plug-In-Lamps:** Available in 6mm spac- only. Connect 12-volt lamp between line and column when ted in any hole. Available in red, green and white colors and ate which equipment or circuit is on, even from a distance. **Cable Plugs:** One sided or two sided; convert the matrix board into a diagnostic center by converting each hole into a test point, permitting connection of that intersection to external trouble-shooting equipment from the front of panel. **Dual and Triple-Segment Shorting Pins. Programming Templates.**

**Write for pricing information on Custom Accessories.**

| Interswitch Number* | Description | Net Each, Lots of 1-249 | 250-999 |
|---|---|---|---|
| 673-31-100-00 | 3mm or 4.5mm shorting pin | $0.25 | $0.20 |
| 673-21-301-00 | 3mm or 4.5mm diode pin | 1.50 | 1.20 |
| 674-31-100-00 | 6mm shorting pin | .40 | .32 |
| 674-21-301-00 | 6mm diode pin | 1.25 | 1.00 |

*Part numbers shown are with black handle, for red handle change last two digits of part number to **02**, e.g., 674-21-301-**02**; same price.

# LICON Switches

## TYPE 10 BASIC SWITCHES

**Type 10**—Highly sensitive switch utilizes one-piece mechanism. Assures long life with excellent repeatability and positive snap action. Wide choice of actuators. Rated 15 amps, 125, 250, 460 VAC; ½ amp, 125 VDC. ⅓ hp, 125 VAC; ½ hp, 250 VAC. Size, 2″ x 1″ x 1 1/16″; 1″ mtg. centers. UL Listed; CSA Approved.

| Licon Number | Description | Microswitch Equivalent | List Price* |
|---|---|---|---|
| 10-122 | Pin plunger, .020″ gap | BZ-2RT | $2.00 |
| 10-127 | Pin plunger, .070″ gap | BZ-R31 | 1.94 |
| 10-222 | Spring plunger | BZ-2RST | 2.47 |
| 10-322 | Panel mount plunger | BZ-2RQIT | 4.20 |
| 10-422 | Leaf spring | BZ-2RLT | 2.15 |
| 10-522 | Roller leaf spring | BZ-2RL2T | 2.94 |
| 10-622 | Pivoted lever | .................. | 2.47 |
| 10-722 | Pivoted roller lever | BZ-2RW82T | 3.10 |
| 10-822 | Compact plunger | BZ-2RDT | 2.52 |
| 10-922 | Roller plunger | BZ-2RQ18T | 7.46 |
| 10-72207 | One way roller | .................. | 3.68 |

**Also available in Type 08 heavy duty 22.5 amp version. Write for information and prices.**

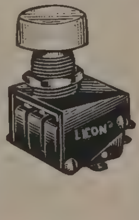
## TYPE 23 HIGH CAPACITY SWITCHES

**Type 23**—High capacity, single-break switch provides excellent mechanical and electrical life. "Heat dam" slot eliminates flow of solder and flux into switch body. Available with screw or taper tab terminals also. Integral type roller and straight lever actuators offered. Rated 15 amps, 125/250 VAC; 8 amps resistive, 6 amps inductive, 30 VDC. Size, 1.344″ x .625″ x .410″; .875″ mounting centers. UL Listed and CSA Approved.

| Licon Number | Description | Microswitch Equivalent | List Price* |
|---|---|---|---|
| 23-114 | SPDT, solder terminals | V3-19 | $1.10 |
| 23-1141 | SPDT-NC, solder terminals | V3-7 | 1.00 |
| 23-1142 | SPDT-NO, solder terminals | V3-32 | 1.00 |
| 23-11401* | SPDT, solder terminals | V3-119 | 1.10 |
| 23-124 | SPDT, screw terminals | V3-1 | 1.15 |
| 23-1241 | SPDT-NC, screw terminals | V3-21 | 1.05 |
| 23-1242 | SPDT-NO, screw terminals | V3-23 | 1.05 |
| 23-12401* | SPDT, screw terminals | V3-101 | 1.15 |
| 23-12411* | SPDT-NC, screw terminals | V3-121 | 1.05 |
| 23-12421* | SPDT-NO, screw terminals | V3-123 | 1.05 |
| 23-154 | SPDT, taper tab terminals | V3-1-D8 | 1.00 |
| 23-1541 | SPDT-NC, taper tab term. | V3-21-D8 | .90 |
| 23-1542 | SPDT-NO, taper tab term. | V3-23-D8 | .90 |
| 23-254† | SPDT, taper tab, .840″ lever | V3L-1-D8 | 1.10 |
| 23-354† | SPDT, taper tab, 1.40″ lever | V3L-2-D8 | 1.10 |
| 23-454† | SPDT, .810″ roller lever | V3L-3-D8 | 1.35 |
| 23-554† | SPDT, 1.340″ roller lever | V3L-4-D8 | 1.35 |

*8 ounce operating force, all others 6–14 ounces. †Taper tab.

## TYPE 73 LOW-COST PUSHBUTTON SWITCHES



**Type 73**—Low-cost pushbutton series for use with Type 23 basic switch (above). Choice of 1, 2 or 3-pole actuator; two button styles in four colors; and any Type 23 basic switch. Size, 1 3/32″ x 1 3/8″ x 2 3/32″; .875″ mtg. centers.

### BUTTONS

| Square (.600″ x .530″) Licon No. | Round (.950″ Dia.) Licon No. | Color | List Price* |
|---|---|---|---|
| 80-701280 | 80-701284 | Red | $0.25 |
| 80-701281 | 80-701285 | Green | .25 |
| 80-701282 | 80-701286 | Ivory | .25 |
| 80-701283 | 80-701287 | Black | .25 |

### PUSHBUTTON ACTUATORS

| 15/32″-32 Mounting Bushing | | | 5/8″-24 Mounting Bushing | | |
|---|---|---|---|---|---|
| Licon No.* | No. of Poles | List Price* | Licon No.* | No. of Poles | List Price* |
| 73-2910 | 1 | $1.05 | 73-2911 | 1 | $1.05 |
| 73-2920 | 2 | 1.10 | 73-2921 | 2 | 1.10 |
| 73-2930 | 3 | 1.15 | 73-2931 | 3 | 1.15 |

*To order complete unit, add slash (/) and Type 23 basic switch suffix (Example: 73-2910/**154** for Type 73 1-pole actuator with 15/32″-32 mounting bushing and Type 23-154 basic switch); combine actuator and basic switch prices. Order buttons separately.

## ★QUANTITY DISCOUNT SCHEDULE "A"

These discounts apply to all items on this page.

| Quantity | Discount | Multiplier | Quantity | Discount | Multiplier |
|---|---|---|---|---|---|
| 1–24 | 0% | None | 100–199 | 35% | .65 |
| 25–49 | 20% | .80 | 200–499 | 37% | .63 |
| 50–99 | 30% | .70 | | | |

**Write for additional discounts on larger quantities.**

## TYPE 25 MINIATURE THIN SWITCHES

**Type 25**—Miniature, snap action thin switch employs coil spring mechanism similar to that of the exclusive Licon Butterfly® double break switches. Provides extremely long life with 12.0-amp rating. Excellent contact wiping action, low contact resistance, high shock and vibration resistance are additional features of this Form C switch. Designed for commercial applications which require reliability at low cost. Ideal f coin and vending machines, timers and counters. Off-cent plunger versions allow for extremely light operating force to grams max. Rated 6 amps resistive, 3 amps inductive, 125/2 VAC. Tested to 20 million operations. Size, 1½″ x .825″ x .283″, center version; 1½″ x 53/64″ x 9/32″, off-center version. 1″ m centers. Solder terminals. UL Listed.

| Licon Number | Plunger Location | Operating Force | Acro Equivalent | List Price |
|---|---|---|---|---|
| 25-100000 | On-center | 3–6 oz. | 1MD1-1A | $1.4 |
| 25-101000 | On-center | 6–10 oz. | 2MD1-1A | 1.4 |
| 25-102000 | On-center | 12–16 oz. | 3MD1-1A | 1.4 |
| 25-205000 | Off-center | 25 gm. max. | 1CMD1-2AXX | 1.4 |
| 25-206000 | Off-center | 44 gm. max. | 2CMD1-2AXX | 1.4 |
| 25-207000 | Off-center | 60 gm. max. | 3CMD1-2AXX | 1.4 |

## TYPE 25 SWITCHES WITH ACTUATORS

| Licon Number | Plunger Location | Actuator Type | Operating Force | List Price |
|---|---|---|---|---|
| 25-205010 | Off-center | Wire | 2½ gm. | $1.7 |
| 25-205020 | Off-center | Lever | 2½ gm. | 1.7 |
| 25-205030 | Off-center | Roller lever | 2½ gm. | 2.0 |

## TYPE 11 MINIATURE TWO-CIRCUIT BASIC SWITC

**Type 11**—High capacity two-circuit basic switch combines long life and high electrical rating into a compact package. Rated 10 amps, 125, 250 VAC or 30 VDC. ½ hp, 125 VAC; ¾ hp, 250 VAC. Tested to 20 million operations. Choice of actuators. Reset models available in all terminal styles. Size, 1¼″ x ½″ x ½″. UL Listed; CSA Approved.

| Licon Number | Description | Microswitch Equivalent | List Price |
|---|---|---|---|
| 11-104 | End solder terminal | 1TB2 | $1.5 |
| 11-204 | End screw terminal | 1TB1 | 1.7 |
| 11-304 | Side solder terminal | 1TB3 | 1.6 |
| 11-504 | ¼″ quick-disconnect end | .................. | 1.6 |
| 11-114 | Reset-end solder term. | .................. | 1.8 |
| 11-214 | Reset-end screw term. | .................. | 1.8 |
| 11-314 | Reset-side solder term. | .................. | 1.8 |

## MS PART NUMBERS FOR TYPE 11

| Licon Number | Description | List Price* |
|---|---|---|
| 11-188051 | MS25342-1 | $2.70 |
| 11-288051 | MS25344-1 | 2.70 |
| 11-388051 | MS25343-1 | 2.70 |

## AUXILIARY ACTUATORS ONLY FOR TYPE 11

| Licon Number | Actuator Type | No. of Poles | List Price* |
|---|---|---|---|
| 71-1030 | Rigid lever | 1 | $0.40 |
| 71-1040 | Rigid roller lever | 1 | .90 |
| 71-2010 | Overtravel plunger | 1 | 1.40 |
| 71-2077 | Straight-line plunger | 2 | 2.40 |
| 71-2657 | Pushbutton (½″ dia.) | 1 | 2.15 |

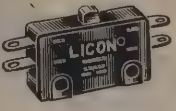
## TYPE 14 HEAVY DUTY TWO-CIRCUIT SWITCH

**Type 14**—Heavy-duty industrial limit switch. Uses double break mechanism for high electrical rating. Nylon button reduces mechanical wear. Well-spaced electrical terminals. Horizontal mounting holes permit multiple side mounting. Rated 20 amps, 125/250 VAC. Size, 13/16″ x 1 13/16″ x 1 1/16″. UL Listed; CSA Approved.

| Licon Number | Description | List Price* |
|---|---|---|
| 14-12403 | Basic switch, vertical mounting | $3.20 |
| 14-124 | Basic switch, horizontal mounting | 3.00 |
| 14-1241 | Reset switch | 3.50 |
| 14-128040 | Heavy duty, vertical mounting | 3.20 |
| 14-324 | Overtravel plunger actuator switch | 4.60 |
| 14-624 | Pivoted lever actuator switch | 3.60 |
| 14-724 | Pivoted roller lever actuator | 4.10 |
| 14-72403 | Pivoted roller, vertical mounting | 4.30 |

# LICON Switches

## TYPE 16 SUBMINIATURE TWO-CIRCUIT BASIC SWITCH



**16**—Two-circuit subminiature. le break mechanism tested over 20 n mechanical cycles. Rated 10 amps 50 VAC or 30 VDC. Exceptional and vibration resistance. Solder, or taper tab terminals extending from ıs unit faces. Auxiliary actuators le levers, roller levers and toggles. 25⁄32″ x 7⁄16″ x 1⁄4″. UL Listed; CSA oved.

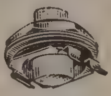
| con mber | Description | Circuit | List Price* |
|---|---|---|---|
| 04 | End solder terminal | SPDT, Form Z | $2.35 |
| 04 | Side solder terminal | SPDT, Form Z | 2.35 |
| 04 | Bottom solder terminal | SPDT, Form Z | 2.35 |
| 14 | Reset-end solder term. | SPDT, Form Z | 2.60 |
| 04 | Bottom taper tab term. | SPDT, Form Z | 2.35 |
| 04 | Screw end terminal | SPDT, Form Z | 2.35 |
| 042 | Hi-temperature case | SPDT, Form Z | 2.75 |
| 0401 | Gold-plated contacts | SPDT, Form Z | 2.85 |
| 0421 | Hi-temp case, gold-plated contacts | SPDT, Form Z | 3.25 |
| 88051 | MS25476-1 | SPDT, Form Z | 3.45 |
| 88051 | MS27217-2 | SPDT, Form Z | 3.45 |
| 88051 | MS27217-1 | SPDT, Form Z | 3.45 |

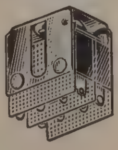
### AUXILIARY ACTUATORS ONLY FOR TYPE 16

| | | | |
|---|---|---|---|
| 200 | Rigid roller lever | 1 pole | $1.00 |
| 210 | Rigid lever | 1 pole | .55 |
| 200 | Spring lever | 1 pole | .40 |
| 210 | Spring roller lever | 1 pole | .85 |
| 190 | Pushbutton | 2 pole | 2.35 |
| 220 | Pushbutton | 1 pole | 2.20 |
| 260 | Overtravel pushbutton | 1 pole | 2.30 |
| 210 | Two-position toggle | 2 pole | 4.95 |
| 220 | Two-position toggle | 3 pole | 5.25 |
| 100 | Maintained pushbutton | 2 pole | 4.00 |

## 76 SNAP-TOGETHER PUSHBUTTON SWITCHES

ighted, snap-together pushbutton design choice of 5⁄8″ or 15⁄32″ bushings, four but- olors and a wide variety of snap-on switch les with high performance, 10-amp sub- ture double break switches. Unit price ies the three individual components.





### SWITCH MODULES

| n ber | Actuator Type | No. of Poles | Contact Form | List Price* |
|---|---|---|---|---|
| 11 | Maintained | 1 | C | $4.35 |
| 13 | Maintained | 1 | Z | 4.60 |
| 21 | Maintained | 2 | C | 5.30 |
| 23 | Maintained | 2 | Z | 5.85 |
| 51 | Momentary | 1 | C | 2.80 |
| 53 | Momentary | 1 | Z | 3.05 |
| 61 | Momentary | 2 | C | 3.55 |
| 63 | Momentary | 2 | Z | 4.10 |

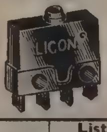
### BUSHINGS

| n No. | O.D. | List Price* | Licon No. | O.D. | List Price* |
|---|---|---|---|---|---|
| 2530 | 15⁄32″ | $1.20 | 76-2550 | 5⁄8″ | $1.40 |

### PUSHBUTTONS

| n No. | Color | List Pr.* | Licon No. | Color | List Pr.* |
|---|---|---|---|---|---|
| 00903 | White | $0.25 | 80-700909 | Green | $0.25 |
| 00908 | Red | .25 | 80-700910 | Black | .25 |

## TYPE 18 SUB-SUBMINIATURE SWITCHES

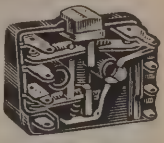


**18**—Double-break switch has same ility and precision performance of 16 switches. Features big switch rat- Rated 7 amps, 125/250 VAC. Size, x .500″ x .350″. UL Listed.

| icon mber | Description | List Price |
|---|---|---|
| 40121 | SPST-NC-DB, solder terminals | $3.15 |
| 40221 | SPST-NO-DB, solder terminals | 3.15 |
| 40421 | SPDT-DB, solder terminals | 3.15 |
| 488051 | MS27257-1(B) | 3.50 |

CHECK **cramer** FOR ALL LARGE
QUANTITY ORDERS.

## TYPE 22 FOUR-CIRCUIT BASIC SWITCH



**Type 22**—Features high current interruption, tested to over 10 million cycles mechanical life. DPDT, 4 independent circuits permit simultaneous multiple circuit control without complicated mechanisms. Rated 10 amps, 125, 250 VAC or 30 VDC. 1⁄2 hp, 125 VAC; 3⁄4 hp, 250 VAC. Size, 7⁄8″ x 11⁄4″ x 1⁄2″. UL Listed.

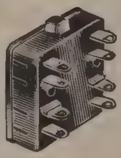
### BASIC SWITCH

| Licon Number | Description | Microswitch Equivalent | List Price* |
|---|---|---|---|
| 22-304 | DPDT—side solder terminal | 41TB5-3 | $4.95 |
| 22-114 | DPDT—side solder terminal—reset | ............ | 5.15 |
| 22-204 | DPDT—screw end | ............ | 5.05 |
| 22-104 | DPDT—solder end | ............ | 4.95 |
| 22-504 | DPDT—1⁄4″ quick-disconnect term. | ............ | 4.95 |
| 22-188051 | MS25348-1 | ............ | 7.05 |
| 22-388051 | MS25349-1 | ............ | 7.05 |

### AUXILIARY ACTUATORS FOR TYPE 22

| | | | |
|---|---|---|---|
| 72-1150 | Rigid lever | ............ | $0.55 |
| 72-1160 | Rigid roller lever | ............ | 1.15 |
| 72-2080 | Overtravel plunger | ............ | 1.65 |

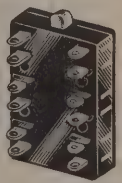
## TYPE 26 DOUBLE POLE SUBMINIATURE SWITCHES



**Type 26**—Subminiature double pole switch utilizes two Licon Butterfly® double-break mechanisms. Simultaneity of operation of both poles insured by special linkage between mechanisms. Switch eliminates need for dual components and actuating mechanism; requires less space than two single pole miniature switches. Type 76 actuators fit type 26 switches. Pushbutton and toggle actuators fit 26-800 switch series only. Rated 8 amps, 125/250 VAC; 10 amps resistive, 5 amps inductive, 28 VDC. Size, 25⁄32″ x .761″ x 1⁄4″. UL Listed.

| Licon Number | Description | List Price* |
|---|---|---|
| 26-801 | DPST-NC-DB, end solder terminals | $6.05 |
| 26-802 | DPST-NO-DB, end solder terminals | 6.05 |
| 26-804 | DPDT-DB, end solder terminals | 6.05 |
| 26-80401 | Same, but non-simultaneous | 5.00 |
| 26-8042 | DPDT-DB, hi-temp., end solder | 6.80 |
| 26-80421 | Same, but non-simultaneous | 5.80 |
| 26-901 | DPST-NC-DB, side solder terminals | 6.05 |
| 26-902 | DPST-NO-DB, side solder terminals | 6.05 |
| 26-904 | DPDT-DB, side solder terminals | 6.05 |
| 26-90401 | Same, but non-simultaneous | 5.00 |
| 26-9042 | DPDT-DB, hi-temp., side solder | 6.80 |
| 26-90421 | Same, but non-simultaneous | 5.80 |
| 26-888051 | M8805/77-001 | 7.80 |
| 26-988051 | M8805/77-002 | 7.80 |

## TYPE 36 TRIPLE-POLE SUBMINIATURE SWITCHES



**Type 36**—Utilizes three Licon Butterfly® double-break mechanisms with simultaneous operation. Greatly reduces space requirements. Uses same actuators as Types 16 and 26. Contacts 3PDT-DB, momentary action; rated 10 amps resistive, 5 amps inductive (8 amps, U/L Listed) at 125/250 VAC or 28 VDC. Size, 25⁄32″ x 13⁄16″ x 1⁄4″, excluding terminals.

| Licon No. | Description | List* |
|---|---|---|
| 36-604 | End solder terminals, simultaneous action | $9.20 |
| 36-704 | Side solder terminals, simultaneous | 9.20 |
| 36-60401 | End solder terminals, non-simultaneous | 8.15 |
| 36-70401 | Side solder terminals, non-simultaneous | 8.15 |
| 36-688051 | M8805/78-001 | 11.50 |
| 36-788051 | M8805/78-002 | 11.50 |

### ★QUANTITY DISCOUNT SCHEDULE "A"

These discounts apply to all items on this page.

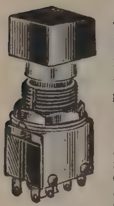
| Quantity | Discount | Multiplier | Quantity | Discount | Multiplier |
|---|---|---|---|---|---|
| 1–24 | 0% | None | 100–199 | 35% | .65 |
| 25–49 | 20% | .80 | 200–499 | 37% | .63 |
| 50–99 | 30% | .70 | | | |

**Write for additional discounts on larger quantities.**

# LICON Switches

## TYPE 01 LIGHTED PUSHBUTTON SWITCH WITH SINGLE LAMP INDICATOR

### (DISCOUNT SCHEDULE "B")



**Type 01** pushbutton switch combines single bulb panel indicator with multi-pole pushbutton switch. For original equipment or replacement of toggles with color-lit or legend-coded button. Provides a visual reminder that a circuit is on or off at a glance. Available in red, white, yellow, green, or blue pushbutton, ⅝" and ¾" round or square, and 1⅛" diameter round lens caps; solid or projected color illumination. **Order lens cap separately.** Available in one and two-pole form C or form Z contact arrangement. Switch rated at 10 amps, 250 VAC or 30 VDC. Momentary, maintained, solenoid held and indicator models. One hole mounting with choice of 15/32" or ⅝" bushing. Uses T-1¾ lamp with screw or flange base (not included in price). Overall size: 1 29/32" x ⅝" x 25/32". UL Listed.

| Licon Number | Unit Type | Bushing | Lamp Base | No. of Poles | Contact Form | List Price* |
|---|---|---|---|---|---|---|
| 01-145000 | Indicator | 15/32-32 | Screw | ........ | ........ | $ 3.50 |
| 01-365000 | Indicator | 5/8-24 | Flange | ........ | ........ | 3.50 |
| 01-145510 | Momentary | 15/32-32 | Screw | 1 | C | 5.40 |
| 01-145530 | Momentary | 15/32-32 | Screw | 1 | Z | 5.65 |
| 01-365510 | Momentary | 5/8-24 | Flange | 1 | C | 5.40 |
| 01-365530 | Momentary | 5/8-24 | Flange | 1 | Z | 5.65 |
| 01-145610 | Momentary | 15/32-32 | Screw | 2 | C | 7.30 |
| 01-145630 | Momentary | 15/32-32 | Screw | 2 | Z | 7.80 |
| 01-365610 | Momentary | 5/8-24 | Flange | 2 | C | 7.30 |
| 01-365630 | Momentary | 5/8-24 | Flange | 2 | Z | 7.80 |
| 01-145110 | Maintained | 15/32-32 | Screw | 1 | C | 7.90 |
| 01-145130 | Maintained | 15/32-32 | Screw | 1 | Z | 8.20 |
| 01-365110 | Maintained | 5/8-24 | Flange | 1 | C | 7.90 |
| 01-365130 | Maintained | 5/8-24 | Flange | 1 | Z | 8.20 |
| 01-145210 | Maintained | 15/32-32 | Screw | 2 | C | 9.75 |
| 01-145230 | Maintained | 15/32-32 | Screw | 2 | Z | 10.30 |
| 01-365210 | Maintained | 5/8-24 | Flange | 2 | C | 9.75 |
| 01-365230 | Maintained | 5/8-24 | Flange | 2 | Z | 10.30 |
| 01-145531 | Solenoid held, 28 V | 15/32-32 | Screw | 1 | Z | 12.65 |
| 01-365531 | | 5/8-24 | Flange | 1 | Z | 12.65 |
| 01-145631 | | 15/32-32 | Flange | 2 | Z | 14.80 |
| 01-365631 | | 5/8-24 | Flange | 2 | Z | 14.80 |

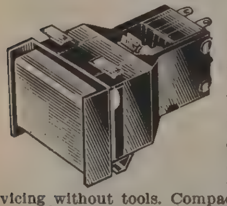
### *LENS CAP (SOLID COLOR) ORDERING INFORMATION

| Licon Number | Cap | | For Bushing | List Price* | Cap Color Indication |
|---|---|---|---|---|---|
| | Shape | Size | | | |
| 01-93131X | Round | ⅝" | 15/32-32 | $0.45 | Add proper suffix to replace **X** for cap color indication. |
| 01-94131X | Round | ⅝" | 5/8-24 | .45 | |
| 01-93141X | Round | ¾" | 15/32-32 | .55 | |
| 01-94141X | Round | ¾" | 5/8-24 | .55 | **White:** Suffix **1** |
| 01-93181X | Round | 1⅛" | 15/32-32 | .75 | **Red:** Suffix **2** |
| 01-94181X | Round | 1⅛" | 5/8-24 | .75 | **Green:** Suffix **3** |
| 01-91131X | Square | ⅝" | 15/32-32 | .45 | **Blue:** Suffix **4** |
| 01-92131X | Square | ⅝" | 5/8-24 | .45 | **Yellow:** Suffix **5** |
| 01-91141X | Square | ¾" | 15/32-32 | .55 | **Example:** 01-931311 |
| 01-92141X | Square | ¾" | 5/8-24 | .55 | White cap, solid color |

*Solid color; projected color types on request.

## TYPE 01-800 SNAP-IN ILLUMINATED MATRIX MOUNTING SWITCH—WITH SINGLE LAMP INDICATOR

### (DISCOUNT SCHEDULE "B")



Type 01-800 single-lamp lighted pushbutton switch offers time-saving snap-in front mounting on panels. Combination bezel-barrier eliminates misguided actuation. Choice of screen colors with solid or projected illumination. Choice of momentary or maintained contact types in Form C (SPDT) and Form Z (SPDT, double break); or, indicator-only units. Switch rated 10 amps, 125/250 VAC; UL Listed. Uses T-1¾ flange bulbs (not included in price); simple front-panel lamp servicing without tools. Compact 1⅛" x ⅞" lens cap gives ample space for engraving or hot stamping.

| Indicator Licon Number | Switch Modules | | Lens Caps* | | |
|---|---|---|---|---|---|
| | Description | List Price* | Licon Number | Color | List Price* |
| 01-865000 | Indicator only | $2.15 | 01-951911 | White | $0.70 |
| 01-865130 | 1-pole, maintained | 5.80 | 01-951912 | Red | .70 |
| 01-865230 | 2-pole, maintained | 7.50 | 01-951913 | Green | .70 |
| 01-865530 | 1-pole, momentary | 3.85 | 01-951914 | Blue | .70 |
| 01-865630 | 2-pole, momentary | 5.55 | 01-951915 | Yellow | .70 |
| | | | 01-951916 | Amber | .70 |
| | | | 01-951917 | Orange | .70 |

*Solid color; projected color types on request.

### ●QUANTITY DISCOUNT SCHEDULE "B"

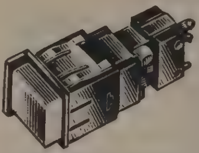
| Quantity | Discount | Multiplier | Quantity | Discount | Multiplier |
|---|---|---|---|---|---|
| 1–49 | 0% | None | 100–499 | 15% | .85 |
| 50–99 | 10% | .90 | 500–999 | 26% | .74 |

### ★QUANTITY DISCOUNT SCHEDULE "D"

| Quantity | Discount | Multiplier | Quantity | Discount | Multiplier |
|---|---|---|---|---|---|
| 1–49 | 0% | None | 500–999 | 26% | .74 |
| 50–99 | 10% | .90 | 1000–1999 | 30% | .70 |
| 100–499 | 18% | .82 | | | |

## TYPE 01-600 SWITCH HOUSING (FOR USE WITH TYPE 01-748 LIGHTED SWITCH)

### (DISCOUNT SCHEDULE "D")



**Type 01-600**—Easy-to-install, snap-in housing for use with Type 01-748 switch (listed below, under 01-700 series). Complete lighted switch offers versatility and flexibility at low cost. Available in bezel, single barrier or double barrier design. Individual or matrix mounting is possible with a single panel cutout. Uses lens cap 01-91141X as listed in Type 01 lens cap section. Panel cutout, .875".

| Licon No. | Description | List* |
|---|---|---|
| 01-600001 | Vertical row mtg., vert. barrier | $1.20 |
| 01-600002 | Horizontal row mtg., vert. barrier | 1.20 |
| 01-600003 | Vertical row mtg., single vert. barrier | 1.20 |
| 01-600004 | Horizontal row mtg., single vert. barrier | 1.20 |
| 01-600005 | Vertical row mtg., no barrier | 1.20 |
| 01-600006 | Horizontal row mtg., no barrier | 1.20 |

## TYPE 01-700 ONE-LITE PUSHBUTTON SWITCHES

### (DISCOUNT SCHEDULE "D")

**Type 01-700**—Low cost, momentary or maintained, lighted pushbutton combines long life, double-break switch and lamp base in one plastic housing. Choice of cylindrical, translucent lens caps or regular 01 Series lens caps (if plunger converter is used). Bulb replaceable from front of panel; uses screw-base T-1¾ lamp, not supplied. Switch mechanism is one or two-pole momentary with SPDT (Form Z or C) contact. UL Listed at 10 A, 125/250 VAC.

### SWITCHES WITHOUT LENS CAPS

| Licon Number | Actuator | No. Poles | Contact Form | List Price* |
|---|---|---|---|---|
| 01-745000 | Indicator only (no switch) | | | $1.80 |
| 01-745510 | Momentary | 1 | C | 3.10 |
| 01-745530 | Momentary | 1 | Z | 3.30 |
| 01-745610 | Momentary | 2 | C | 3.80 |
| 01-745630 | Momentary | 2 | Z | 4.20 |
| 01-745110 | Maintained | 1 | C | 4.10 |
| 01-745130 | Maintained | 1 | Z | 4.30 |
| 01-745210 | Maintained | 2 | C | 4.80 |
| 01-745230 | Maintained | 2 | Z | 5.20 |

### PLUNGER CONVERTER INSTALLED

For use with 01 Series lens caps. 15/32" bushing only.

| Licon Number | Actuator | No. of Poles | Contact Form | List Price* |
|---|---|---|---|---|
| 01-748000 | Indicator only (no switch) | | | $2.00 |
| 01-748510 | Momentary | 1 | C | 3.30 |
| 01-748530 | Momentary | 1 | Z | 3.50 |
| 01-748610 | Momentary | 2 | C | 4.00 |
| 01-748630 | Momentary | 2 | Z | 4.40 |
| 01-748110 | Maintained | 1 | C | 4.40 |
| 01-748130 | Maintained | 1 | Z | 4.60 |
| 01-748210 | Maintained | 2 | C | 5.10 |
| 01-748230 | Maintained | 2 | Z | 5.50 |

### TRANSLUCENT LENS CAPS

**Momentary**—Specify number. List Price.................20¢*

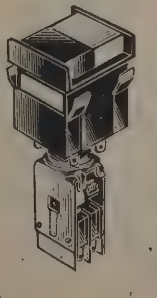
| Licon No. | Color | Licon No. | Color | Licon No. | Color |
|---|---|---|---|---|---|
| 80-010764 | Green | 80-010766 | Yellow | 80-010768 | White |
| 80-010765 | Red | 80-010767 | Blue | | |

**Maintained**—Specify number. List Price.................20¢*

| Licon No. | Color | Licon No. | Color | Licon No. | Color |
|---|---|---|---|---|---|
| 86-010890 | Green | 86-010892 | Yellow | 86-010580 | White |
| 86-010891 | Red | 86-010893 | Blue | | |

## TYPE 02-800 TWO-LIGHT SWITCH

### (DISCOUNT SCHEDULE "B")



Economical two-light version of the 01-800 with efficient snap-in mounting and attractive bezel barrier appearance. Size, 1⅛" x ⅞". Employs 76-27XX series snap-on switch module. To order complete unit, select a lens cap, housing, and switch module (76-27XX, as shown in 04 section).

### LENS CAPS

| Licon No.* | Description | List* |
|---|---|---|
| 02-61XX | Full screen† | $0.70 |
| 02-62XX | Vertical split† | 1.25 |
| 02-63XX | Horizontal split† | 1.25 |
| 02-64XX | Full proj. color | 1.25 |
| 02-65XX | Vert proj. color | 1.80 |
| 02-66XX | Horiz. proj. color | 1.80 |

*Indicate desired colors by substituting appropriate numbers for XX in Licon No.: **1** = white, **2** = red, **3** = green, **4** = blue, **5** = yellow, **6** = amber, **7** = orange. †Solid color.

### HOUSINGS

| | | |
|---|---|---|
| 02-73 | Snap-in, flange base lamp sockets | $1.95 |
| 02-76 | Indicator only | 1.95 |

# LICON Switches

## TYPE 04 LIGHTED PUSHBUTTON ITCH—WITH FOUR-LAMP INDICATOR

04 illuminated pushbutton switches com- four-bulb panel indicator ⅞" square with ipole switching. Choice of full or split ns: Projected or solid color illumination. different styles: Momentary or main- d contact; solenoid held switch models, form C or form Z contact arrangements; indicator-only units. Switch rated at 10 s, 250 VAC or 30 VDC. Uses T-1¾ flange s (not included in price). Simple front of l lamp servicing without tools. Choice of e, barrier, bezel or bezel barrier mounts. **r each module individually.** A light mod- a housing module and a switch module e a complete assembly. A light module and using only makes an indicator only.

A

### LIGHT MODULE (FIG. A)
### SCOUNT "B"—SEE PREVIOUS PAGE)

| on ber | Screen Split or Full | Color (Specify) | For Unit | List Price* |
|---|---|---|---|---|
| 01* | Full | Proj. | Indi-cator-switch | $2.75 |
| 02* | Vert. split | Proj. | | 3.15 |
| 03* | Horiz. split | Proj. | | 3.15 |
| 04* | Full | Solid | | 2.75 |
| 31* | Full | Proj. | Indic. only | 2.75 |
| 34* | Full | Solid | | 2.75 |

icate color filter combination for projected module by listing color designating let- (R = red, G = green, A = amber, Y = yellow, white, B = blue, O = orange) clockwise in rdance with Color Key figure at right e.g., 02 RGGR.

B

### HOUSING MODULE (FIG. B)
### SCOUNT "B"—SEE PREVIOUS PAGE)

h and protruding barriers also available.

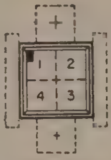
| con nber | Description | List Price* |
|---|---|---|
| -71 | Flange mount, ⅛" panel | $4.15 |
| -72 | Flange mount, ¼" panel | 4.15 |
| -73 | Flange mount, ⅜" panel | 4.15 |
| -74 | Flange mount, ½" panel | 4.15 |
| -75 | Barrier mount | 3.90 |
| -76 | Bezel, black | 4.15 |
| -77 | Bezel, clear | 4.15 |
| -78 | Bezel barrier, black | 4.15 |
| -79 | Bezel barrier, clear | 4.15 |

C

Type 04 Indicator/Switch

### SWITCH MODULE (FIG. C)
### (DISCOUNT SCHEDULE "A")

| con nber | Unit Type | No. of Poles | Contact Form | List Price* |
|---|---|---|---|---|
| 711 | Maintained | 1 | C | $4.35 |
| 713 | Maintained | 1 | Z | 4.60 |
| 721 | Maintained | 2 | C | 5.30 |
| 723 | Maintained | 2 | Z | 5.85 |
| 751 | Momentary | 1 | C | 2.80 |
| 753 | Momentary | 1 | Z | 3.05 |
| 761 | Momentary | 2 | C | 3.55 |
| 763 | Momentary | 2 | Z | 4.10 |



Color Key

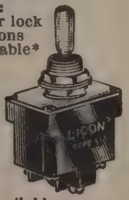
## TYPE 51 MIL APPROVED TOGGLES
### (DISCOUNT SCHEDULE "E")

vy-duty sealed toggle, approved to MIL-S-3950C, on QPL MS24523 (1-pole), MS24524 (2-pole), MS24525 (4-pole). d at 15 A resis. at 115 VAC. Dependable operation between ° F to +250° F. Ideal aircraft and industrial uses.

| n No. | Description | List Pr.▲ |
|---|---|---|
| 12200 | 1 pole On-Off | $ 4.40 |
| 22200 | 2 pole On-Off | 7.20 |
| 42200 | 4 pole On-Off | 11.45 |
| 12300 | 1 pole On-On | 4.40 |
| 22300 | 2 pole On-On | 7.20 |
| 42300 | 4 pole On-On | 11.45 |
| 12100 | 1 pole On-Off-On | 4.40 |
| 22100 | 2 pole On-Off-On | 7.20 |
| 42100 | 4 pole On-Off-On | 11.45 |
| 12700 | 1 pole Momen.* | 4.40 |
| 22700 | 2 pole Momen.* | 7.20 |
| 42700 | 4 pole Momen.* | 11.45 |

24658, MS24659, MS24660 lever lock also available.

**Note:**
Lever lock versions available*



## E 65 SUBMIN. SEALED SWITCH
### (DISCOUNT SCHEDULE "A")

65—Dependable, environment-free -action switching with ratings up to mps, 30 VDC. SPDT 2-Circuit con- ation. Solder terminals; quick-discon- , screw and potted leads available on ial order. Size, .850" x .875" x .320"; centers, ½". UL Listed.

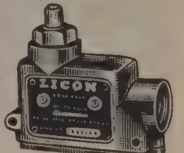
| n No. | Description | List Pr.* |
|---|---|---|
| 01 | Rigid lever | $ 8.60 |
| 01 | Pin plunger | 7.45 |
| 01 | Roller lever | 9.20 |
| 01 | Overtravel plung. | 10.40 |

### ★QUANTITY DISCOUNT SCHEDULE "A"

| ntity | Discount | Multiplier | Quantity | Discount | Multiplier |
|---|---|---|---|---|---|
| -24 | 0% | None | 100–199 | 35% | .65 |
| -49 | 20% | .80 | 200–499 | 37% | .63 |
| -99 | 30% | .70 | | | |

## TYPE 30 DIECAST ENCLOSED SWITCH
### (DISCOUNT SCHEDULE "A")

**Type 30**—Offers versatility for wide applications. Superior mounting and variety of infinitely adjustable actuators. Aluminum housing is rugged; permits adequate wiring room; has ½-14 internal tap conduit hub. Rated 15 amps, 125, 250 and 480 VAC; ½ amp, 115 VDC. Size, 3" x 1" x 2½".



### DIECAST HOUSINGS

| Licon No. | Description | List Pr.* |
|---|---|---|
| 30-100 | Overtravel plunger, side mount | $ 5.20 |
| 30-120 | Overtravel plunger, base mount | 5.20 |
| 30-200 | Internal sealed O.T. plunger, side mount | 6.83 |
| 30-220 | Internal sealed O.T. plunger, base mount | 6.83 |
| 30-300 | Roller lever actuator, side mount | 9.29 |
| 30-320 | Roller lever actuator, base mount | 9.29 |
| 30-400 | Internal sealed roller lever, side mount | 10.50 |
| 30-420 | Internal sealed roller lever, base mount | 10.50 |
| 30-500 | Roller plunger actuator, side mount | 9.29 |
| 30-520 | Roller plunger actuator, base mount | 9.29 |
| 30-600 | Palm button actuator, side mount | 11.08 |
| 30-620 | Palm button actuator, base mount | 11.08 |
| 30-700 | Internal sealed roller plunger, side mt. | 10.08 |
| 30-720 | Internal sealed roller plunger, base mt. | 10.08 |
| 30-800 | Internal sealed 1-way roller, side mount | 12.18 |
| 30-820 | Internal sealed 1-way roller, base mount | 12.18 |
| 30-900 | One-way roller, side mount | 11.08 |
| 30-920 | One-way roller, base mount | 11.08 |
| 30-200010 | Sealed O.T. plunger with external boot seal, side mount | 8.14 |
| 30-220010 | Sealed O.T. plunger, seal, base mount | 8.14 |

### SPLIT HOUSINGS

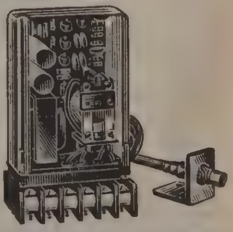
| Licon No. | Description | List Pr.* |
|---|---|---|
| 30-140 | Overtravel plunger, side mount | $ 5.26 |
| 30-150 | Overtravel plunger, base mount | 5.26 |
| 30-240 | Internal sealed O.T. plunger, side mount | 6.88 |
| 30-250 | Internal sealed O.T. plunger, base mount | 6.88 |
| 30-340 | Roller lever actuator, side mount | 9.29 |
| 30-350 | Roller lever actuator, base mount | 9.29 |
| 30-440 | Internal sealed roller lever, side mount | 10.50 |
| 30-450 | Internal sealed roller lever, base mount | 10.50 |
| 30-540 | Roller plunger actuator, side mount | 9.29 |
| 30-550 | Roller plunger actuator, base mount | 9.29 |
| 30-640 | Palm button actuator, side mount | 11.08 |
| 30-650 | Palm button actuator, base mount | 11.08 |
| 30-740 | Internal sealed roller plunger, side mt. | 10.08 |
| 30-750 | Internal sealed roller plunger, base mt. | 10.08 |
| 30-840 | Internal sealed 1-way roller, side mount | 12.18 |
| 30-850 | Internal sealed 1-way roller, base mount | 12.18 |
| 30-940 | One-way roller, side mount | 11.08 |
| 30-950 | One-way roller, base mount | 11.08 |

### INDIVIDUAL COMPONENTS FOR TYPE 30

| Licon No. | Description | List Pr.* |
|---|---|---|
| 73-1900 | Roller lever actuator (alone) | $3.65 |
| 73-1910 | Palm button actuator (alone) | 4.15 |
| 73-1920 | One-way roller actuator (alone) | 5.15 |
| 80-300610 | Split case housing bottom half, base mt. | .80 |
| 80-300609 | Split case housing bottom half, side mt. | .80 |
| 80-300502 | Die cast housing bottom plate, side mt. | .50 |
| 80-300508 | Die cast housing bottom plate, base mt. | .50 |
| 30-030 | Die cast terminal enclosure, side mount | 2.00 |

## TYPE 70-700 PROXIMITY SWITCH
### (DISCOUNT SCHEDULE "C")

Ultra compact switch for precision control without physical contact. Consists of a control module (2.53" x 3.75" x 1.35") which contains a 10 amp DPDT relay, plug-in terminal block (2.19" x 2.66" x .84"), potted sensor with 20′ cable, and potentiometer for sensitivity control. Senses both ferrous and non-ferrous metals. Up to 1000 operations per minute possible. Sensing range for .665" dia. sensor is .110" to .261"; for .440" dia. sensor, .048" to .148" (sensing ranges based on .235" dia. stainless steel target).



| Licon No. | Description | List Pr.■ |
|---|---|---|
| 70-7021 | Complete unit with .440" dia. sensor | $90.00 |
| 70-7022 | Complete unit with .665" dia. sensor | 97.00 |
| 70-7010 | Component, Controls module | 60.00 |
| 70-7011 | Component, Terminal block | 6.50 |
| 70-7026 | Component, .665" dia. sensor | 25.00 |
| 70-7020 | Component, .440" dia. sensor | 18.00 |
| 70-7018 | Component, Potentiometer | 5.50 |
| 70-7025 | NEMA Class 1 enclosure | 14.00 |

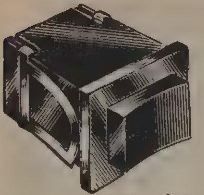
### ■QUANTITY DISCOUNT SCHEDULE "C"

| Quantity | Discount | Multiplier | Quantity | Discount | Multiplier |
|---|---|---|---|---|---|
| 1–2 | 0% | None | 10–24 | 20% | .80 |
| 3–5 | 5% | .95 | 25–49 | 25% | .75 |
| 6–9 | 10% | .90 | 50–99 | 30% | .70 |

### ▲QUANTITY DISCOUNT SCHEDULE "E"

| | | | | | |
|---|---|---|---|---|---|
| 1–4 | 0% | None | 50–249 | 33% | .67 |
| 5–19 | 18% | .82 | 250–999 | 38% | .62 |
| 20–49 | 27% | .73 | | | |

# waldom / molex LIGHTED PUSHBUTTON SWITCHES



Series 1175

Series 1820

## 1175 SERIES

Compact design has precision molded, durable phenolic housing; size 7/8″ w. x 1¼″ d. behind panel (excluding terminals). Terminals are standard ¼″ male tab and use Waldom female Q-D terminal SS-1090. Chrome-plated bezel, 1¼″ lg. x 1 5/64″ w. Available illuminated pushbutton switches and as indicator lights.

These sturdy, well-designed, illuminated pushbutton switches offe a wide choice of features plus limitless design possibilities. Available in alternate Push On–Push Off, Momentary Normally Ope Momentary Normally Closed actions. Mar-resistant nylon bu tons available in standard colors white, red, green and ambe Blue and yellow available on special order.

Mechanical life minimum 25,000 cycles. Both models easily sna mount into place. Price includes permanently installed lamp plu female quick disconnects that accommodate the switch's mal tabs. Tabs also have hole for soldering wire lead if desired.

## 1820 SERIES

Attractive and versatile—long lasting, highest quality molde nylon housing; size 31/32″ w. x 2 19/64″ d. behind panel (excludin terminals.) Terminals are standard 3/16″ male tabs and use Waldo female Q-D terminal SS-1187. Nylon bezel, 1 9/32″ lg. x 35/64″ Button size, 1 3/16″ lg. x 7/16″ w.

**Indicator lights, non-switched version of Series 1175 Pushbutto Switches also available. Write for pricing and full informatio**

## 1175 SERIES ILLUMINATED PUSHBUTTON SWITCHES

Panel cut-out dimension, 1.115″ x .915″.

| Waldom/Molex Number | | | | Rated | | With Lamp Number | Legend | SPST Switch Action | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| White* 01- | Red* 01- | Amber* 01- | Green* 01- | Volts AC | Amps | | | | 1-9 | 10-24 | 25-49 | 50-99* |
| 10-6001 | 10-6002 | 10-6008 | 10-6003 | 6 | 2 | 2114 | None | Push-On, Push-Off | $3.38 | $2.76 | $2.46 | $2.34 |
| 11-6006 | 11-6007 | 11-6001 | 11-6002 | | | | | Momentary NO | 3.42 | 2.80 | 2.49 | 2.37 |
| 12-6006 | 12-6007 | 12-6001 | 12-6002 | | | | | Momentary NC | 3.42 | 2.80 | 2.49 | 2.37 |
| 10-4013 | 10-4014 | 10-4015 | 10-4016 | 14 | 2 | 2182 | None | Push-On, Push-Off | 3.33 | 2.73 | 2.42 | 2.30 |
| 11-4003 | 11-4004 | 11-4005 | 11-4006 | | | | | Momentary NO | 3.38 | 2.76 | 2.46 | 2.34 |
| 12-4001 | 12-4002 | 12-4003 | 12-4004 | | | | | Momentary NC | 3.38 | 2.76 | 2.46 | 2.34 |
| 10-3003 | 10-3004 | 10-3005 | 10-3006 | 28 | 2 | 2185 | None | Push-On, Push-Off | 3.45 | 2.83 | 2.51 | 2.38 |
| 11-3008 | 11-3009 | 11-3010 | 11-3011 | | | | | Momentary NO | 3.50 | 2.86 | 2.54 | 2.41 |
| 12-3002 | 12-3003 | 12-3004 | 12-3005 | | | | | Momentary NC | 3.50 | 2.86 | 2.54 | 2.41 |
| 15-1061 | 15-1062 | 15-1067 | 15-1068 | 125† | 8.5 | NE-2II‡ | None | Push-On, Push-Off | 3.61 | 2.95 | 2.62 | 2.49 |
| 16-1049 | 16-1050 | 16-1045 | 16-1051 | | | | | Momentary NO | 3.70 | 3.02 | 2.69 | 2.56 |
| 17-1006 | 17-1007 | 17-1002 | 17-1008 | | | | | Momentary NC | 3.70 | 3.02 | 2.69 | 2.56 |
| 10-6004 | 10-6009 | 10-6010 | 10-6005 | 6 | 2 | 2114 | **ON** | Push-On, Push-Off | 3.62 | 2.96 | 2.63 | 2.50 |
| 11-6009 | 11-6008 | 11-6003 | 11-6004 | | | | | Momentary NO | 3.66 | 3.00 | 2.66 | 2.53 |
| 12-6008 | 12-6009 | 12-6003 | 12-6004 | | | | | Momentary NC | 3.66 | 3.00 | 2.66 | 2.53 |
| 10-6006 | 10-6007 | 10-6011 | 10-6012 | 6 | 2 | 2114 | **OFF** | Push-On, Push-Off | 3.62 | 2.96 | 2.63 | 2.50 |
| 11-6010 | 11-6011 | 11-6005 | 11-6012 | | | | | Momentary NO | 3.66 | 3.00 | 2.66 | 2.53 |
| 12-6010 | 12-6011 | 12-6005 | 12-6012 | | | | | Momentary NC | 3.66 | 3.00 | 2.66 | 2.53 |
| 10-4017 | 10-4018 | 10-4019 | 10-4020 | 14 | 2 | 2114 | **ON** | Push-On, Push-Off | 3.58 | 2.93 | 2.60 | 2.47 |
| 11-4007 | 11-4008 | 11-4009 | 11-4010 | | | | | Momentary NO | 3.62 | 2.96 | 2.63 | 2.50 |
| 12-4005 | 12-4006 | 12-4007 | 12-4008 | | | | | Momentary NC | 3.62 | 2.96 | 2.63 | 2.50 |
| 10-4021 | 10-4022 | 10-4023 | 10-4024 | 14 | 2 | 2114 | **OFF** | Push-On, Push-Off | 3.58 | 2.93 | 2.60 | 2.47 |
| 11-4011 | 11-4012 | 11-4013 | 11-4014 | | | | | Momentary NO | 3.62 | 2.96 | 2.63 | 2.50 |
| 12-4009 | 12-4010 | 12-4011 | 12-4012 | | | | | Momentary NC | 3.62 | 2.96 | 2.63 | 2.50 |
| 10-3007 | 10-3008 | 10-3009 | 10-3010 | 28 | 2 | 2185 | **ON** | Push-On, Push-Off | 3.70 | 3.02 | 2.69 | 2.56 |
| 11-3012 | 11-3013 | 11-3014 | 11-3015 | | | | | Momentary NO | 3.74 | 3.06 | 2.72 | 2.58 |
| 12-3006 | 12-3007 | 12-3008 | 12-3009 | | | | | Momentary NC | 3.74 | 3.06 | 2.72 | 2.58 |
| 10-3011 | 10-3012 | 10-3013 | 10-3014 | 28 | 2 | 2185 | **OFF** | Push-On, Push-Off | 3.70 | 3.02 | 2.69 | 2.56 |
| 11-3016 | 11-3017 | 11-3018 | 11-3019 | | | | | Momentary NO | 3.74 | 3.06 | 2.72 | 2.58 |
| 12-3010 | 12-3011 | 12-3012 | 12-3013 | | | | | Momentary NC | 3.74 | 3.06 | 2.72 | 2.58 |
| 15-1063 | 15-1069 | 15-1070 | 15-1064 | 125† | 8.5 | NE-2H‡ | **ON** | Push-On, Push-Off | 3.85 | 3.15 | 2.80 | 2.66 |
| 16-1052 | 16-1053 | 16-1047 | 16-1048 | | | | | Momentary NO | 3.94 | 3.22 | 2.86 | 2.72 |
| 17-1009 | 17-1010 | 17-1004 | 17-1005 | | | | | Momentary NC | 3.94 | 3.22 | 2.86 | 2.72 |
| 15-1065 | 15-1066 | 15-1071 | 15-1072 | 125† | 8.5 | NE-2H‡ | **OFF** | Push-On, Push-Off | 3.85 | 3.15 | 2.80 | 2.66 |
| 16-1054 | 16-1055 | 16-1046 | 16-1056 | | | | | Momentary NO | 3.94 | 3.22 | 2.86 | 2.72 |
| 17-1011 | 17-1012 | 17-1003 | 17-1013 | | | | | Momentary NC | 3.94 | 3.22 | 2.86 | 2.72 |

## 1820 SERIES ILLUMINATED PUSHBUTTON SWITCHES

Panel cut-out dimension, .500″ x 1.215″.

| White* 01- | Red* 01- | Amber* 01- | Green* 01- | Volts AC | Amps | With Lamp Number | Legend | SPST Switch Action | 1-9 | 10-24 | 25-49 | 50-99* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50-6001 | 50-6002 | 50-6008 | 50-6003 | 6 | 2 | 2114 | None | Push-On, Push-Off | $3.84 | $3.14 | $2.79 | $2.65 |
| 52-6006 | 52-6007 | 52-6001 | 52-6002 | | | | | Momentary NO | 3.99 | 3.27 | 2.90 | 2.76 |
| 53-6006 | 53-6007 | 53-6001 | 53-6002 | | | | | Momentary NC | 3.99 | 3.27 | 2.90 | 2.76 |
| 50-4001 | 50-4002 | 50-4003 | 50-4004 | 14 | 2 | 2182 | None | Push-On, Push-Off | 3.86 | 3.16 | 2.81 | 2.67 |
| 52-4001 | 52-4002 | 52-4003 | 52-4004 | | | | | Momentary NO | 4.02 | 3.29 | 2.92 | 2.77 |
| 53-4001 | 53-4002 | 53-4003 | 53-4004 | | | | | Momentary NC | 4.02 | 3.29 | 2.92 | 2.77 |
| 50-3002 | 50-3003 | 50-3004 | 50-3005 | 28 | 2 | 2185 | None | Push-On, Push-Off | 3.84 | 3.14 | 2.79 | 2.65 |
| 52-3001 | 52-3002 | 52-3003 | 52-3004 | | | | | Momentary NO | 3.99 | 3.27 | 2.90 | 2.76 |
| 53-3001 | 53-3002 | 53-3003 | 53-3004 | | | | | Momentary NC | 3.99 | 3.27 | 2.90 | 2.76 |
| 55-1002 | 55-1003 | 55-1008 | 55-1009 | 125† | 9 | NE-2H‡ | None | Push-On, Push-Off | 3.73 | 3.05 | 2.71 | 2.57 |
| 57-1006 | 57-1007 | 57-1002 | 57-1008 | | | | | Momentary NO | 3.88 | 3.18 | 2.82 | 2.68 |
| 58-1005 | 58-1006 | 58-1001 | 58-1007 | | | | | Momentary NC | 3.88 | 3.18 | 2.82 | 2.68 |
| 50-6004 | 50-6009 | 50-6010 | 50-6005 | 6 | 2 | 2114 | **ON** | Push-On, Push-Off | 4.08 | 3.34 | 2.97 | 2.82 |
| 52-6008 | 52-6009 | 52-6003 | 52-6004 | | | | | Momentary NO | 4.24 | 3.47 | 3.08 | 2.93 |
| 53-6008 | 53-6009 | 53-6003 | 53-6004 | | | | | Momentary NC | 4.24 | 3.47 | 3.08 | 2.93 |
| 50-6006 | 50-6007 | 50-6011 | 50-6012 | 6 | 2 | 2114 | **OFF** | Push-On, Push-Off | 4.08 | 3.34 | 2.97 | 2.82 |
| 52-6010 | 52-6011 | 52-6005 | 52-6012 | | | | | Momentary NO | 4.24 | 3.47 | 3.08 | 2.93 |
| 53-6010 | 53-6011 | 53-6005 | 53-6012 | | | | | Momentary NC | 4.24 | 3.47 | 3.08 | 2.93 |
| 50-4005 | 50-4006 | 50-4007 | 50-4008 | 14 | 2 | 2182 | **ON** | Push-On, Push-Off | 4.10 | 3.36 | 2.98 | 2.83 |
| 52-4005 | 52-4006 | 52-4007 | 52-4008 | | | | | Momentary NO | 4.26 | 3.48 | 3.10 | 2.95 |
| 53-4005 | 53-4006 | 53-4007 | 53-4008 | | | | | Momentary NC | 4.26 | 3.48 | 3.10 | 2.95 |
| 50-4009 | 50-4010 | 50-4011 | 50-4012 | 14 | 2 | 2182 | **OFF** | Push-On, Push-Off | 4.10 | 3.36 | 2.98 | 2.83 |
| 52-4009 | 52-4010 | 52-4011 | 52-4012 | | | | | Momentary NO | 4.26 | 3.48 | 3.10 | 2.95 |
| 53-4009 | 53-4010 | 53-4011 | 53-4012 | | | | | Momentary NC | 4.26 | 3.48 | 3.10 | 2.95 |
| 50-3006 | 50-3007 | 50-3008 | 50-3009 | 28 | 2 | 2185 | **ON** | Push-On, Push-Off | 4.08 | 3.34 | 2.97 | 2.82 |
| 52-3005 | 52-3006 | 52-3007 | 52-3008 | | | | | Momentary NO | 4.24 | 3.47 | 3.08 | 2.93 |
| 53-3005 | 53-3006 | 53-3007 | 53-3008 | | | | | Momentary NC | 4.24 | 3.47 | 3.08 | 2.93 |
| 50-3010 | 50-3011 | 50-3012 | 50-3013 | 28 | 2 | 2185 | **OFF** | Push-On, Push-Off | 4.08 | 3.34 | 2.97 | 2.82 |
| 52-3009 | 52-3010 | 52-3011 | 52-3012 | | | | | Momentary NO | 4.24 | 3.47 | 3.08 | 2.93 |
| 53-3009 | 53-3010 | 53-3011 | 53-3012 | | | | | Momentary NC | 4.24 | 3.47 | 3.08 | 2.93 |
| 55-1004 | 55-1010 | 55-1011 | 55-1005 | 125† | 9 | NE-2H‡ | **ON** | Push-On, Push-Off | 3.97 | 3.25 | 2.89 | 2.75 |
| 57-1009 | 57-1010 | 57-1003 | 57-1005 | | | | | Momentary NO | 4.13 | 3.38 | 3.00 | 2.85 |
| 58-1008 | 58-1009 | 58-1002 | 58-1004 | | | | | Momentary NC | 4.13 | 3.38 | 3.00 | 2.85 |
| 55-1006 | 55-1007 | 55-1012 | 55-1013 | 125† | 9 | NE-2H‡ | **OFF** | Push-On, Push-Off | 3.97 | 3.25 | 2.89 | 2.75 |
| 57-1011 | 57-1012 | 57-1004 | 57-1013 | | | | | Momentary NO | 4.13 | 3.38 | 3.00 | 2.85 |
| 58-1010 | 58-1011 | 58-1003 | 58-1012 | | | | | Momentary NC | 4.13 | 3.38 | 3.00 | 2.85 |

*Button color. †Component is UL and CSA recognized. ‡Neon bulb supplied with 35K-ohm resistor; all other bulbs incandescen

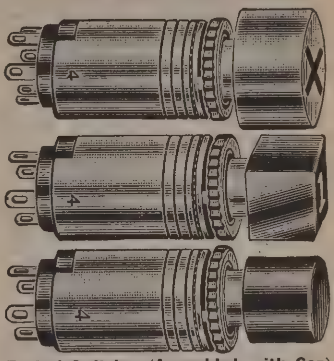
***Larger quantity prices on request.**

**Manufactured by Molex Products, these items are made available from electronic distributors through Waldom Electronics, In**

# DIALIGHT LIGHTED PUSHBUTTON SWITCHES & INDICATOR LIGHTS DIALCO®

## SINGLE-HOLE MOUNTING PUSHBUTTON SWITCHES AND MATCHING INDICATOR LIGHTS

venient, modular design allows assembly of an illuminated switch to meet your ticular requirement. **Three Switch Assemblies:** Choice of NO, NC or 2-Circuit ingements in two styles: One to accommodate screw-in type caps; another for friction-aps. Switch contacts rated 3 amps resistive at 125 VAC or 30 VDC. **Caps:** Choice of w-in or friction fit (rotatable or keyed) styles in ½″ or ¾″ sizes, round or square pe, and a choice of colors. **Matching Indicator Lights:** Available in two sizes to ch your indicating switches. Simply select the indicator base assembly size desired, add the cap of your choice (the same caps used with switches).


Typical Switches (Assembled, with Cap)

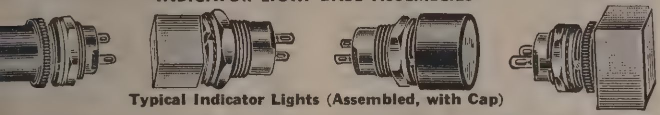
### SWITCH BASE ASSEMBLIES

gle-hole mounting; fit panels up to 3⁄16″ thick. Size, .650″ dia. x 115⁄32″ lg.

| witch ircuit | For Friction-Fit Caps Either ½″ or ¾″ Cap Size | For Screw-In Caps Only |  | Net Each, Lots of |  |  |
|---|---|---|---|---|---|---|
|  |  | ½″ mtg. | 15⁄32″ mtg. | 1-9 | 10-24 | 25-99* |
| T-NO | 513-0101-604 | 513-0105-604 | 513-0104-604 | $3.59 | $3.23 | $3.04 |
| T-NC | 513-0201-604 | 513-0205-604 | 513-0204-604 | 3.59 | 3.23 | 3.04 |
| ircuit* | 513-0301-604 | 513-0305-604 | 513-0304-604 | 3.97 | 3.56 | 3.34 |

e circuit NO, one circuit NC.

### INDICATOR LIGHT BASE ASSEMBLIES


Typical Indicator Lights (Assembled, with Cap)

ommodate T-1¾ incandescent lamp from 1.35 to 28 V. Accept friction-fit caps, ed or rotatable, ½″ or ¾″ size. Length, 27⁄32″ max.

| Dialco Number | Description | Net Each, Lots of 1-9 | 10-24 | 25-99* |
|---|---|---|---|---|
| -9730-14-602 | For 15⁄32″ hole, front mounting (.549″ dia.) | $1.16 | $1.03 | $0.96 |
| -9830-14-604 | For ½″ hole, front or rear mount (.560″ dia.) | 1.16 | 1.03 | .96 |

**COLOR OF LENS FACE**

Indicated by last figure in Dialco number. For simplicity, all numbers listed use suffix "1" to indicate the lens face is **Red.** When a color other than red is required, change the last figure per following list:

| Last Figure in No. | Lens Face Color |
|---|---|
| 1 | Red (as listed) |
| 2 | Green |
| 3 | Amber (yellow) |
| 4 | Blue |
| 5 | White (translucent) |
| 6 | Light yellow |
| 8 | Ivory |

**Examples:** 183-1472 (Green)
300-1874 (Blue)

### CAPS FOR SWITCH BASE ASSEMBLIES OR INDICATOR LIGHT

ction-fit caps are available in round or square shapes; choice of keyed (non-rotatable) rotatable style; ½″ or ¾″ size. Screw-in caps fit only the switch base assemblies ignated for them; come only in ½″ round configuration. **Colors:** All items listed are as indicated by **1**, the last digit in the ordering number (e.g., 183-1471). **For other ors, see color table;** same prices. Legends may be hot-stamped or engraved; pricing request.

### ½″ FRICTION-FIT AND SCREW-IN CAPS

| Description | Shape | Friction Fit Caps Rotatable Number | Friction Fit Caps Keyed Number (Non-Rotatable) | Screw-In Cap Number | Net Each, Lots of 1-9 | 10-24 | 25-99* |
|---|---|---|---|---|---|---|---|
| d Color, Translucent Face | Round | 183-1471 | 186-1471 | 192-1471 | $0.65 | $0.61 | $0.56 |
| nd Sides | Square | 185-1871 | 184-1871 | ............... | .65 | .61 | .56 |
| nslucent Colored Face, | Round | 183-5071 | 186-5071 | 192-5071 | .65 | .61 | .56 |
| lack Opaque Sides | Square | 185-5071 | 184-5071 | ............... | .65 | .61 | .56 |
| nslucent Colored Face, | Round | 183-5171 | 186-5171 | 192-5171 | .65 | .61 | .56 |
| ray Opaque Sides | Square | 185-5171 | 184-5171 | ............... | .65 | .61 | .56 |

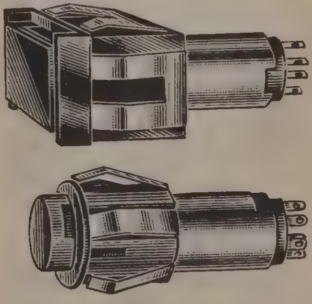
### ¾″ FRICTION-FIT CAPS

| Description | Shape | Rotatable Number | Keyed Number (Non-Rotatable) | Screw-In Cap Number | 1-9 | 10-24 | 25-99* |
|---|---|---|---|---|---|---|---|
| d Color, Translucent Face | Round | 191-1471 | 188-1471 | ............... | $0.91 | $0.86 | $0.80 |
| nd Sides | Square | 190-1871 | 187-1871 | ............... | .91 | .86 | .80 |
| nslucent Colored Face, | Round | 191-5071 | 188-5071 | ............... | .91 | .86 | .80 |
| lack Opaque Sides | Square | 190-5071 | 187-5071 | ............... | .91 | .86 | .80 |
| nslucent Colored Face, | Round | 191-5171 | 188-5171 | ............... | .91 | .86 | .80 |
| ray Opaque Sides | Square | 190-5171 | 187-5171 | ............... | .91 | .86 | .80 |

## NEW SNAP-IN MOUNTING PUSHBUTTON SWITCHES AND MATCHING INDICATOR LIGHTS

### SWITCH BASE ASSEMBLIES

p-in mounting for panels up to 3⁄16″ thick. Includes bezel, clip and spanner ring. mentary non-snap action switches have contacts rated 3 amps resistive at 125 VAC 0 VDC. Life at rated load, 100,000 operations. Suffix **001** in Dialco number indicates k bezel; to specify gray bezel, change 001 to **002** (e.g., 513-0106-**002**). Other bezel rs available on special order. Rectangular bezel units interchangeable with most mp displays.


Typical Snap-In Switches (Assembled, with Cap)

| witch ircuit | For ⅝″ Sq. Cap | For ⅝″ Rnd. Cap | For ¾″ x 1″ Cap Less Barrier | For ¾″ x 1″ Cap With Barrier | Net Each, Lots of 1-9 | 10-24 | 25-99* |
|---|---|---|---|---|---|---|---|
| T-NO | 513-0106-001 | 513-0107-001 | 513-0109-001 | 513-0110-001 | $4.34 | $3.89 | $3.65 |
| T-NC | 513-0206-001 | 513-0207-001 | 513-0209-001 | 513-0210-001 | 4.34 | 3.89 | 3.65 |
| ircuit* | 513-0306-001 | 513-0307-001 | 513-0309-001 | 513-0310-001 | 4.72 | 4.22 | 3.96 |

e circuit NO, one circuit NC.

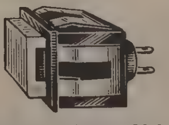
### INDICATOR LIGHT BASE ASSEMBLIES

ommodate T-1¾ incandescent lamp in a range of voltages to 28 V.

| ezel olor | For 300 Series ⅝″ Sq. Cap | For 301 Series ⅝″ Rnd. Cap | For 303 Series ¾″ x 1″ Cap Less Barrier | For 303 Series ¾″ x 1″ Cap With Barrier | Net Each, Lots of 1-9 | 10-24 | 25-99* |
|---|---|---|---|---|---|---|---|
| ck | 533-0601 | 533-0701 | 533-0901 | 533-1001 | $1.91 | $1.73 | $1.57 |
| y | 533-0602 | 533-0702 | 533-0902 | 533-1002 | 1.91 | 1.73 | 1.57 |

### CAPS FOR INDICATOR LIGHT OR SWITCH BASE ASSEMBLIES

ns listed are red as indicated by **1**, the last digit in the ordering number (e.g., 300-1). Also available in green, amber (yellow), blue, white, and light yellow. **To order, color table;** same prices.


Typical Indicator Light (Assembled, with Cap)

| ialco mber | Size | Net Each, Lots of 1-9 | 10-24 | 25-99* | Dialco Number | Size | Net Each, Lots of 1-9 | 10-24 | 25-99* |
|---|---|---|---|---|---|---|---|---|---|
| -1871 | ⅝″ sq. | $0.91 | $0.86 | $0.80 | 301-1471 | ⅝″ rnd. | $0.91 | $0.86 | $0.80 |
| -3471 | ¾″ x 1″ | 1.01 | .95 | .88 |  |  |  |  |  |

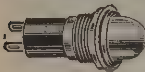
**lco Model 506-1500 Spanner Wrench**—For snap-in mounting switches. Permits ening bezel and clip to switch or matching indicator light base. Net Each. . **$4.69**

**★PRICES ON QUANTITIES OF 100-249, 250-499, 500-999 AND HIGHER ON REQUEST**

# DIALIGHT PILOT LIGHT ASSEMBLIES DIALCO®

## NEON SERIES 95-, 52-0408

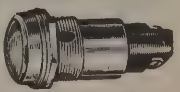
**Now also available with new High Brightness NE-51H Neon Glow Lamp. Have Patented Built-in Resistor.**



**Series 95-0408**—Two types available: Series 95-0408 enclosed neon indicator light has 56K-ohm, ⅓-watt resistor built-in for use with the regular NE-51 neon lamp on 105–125 volt circuit. Series 95-0463 has built-in 22K-ohm resistor for use with new NE-51H high brightness neon lamp on 110–125 VAC circuits. Rugged design; resistor fully insulated in molded phenolic. Plastic head gives 180° light spread. Mounting bushing is black nickel plated. Solder terminals. Size: 2¹⁄₁₆″ long, ¹⁵⁄₁₆″ O.D.; mounts in ¹¹⁄₁₆″ hole in panels up to ⅜″ thick. UL and CSA Listed. Meets requirements of MIL-L-3661A. **Series 52-0408** same, but with internally fluted stovepipe lens. Shpg. Wt., 3 oz. Less lamp. **For high brightness version:** Change **08** in number to **63** (e.g., 95-0463) and final suffix to **-0211** (e.g., 95-0463-0931-**0211**) for 22K-ohm resistor.
Net Each, 1–9. .**$1.45**; 10–24. .**$1.29**

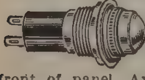
| Dialco No. 95- | Color | Dialco No. 52- |
|---|---|---|
| 0408-0931-241 | Red | 0408-0991-241 |
| 0408-0933-241 | Amber | 0408-0993-241 |
| 0408-0935-241 | White | 0408-0995-241 |
| 0408-0937-241 | Clear | 0408-0997-241 |

## DIALCO NEON SERIES 32-0914



Enclosed assemblies for use with NE-45 neon glow lamps with candelabra screw base for 105–125 volts. Replaceable from front of panel. Convex lens in choice of colors has friction-fit, polished chrome lens holder. Nickel plated mounting bushing. Iridite coated, cadmium plated steel hex nut, split lockwasher. Binding screw terminals. Size, 2½″ long, 1³⁄₁₆″ O.D.; mounts in 1″ hole. UL and CSA Listed. Shpg. Wt., 4 oz. Less lamp. **Dialco Nos. 32-0914-0111-302** (Red), **32-0914-0113-302** (Amber) or **32-0914-0117-302** (Clear)—Net, 1–9 **$1.97**; 10–24 **$1.77**

## INCANDESCENT SERIES 81-0410
## SERIES 95-0410, 52-0410

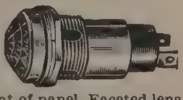


**Series 81-0410**—For use with T-3¼ bulb, miniature bayonet base incandescent, for 2–55 V circuits. Replaceable from front of panel. Aviation type assembly with socket shell encased in molded phenolic. Smooth face lenses in ½″ brass lens holder. Holder and mounting bushing black nickel plated. Solder terminals. Size: 2¼″ lg., ¹⁵⁄₁₆″ O.D.; mounts in ¹¹⁄₁₆″ hole in panels up to ⅜″ thick. UL and CSA Listed. Meets MIL-L-3661A requirements.
Net Each, 1–9. .**$1.45**; 10–24. .**$1.28**
**Series 95-0410, 52-0410**—Same as 81-0410 but ⅝″ plastic stovepipe lens. 52-0410 lens is internally fluted. Wt., 3 oz. Less lamp.
Net Each, 1–9. .**$1.23**; 10–24. .**$1.09**

| * | Convex No. 81-0410- | Stovepipe No. 95-0410- | Fluted No. 52-0410- |
|---|---|---|---|
| R | 0111-201 | 0971-201 | 0991-201 |
| G | 0112-201 | 0972-201 | 0992-201 |
| A | 0113-201 | 0973-201 | 0993-201 |
| W | 0135-201† | 0975-201 | 0995-201 |

*Lens: R—red, G—green, A—amber, W—white. †Translucent unfrosted lens.

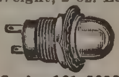
## ENCLOSED ASSEMBLIES
## ONE-INCH SERIES 32-4001



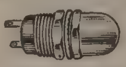
Series for use with S-6 incandescent bulbs with candelabra screw base for 6-125 volt circuits. Lamp replaceable from front of panel. Faceted lens in choice of colors with friction-fit lens holder of polished chrome; white nickel plated mounting bushing. Iridite coated, cadmium plated steel hex nut and split lockwasher. Solder terminals. Size, 2²⁵⁄₃₂″ long, 1³⁄₁₆″ O.D.; mounts in 1″ hole. UL and CSA Listed. Shpg. Wt., 4 oz. Less lamp. **Dialco Nos. 32-4001-0431-302** (Red), **32-4001-0432-302** (Green), **32-4001-0433-302** (Amber) or **32-4001-0437-302** (Clear)—Net Each, 1–9. .**$1.66**; 10–24. .**$1.45**

## SUBMINIATURE SERIES

For use with T-1¾ bulbs for 1.35–28 V. Bulb replaceable from front of panel. Military grade phenolic assures permanent isolation from ground. Fully insulated. Black nickel finish. Lockwasher and nut supplied. Size: 1⅜″ long; ¾″ O.D. Shipping Weight, 2 oz. Less lamp.



**Series 101-5030**



**Series 101-3830**

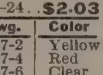
## TWO-TERMINAL PLASTIC DOME TYPES

Series 101-5030 Front Mount and Series 101-3830 Back Mount: Front mounting units mount in ¹⁷⁄₃₂″ hole; back mounting units, in ¹⁵⁄₃₂″ hole. Solder terminals.
Net Each, 1–9. .**$1.45**; 10–24. .**$1.27**

| Front Mtg. No. | * | Back Mtg. No. |
|---|---|---|
| 101-5030-0971-201 | R | 101-3830-0971-201 |
| 101-5030-0972-201 | G | 101-3830-0972-201 |
| 101-5030-0973-201 | A | 101-3830-0973-201 |
| 101-5030-0975-201 | W | 101-3830-0975-201 |

*R–Red; G–Green; A–Amber; W–White.

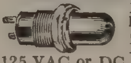
## INCANDESCENT SUBMIN. MS25256



Front mount., in ¹⁵⁄₃₂″ hole. Use T-1¾ incand. bulbs. Fully insulated. Size: 1³⁄₃₂″ x ⅝″; 1½ oz. Less lamp.
Net Each, 1–9. .**$1.39**; 10–24. .**$1.22**

| Dialco No. | MS Drwg. | Color |
|---|---|---|
| 162-8430-0933-502 | MS25256-2 | Yellow |
| 162-8430-0932-502 | MS25256-4 | Green |
| 162-8430-0931-502 | MS25256-6 | Red |
| 162-8430-0937-502 | MS25256-8 | Clear |
| 162-8430-0975-502 | MS25256-10 | White |
| 162-8430-0934-502 | MS25256-12 | Blue |

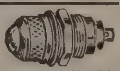
## NEON SUBMINIATURE MS25257



Front mount., in ¹⁵⁄₃₂″ hole. Built-in resistor (pat.); use T-2 Neon Glow Lamp (NE-2D); for 105-125 VAC or DC. Size: 1½″ x ⅝″; 1½ oz. Less lamp.
Net Each, 1–9. .**$2.33**; 10–24. .**$2.03**

| Dialco No. | MS Drwg. | Color |
|---|---|---|
| 137-8836-0933-552 | MS25257-2 | Yellow |
| 137-8836-0931-552 | MS25257-4 | Red |
| 137-8836-0937-552 | MS25257-6 | Clear |

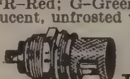
## 1-TERMINAL NON-DIMMING
### With Binding Screw or Solder Terminal



For grounded circuits; meet applicable MIL specs. Frosted lens unless otherwise noted. Size, 1¹¹⁄₃₂″ long, ⅝″ O.D.; mounts in ¹⁵⁄₃₂″ hole. Shpg. Wt., 1½ oz. Less lamp.
**Series 8-1830**—Net Each, 1–9. . . .**$1.88**
Net Each, 10–24. . . . . . . . . . . . . . . **1.67**
**Series 8-1930**—Net Each, 1–9. . . . **1.60**
Net Each, 10–24. . . . . . . . . . . . . . . **1.41**

| Binding Screw No. | * | Solder Term. No. |
|---|---|---|
| 8-1830-0111-201 | R | 8-1930-0111-201 |
| 8-1830-0112-201 | G | 8-1930-0112-201 |
| 8-1830-0113-201 | A | 8-1930-0113-201 |
| 8-1830-0135-201 | W | 8-1930-0135-201 |
| 8-1830-0117-201 | C | 8-1930-0117-201 |

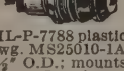
*R–Red; G–Green; A–Amber; W–Translucent, unfrosted white lens; C–Clear.



## DIALCO 1-TERMINAL LIGHT SHIELD UNITS
### Two Types of Terminals

For grounded circuits. Size opening ¼″ x ⁵⁄₁₆″ for light on panels. Size, 1⁵⁄₃₂″ long, ⅝″ O.D.; mounts in ¹⁵⁄₃₂″ hole. Shpg. Wt., 1½ oz. Less lamp.
**Dialco No. 4-1830-2900-201**—Screw term.
Net Each, 1–9. .**$2.21**; 10–24. .**$1.93**
**Dialco No. 4-1930-2900-201**—Solder term.
Net Each, 1–9. .**$1.90**; 10–24. .**$1.66**

## SERIES 270 FOR PLASTIC PLATE EDGE-LIGHTING



Subminiature units for MIL-P-7788 plastic plate panels, per MIL drwg. MS25010-1A to 8A. Size, 1⁷⁄₁₆″ long, 1½″ O.D.; mounts in ¹⁵⁄₃₂″ hole. Shpg. Wt., 2 oz. Less lamp.
**Series 270-1930**—Solder terminals.
Net Each, 1–9. . . . .**90c**; 10–24. . . . .**80c**
**Series 270-1830**—Screw terminals.
Net Each, 1–9. .**$1.08**; 10–24. . . . .**93c**

| Solder Terminal No. 270- | Filter | Screw Terminal No. 270- |
|---|---|---|
| 1930-0111-702 | Red | 1830-0111-702 |
| 1930-0171-702 | Clear | 1830-0171-702 |
| 1930-3111-702 | Red* | 1830-3111-702 |
| 1930-3771-702 | Clear* | 1830-3771-702 |

*With light-emitting top.

## TWO-TERMINAL NON-DIMMING
## SERIES 111-3830

Rugged, general purpose with glass lens metal holders; unscrew for easy lamp placement. Frosted lens except as oth wise noted. Internal tooth lockwasher nut; solder terminals. Size, 1¹¹⁄₃₂″ long, O.D.; mounts in ¹⁵⁄₃₂″ hole. Shpg. W 1½ oz. Less lamp.

| Dialco No | Lens Color | Net Ea., L 1-9 | 10- |
|---|---|---|---|
| 111-3830-0111-201 | Red | $1.94 | $1. |
| 111-3830-0112-201 | Green | 1.94 | 1. |
| 111-3830-0113-201 | Amber | 1.94 | 1. |
| 111-3830-0135-201 | White* | 1.94 | 1. |
| 111-3830-0117-201 | Clear | 1.94 | 1. |

*Translucent unfrosted lens.

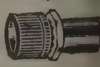
## DIALCO DATALITES•

**Ultra-Miniature Indicator Lights Computers, Data Processing Equipme Automation, etc. Mount in ⅜″ h**
"Datalites" are made in two basic sty With Dialco's lamp cartridges, which replaceable; and with built-in neon lan which are permanent, not replaceable.
• Reg. T.

### SINGLE LAMP HOLDER

Use with Dialco's lamp cartridge, removable from front. Size, 1¹³⁄₁₆″ long, ½″ O.D., less cartridge; mounts in ⅜″ hole. Two insulated terminals offset for correct polarity when replacing cartridges in DC circuits. Conform to applicable MIL specs. Collar, flange ring and mounting bushing are of aluminum with black anodized finish. With mounting hardware, less cartridge. Shpg. Wt., 2 oz.

**508-7538-50 Lamp Hold**



**plus—**

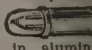
**Dialco Lam Cartridge makes—**

**Complete Dial DATALITE**

**No. 508-7538-504**—Net Ea., 1–9. .**$1.**
10–24. . . . . .**$1.23**; 25–99. . . . . . **1.**
**No. 508-7545-504**—Similar to above, ⁵⁄₆₄″ longer to accommodate new neon c tridges No. 45 and 45H (High Brightne
Net Each, 1–9. . . . . . . . . . . . . . . . . .**$1.**
10–24. . . . . .**$1.23**; 25–99. . . . . . **1.**

## NEON LAMP CARTRIDGES

**For use with 508-7538-504 Lamp Hol**



Consists of NE-2E neon bulb, 1/25 watt, with starting 65 VAC and 90 VDC; mounted in alumin sleeve, capped with plastic stovepipe le Requires ⅓-watt ballast resistor. S 1¹⁹⁄₆₄″ long, ²¹⁄₆₄″ O.D. Shpg. Wt., 1 Lens is transparent.
**Nos. 507-3835-0931-600** (Red,) **-0933-** (Yellow), **-0935-600** (White) or **-0937-** (Clear)—Net Each, 1–9. . . . . . . . . .**$1.**
10–24. . . . . . . .**89c**; 25–99. . . . . . .

## NEON CARTRIDGES

High Brightness. Similar to above, ⁵⁄₆₄″ longer. Built-in resistor (1/10 W).
**Any Model**—Net Each, 1–9. . . . . .**$1.**
10–24. . . . . .**$1.20**; 25–99. . . . . . **1.**

| Stovepipe No. 507- | Long Cylinder No. 507- | Len |
|---|---|---|
| 4537-0931-640* | 4537-1531-640* | Re |
| 4538-0931-610† | 4538-1531-610† | Re |

***Regular:** Has built-in 56K resistor 105–125 VAC/DC. †**High-Brightness:** H built-in 22K resistor for 110–125 VA ‡**Lens Colors:** To specify color, char last digit in third group of Cat. No. (e. 507-4537-0931-): Red—1; Amber—3; Wh —5; Light Yellow—6; Clear (Colorless)—

## INCANDESCENT LAMP CARTRIDGE

| V | A | Hrs. |
|---|---|---|
| 6 | .20 | 1000 |
| 14 | .08 | 750 |
| 28 | .04 | 1000 |

Uses T-1¾ incandesc bulb mounted in alu num sleeve and cap with short cylindri lens. Items listed have translucent lens; ot colors on request. S 1⁷⁄₆₄″ long, ²¹⁄₆₄″ O Shpg. Wt., 1 oz.

| Dialco No. 507- | V | Net Each, Lots 1-9 | 10-24 | 25- |
|---|---|---|---|---|
| 3906-1471-600 | 6 | $1.32 | $1.17 | $1. |
| 3913-1471-600 | 14 | 1.38 | 1.22 | 1. |
| 3917-1471-600 | 28 | 1.27 | 1.12 | 1. |

IALIGHT

# PILOT LIGHT ASSEMBLIES

DIALCO®

## DIALCO DATALITES•
. T.M.

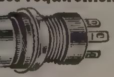
### ALITES WITH PERMANENT LAMPS
**Neon Glow Lamp Built-In,**
**Not Replaceable**

-in, rugged NE-2E neon lamp re-
s ballast resistor, also available built-
ightweight aluminum design; plastic
pipe lens. With mtg. hardware and
-in lamp; two fully insulated ter-
ls. Conform to applicable MIL specs.
nts in ⅜″ hole.

**HOUT BUILT-IN**
**RESISTOR**
long, ½″ O.D.;
z.
**249-7840-0931-504** (Red), **-0933-504**
ow), **-0935-504** (White) or **-0937-504**
r)—Net Ea., 1–9............**$1.39**
......**$1.30**; 25–99...... **1.22**

**WITH BUILT-IN**
**100K OHMS**
**RESISTOR**
1 53/64″ long,
½″ O.D.; 2 oz.
**249-7841-0931-574** (Red), **-0933-574**
ow), **-0935-574** (White) or **0937-574**
r)—Net Ea., 1–9............**$1.71**
......**$1.60**; 25–99...... **1.50**

### RESS-TO-TEST ASSEMBLIES
**eet requirements of MIL-L-7961B**



**-1030-0971-506**

**801-1030-0331-504**

ght pressure on the face of the unit
ks" the normal circuit and "makes"
t circuit. If lamp lights up when
ed in, it is satisfactory. If it fails to
the lamp is defective. Equipped with
terminals: Two for "normal" circuit,
hird for "test" circuit.

### SERIES 804/803 (MS25331)
nt from back in ⅝″ clearance hole.
mmodates T-3¼ lamp with miniature
net base. Overall size, ⅞″ x 2¼″.
. Wt., 1½ oz. Less lamp.

**TH MECH. SHUTTER DIMMER**
**Model**—Net Each, 1–9.......**$3.08**
......**$2.70**; 25–99...... **2.49**

| s or | Dialco No. | MIL Type No. |
|---|---|---|
| | 804-1710-0337-504 | MS25331-1 |
| | 804-1710-0331-504 | MS25331-2 |
| n | 804-1710-0332-504 | MS25331-3 |
| er | 804-1710-0333-504 | MS25331-4 |
| | 804-1710-0334-504 | .......... |

**WITHOUT DIMMER**
**Model**—Net Each, 1–9......**$2.81**
......**$2.47**; 25–99...... **2.25**

| | | |
|---|---|---|
| | 803-1710-0337-504 | MS25331-5 |
| | 803-1710-0331-504 | MS25331-6 |
| n | 803-1710-0332-504 | MS25331-7 |
| er | 803-1710-0333-504 | MS25331-8 |
| | 803-1710-0334-504 | .......... |

### SERIES 801/800 (MS25041)
ar to above, but mounts in 15/32″ clear-
hole, accommodates T-1¾ lamp with
et flange base. ⅝″ x 1⅜″. Less lamp.

**TH MECH. SHUTTER DIMMER**
**Model**—Net Each, 1–9......**$2.60**
......**$2.29**; 25–99...... **2.11**

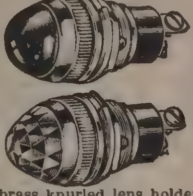
| s or | Dialco No. | MIL Type No. |
|---|---|---|
| | 801-1030-0337-504 | MS25041-1 |
| | 801-1030-0331-504 | MS25041-2 |
| n | 801-1030-0332-504 | MS25041-3 |
| er | 801-1030-0333-504 | MS25041-4 |
| | 801-1030-0334-504 | MS25041-10 |

**WITHOUT DIMMER**
**Model**—Net Each, 1–9......**$2.24**
......**$1.97**; 25–99...... **1.81**

| | | |
|---|---|---|
| | 800-1030-0337-504 | MS25041-5 |
| | 800-1030-0331-504 | MS25041-6 |
| n | 800-1030-0332-504 | MS25041-7 |
| er | 800-1030-0333-504 | MS25041-8 |
| | 800-1030-0334-504 | MS25041-11 |

### SERIES 812
e as above, but with translucent
pipe lens.
**12-1030-0975-506** (White), **-0971-506**
, **-0972-506** (Green) or **-0973-506**
er)—Net Each, 1–9........**$2.46**
......**$2.15**; 25–99...... **1.98**

## OIL-TIGHT ASSEMBLIES
**For Heavy Duty Industrial Applications**



### 1″ SERIES
Enclosed rugged design gasketed with oilproof gaskets impervious to oil, water and dust. Rugged binding screw terminals. Caps unscrew from face of panel. One-piece, solid brass mounting bushing; solid brass knurled lens holder; chrome finish. Glass lens gives omnidirectional (180°) light spread. High impact phenolic insulation. Size, 1⅞″ long, 1 3/16″ O.D. Mounts in 1″ clearance hole. Shpg. Wt., 3 oz., average. Less lamp.

**Screw Base Types**—Net Ea., 1–9...$3.17
Net Each, 10–24.................. 2.92
**Bayonet Base Types**—Net Ea., 1–9.. 3.48
Net Each, 10–24.................. 3.22

### FOR 6S6 INCANDESCENT LAMPS
**Torpedo Faceted Lens**

| For Screw Base | * | For Bayonet Base |
|---|---|---|
| 103-3101-1331-403 | R | 103-3502-1331-403 |
| 103-3101-1332-403 | G | 103-3502-1332-403 |
| 103-3101-1333-403 | A | 103-3502-1333-403 |
| 103-3101-1334-403 | B | 103-3502-1334-403 |
| 103-3101-1335-403 | W | 103-3502-1335-403 |
| 103-3101-1336-403 | Y | 103-3502-1336-403 |
| 103-3101-1337-403 | C | 103-3502-1337-403 |

### DOME TYPE LENS (FROSTED BACK)

| For Screw Base | * | For Bayonet Base |
|---|---|---|
| 103-3101-1211-403 | R | 103-3502-1211-403 |
| 103-3101-1212-403 | G | 103-3502-1212-403 |
| 103-3101-1213-403 | A | 103-3502-1213-403 |
| 103-3101-1214-403 | B | 103-3502-1214-403 |
| 103-3101-1235-403 | W | 103-3502-1235-403 |
| 103-3101-1216-403 | Y | 103-3502-1216-403 |
| 103-3101-1217-403 | C | 103-3502-1217-403 |

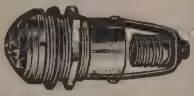
*R–Red; G–Green; A–Amber; B–Blue; W–Translucent, unfrosted white; Y–Yellow; C–Clear.

### FOR NEON GLOW LAMPS
For use with NE-45 candelabra screw base lamps. Resistor built into lamp base. Size, 2 7/32″ long, 1 3/16″ O.D. Fits 1″ clearance hole. Shpg. Wt., 3 oz. Less lamp.

| Dialco No. | Lens Color | Net Ea., Lots 1–9 | Net Ea., Lots 10–24 |
|---|---|---|---|
| 103-3114-1231-403 | Red | $3.17 | $2.92 |
| 103-3114-1233-403 | Amber | 3.17 | 2.92 |
| 103-3114-1236-403 | Yellow | 3.17 | 2.92 |
| 103-3114-1237-403 | Clear | 3.17 | 2.92 |
| 103-3114-1217-403 | Clear* | 3.17 | 2.92 |

*Frosted back.

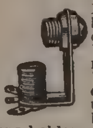
### ONE-INCH SERIES 502-3228
**DETACHABLE LAMP SOCKET**



Candelabra base, 115 volt pilot light assembly with faceted jewel in highly polished chrome plated brass holder. For standard bulbs. Requires hole of 1-inch diameter for mounting. Easily adjusted to panel thickness. Less bulb. Shipping Weight, 5 oz

**Dialco Nos. 502-3228-0431-302** (Red), **502-3228-0432-302** (Green), or **502-3228-0433-302** (Amber)—Net Each, 1–9.....**$1.38**
Net Each, 10–24................. **1.30**

### SERIES 502-1015 & 502-1024
**ANGLE BRACKET ASSEMBLY**



Economical space saver. For low volt operation of incandescent miniature lamps. With solder terminals. White nickel finish. Mounting hole 7/16″ diameter. Effective lens diameter ½″. Angle bracket units are secured to the panel by the threaded shank of the lens holder and lamps are accessible only from back of panel. Convex lens. Less bulb.

**SERIES 502-1015 MINIATURE SCREW**
**Dialco Nos. 502-1015-0121-102** (Red), **502-1015-0122-102** (Green) or **502-1015-0123-102** (Amber)—Net Each, 1–9.......**58c**
Net Each, 10–24....................**55c**

**SERIES 502-1024**
**MINIATURE BAYONET**
**Dialco Nos. 502-1024-0121-102** (Red), **502-1024-0122-102** (Green) or **502-1024-0123-102** (Amber)—Net Each, 1–9.......**58c**
Net Each, 10–24....................**55c**

## OIL-TIGHT, 11/16″ SERIES

**Stovepipe Lenses**
**Fluted or Plain**

With built-in resistor. Size, 2 9/64″ long, 15/16″ O.D. Mounts in 11/16″ diameter hole. Shipping Weight, 2 oz. Less lamp.

### FOR NE-51 NEON GLOW LAMP
Any model. Net, 1–9..$2.32; 10–24..$2.10

| Fluted Lens | * | Plain Lens |
|---|---|---|
| 125-0408-1191-443 | R | 125-0408-1131-443 |
| 125-0408-1193-443 | A | 125-0408-1133-443 |
| 125-0408-1196-443 | Y | 125-0408-1136-443 |
| 125-0408-1197-443 | C | 125-0408-1137-443 |
| ............... | CL | 125-0408-1117-443 |

### FOR LOW-VOLTAGE T-3¼ MINIATURE BAYONET BASE LAMP
Any model. Net, 1–9..$2.13; 10–24..$1.92

| Fluted Lens | * | Frosted Lens |
|---|---|---|
| 125-0410-1191-403 | R | 125-0410-1111-403 |
| 125-0410-1192-403 | G | 125-0410-1112-403 |
| 125-0410-1193-403 | A | 125-0410-1113-403 |
| 125-0410-1194-403 | B | 125-0410-1114-403 |
| 125-0410-1195-403 | W | 125-0410-1135-403† |
| 125-0410-1196-403 | Y | 125-0410-1116-403 |
| 125-0410-1197-403 | C | 125-0410-1117-403 |

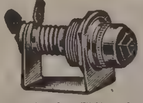
*R–Red; G–Green; A–Amber; B–Blue; W–White; Y–Yellow; C–Clear; Cl–Frosted back, clear. †Translucent unfrosted.

## OPEN SOCKET ASSEMBLIES
### DIALCO SERIES 502-3214
### ONE-INCH REMOVABLE JEWEL

Candelabra base, 115 volt pilot light assembly with faceted jewel in highly polished chrome plated brass holder. For standard bulbs. Requires 1″ mounting hole. Solder terminals. Easily adjusted to panel. Secured to panel by separate bushings into which the lens holders are a friction fit, permitting removal for lamp replacement.

**Dialco Nos. 502-3214-0431-302** (Red), **502-3214-0432-302** (Green) or **502-3214-0433-302** (Amber)—Net Each, 1–9.....**$1.26**
Net Each, 10–24................. **1.19**

### SERIES 502-8136, -8137
### HALF-INCH REMOVABLE JEWEL



For operation with low volt, miniature bayonet and miniature screw base, incandescent lamps. Burnished nickel finish. Requires 11/16 in. mounting hole. Faceted lens. Solder terminals. Effective lens diameter ½″. All brackets are insulated from the live terminals. Unit secured by separate bushings from which caps may be removed easily for access to the lamps Less bulb.

**Series 502-8136 Miniature Bayonet**—Any model. Net Each, 1–9..**71c**; 10–24..**66c**
**Series 502-8137 Miniature Screw**—Any model. Net Each, 1–9..**71c**; 10–24..**66c**

| Bayonet Base | * | Screw Base |
|---|---|---|
| 502-8136-2131-102 | R | 502-8137-2131-102 |
| 502-8136-2132-102 | G | 502-8137-2132-102 |
| 502-8136-2133-102 | A | 502-8137-2133-102 |

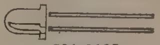
*R—Red; G—Green; A—Amber.

### LENSES IN THREADED HOLDERS FOR PANEL MOUNTING

For use with separately mounted lamp sockets. All-purpose smooth jewels in polished chrome-plated brass holders for up to 9/32″ panels. ¾″, ½″ and 11/32″ diameters—requiring 11/16″, 7/16″ and 9/32″ holes, respectively, for mounting. Shpg. Wt., 2 oz.

**Dialco Nos. 514-2512-0111-302** (Red), **514-2512-0112-302** (Green), **514-2512-0113-302** (Amber)—Net Each, 1–9.......**72c**
Net Each, 10–24....................**68c**
**Dialco Nos. 514-1012-0621-102** (Red), **514-1012-0622-102** (Green), **514-1012-0623-102** (Amber)—Net Each, 1–9.......**27c**
Net Each, 10–24....................**25c**
**Dialco Nos. 514-0512-0621-102** (Red), **514-0512-0622-102** (Green), **514-0512-0623-102** (Amber)—Net Each, 1–9.......**27c**
Net Each, 10–24....................**25c**

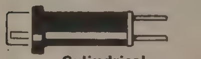
# DIALIGHT LED Indicator Lights (DIALCO



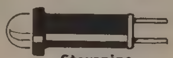
521-9165

521-9167, 521-9168

507 SERIES



Cylindrical



Stovepipe

Datalamp Holder

249 SERIES

Cylindrical

Stovepipe

## 507 SERIES DATALAMP CARTRIDGES WITH SOLID STATE DIODE-LITES

Light source is a solid state lamp that provides the advantages of low power with extremely long life and reliability. IC compatible; interchangeable with standard incandescent cartridges. Oper. temperature, −55° to +60° C. For operation directly from RTL, DTL or TTL logic, the 10 mA cartridge is recommended; for optimum brightness, the 20 mA cartridge is recommended. Unique lens design features an internal fresnel ring to assure maximum distribution of light output. Polarity is marked on housing; terminal base is keyed. Housing is black anodized aluminum for high contrast; connections are stainless steel pins mounted in nylon insulated header, offset for polarization; lens is high strength plastic, permanently attached. Cartridge may be mounted with Datalamp Holder or cartridge connector with speed clip (listed below). Size, .284" dia. x 1.140" max. overall (including .203" terminals).

### 20 mA DATALAMP CARTRIDGES

| VDC | Lens Color | Dialco Lens No. Short Cylindrical | Dialco Lens No. Short Stovepipe | Net Each, 1-9* |
|---|---|---|---|---|
| 3.6 | Red | 507-4756-3331-500 | 507-4756-3731-500 | $1.75 |
| 3.6 | Yellow | 507-4756-3333-500 | 507-4756-3733-500 | 1.75 |
| 3.6 | White | 507-4756-3335-500 | 507-4756-3735-500 | 1.75 |
| 3.6 | Clear | 507-4756-3337-500 | 507-4756-3737-500 | 1.75 |
| 5 | Red | 507-4757-3331-500 | 507-4757-3731-500 | 1.75 |
| 5 | Yellow | 507-4757-3333-500 | 507-4757-3733-500 | 1.75 |
| 5 | White | 507-4757-3335-500 | 507-4757-3735-500 | 1.75 |
| 5 | Clear | 507-4757-3337-500 | 507-4757-3737-500 | 1.75 |
| 6 | Red | 507-4758-3331-500 | 507-4758-3731-500 | 1.75 |
| 6 | Yellow | 507-4758-3333-500 | 507-4758-3733-500 | 1.75 |
| 6 | White | 507-4758-3335-500 | 507-4758-3735-500 | 1.75 |
| 6 | Clear | 507-4758-3337-500 | 507-4758-3737-500 | 1.75 |
| 10 | Red | 507-4759-3331-500 | 507-4759-3731-500 | 1.75 |
| 10 | Yellow | 507-4759-3333-500 | 507-4759-3733-500 | 1.75 |
| 10 | White | 507-4759-3335-500 | 507-4759-3735-500 | 1.75 |
| 10 | Clear | 507-4759-3337-500 | 507-4759-3737-500 | 1.75 |
| 14 | Red | 507-4760-3331-500 | 507-4760-3731-500 | 1.75 |
| 14 | Yellow | 507-4760-3333-500 | 507-4760-3733-500 | 1.75 |
| 14 | White | 507-4760-3335-500 | 507-4760-3735-500 | 1.75 |
| 14 | Clear | 507-4760-3337-500 | 507-4760-3737-500 | 1.75 |
| 28 | Red | 507-4761-3331-500 | 507-4761-3731-500 | 1.93 |
| 28 | Yellow | 507-4761-3333-500 | 507-4761-3733-500 | 1.93 |
| 28 | White | 507-4761-3335-500 | 507-4761-3735-500 | 1.93 |
| 28 | Clear | 507-4761-3337-500 | 507-4761-3737-500 | 1.93 |

### 10 mA DATALAMP CARTRIDGES

| VDC | Lens Color | Short Cylindrical | Short Stovepipe | Net Each, 1-9* |
|---|---|---|---|---|
| 3.6 | Red | 507-4763-3331-500 | 507-4763-3731-500 | $1.75 |
| 3.6 | Yellow | 507-4763-3333-500 | 507-4763-3733-500 | 1.75 |
| 3.6 | White | 507-4763-3335-500 | 507-4763-3735-500 | 1.75 |
| 3.6 | Clear | 507-4763-3337-500 | 507-4763-3737-500 | 1.75 |
| 5 | Red | 507-4764-3331-500 | 507-4764-3731-500 | 1.75 |
| 5 | Yellow | 507-4764-3333-500 | 507-4764-3733-500 | 1.75 |
| 5 | White | 507-4764-3335-500 | 507-4764-3735-500 | 1.75 |
| 5 | Clear | 507-4764-3337-500 | 507-4764-3737-500 | 1.75 |
| 6 | Red | 507-4765-3331-500 | 507-4765-3731-500 | 1.75 |
| 6 | Yellow | 507-4765-3333-500 | 507-4765-3733-500 | 1.75 |
| 6 | White | 507-4765-3335-500 | 507-4765-3735-500 | 1.75 |
| 6 | Clear | 507-4765-3337-500 | 507-4765-3737-500 | 1.75 |
| 10 | Red | 507-4766-3331-500 | 507-4766-3731-500 | 1.75 |
| 10 | Yellow | 507-4766-3333-500 | 507-4766-3733-500 | 1.75 |
| 10 | White | 507-4766-3335-500 | 507-4766-3735-500 | 1.75 |
| 10 | Clear | 507-4766-3337-500 | 507-4766-3737-500 | 1.75 |
| 14 | Red | 507-4767-3331-500 | 507-4767-3731-500 | 1.75 |
| 14 | Yellow | 507-4767-3333-500 | 507-4767-3733-500 | 1.75 |
| 14 | White | 507-4767-3335-500 | 507-4767-3735-500 | 1.75 |
| 14 | Clear | 507-4767-3337-500 | 507-4767-3737-500 | 1.75 |
| 28 | Red | 507-4768-3331-500 | 507-4768-3731-500 | 1.75 |
| 28 | Yellow | 507-4768-3333-500 | 507-4768-3733-500 | 1.75 |
| 28 | White | 507-4768-3335-500 | 507-4768-3735-500 | 1.75 |
| 28 | Clear | 507-4768-3337-500 | 507-4768-3737-500 | 1.75 |

### ★QUANTITY PRICING—249 AND 507 SERIES

| Series | VDC | Price, 1-9 | Net Each, Lots of 10-24 | 25-99 | 100-249 | 250-499 | 500-999 | 1000-2499 |
|---|---|---|---|---|---|---|---|---|
| 249 | 3.6–14 | $2.52 | $2.34 | $2.17 | $2.00 | $1.84 | $1.70 | $1.55 |
| 249 | 28 | 2.73 | 2.54 | 2.36 | 2.17 | 2.00 | 1.85 | 1.69 |
| 507 | 3.6–14 | 1.75 | 1.63 | 1.50 | 1.38 | 1.27 | 1.17 | 1.07 |
| 507 | 28 | 1.93 | 1.79 | 1.66 | 1.52 | 1.40 | 1.29 | 1.18 |

**Cartridge Connector**—Ask for No. **515-0050.**

## DIALIGHT DIODE-LITES™ GALLIUM ARSENIDE PHOSPHIDE SOLID STATE LAMPS

Offer high luminous intensity (2.0 mcd at 20 mA for 521-
1.0 mcd for 521-9167 and 521-9168) and low power consum
at low cost. For applications requiring direct mounting thr
a panel. IC compatible; vibration and shock resistant; wide
ing angle. Solid state reliability, with life measured in y
Consist of a gallium arsenide phosphide semiconductor c
completely encapsulated, with red or clear diffusion.
source for Nos. 521-9167 and 521-9168 is contained
black case, giving excellent contrast when "On", yet ap
ing black when "Off". The 521-9165 base has a flat on
side which gives the device an antirotation feature as we
indicating which lead is the cathode. Leads are flexible en
for bending and rigid enough for direct mounting to a PC b
**Forward Voltage:** 1.8 volts typical at 50 mA, 2.3 volts
**Forward DC Current:** 50 mA max. **Reverse Voltage:** 3 volts
**Reverse Breakdown Voltage:** 3.0 volts minimum at 10 µA
volts typical. **Power Dissipation:** 100 mW (derate 1.3 mW
above 25° C. **Storage/Operating Temperature:** −40° to +10
**Relative Humidity:** 98% at 65° C. **Solder Temperature:** 25
at 0.1" from seating plane for 5 seconds. **Luminous Inte**
1.0 mcd at 20 mA except 521-9165, 2.0 mcd at 20 mA. **Lum**
**Flux:** 1.35 mlumen. **Wavelength:** 650 nM at peak. **Spectral**
**Width:** 25 nM. **Rise and Fall Time:** 10 ns for 10–90% of
intensity for step change in current. **Angle of Half Intensity**
**Angle of 0.1 Intensity:** 85°. **Size:** 521-9165 has .192" dia. x
lens, .285" long plus two .500" leads; 521-9167 and 521-916
.190"–.210" dia. x .190"–.260" long with three leads, .400"
minimum.

| Dialco No. | Diffusion | Net Each, Lots of 1-9 | 10-24 | 25-99 | 100-249 | 250-499 | 500-999 | 1 |
|---|---|---|---|---|---|---|---|---|
| 521-9165 | Red | $1.50 | $1.40 | $1.25 | $1.00 | $0.93 | $0.84 | $ |
| 521-9167 | Red | 1.50 | 1.40 | 1.25 | 1.00 | .93 | .84 | |
| 521-9168 | Clear | 1.50 | 1.40 | 1.25 | 1.00 | .93 | .84 | |
| 515-0002 | Holder* | No charge for holder when ordered | | | | | | |
| 515-0003 | Holder† | above LED's. | | | | | | |

*Snap-in holder for direct mounting of 521-9165 into pan
.062"–.125" thickness; .265" mounting hole. †Press-fit hold
direct mounting of 521-9167 and 521-9168 into panels of va
thicknesses; .250" mounting hole.

## 249 SERIES ULTRAMINIATURE INDICATO LIGHTS WITH DIODE-LITES (LED)

Complete solid state indicator package consisting of light s
housing and lens, ready for permanent panel mounting.
source is a solid state (LED) lamp that provides the advan
of low power with extremely long life measured in years.
patible with IC's (can be driven directly by RTL, DTL and
logic). Unique lens design uses an internal fresnel ring to
maximum distribution of the light output. Positive termi
marked "+" for proper installation. Mounting bushing and
ring are black anodized aluminum; terminals are low carbon
solder plated; lens is high strength plastic. Size: ⅞" behind
(including 3/16" terminals); ⅜"-32 threaded body with ½" he
fits panels to 5/16" thick. Lens, 9/32" dia. x 3/16".

| VDC at 20 mA | Lens Color | Dialco Lens No. Short Cylindrical | Dialco Lens No. Short Stovepipe | E |
|---|---|---|---|---|
| 3.6 | Red | 249-7867-3331-504 | 249-7867-3731-504 | $ |
| 3.6 | Yellow | 249-7867-3333-504 | 249-7867-3733-504 | |
| 3.6 | White | 249-7867-3335-504 | 249-7867-3735-504 | |
| 3.6 | Clear | 249-7867-3337-504 | 249-7867-3737-504 | |
| 5 | Red | 249-7868-3331-504 | 249-7868-3731-504 | |
| 5 | Yellow | 249-7868-3333-504 | 249-7868-3733-504 | |
| 5 | White | 249-7868-3335-504 | 249-7868-3735-504 | |
| 5 | Clear | 249-7868-3337-504 | 249-7868-3737-504 | |
| 6 | Red | 249-7869-3331-504 | 249-7869-3731-504 | |
| 6 | Yellow | 249-7869-3333-504 | 249-7869-3733-504 | |
| 6 | White | 249-7869-3335-504 | 249-7869-3735-504 | |
| 6 | Clear | 249-7869-3337-504 | 249-7869-3737-504 | |
| 10 | Red | 249-7870-3331-504 | 249-7870-3731-504 | |
| 10 | Yellow | 249-7870-3333-504 | 249-7870-3733-504 | |
| 10 | White | 249-7870-3335-504 | 249-7870-3735-504 | |
| 10 | Clear | 249-7870-3337-504 | 249-7870-3737-504 | |
| 14 | Red | 249-7871-3331-504 | 249-7871-3731-504 | |
| 14 | Yellow | 249-7871-3333-504 | 249-7871-3733-504 | |
| 14 | White | 249-7871-3335-504 | 249-7871-3735-504 | |
| 14 | Clear | 249-7871-3337-504 | 249-7871-3737-504 | |
| 28 | Red | 249-7872-3331-504 | 249-7872-3731-504 | |
| 28 | Yellow | 249-7872-3333-504 | 249-7872-3733-504 | |
| 28 | White | 249-7872-3335-504 | 249-7872-3735-504 | |
| 28 | Clear | 249-7872-3337-504 | 249-7872-3737-504 | |

### DATALAMP HOLDERS (FOR 507 SERIES)

Black anodized mtg. bushing, collar, flange nut; gold
phosphor bronze terminals. Series 508 has collar (33/64" dia. x
extends 57/64" behind panel. Series 250 has no collar, extends
Mount in ⅜" hole in panels to 5/32" thick.

| Dialco No. | Terminals | Net Each, Lots of 1-9 | 10-24 | 25-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| 508-8738-504 | Turret | $1.40 | $1.23 | $1.12 | $0.99 | $0.89 | $0.80 |
| 508-7538-504 | Cup† | 1.40 | 1.23 | 1.12 | .99 | .89 | .80 |
| 508-7438-504 | Blade† | 1.16 | 1.02 | .92 | .82 | .75 | .66 |
| 508-9038-504 | Taper* | 2.30 | 2.06 | 1.93 | 1.75 | 1.62 | 1.46 |
| 250-8738-14-504 | Turret | 1.27 | 1.11 | 1.01 | .89 | .82 | .72 |
| 250-7538-14-504 | Cup† | 1.27 | 1.11 | 1.01 | .89 | .82 | .72 |
| 250-7438-14-504 | Blade† | 1.01 | .89 | .80 | .70 | .64 | .57 |
| 250-9038-14-504 | Taper* | 2.16 | 1.94 | 1.82 | 1.64 | 1.56 | 1.39 |
| 515-0051 | Speed Clip | .11 | .10 | .07 | .06 | .05 | .04 |
| 515-0012 | Connector | .70 | .61 | .53 | .46 | .40 | .35 |

*Amp "53" taper pin receptacle. †Solder type.

# LCOLiTE Readouts

## ELFIN® NEON INDICATORS

F—Seven-segment cold cathode, gas-filled subminiature indicator is 1.6″ h. x .385″ dia. with .433″ character height. out 0–9 and two decimals. **MG-17G**—Seven-segment dis- 1.220″ h. x .385″ dia. with .378″ character height. Reads out l one decimal. For DC and pulsed operations. **MG-19B**— egment display indicator has one decimal and two diagonal es placed in the center of the numeric "8". **DM-17G** es—Factory-assembled plug-in modules consist of MG-17G ndicator mounted on PC board with decoder/driver and ncludes limiting resistors. Elfin tube is front-mounted and s can be stacked together in multiples; end plates available vide completed bezel appearance. Suffixes **-721** and **-722** 4-line BCD inputs; suffix **-723** accepts a count input. l filter integrates display appearance.

| co o. | Description | Net Each, Lots of 1-24 | 25-99 | 100-499 |
|---|---|---|---|---|
| F | 7 segments, two decimals | $ 4.95 | $ 4.25 | $ 3.75 |
| G | 7 segments, one decimal | 4.95 | 4.25 | 3.75 |
| B | 9 segments, one decimal | 4.95 | 4.25 | 3.75 |
| G-721 | Readout w/decoder/driver | 19.75 | 17.00 | 15.04 |
| G-722 | DM-17G-721 with memory | 23.00 | 19.90 | 17.46 |
| G-723 | DM-17G-721 with counter | 23.35 | 20.20 | 17.81 |
| G-CC | Clock/colon module | 3.95 | 3.42 | 3.05 |
| G-SM | Overrange/symbol module | 16.60 | 13.79 | 12.81 |
| G-EP | Finished end plates, pair | 1.80 | 1.53 | 1.35 |
| FL3 | Filter for 3 modules | .90 | .78 | .68 |
| FL4 | Filter for 4 modules | 1.20 | 1.02 | .90 |
| .4-1C | Filter for 4 mod., 1 colon | 1.40 | 1.19 | 1.05 |
| FL5 | Filter for 5 modules | 1.50 | 1.28 | 1.13 |
| FL6 | Filter for 6 modules | 1.80 | 1.53 | 1.35 |
| .6-2C | Filter for 6 mod., 2 colons | 2.00 | 1.70 | 1.50 |
|  | Pr. assembly studs, 3 mod. | .30 | .256 | .226 |
|  | Pr. assembly studs, 4 mod. | .30 | .256 | .226 |
|  | Pr. assembly studs, 5 mod. | .30 | .256 | .226 |
|  | Pr. assembly studs, 6 mod. | .30 | .256 | .226 |
| A | Same, for 6 mod., 2 colons | .30 | .256 | .226 |

## NDESCENT MOSAIC READOUT INDICATORS

, **MS-14A**—Single plane readout, 0–9 and some alphabet; l points used as colon. Segment bars are closely linked; are .800″ h. Case size, .834″ w. x 2.104″ d. x 1.750″ h. life, 20,000 hours; plug-in at rear of case. Order sockets ely. **MS-6S, MS-14S**—Mates with above MS series, but has indicators for +, – and 1. **MSM-5**—Similar to above, but . Figure size, .475″. Body size, .475″ w. x 1.562″ d. x .985″ h. ife, 50,000 hours (5 V at 60 mA). Plug-in through standard ninal PC connector; suffix **AL** type has 10″ flat cable con- . **MSM-5S**—Mates with MSM above, but with symbol ors for +, – and 1.

| co . | Description | Net Each, Lots of 1-24 | 25-99 | 100-499 |
|---|---|---|---|---|
|  | 6.3 V, numeric | $8.25 | $7.01 | $6.19 |
|  | 6.3 V, +, –, 1 symbols | 8.25 | 7.01 | 6.19 |
| A | 14.0 V, numeric | 8.25 | 7.01 | 6.19 |
| S | 14.0 V, +, –, 1 symbols | 8.25 | 7.01 | 6.19 |
| 5A | 3–5 V, min. numeric | 8.25 | 7.01 | 6.19 |
| 5AL | 3–5 V, min. numeric, flat cable | 9.95 | 8.46 | 7.46 |
| 5S | 3–5 V, +, –, 1 symbols | 8.25 | 7.01 | 6.19 |
| T-R | Right angle socket for MS | 1.55 | 1.32 | 1.16 |
| T | Socket for MS | 1.15 | .98 | .92 |
| SK | Socket for MSM | 1.15 | .98 | .92 |
| V | Violet filter for MS | .40 | .34 | .30 |
| R | Red filter for MS | .40 | .34 | .30 |
| G | Green filter for MS | .40 | .34 | .30 |

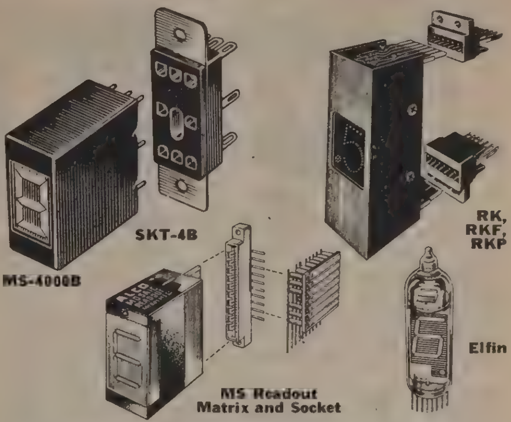
## NDESCENT RK SERIES READOUT INDICATORS

design provides clear displays without focusing problems; viewing from any angle. Long life bulbs, 20,000–50,000 Precision machined from 1-piece aluminum which also as a heat sink for bulbs. Front and rear tapped mounting or mounting on panel or on accessory bracket available. ved acrylic plates mounted in tightly-packed stack and t by selectively energizing the circuit to the lamps. Avail- ith numerals 0 to 9 and a period; types with suffix **S** are indicators +, –, V, Ω, % (specify). Numeral indicators mated together with symbol indicators. Numeral size, high except RKF, 1″ high. Body size, 0.78″ w. x 0.83″ d. x . except RKF, 1.19″ sq. x 3.30″ h. RK types have solder als; RKF, RKP types have edge board terminals for use C sockets.

| Alco No. rals | Alco No. Symbols | Volts | Drain, mA | Net Each, Lots of 1-24 | 25-99 | 100-499 |
|---|---|---|---|---|---|---|
|  | RK-6S | 6.3 | 200 | $ 8.25 | $ 7.01 | $ 6.19 |
| 4 | RK-14S | 14 | 80 | 8.25 | 7.01 | 6.19 |
| 4 | RK-24S | 24 | 50 | 8.75 | 7.44 | 6.56 |
| -6 | RKF-6S | 6.3 | 400 | 15.75 | 13.39 | 11.81 |
| -14 | RKF-14S | 14 | 160 | 15.75 | 13.39 | 11.81 |
| -6 | RKP-6S | 6.3 | 200 | 8.25 | 7.01 | 6.19 |
| -14 | RKP-14S | 14 | 80 | 8.25 | 7.01 | 6.19 |
| -24 | RKP-24S | 24 | 50 | 8.75 | 7.44 | 6.56 |

### ACCESSORIES

| lco o. | Description | Net Each, Lots of 1-24 | 25-99 | 100-499 |
|---|---|---|---|---|
| -2-8 | RK-RKP bracket | $1.65 | $1.40 | $1.24 |
| LV | Violet RK-RKP filter | .40 | .34 | .30 |
| -FLV | Violet RFK filter | .50 | .43 | .38 |
| KT | RKF-RKP pair of sockets | 1.65 | 1.40 | 1.24 |
| KT-C | RKF-RKP pair of sockets with cover | 2.45 | 2.08 | 1.84 |



## INCANDESCENT READOUT INDICATORS

**MS-4000B**—Seven-segment readout has bright, single plane display allowing wide angle view. Character size, .325″ x .600″. Case size, .552″ w. x 1.18″ d. x 1.18″ h.; one-piece black metal matte. Uses long-life #683 T-1 lamps (listed elsewhere) separately lit with external decoder/driver. Current drain, 420 mA max. (numeral "8"). Power, .24 watt min., 2.1 watts max. Order socket separately. **MS-4100B**—Same as above, but with decimal point and slightly smaller figures (0–9). **MS-4100S**—Symbol indicator with +, –, 1 and decimal to match MS-4000B or MS-4100B. **MS-250A**. —Smaller version of above readouts. Supplied with socket and plastic housing. Uses 2.5 V lamps at 20 mA/segment; current drain, 40 mA min. Power consumption, 160 mA min., 400 mA max.

| Alco No. | Description | Net Each, Lots of 1-24 | 25-99 | 100-499 |
|---|---|---|---|---|
| MS-4000B* | Numeric readout | $6.45 | $5.48 | $4.84 |
| SKT-4B | Socket for MS-4000B | .48 | .41 | .36 |
| MS-4100B* | Numeric readout with decimal | 7.45 | 6.33 | 5.59 |
| MS-4100S* | Symbol readout | 7.45 | 6.33 | 5.59 |
| SKT-41B | Socket for MS-4100 | .48 | .41 | .36 |
| MS-250A* | Numeric readout with socket | 8.25 | 7.01 | 6.19 |
| MS-250S* | Symbol readout with socket | 8.25 | 7.01 | 6.19 |

*Add either suffix **R** for red filter or **C** for clear filter.

## DECODER/DRIVERS, ACCESSORIES AND POWER SUPPLY

**MSDD-720 Series**—Hybrid BCD-to-seven-segment decoder/drivers with active low outputs to drive Elfin cathodes to display 0–9. Supply voltage, 7 V. Input, 5.0 V. Plastic/epoxy dual inline package. **MSDD-320 Series**—Hybrid BCD-to-seven segment decoder/drivers for 120 mA/segment readouts; designed to drive MS-4000B, MS-4100B, MS-250A, MS-6, MS-14, MSM-5A and other devices requiring low voltages, high current-sinking capabilities. Circuits are TTL and DTL compatible and have uncommitted collector outputs. **MSDD-700 Series**—Monolithic BCD-to-seven-segment decoder/drivers in 16-lead dual inline packages to drive incandescent displays. MSDD-700 and MSDD-701 are for use with MS-250A; MSDD-702 and MSDD-703 are for use with MS-4000B, MS-4100B, MS-6 and MSM-5A. **Plug-In Decoder/Driver Modules**—Packaged module includes decoder/driver and plugs directly into mating readout. DDM-702 is for MS-4100B and DDM-703 is for MS-4000B; MTX-4000 is for MS-4000B and MTX-250 is for MS-250A. All are completely assembled and come with color-coded leads. **MS-4FB Panel Mounting Accessories**—For MS-4000 or MS-4100 readouts; up to 5 modular digits. Bezel has top and bottom aluminum extrusion; assembly comes with red filter; for use with clear readouts. **PS-51-117 Logic Power Supply**—Low 5 V section is compatible with MSDD-700 Series decoder/drivers; high 200 VDC section will fire Elfin neon displays.

| | | | | |
|---|---|---|---|---|
| MSDD-721 | BCD/7-seg. decoder/driver | $ 9.90 | $ 8.65 | $ 7.65 |
| MSDD-722 | -721 with memory | 13.15 | 11.52 | 10.18 |
| MSDD-723 | -721 with decade counter | 13.50 | 11.82 | 10.43 |
| MSDD-724 | -721 with counter, memory | 17.95 | 15.70 | 13.86 |
| MSDD-728 | -721 with up/down counter | 20.75 | 18.25 | 16.10 |
| MSDD-729 | -728 with memory | 24.95 | 21.81 | 19.25 |
| MSDD-321 | 120 mA/seg. decoder/driver | 9.30 | 8.15 | 7.20 |
| MSDD-322 | -321 with memory | 12.00 | 10.50 | 9.25 |
| MSDD-323 | -321 with decade counter | 12.35 | 10.80 | 9.55 |
| MSDD-324 | -321 with counter, memory | 16.75 | 14.70 | 12.95 |
| MSDD-328 | -321 with up/down counter | 19.65 | 17.25 | 15.20 |
| MSDD-329 | -328 with memory | 22.75 | 20.40 | 18.35 |
| MSDD-700 | 30 mA/seg., with dec. point | 6.65 | 6.65 | 5.15 |
| MSDD-701 | 30 mA/seg., with ripple blank | 6.65 | 6.65 | 5.15 |
| MSDD-702 | 80 mA/seg. with dec. point | 9.00 | 9.00 | 6.75 |
| MSDD-703 | 80 mA/seg., with ripple blank | 9.00 | 9.00 | 6.75 |
| DDM-702 | 80 mA/seg. with dec. point | 19.95 | 17.25 | 14.75 |
| DDM-703 | 80 mA/seg., with ripple blank | 19.95 | 17.25 | 14.75 |
| MTX-4000 | Dec./7-seg. plug-in decoder | 12.85 | 10.92 | 9.64 |
| MTX-250 | Dec./7-seg. plug-in decoder | 12.85 | 10.92 | 9.64 |
| MS-4FBA | Module mounting kit, natural | 4.95 | 4.25 | 3.75 |
| MS-4FBB | Module mounting kit, black | 4.95 | 4.25 | 3.75 |
| MS-4BA | Bezel only, natural, pair | 1.25 | 1.06 | .94 |
| MS-4BB | Bezel only, black, pair | 1.25 | 1.06 | .94 |
| PS-51-117 | Elfin logic power supply | 39.95 | 33.96 | 29.96 |

# ALCOLiTE PILOT LIGHTS AND LAMPS

BNE Series

BNF Series

BND Series

MNE-4SL

PL-105

MC-680

## NEON PILOT LIGHT ASSEMBLIES

**BNE Series**—Compact lens assembly protrudes slightly above panel; mounts with single 5/16"-32 nut. Operates from 75 VDC without resistor, 115 VAC with resistor (150K for standard intensity, 33K for high intensity); resistor not supplied unless otherwise indicated. Temperature range, −10° C to +70° C. **BNF Series**—Similar to BNE, but with long lens assembly extending further beyond panel for brighter illumination. **BND Series**—Similar to above series, but with square lens assembly; mounts in ⅜" hole. Specify red, amber, clear or white for all models.

| Alco No. | | | Description | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|
| BNE- | BNF- | BND- | | 1-24 | 25-99 | 100-499 | 500-999 |
| 2 | 2 | 2 | Std. intensity | $0.59 | $0.39 | $0.35 | $0.29 |
| ...... | ...... | 2R | With inter. resis. | .69 | .46 | .41 | .35 |
| 3 | 3 | 3 | High intensity | .69 | .46 | .41 | .35 |
| ...... | ...... | 3R | With inter. resis. | .79 | .53 | .48 | .40 |
| 4R | 4R | ...... | With inter. resis. | .79 | .53 | .48 | .40 |

## BRITE GLO® NEON LAMPS

Extremely small size lamp, equivalent to T-1⅜. Bullseye appearance gives the largest glow where needed on the top. Rounded top places the illuminated area closer to the viewing point. Metal base increases light output and protects lamp from damage.

| Alco No. | Description | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|
| MNE-4A | With short bare leads | $0.49 | $0.33 | $0.29 | $0.24 |
| MNE-4LA | With 10" insulated leads | .53 | .35 | .31 | .26 |
| MNE-4SLA | Same but with metal base | .59 | .39 | .35 | .29 |

## BRITE GLO® INCANDESCENT LAMPS

Ultraminiaturized series mounts in a 3/16" hole. Available with 5 V at 60 mA rated lamps having 100,000 hours life. Model ME-680 can be used for PC boards. Specify red, white, green, blue or yellow (amber for MC Series). With #683 T-1 lamp and mounting rings.

| | | | | | |
|---|---|---|---|---|---|
| ME-680 | With pin contacts | $0.89 | $0.59 | $0.54 | $0.45 |
| ME-680L* | With long leads | .89 | .59 | .54 | .45 |
| MC-680 | With pin contacts | .99 | .67 | .60 | .49 |
| MC-680L* | With long leads | .99 | .67 | .60 | .49 |

*Solder tin dipped, hi-temp leads, 24 AWG wire.

## PANEL MOUNTED ASSEMBLIES

Model PLN-100 incorporates the crater electrode T-1⅜ MNE-4L in a black phenolic case. Model PL-105 is ultraminiature in size, a mate to PLN-100. With 10" insulated leads, mt. in ¼" hole.

| | | | | | |
|---|---|---|---|---|---|
| PLN-100A | Neon lamp | $0.89 | $0.59 | $0.54 | $0.45 |
| PLN-100B | Neon lamp | .89 | .59 | .54 | .45 |
| PL-105 | Incandescent lamp | .79 | .53 | .48 | .40 |

## LVN-ML-5V MINIATURE NEON LOGILITE

Provides neon glow presentation from low voltage source; self-contained solid state generator provides high voltage necessary for excitation; flat cylinder lens has internal fresnel ring. **Operating Parameters:** 6 V at 36 mA max., 4 V at 21 mA min.; 5 V at 30 mA normal. **Size:** ⅜" bushing length x ⅝" dia. x 1⅜" behind panel (less terminals); mounts in ⅜" hole. Specify red or clear lens.

| | | | | | |
|---|---|---|---|---|---|
| LVN-ML-5V | Low V neon indicator | $4.85 | $3.30 | $2.91 | $2.43 |

## EXTRA LONG NEON LAMP

Replaces readout tubes in "overrange" position of digital voltmeters; also usable as "+" or "−" display or where a longer light source than a conventional NE-2 is needed. Lighted electrode is designed to mate with MG-17 and MG-19 Elfin® tube or other comparable neon readout. Bare leads. **Breakdown:** 90 VDC. **Maintained Voltage:** 65 VDC. **Design Current:** 1.3 mA. **Life:** 2,000–8,000 hours.

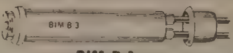
| | | | | | |
|---|---|---|---|---|---|
| NE-211 | 11 mm glow | $0.39 | $0.27 | $0.24 | $0.20 |

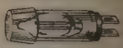
## SERIES BIM 110-V NEON INDICATORS

General purpose panel indicators have eight lens styles for great versatility; NE-2H high intensity lamp has built-in series resistor for 110-V operation. Indicator housing is white polypropylene with acrylic lens; mounts in 5/16" dia. hole; flexible black 6" leads are solid tinned #22 AWG wire. Supplied with plastic retainer for snug fit in minimum space on front or back of panel. **BIM-A** types are similar to BIM, but with shorter body, solder lugs and limited lens selection. **BIM-R** metal retainer available optionally at extra cost. **Lenses**—See illustrations and specify red, amber or clear.

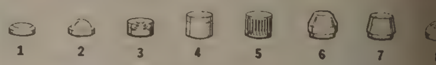
| | | | | | |
|---|---|---|---|---|---|
| BIM-1 | With lens 1 | $0.59 | $0.39 | $0.35 | $0.29 |
| BIM-A-1 | Lens 1, less resistor | .69 | .46 | .41 | .35 |
| BIM-2 | With lens 2 | .59 | .39 | .35 | .29 |
| BIM-3 | With lens 3 | .59 | .39 | .35 | .29 |
| BIM-4 | With lens 4 | .69 | .46 | .41 | .35 |
| BIM-A-4 | With lens 4 | .79 | .53 | .48 | .40 |
| BIM-5 | With lens 5 | .69 | .46 | .41 | .35 |
| BIM-6 | With lens 6 | .69 | .46 | .41 | .35 |
| BIM-7 | With lens 7 | .69 | .46 | .41 | .35 |
| BIM-8 | With lens 8 | .69 | .46 | .41 | .35 |
| BIM-R | Metal retainer | .03 | .02 | .018 | .015 |

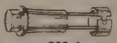
LVN-ML-5V

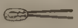

BIM-B-3


BIM-A-1

BIM




SM-1


T-1

T-1⅛

NE-211

## MINIATURE T-1⅛ NEON LAMPS

Alco's smallest neon lamp is unique for its size and brillian
Ignition voltage, 75 VAC or 95 VDC; current should be limi
to 800 μA; 150K series resistor recommended for 115 V operati
180K for 220 V operation. Light output variations possible w
changes in voltage or series resistance, with resultant change
life expectancy of 10,000 hours. Bare leads.

| Alco No. | Description | Net Each, Lots of 1-24 | 25-99 | 100-499 | 50 99 |
|---|---|---|---|---|---|
| MNE-3 | Standard intensity | $0.69 | $0.46 | $0.41 | $0. |
| MNE-3H | High intensity | .79 | .53 | .48 | . |

## SUBMINIATURE NEON PANEL INDICATOR

General purpose subminiature panel indicator for use with exter
series resistor. One-piece body houses subminiature high-intens
neon lamp. Metal mounting retainer (included) push fits into
dia. hole; wire leads. Specify red, amber or clear.

| | | | | | |
|---|---|---|---|---|---|
| SM-1 | Less series resistor | $0.89 | $0.59 | $0.54 | $0. |

## NEON LAMP HOLDERS

**BNP-1**—For NE-2; becomes part of plug that snaps into hol
Ideal for printed circuits; supplied less lamp. **Series BNG**—Sim
fied, low-cost snap type holders for miniature lamps such as NE
available in five different sizes for particular panel thicknes
write for details. Specify red, amber or clear; supplied less la

| | | | | | |
|---|---|---|---|---|---|
| BNP-1 | Nylon NE-2 holder | $0.18 | $0.12 | $0.108 | $0. |
| BNG-51, 52, 53, 54, 55 | Snap-type neon lamp holder | ...... | ...... | .09 | . |

## INCANDESCENT LAMP HOLDERS

Relampable miniature holders have ⅜" dia. lens. **MCM-10**
.7" long and mounts with 5/16"-32 nut; for use with No. 685, 7
1112 or 856 lamp, below. **MCM-175** is 1" long and mounts w
⅜"-32 nut; for use with No. 815, 381, 330, 382, 327 or 387 la
below. Specify red, green, amber, blue or white lens.

| | | | | | |
|---|---|---|---|---|---|
| MCM-100 | Subminiature flange holder | $0.99 | $0.67 | $0.60 | $0. |
| MCM-175 | Miniature flange holder | .99 | .67 | .60 | . |

## INCANDESCENT LAMP ASSEMBLY

Relampable assembly comes with #680 T-1 lamp (see below);
unscrews to expose lamp. Specify red, green, blue, yellow
white lens.

| | | | | | |
|---|---|---|---|---|---|
| BFK-5 | Incandescent assembly | $1.29 | $0.88 | $0.77 | $0. |

## INCANDESCENT LAMPS

Designed for applications where space is at a premium and l
life is required. Current ratings are ±10%.

### 5-VOLT TYPES

| Alco No. | Size | Current, Amps | MSCP | Net Each, Lots of 1-9 | 10-99 | 100-499 | 50 9 |
|---|---|---|---|---|---|---|---|
| 680-AS15 | T-1† | .060 | .032* | $1.25 | $0.83 | $0.62 | $0. |
| 680-AS25 | T-1† | .060 | .032 | .83 | .55 | .42 | . |
| 683-AS15 | T-1† | .060 | .053* | 1.25 | .83 | .62 | . |
| 683-AS25 | T-1† | .060 | .053 | .83 | .55 | .42 | . |
| 713-AS15 | T-1† | .075 | .088* | 1.25 | .83 | .62 | . |
| 713-AS25 | T-1† | .075 | .088 | .83 | .55 | .42 | . |
| 715-AS15 | T-1† | .115 | .147* | 1.25 | .83 | .62 | . |
| 715-AS25 | T-1† | .115 | .147 | .83 | .55 | .42 | . |
| RM3-5V30 | T-1† | .030 | .030 | .88 | .59 | .44 | . |
| 685 | T-1‡ | .060 | .050 | 1.44 | .96 | .72 | . |
| 718 | T-1‡ | .115 | .147 | 1.38 | .92 | .69 | . |
| 815 | T-1¾§ | .115 | .147 | .90 | .60 | .45 | . |

### 6.3-VOLT TYPES

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2181 | T-1¾† | .200 | .400 | $0.79 | $0.52 | $0.39 | $0. |
| 381 | T-1¾§ | .200 | .400 | .85 | .57 | .43 | . |
| 379 | T-1¾# | .200 | .400 | .85 | .57 | .43 | . |
| 378 | T-1¾• | .200 | .400 | .85 | .57 | .43 | . |

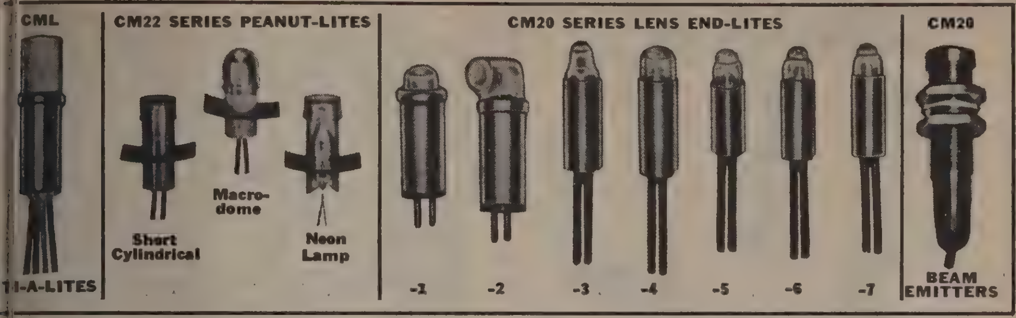
### 14-VOLT TYPES

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1112 | T-1‡ | .065 | .150 | $2.16 | $1.44 | $1.08 | $1. |
| 2182 | T-1¾† | .080 | .300 | .79 | .52 | .39 | . |
| 330 | T-1¾§ | .080 | .500 | .96 | .64 | .48 | . |
| 382 | T-1¾§ | .080 | .300 | .90 | .60 | .45 | . |
| 386 | T-1¾# | .080 | .300 | .90 | .60 | .45 | . |
| 362 | T-1¾• | .080 | .300 | .90 | .60 | .45 | . |

### 28-VOLT TYPES

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 856 | T-1‡ | .024 | .150 | $3.06 | $2.04 | $1.53 | $1. |
| 327 | T-1¾§ | .040 | .340 | .90 | .60 | .45 | . |
| 387 | T-1¾§ | .040 | .300 | .95 | .63 | .47 | . |
| 388 | T-1¾# | .040 | .300 | .95 | .63 | .47 | . |
| 399 | T-1¾• | .040 | .300 | .95 | .63 | .47 | . |

*±15%. †Wire terminals. ‡Subminiature flange. §Miniature fla
base. #Miniature grooved base. •Miniature screw base.



## CML SERIES TRI-A-LITES

que indicator device that appears white in the off position rns red, green, or yellow when an input voltage is applied of the color coded lead wires. Uses type T-¾ lamps rated .115A/lamp, 15,000 hours average life. Unit mounts in a learance hole with 10380 mounting clip (supplied). Housed r anodized aluminum with translucent polycarbonate cap. nates in 24 AWG stranded wire, color coded, end stripped CML 9501-RGY has flush style white cap; CML 9601-RGY short cylindrical style white cap. Optional features are other combinations, different lead length, hot stamped legends, ack anodized housings.

| CML Number CML- | Net Each, Lots of* | | | | | |
|---|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-99 | 100-249 | 250-499 | 500-999 |
| or 9601-RGY | $7.06 | $6.48 | $6.02 | $5.33 | $4.83 | $4.28 |

## CM22 SERIES PEANUT-LITES

tile, low-cost indicator assemblies with incandescent or neon . Ideal for stereo amplifiers, mobile equipment, instrumen-, computer and display panels, etc. Incandescent types have emperature polycarbonate shells with T-1¾ lamps and 6″ eads, permanently potted in place for strain relief. Available o cap styles, macrodome (Type CM22-1) or short cylindrical CM22-2). Type CM22-1000 Peanut-Lites include T-2 neon which snap into place in butyrate shells, All types include clips for mounting.

**TO ORDER:** Insert two digits in CML number, replacing o indicate cap color: **01**, clear transparent; **02**, red trans-t; **03**, amber transparent; **04**, green transparent (incandes- types only); or **05**, white translucent. CM22-1000-01-A1A 2) has clear transparent short cylindrical cap with NE-2 lamp.

### WITH T-1¾ INCANDESCENT LAMP

.340″ dia. x .800″ long; #24 AWG wire leads, 6″ long. Type B insulation per MIL-W-16878. Semi-resilient thermosetting encapsulant. Numbers shown are for macrodome cap; for cylindrical cap, change **1** in CML number to **2**; e.g., 2-2-XX-15; prices are the same.

| IL ber* 22- | Volts | Amps | M.S. C.P. | Aver. Life, Hours | Net Each, Lots of* | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | 1-9 | 10-24 | 25-99 | 100-249 |
| -15 | 1.35 | .06 | .01 | 500 | $1.04 | $0.95 | $0.88 | $0.78 |
| -17 | 2.5 | .20 | .22 | 500 | 1.04 | .95 | .88 | .78 |
| -18 | 2.7 | .06 | .04 | 6,000 | 1.04 | .95 | .88 | .78 |
| -43 | 3.0 | .015 | .004 | 10,000 | 1.71 | 1.57 | 1.46 | 1.29 |
| -50 | 3.0 | .03 | .02 | 1,800 | 1.35 | 1.23 | 1.15 | 1.01 |
| -41 | 5.0 | .06 | .05 | 100,000 | 1.04 | .95 | .88 | .78 |
| -12 | 6.0 | .04 | .03 | 10,000 | .98 | .90 | .83 | .74 |
| -06 | 6.0 | .20 | .34† | 1,000 | 1.04 | .95 | .88 | .78 |
| -52 | 6.3 | .20 | .55 | 3,000 | .93 | .85 | .79 | .70 |
| -27 | 6.3 | .04 | .02 | 50,000 | 1.13 | 1.04 | .97 | .86 |
| -19 | 6.3 | .075 | .22 | 500 | 1.04 | .95 | .88 | .71 |
| -13 | 6.3 | .20 | .40 | 50,000 | 1.30 | 1.20 | 1.11 | .98 |
| -20 | 6.3 | .20 | .55 | 3,000 | 1.04 | .95 | .88 | .71 |
| -07 | 10.0 | .014 | .002 | 10,000 | .93 | .85 | .79 | .70 |
| -08 | 10.0 | .04 | .08 | 5,000 | .98 | .90 | .83 | .74 |
| -28 | 14.0 | .08 | .30 | 50,000 | 1.13 | 1.04 | .97 | .86 |
| -09 | 14.0 | .08 | .50 | 750 | .93 | .85 | .79 | .70 |
| -10 | 18.0 | .04 | .15 | 10,000 | 1.26 | 1.16 | 1.08 | .95 |
| -40 | 28.0 | .04 | .20 | 50,000 | 1.09 | 1.00 | .93 | .82 |
| -29 | 28.0 | .04 | .30 | 25,000 | 1.13 | 1.04 | .97 | .86 |
| -11 | 28.0 | .04 | .34 | 7,000 | 1.09 | 1.00 | .93 | .82 |
| -45 | 28.0 | .06 | .34 | 25,000 | 1.09 | 1.00 | .93 | .82 |

### WITH T-2 NEON LAMP

t cylindrical cap. Size: .370″ dia. x .850″ long; Dumet wire . For 105–125 VAC. **Series Resistance Required:** A1A, 200K ; A9A, 62K ohms; C2A, 22K ohms.

| CML Number* 22-1000- | Nominal | | Aver. Life, Hours | Net Each, Lots of* | | | |
|---|---|---|---|---|---|---|---|
| | mA | Watts | | 1-9 | 10-24 | 25-99 | 100-249 |
| -A1A(NE-2) | 0.3 | 1/25 | 25,000 | $0.27 | $0.25 | $0.23 | $0.20 |
| -A9A(NE-2E) | 1.0 | 1/10 | 5,000 | .27 | .25 | .23 | .20 |
| -C2A(NE-2H) | 2.0 | 1/4 | 5,000 | .27 | .25 | .23 | .20 |

How To Order information above and insert two digits in L no. as indicated. †At 5 volts.

## CM20 SERIES SUBMINIATURE LENS END-LITES

Subminiature end-lites produce axially centered spots for minimal adjustment problems and easy lamp replacement. Ideal for close proximity use with photo sensors, where an intense spot of luminous and infrared energy is required. Typical applications include encoders, tape sensors, card readers and optical scanners. Types CM20-1, -2, -17 and -19 have clear anodized aluminum cartridge body; stainless steel terminals (CM20-19 #24 AWG stranded wire leads); nylon insulation. Types CM20-3 thru -7 and -20 have gold anodized aluminum shell; #24 AWG stranded wire leads; Type B insulation per MIL-W-16878; semi-resilient thermosetting resin encapsulation. Types CM20-5 thru CM20-7 are small enough to be mounted on .250″ centers for card reader applications. **Spot Specifications:** CM20-1, -19: When projected ⅜″ from end of bulb, spot covers ⅛″ dia. target, concentric with long axis at minimum intensity of 750 ft.-candles. CM20-2: When projected 1″ from end of bulb, spot covers 1″ dia. target with minimum of 350 ft.-candles. CM20-3: When projected ⅜″ from end of bulb, spot covers 1/16″ dia. target concentric with sleeve; intensity ⅜″ from bulb is minimum of 750 ft.-candles; spot is narrow elliptical. CM20-4: Same as CM20-3 except covers ⅛″ dia. target; spot is "round" elliptical. CM20-5 thru -7, -20 have no spot specifications, but have axially aligned lamp; CM20-17 spot is axially aligned with housing.

| CML No. | Lamp Type | V | Amps (±10%) | Aver. Life, Hours | Net Each, Lots of* | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | 1-9 | 10-49 | 50-99 | 100-499 |
| CM20-1 | TL-1¾ | 2.5 | .350 | 10,000 | $2.50 | $2.32 | $2.06 | $1.86 |
| CM20-2 | SL-2 | 2.5 | .325 | 10,000 | 4.70 | 4.37 | 3.86 | 3.50 |
| CM20-3 | TL-1¾ | 2.5 | .350 | 10,000 | 2.56 | 2.39 | 2.11 | 1.91 |
| CM20-4 | TL-1¾ | 2.5 | .350 | 10,000 | 3.12 | 2.90 | 2.57 | 2.33 |
| CM20-5 | TL-1¼ | 2.5<br>2.1 | .200<br>.180 | 1,000<br>10,000 | 2.50 | 2.32 | 2.06 | 1.86 |
| CM20-6 | TL-1¼ | 6.0<br>5.1 | .200<br>.180 | 1,000<br>10,000 | 2.34 | 2.17 | 1.92 | 1.74 |
| CM20-7 | TL-1¼ | 28.0<br>24.0 | .040<br>.036 | 1,000<br>10,000 | 2.40 | 2.23 | 1.97 | 1.79 |
| CM20-17 | TL-1¾ | 5.0 | .180 | 10,000 | 4.25 | 3.95 | 3.49 | 3.16 |
| CM20-19 | CM20-1 with 6″ leads | | | | 3.14 | 2.92 | 2.58 | 2.34 |
| CM20-20 | TL-1¾ | 5.0 | .180 | 10,000 | 4.72 | 4.38 | 3.88 | 3.51 |

## CM20 SERIES BEAM EMITTERS

Compact assemblies designed to project narrow cones of infrared and luminous energies over distances of 3″ to 20″. Spots produced are round, varying from ⅜″ to 1¼″. Infrared outputs are approximately 75% of input power, ideal for integration with silicon type sensors. Low power consumption (782 mW), axially aligned spots, easy mounting and long life. **Volts:** 2.3. **Current:** .340 amps, ±10%. **Average Life:** 10,000 hours. **Construction:** Anodized aluminum housing, #24 AWG wire leads, semi-resilient thermosetting resin encapsulation. **Size:** .475″ dia.; CM20-8-01, 1.33″ long; CM20-9-01, 2.08″ long.

| CML Number | Focal Distance | Projected Spot Dia. | Net Each, Lots of* | | | |
|---|---|---|---|---|---|---|
| | | | 1-9 | 10-24 | 25-49 | 50-99 |
| CM20-8-01 | 7″–9″ | 1¼″–1¾″ | $20.51 | $18.15 | $16.44 | $14.60 |
| CM20-9-01 | 14″–16″ | 1″–1⅛″ | 23.68 | 20.95 | 18.96 | 16.85 |

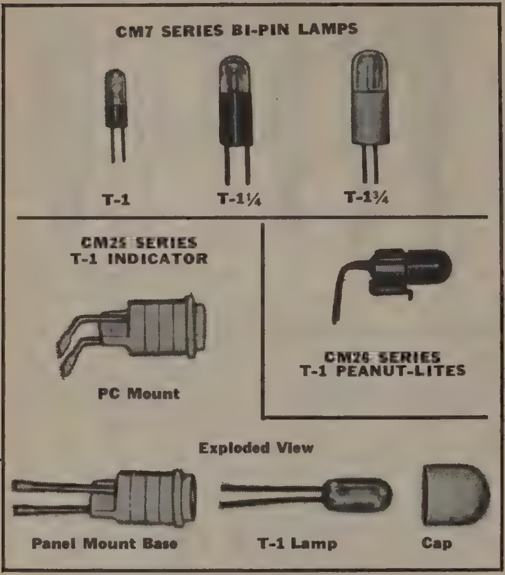
## CM39 SERIES LAMP FILTERS (Not Illus.)

Slip-on filters are translucent, precision molded silicone rubber caps; for subminiature and miniature lamps. They assume basic lamp contours, are impervious to color shift. Replaceable and reusable. Temperature range, −62° to +225° C. **TO ORDER:** Add suffix to CML Number to indicate color: **-1**, red; **-2**, blue/white; **-3**, clear; **-4**, amber; **-5**, green; **-6**, blue; **-7**, yellow.

| CML Number | Lamp Size | Size, In. Dia. x L. | Net Each, Lots of* | | | | |
|---|---|---|---|---|---|---|---|
| | | | 1-9 | 10-24 | 25-99 | 100-249 | 250-499 |
| CM39-02 | T-¾ | .090 x .230 | $0.29 | $0.27 | $0.25 | $0.22 | $0.20 |
| CM39-03 | T-1 | .096 x .3125 | .29 | .27 | .25 | .22 | .20 |
| CM39-04 | T-1 | .096 x .219 | .29 | .27 | .25 | .22 | .20 |
| CM39-05 | T-1¼ | .175 x .265 | .29 | .27 | .25 | .22 | .20 |
| CM39-06 | T-1¾ | .214 x .375 | .29 | .27 | .25 | .22 | .20 |
| CM39-07 | T-1¾ | .218 x .3125 | .29 | .27 | .25 | .22 | .20 |
| CM39-08 | T-1¾ | .325 x .279 | .29 | .27 | .25 | .22 | .20 |
| CM39-09 | T-2 | .250 x .522 | .29 | .27 | .25 | .22 | .20 |
| CM39-10 | T-2 | .250 x .272 | .29 | .27 | .25 | .22 | .20 |
| CM39-11 | T-3¼ | .370 x .672 | .38 | .35 | .33 | .29 | .26 |
| CM39-12 | S-6 | .584 x 1.120 | .38 | .35 | .33 | .29 | .26 |

**★WRITE FOR PRICES ON LARGER QUANTITIES**

# CHICAGO MINIATURE LAMP WORKS



## CM7 SERIES BI-PIN INDICATOR LAMPS

High quality, low cost incandescent lamps fit CM21 sockets below. Available with variations (right angle leads, flying leads, etc.) or with commercial or aviation color coating, on special order. Write for information.

### T-1 BI-PIN INDICATOR LAMPS

Size: .130" dia. x .350" long; .020" dia. pins, .190" long.

| CML No. CM7- | Volts | Amps | M.S. C.P., Approx. | Aver. Life, Hours | Net Each, per Pkg. of 10 | 100 | 500 |
|---|---|---|---|---|---|---|---|
| 7680 | 5.0 | .06 | .03 | 100,000 | $1.59 | $1.29 | $1.10 |
| 7683 | 5.0 | .06 | .05 | 100,000 | 1.59 | 1.29 | 1.10 |
| 7714 | 5.0 | .075 | .09 | 25,000 | 1.59 | 1.29 | 1.10 |
| 7715 | 5.0 | .115 | .15 | 40,000 | 1.59 | 1.29 | 1.10 |
| 8095 | 10.0 | .027 | .10 | 10,000 | 2.45 | 1.99 | 1.70 |
| 8097 | 12.0 | .06 | .15 | 10,000 | 2.45 | 1.99 | 1.70 |
| 8099 | 18.0 | .026 | .15 | 10,000 | 2.45 | 1.99 | 1.70 |
| 7839 | 28.0 | .024 | .15 | 16,000 | 2.36 | 1.92 | 1.64 |

### T-1¼ BI-PIN INDICATOR LAMPS

Size: .200" dia. x .600" long; .020" dia. pins, .250" long.

| CML No. CM7- | Volts | Amps | M.S. C.P., Approx. | Aver. Life, Hours | Net Each, per Pkg. of 10 | 100 | 500 |
|---|---|---|---|---|---|---|---|
| 7636 | 1.35 | .06 | .006 | 500 | $1.75 | $1.42 | $1.22 |
| 7637 | 3.0 | .19 | .25 | 350 | 1.50 | 1.21 | 1.04 |
| 7660 | 6.0 | .04 | .03 | 1,000 | 1.75 | 1.42 | 1.22 |
| 7628 | 6.0 | .20 | .63 | 500 | 1.50 | 1.21 | 1.04 |
| 7646 | 14.0 | .08 | .50 | 1,000 | 1.50 | 1.21 | 1.04 |

### T-1¾ BI-PIN INDICATOR LAMPS

Size: .230" dia. x .625" long; .020" dia. pins, .250" long.

| CML No. CM7- | Volts | Amps | M.S. C.P., Approx. | Aver. Life, Hours | Net Each, per Pkg. of 10 | 100 | 500 |
|---|---|---|---|---|---|---|---|
| 7931 | 1.35 | .06 | .01 | 500 | $0.88 | $0.72 | $0.61 |
| 7868 | 2.5 | .350 | .21 | 10,000 | 1.11 | .90 | .77 |
| 7968 | 2.5 | .20 | .22 | 500 | .88 | .72 | .61 |
| 7838 | 2.7 | .06 | .04 | 6,000 | .88 | .72 | .61 |
| 7375 | 3.0 | .015 | .004 | 10,000 | 1.33 | 1.08 | .92 |
| 7945 | 6.0 | .04 | .03 | 10,000 | .88 | .72 | .61 |
| 7328 | 6.0 | .20 | .63 | 1,000 | .68 | .55 | .47 |
| 7380 | 6.3 | .04 | .02 | 50,000 | .88 | .72 | .61 |
| 7377 | 6.3 | .075 | .22 | 500 | .65 | .52 | .45 |
| 7349 | 6.3 | .20 | .55 | 3,000 | .65 | .52 | .45 |
| 7381 | 6.3 | .20 | .40 | 50,000 | .71 | .58 | .50 |
| 7344 | 10.0 | .014 | .002 | 10,000 | .97 | .79 | .67 |
| 7382 | 14.0 | .08 | .30 | 50,000 | .71 | .58 | .50 |
| 7330 | 14.0 | .08 | .50 | 750 | .65 | .52 | .45 |
| 7370 | 18.0 | .04 | .15 | 10,000 | 1.07 | .87 | .74 |
| 7459 | 22.0 | .04 | .30 | 2,000 | 1.11 | .90 | .77 |
| 7387 | 28.0 | .04 | .30 | 25,000 | .75 | .61 | .52 |
| 7327 | 28.0 | .04 | .34 | 7,000 | .65 | .52 | .45 |

## CM21 SERIES SOCKETS FOR BI-PIN LAMPS

Pushfit Teflon® sockets accept all CM7 Bi-Pin lamps listed above. Snap directly into panels, brackets or PC boards. Type CM21-1 has beryllium copper contacts with .050" pin centers, for T-1 lamps. CM21-2 has phosphor bronze contacts with gold over silver plating, with .125" pin centers for T-1¼ and T-1¾.

®Registered DuPont trademark.

| CML No. | For Bi-Pin Lamp | Mtg. Hole | Net Each, Lots of* 1-9 | 10-24 | 25-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|
| CM21-1 | T-1 | .122" | $0.73 | $0.67 | $0.62 | $0.55 | $0.50 |
| CM21-2 | T-1¼, T-1¾ | .221" | .95 | .87 | .81 | .72 | .65 |

## CM26 SERIES T-1 PEANUT-LITES

Low cost commercial substitutes for MS25446 and MS90308 ind
cators. Each T-1 Peanut-Lite contains a subminiature lamp seal
in a high-temperature polycarbonate housing. Lamps range fro
3 to 28 volts. Can be mounted with spring mounting clips (CM2
1012) which are provided with T-1 Peanut-Lites. Type 10384 c
for circuit board mounting is also available. Three types of termi
material are available—CM26-1 has .750" tinned wire lead
CM26-2 has .312" long .020" nickel pins; CM26-3 has #26 AW
stranded wire, 6" long. White, red, amber, green, and blue ca
are standard; other colors available. Also available are spec
length and type pins and leads. Write for information. **HOW T
ORDER:** For cap color, substitute for **XX** in CML number:
white; **07**, red; **09**, amber; **10**, green; **11**, blue. Example: CM26-
07-19 is the wire lead version with red cap and 5V, .06A lam

| CML Number* CM26- | Volts | Amps | M.S. C.P. | Aver. Life, Hrs. | Net Each, Lots of* 1-9 | 10-24 | 25-99 | 10 249 |
|---|---|---|---|---|---|---|---|---|
| 1-XX-02 | 3.0 | .0125 | .001 | 16,000 | $1.85 | $1.70 | $1.58 | $1.39 |
| 1-XX-05 | 5.0 | .03 | .025 | 75,000 | 1.65 | 1.51 | 1.40 | 1.24 |
| 1-XX-19 | 5.0 | .06 | .065 | 50,000 | .91 | .84 | .78 | .69 |
| 1-XX-20 | 5.0 | .11 | .10 | 25,000 | .91 | .84 | .78 | .69 |
| 1-XX-14 | 10.0 | .027 | .10 | 10,000 | 1.45 | 1.33 | 1.24 | 1.10 |
| 1-XX-15 | 12.0 | .06 | .15 | 16,000 | 1.45 | 1.33 | 1.24 | 1.10 |
| 1-XX-17 | 18.0 | .026 | .15 | 10,000 | 1.72 | 1.58 | 1.46 | 1.30 |
| 1-XX-18 | 28.0 | .024 | .15 | 16,000 | 1.74 | 1.59 | 1.48 | 1.31 |
| 2-XX-02 | 3.0 | .0125 | .001 | 16,000 | 2.01 | 1.85 | 1.72 | 1.52 |
| 2-XX-05 | 5.0 | .03 | .025 | 75,000 | 1.81 | 1.66 | 1.54 | 1.36 |
| 2-XX-19 | 5.0 | .06 | .065 | 50,000 | 1.08 | .99 | .92 | .81 |
| 2-XX-20 | 5.0 | .11 | .10 | 25,000 | 1.08 | .99 | .92 | .81 |
| 2-XX-14 | 10.0 | .027 | .10 | 10,000 | 1.62 | 1.49 | 1.38 | 1.22 |
| 2-XX-15 | 12.0 | .06 | .15 | 16,000 | 1.62 | 1.49 | 1.38 | 1.22 |
| 2-XX-17 | 18.0 | .026 | .15 | 10,000 | 1.88 | 1.73 | 1.61 | 1.42 |
| 2-XX-18 | 28.0 | .024 | .15 | 16,000 | 1.90 | 1.75 | 1.62 | 1.44 |
| 3-XX-02 | 3.0 | .0125 | .001 | 16,000 | 2.05 | 1.88 | 1.75 | 1.55 |
| 3-XX-05 | 5.0 | .03 | .025 | 75,000 | 1.85 | 1.70 | 1.58 | 1.39 |
| 3-XX-19 | 5.0 | .06 | .065 | 50,000 | 1.12 | 1.03 | .96 | .85 |
| 3-XX-20 | 5.0 | .11 | .10 | 25,000 | 1.12 | 1.03 | .96 | .85 |
| 3-XX-14 | 10.0 | .027 | .10 | 10,000 | 1.66 | 1.53 | 1.42 | 1.25 |
| 3-XX-15 | 12.0 | .06 | .06 | 16,000 | 1.66 | 1.53 | 1.42 | 1.25 |
| 3-XX-17 | 18.0 | .026 | .026 | 10,000 | 1.92 | 1.76 | 1.64 | 1.45 |
| 3-XX-18 | 28.[illegible] | .024 | .024 | 16,000 | 1.94 | 1.78 | 1.65 | 1.46 |

*See How To Order information above and insert two digits
CML no. as indicated.

## CM25 SERIES T-1 INDICATORS

Subminiature T-1 indicators which meet MS-90308. Unbased T-
lamp is inserted into housing and cap is snapped on to hold lam
and provide color identification. Features include dimpled te
minals (patent pending) for positive electrical contact and i
ternally flared lead guides for easy wire-terminal lamp insertio
Hot-stamped legends can be provided with new cylindrical ca
style. Units are small enough to mount on .250" centers and sti
allow adequate wiring room and space to replace lamp. Base an
cap are polycarbonate. **HOW TO ORDER:** For **base style,** su
stitute for first **X** in CML number: **5,** panel mount; **6,** PC moun
For **cap style,** substitute for second **X** in CML number:
round; **8,** lens; **9,** square. For **cap color,** substitute for fin
**XX** in CML number; **01,** clear transparent; **02,** red tran
parent; **03,** yellow transparent; **04,** green transparent; **05,** whi
translucent; **06,** blue transparent; **07,** red translucent; **08,** yello
translucent; **09,** green translucent; **10,** blue translucent; **11,** amb
translucent. Final number is lamp number; to order less lam
omit lamp number. **Example:** CM25-5-706-715 is panel mount
with a round, blue transparent cap and a 5 V, .115 A lam
CM25-5-706 is the same thing without the lamp. Also availab
as MS90308 -X (**2,** red; **4,** yellow; **5,** green; **6,** blue; **9,** clear) -XX
(lamp number 680, 683, or 715). Requires .190"/.186" dia. rou
mounting hole.

| CML No. CM25-X-XX- | Volts | Amps | M.S. C.P. | Aver. Life, Hrs. | Net Each, Lots of* 1-9 | 10-24 | 25-9 |
|---|---|---|---|---|---|---|---|
| 7201 | 1.5 | .015* | .01† | 5,000 | $2.14 | $1.97 | $1.8 |
| 8846 | 3.0 | .008* | .001† | 16,000 | 2.14 | 1.97 | 1.8 |
| 2128 | 3.0 | .0125* | .001† | 16,000 | 2.14 | 1.97 | 1.8 |
| 7207 | 3.0 | .060 | .03 | 100,000 | 2.14 | 1.97 | 1.8 |
| 7210 | 5.0 | .030 | .03 | 75,000 | 2.14 | 1.97 | 1.8 |
| 6150 | 5.0 | .060 | .15 | 5,000 | 1.73 | 1.60 | 1.4 |
| 680 | 5.0 | .060 | .03 | 100,000 | 1.73 | 1.60 | 1.4 |
| 683 | 5.0 | .060 | .05 | 100,000 | 1.73 | 1.60 | 1.4 |
| 713 | 5.0 | .075 | .09 | 25,000 | 1.87 | 1.71 | 1.5 |
| 715 | 5.0 | .115 | .15 | 40,000 | 1.73 | 1.60 | 1.4 |
| 7218 | 10.0 | .027 | .10 | 10,000 | 2.16 | 1.98 | 1.8 |
| 7219 | 12.0 | .060 | .15 | 16,000 | 2.16 | 1.98 | 1.8 |
| 7220 | 18.0 | .026 | .15 | 16,000 | 2.16 | 1.98 | 1.8 |
| 6838 | 28.0 | .024 | .15 | 16,000 | 2.23 | 2.05 | 1.9 |

* ±20%. †Nominal.

**Base Only**

| CML Number | Net Each, Lots of* 1-9 | 10-24 | 25-99 | 100-249 | 250-4 |
|---|---|---|---|---|---|
| CM25-1005 | $0.66 | $0.60 | $0.56 | $0.50 | $0.4 |
| CM25-1006 | .66 | .60 | .56 | .50 | .4 |

**Cap Only**

| CML Number | Net Each, Lots of* 1-9 | 10-24 | 25-99 | 100-249 | 250-4 |
|---|---|---|---|---|---|
| CM25-1007-XX* | $0.21 | $0.19 | $0.18 | $0.16 | $0.1 |
| CM25-1008-XX* | .21 | .19 | .18 | .16 | .1 |
| CM25-1009-XX* | .21 | .19 | .18 | .16 | .1 |

*Replace **XX** with color indicators; see How to Order, abov

**★WRITE FOR PRICES ON LARGER QUANTITI**

## CML SERIES CARTRIDGE INDICATORS

ge housings with incandescent or neon lamps; cool operat- peratures for long life. Mount in cartridge holder, or panel ng with speed clip (not included). Clear anodized aluminum s, nylon insulation, transparent or translucent polycar- or butyrate (color matched to industrial standards) caps. equirements of MIL-L-3661. Stainless steel pins are located er for polarization. Stainless steel pin terminals, or #24 wire leads. Available with hot stamped legends; write for **Body Size:** .284″ dia. x .634″ long.

**O ORDER:** Insert two interfixes in CML number, replac- shown in tables below. First interfix indicates cap style minal configuration: **1**, flush cap with wire leads; **2**, short ical cap with wire leads; **3**, long cylindrical cap with wire , macrodome cap with wire leads; **5**, flush cap with pin ls; **6**, short cylindrical cap with pin terminals; **7**, macro- ap with pin terminals; **8**, long cylindrical cap with pin ls. Second interfix indicates cap type: **1**, butyrate, trans- **2**, butyrate, translucent; **3**, polycarbonate, transparent; lycarbonate, translucent.

place final **X** in CML no., to indicate cap color: **1**, red; n; **3**, amber; **4**, blue; **5**, white; **6**, yellow; or **7**, clear. Ex- ; CML-530077 has clear transparent flush cap, pin termi- nd 10 V, 14 mA lamp. CML-140431 has red translucent ap, wire lead terminals, and 3.0 V, 15 mA lamp. CML- has green transparent long cylindrical cap, pin terminals mA, 1/25 watt neon lamp.

### WITH T-1¾ INCANDESCENT LAMPS

| er* | Volts | Amps | M.S. C.P., Approx. | Aver. Life, Hours | Net Each, Lots of* 1-9 | 10-24 | 25-99 | 100-249 |
|---|---|---|---|---|---|---|---|---|
| X | 1.35 | .06 | .01 | 500 | $1.00 | $0.93 | $0.85 | $0.77 |
| X | 2.5 | .20 | .22 | 500 | 1.04 | .96 | .89 | .79 |
| X | 2.7 | .06 | .04 | 6,000 | .97 | .89 | .81 | .73 |
| X | 3.0 | .015 | .004 | 10,000 | 1.62 | 1.54 | 1.40 | 1.19 |
| X | 6.0 | .04 | .03 | 10,000 | .92 | .84 | .77 | .71 |
| X | 6.0 | .20 | .63 | 1,000 | .92 | .85 | .78 | .70 |
| X | 6.3 | .04 | .02 | 50,000 | 1.17 | 1.07 | .98 | .90 |
| X | 6.3 | .075 | .22 | 500 | 1.04 | .96 | .89 | .79 |
| X | 6.3 | .20 | .40 | 50,000 | 1.08 | .97 | .90 | .82 |
| X | 6.3 | .20 | .55 | 3,000 | 1.06 | .98 | .89 | .80 |
| X | 10.0 | .014 | .002 | 10,000 | 1.39 | 1.23 | 1.14 | 1.04 |
| X | 10.0 | .04 | .08 | 5,000 | 1.44 | 1.31 | 1.20 | 1.09 |
| X | 14.0 | .08 | .30 | 50,000 | 1.15 | 1.06 | .97 | .88 |
| X | 14.0 | .08 | .50 | 750 | .90 | .81 | .75 | .69 |
| X | 18.0 | .04 | .15 | 10,000 | 1.19 | 1.10 | 1.00 | .90 |
| X | 28.0 | .04 | .20 | 50,000 | 1.10 | 1.01 | .94 | .83 |
| X | 28.0 | .04 | .30 | 25,000 | 1.16 | 1.06 | .97 | .88 |
| 1X | 28.0 | .04 | .34 | 7,000 | .96 | .89 | .81 | .73 |

### WITH T-2 INCANDESCENT LAMPS (NO CAP)

| L ber - | Volts | Amps | End Ft.-Candles, Approx. | Aver. Life, Hours | Net Each, Lots of* 1-9 | 10-24 | 25-99 | 100-249 |
|---|---|---|---|---|---|---|---|---|
| 7X | 10 | .017 | 100 | 5,000 | $1.28 | $1.18 | $1.10 | $0.97 |
| 9X | 12 | .170 | 2500 | 5,000 | 1.28 | 1.18 | 1.10 | .97 |
| 8X | 16 | .017 | 150 | 5,000 | 1.33 | 1.22 | 1.13 | 1.00 |
| 5X | 28 | .040 | 2000 | 5,000 | 1.28 | 1.18 | 1.10 | .97 |
| 3X | 48 | .053 | 1500 | 5,000 | 1.28 | 1.18 | 1.10 | .97 |
| 8X | 60 | .050 | 2600 | 5,000 | 1.28 | 1.18 | 1.10 | .97 |

### WITH NEON LAMPS (105-125 VAC)

| IL ber* L- | Nominal mA | Nominal Watts | Built-in Resis. | Aver. Life, Hours | Net Each, Lots of* 1-9 | 10-24 | 25-99 | 100-249 |
|---|---|---|---|---|---|---|---|---|
| 01X | 0.3 | 1/25 | 220K† | 25,000 | $0.90 | $0.83 | $0.77 | $0.68 |
| 04X | 0.8 | 1/10 | 68K† | 25,000 | .90 | .83 | .77 | .68 |
|  | 1.2‡ | 1/9 | 22K | 2,000 |  |  |  |  |
| 14X | .17§ | 1/45 | 33K | 5,000 | 1.76 | 1.62 | 1.50 | 1.33 |
| 16X | 2.0§ | 1/4 | 22K | 14,000 | 1.76 | 1.62 | 1.50 | 1.33 |
| 22X | 1.9§ | 1/4 | 30K† | 25,000 | .79 | .72 | .67 | .59 |
| 23X | 1.0§ | 1/10 | 56K | 8,500 | 1.76 | 1.62 | 1.50 | 1.33 |
| 24X | 0.7§ | 1/15 | 100K | 25,000 | 1.76 | 1.62 | 1.50 | 1.33 |
| 25X | 0.7§ | 1/15 | 100K† | 25,000 | .79 | .72 | .67 | .59 |
| 30X | 0.9 | 1/8 | 47K | 12,000 | 1.87 | 1.71 | 1.59 | 1.41 |
| 31X | 0.35 | 1/16 | 150K | 16,000 | 1.87 | 1.71 | 1.59 | 1.41 |
| 32X | 0.3 | 1/25 | 220K | 25,000 | 1.87 | 1.71 | 1.59 | 1.41 |
| 36X | 0.7§ | 1/15 | 100K† | 25,000 | .85 | .78 | .72 | .64 |
| 42X | 1.0§ | 1/10 | 56K | 100,000# | 1.76 | 1.62 | 1.50 | 1.33 |

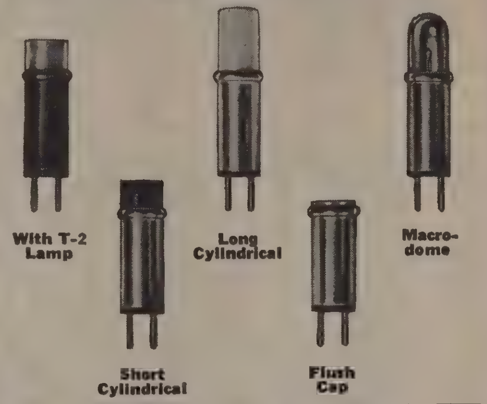
How To Order information above, and add two interfixes uffix, as indicated. †Valve of external resistor required. available in flush cap style. §Available only in long cylin- and macrodome cap styles. #Over 100,000 hours.

**ML-10380 Cartridge Indicator Mounting Clip**—For mount- ML series indicators directly in panel, in 9/32″ clearance hole. g tempered steel. Net Each, Lots of 1–9 . . . . . . . . . . . . . **10c***

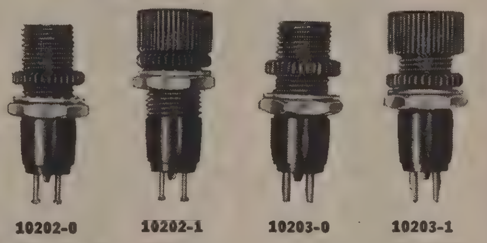
**M21-3 Cartridge Indicator Connector**—Accepts CML se- ndicators for low-cost mounting (not in panels). Phenolic cadmium plated brass contacts. Net Each, Lots of 1–9 . **29c***

**★WRITE FOR PRICES ON LARGER QUANTITIES**

**CML SERIES CARTRIDGE INDICATORS AND HIDE-A-LITES**



**CML SERIES CARTRIDGE HOLDERS**



## CML SERIES HIDE-A-LITES

Electrical and mechanical specifications identical to CML Series Cartridge Indicators except all indicators appear **white** in off position and take on color only when activated. Colors available: Red, green, blue, amber. Translucent cap only. **HOW TO ORDER:** Replace **XX** in CML number with 50, 60, 70, or 80 to indicate cap style and terminal configuration—**50**, flush, pin; **60**, short cylindrical, pin; **70**, long cylindrical, pin; **80**, macrodome, pin. Replace final suffix **X** with R, G, B, or A for activated color—**R**, red; **G**, green; **B**, blue; **A**, amber. Example: CML 50406 W/R—Flush, translucent cap, 6 volt, .20A, white (red when activated).

| CML Number* CML-XX4 | V | A | M.S. C.P. | Avg. Life, Hrs. | Net Each, Lots of* 1-9 | 10-24 | 25-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|---|
| 17 W/X | 2.5 | .20 | .22 | 500 | $1.77 | $1.63 | $1.51 | $1.34 | $1.21 |
| 06 W/X | 6.0 | .20 | .63 | 1,000 | 1.64 | 1.50 | 1.39 | 1.23 | 1.12 |
| 52 W/X | 6.3 | .20 | .55 | 3,000 | 1.64 | 1.50 | 1.39 | 1.23 | 1.12 |
| 19 W/X | 6.3 | .075 | .22 | 500 | 1.77 | 1.63 | 1.51 | 1.34 | 1.21 |
| 13 W/X | 6.3 | .20 | .40 | 50,000 | 1.92 | 1.76 | 1.64 | 1.45 | 1.31 |
| 20 W/X | 6.3 | .20 | .55 | 3,000 | 1.77 | 1.63 | 1.51 | 1.34 | 1.21 |
| 28 W/X | 14.0 | .08 | .30 | 50,000 | 1.92 | 1.76 | 1.64 | 1.45 | 1.31 |
| 09 W/X | 14.0 | .08 | .50 | 750 | 1.64 | 1.50 | 1.39 | 1.23 | 1.12 |
| 53 W/X | 14.0 | .088 | .50 | 10,000 | 2.21 | 2.03 | 1.89 | 1.67 | 1.51 |
| 10 W/X | 18.0 | .04 | .15 | 10,000 | 1.92 | 1.76 | 1.64 | 1.45 | 1.31 |
| 54 W/X | 22.0 | .04 | .30 | 2,000 | 1.92 | 1.76 | 1.64 | 1.45 | 1.31 |
| 40 W/X | 28.0 | .04 | .30 | 25,000 | 1.92 | 1.76 | 1.64 | 1.45 | 1.31 |
| 11 W/X | 28.0 | .04 | .34 | 7,000 | 1.67 | 1.54 | 1.43 | 1.26 | 1.14 |
| 45 W/X | 28.0 | .06 | .34 | 25,000 | 2.16 | 1.98 | 1.84 | 1.62 | 1.48 |
| 55 W/X | 28.0 | .06 | .60 | 5,000 | 2.31 | 2.12 | 1.97 | 1.74 | 1.58 |

*See How To Order information above.

## CML SERIES CARTRIDGE HOLDERS

Panel mounting holders for T-1¾ or T-2 lamps. Body, collar and facing nut are black anodized aluminum. Molded phenolic insulation. Turret terminals are spring brass, gold over nickel plate; solder cup terminals are spring brass, tintilate plate. Types 10202-1 and 10203-1 have 9/32″ thick knurled collar nut. Mount in round or "D" hole, .375″ dia., in panels to 15/32″ thick (when not using collar nut). Terminal pins are polarized.

| CML Number CML- | Mounting | Terminals | Net Each, Lots of* 1-9 | 10-24 | 25-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|
| 10202-0 | Front/rear | Turret | $1.01 | $0.93 | $0.83 | $0.77 | $0.70 |
| 10202-1 | Front | Turret | 1.15 | 1.06 | .94 | .88 | .80 |
| 10203-0 | Front/rear | Solder | 1.01 | .93 | .83 | .77 | .70 |
| 10203-1 | Front | Solder | 1.15 | 1.06 | .94 | .88 | .80 |

# CHICAGO MINIATURE LAMP WORKS

SPECIALISTS IN DESIGN & MANUFACTU
OF MINIATURE ILLUMINATING, INDICA
ING AND ENERGY EMITTING DEVICES

This is a partial listing of miniature and subminiature lamps. Miniature lamps are most commonly used in numerous applications for panel indicators, aircraft, flashlight and radio or TV pilot lights. The subminiature lamps were specifically designed for modern, up-to-date special equipment such as computers, miniature switches, medical electronic equipment, aircraft, aerospace, etc. Many other uses are met where the ultimate in precision miniature lamp techniques is demanded. Engineered to military specifications, they are used as standards on many classified government projects and business machines. Lamps listed herein are the most popular types available from Chicago Miniature. If your application requires a special lamp or one not shown, send us your application needs. We will be pleased to submit our recommendations.

## MINIATURE LAMPS

| Lamp No. | Design V | Design A | MSCP* Approx. | Base Fig. | Bulb | Net/10-Pack 1-9 Pkgs. | Net/10-Pack 10-49 Pkgs. | Net/10-Pack 50 Up Pkgs. |
|---|---|---|---|---|---|---|---|---|
| PR-2 | 2.38 | .50 | .80 | G§ | B-3½ | $ 1.40 | $ 1.20 | $ 1.00 |
| PR-3* | 3.57 | .50 | 1.50 | G§ | B-3½ | 1.40 | 1.20 | 1.00 |
| PR-4 | 2.33 | .27 | .40 | G§ | B-3½ | 1.40 | 1.20 | 1.00 |
| PR-6* | 2.47 | .30 | .45 | G§ | B-3½ | 1.40 | 1.20 | 1.00 |
| PR-7 | 3.70 | .30 | .90 | G | B-3½ | 2.00 | 1.60 | 1.40 |
| PR-12 | 5.95 | .50 | 3.10 | G§ | B-3½ | 1.40 | 1.20 | 1.00 |
| PR-13 | 4.75 | .50 | 2.20 | G§ | B-3½ | 1.40 | 1.20 | 1.00 |
| PR-16 | 12.5 | .25 | .27 | G | B-3½ | 1.90 | 1.50 | 1.30 |
| 12 | 6.3 | .15 | .35 | Q | G-3½ | 1.90 | 1.60 | 1.30 |
| 13* | 3.7 | .30 | .98 | H | G-3½ | 1.20 | 1.00 | .80 |
| 14* | 2.47 | .30 | .50 | H | G-3½ | 1.20 | 1.00 | .80 |
| 27* | 4.9 | .30 | 1.4 | H | G-4½ | 1.50 | 1.20 | 1.00 |
| 31* | 6.15 | .30 | 2.0 | H | G-4½ | 1.90 | 1.50 | 1.30 |
| 40* | 6.3 | .15 | .52 | H | T-3¼ | 1.00 | .80 | .70 |
| 42* | 3.2 | .35 | .50 | H | T-3¼ | 2.50 | 2.10 | 1.80 |
| 43 | 2.5 | .50 | .50 | J | T-3¼ | 2.00 | 1.60 | 1.40 |
| 44* | 6.3 | .25 | .90 | J | T-3¼ | 1.00 | .80 | .70 |
| 45* | 3.2 | .35 | .50 | J | T-3¼ | 1.60 | 1.30 | 1.10 |
| 46* | 6.3 | .25 | .90 | H | T-3¼ | 1.00 | .80 | .70 |
| 47* | 6.3 | .15 | .52 | J | T-3¼ | 1.00 | .80 | .70 |
| 48 | 2.0 | .06 | .04 | H | T-3¼ | 2.00 | 1.60 | 1.40 |
| 49 | 2.0 | .06 | .04 | J | T-3¼ | 1.60 | 1.30 | 1.10 |
| 50 | 7.5 | .22 | 1.0 | H | G-3½ | 1.20 | 1.00 | .80 |
| 51* | 7.5 | .22 | 1.0 | J | G-3½ | 1.00 | .80 | .70 |
| 53* | 14.4 | .12 | 1.0 | J | G-3½ | 1.10 | .90 | .80 |
| 55* | 7.0 | .41 | 2.0 | J | G-4½ | 1.10 | .90 | .80 |
| 57 | 14.0 | .24 | 2.0 | J | G-4½ | 1.20 | .90 | .80 |
| 64* | 7.0 | .63 | 3.0 | L | G-6 | 2.00 | 1.60 | 1.40 |
| 67* | 13.5 | .59 | 4.0 | K | G-6 | 1.50 | 1.20 | 1.00 |
| 68* | 13.5 | .59 | 4.0 | L | G-6 | 2.20 | 1.80 | 1.50 |
| 72 | 22.0 | .17 | 3.0 | L | G-6 | 3.30 | 2.60 | 2.30 |
| 82* | 6.5 | 1.05 | 6.0 | L | G-6 | 1.70 | 1.40 | 1.20 |
| 87* | 6.8 | 1.91 | 15.0 | K | S-8 | 2.70 | 2.20 | 1.90 |
| 88* | 6.8 | 1.90 | 15.0 | L | S-8 | 2.70 | 2.20 | 1.90 |
| 88L | 6.8 | 2.0 | 15.0 | L | S-8 | 7.20 | 5.90 | 5.00 |
| 90* | 13.0 | .58 | 6.0 | L | G-6 | 1.60 | 1.30 | 1.10 |
| 93* | 12.8 | 1.04 | 15.0 | K | S-8 | 2.30 | 1.80 | 1.60 |
| 94* | 12.8 | 1.0 | 15.0 | L | S-8 | 2.60 | 2.10 | 1.80 |
| 113 | 1.3 | .22 | ........ | H | GTL-3 | 2.40 | 1.90 | 1.60 |
| 114 | 1.2 | .20 | ........ | SP‡ | GTL-2¾ | 2.50 | 2.10 | 1.80 |
| 123 | 1.25 | .30 | 10.0 | H | G-3½ | 1.30 | 1.00 | .90 |
| 131* | 1.3 | .10 | .03 | H | G-3½ | 1.40 | 1.10 | 1.00 |
| 136 | 1.25 | .60 | .20 | H | G-4½ | 1.70 | 1.40 | 1.20 |
| 159 | 6.3 | .15 | 3.8 | R | T-3¼ | 1.90 | 1.60 | 1.30 |
| 209 | 6.5 | 1.78 | 15.0 | K | B-6 | 2.90 | 2.40 | 2.00 |
| 222* | 2.25 | .25 | ........ | H | GTL-3 | 1.20 | 1.00 | .80 |
| 224 | 2.15 | .22 | ........ | SP‡ | GTL-2¾ | 1.70 | 1.40 | 1.20 |
| 233 | 2.33 | .27 | .42 | H | G-3½ | 1.80 | 1.40 | 1.20 |
| 239 | 6.3 | .36 | .91 | J | T-3¼ | 2.30 | 1.80 | 1.60 |
| 240 | 6.3 | .36 | .67 | J | T-3¼ | 2.10 | 1.70 | 1.40 |
| 245 | 2.46 | .50 | .90 | H | G-3½ | 1.90 | 1.50 | 1.30 |
| 252 | 2.5 | .35 | ........ | D | GTL-1¾ | 22.60 | 18.40 | 15.70 |
| 253X | 2.5 | .35 | ........ | D | GTL-1¾ | 27.40 | 22.20 | 19.00 |
| 261 | 2.5 | .35 | ........ | B | GTL-1¾ | 44.40 | 35.70 | 30.60 |
| 301* | 28.0 | .17 | 3.0 | K | G-5 | 3.20 | 2.60 | 2.20 |
| 304* | 28.0 | .30 | 6.0 | L | G-6 | 3.70 | 3.00 | 2.50 |
| 305* | 28.0 | .51 | 15.0 | K | S-8 | 5.80 | 4.70 | 4.00 |
| 307* | 28.0 | .66 | 21.0 | K | S-8 | 5.20 | 4.20 | 3.60 |
| 309 | 28.0 | .90 | 32.0 | K | S-11 | 6.00 | 4.90 | 4.20 |
| 313* | 28.0 | .17 | 3.0 | J | T-3¼ | 2.40 | 2.00 | 1.70 |
| 323* | 3.0 | .19 | .250 | P | T-1¼ | 10.80 | 8.80 | 7.50 |
| 323L | 3.0 | .19 | .250 | P | T-1¼ | 16.80 | 13.70 | 11.70 |
| 324 | 3.0 | .19 | .250 | S | T-1¼ | 4.50 | 3.70 | 3.10 |
| 325 | 3.0 | .19 | .250 | T‡ | T-1¼ | 13.50 | 10.90 | 9.30 |
| 327* | 28.0 | .04 | .340 | D | T-1¾ | 4.80 | 3.90 | 3.30 |
| 327LSV | 28.0 | .06 | .340 | D | T-1¾ | 10.50 | 8.50 | 7.30 |
| 328* | 6.0 | .20 | .340† | D | T-1¾ | 3.80 | 3.10 | 2.60 |
| 330 | 14.0 | .08 | .500 | D | T-1¾ | 6.40 | 5.20 | 4.40 |
| 331 | 1.35 | .06 | .01 | D | T-1¾ | 7.40 | 6.00 | 5.10 |
| 334 | 28.0 | .04 | .340 | B | T-1¾ | 7.20 | 5.80 | 5.00 |
| 334LSV | 28.0 | .06 | .340 | B | T-1¾ | 13.10 | 10.60 | 9.10 |
| 337 | 6.0 | .20 | .630 | B | T-1¾ | 13.00 | 10.60 | 9.10 |
| 337L | 6.3 | .20 | .55 | B | T-1¾ | 16.80 | 13.70 | 11.70 |
| 344 | 10.0 | .014 | .008 | B | T-1¾ | 10.40 | 8.40 | 7.10 |
| 346 | 18.0 | .04 | .20 | B | T-1¾ | 9.50 | 7.70 | 6.60 |
| 363 | 14.0 | .20 | 2.0 | J | G-3½ | 1.70 | 1.40 | 1.20 |
| 365* | 3.69 | .50 | 1.6 | H | G-3½ | 2.00 | 1.70 | 1.40 |
| 370 | 18.0 | .04 | .020 | D | G-3½ | 11.50 | 9.30 | 8.00 |
| 375 | 3.0 | .015 | .002 | D | T-1¾ | 19.00 | 15.50 | 13.20 |
| 380 | 6.3 | .04 | .020 | D | T-1¾ | 16.00 | 13.00 | 11.10 |
| 381 | 6.3 | .20 | .40 | D | T-1¾ | 8.50 | 6.90 | 5.90 |
| 386 | 14.0 | .08 | .30 | B | T-1¾ | 11.60 | 9.40 | 8.10 |
| 387* | 28.0 | .04 | .30 | D | T-1¾ | 5.50 | 4.50 | 3.80 |
| 388 | 28.0 | .04 | .30 | B | T-1¾ | 11.60 | 9.40 | 8.00 |
| 407 | 4.9 | .30 | .70 | H | G-4½ | 1.60 | 1.30 | 1.10 |
| 425 | 5.0 | .50 | 2.3 | H | G-4½ | 1.60 | 1.30 | 1.10 |
| 502 | 5.1 | .15 | .60 | H | G-4½ | 1.30 | 1.00 | .90 |
| 503 | 5.1 | .15 | .60 | J | G-4½ | 1.70 | 1.40 | 1.20 |
| 509K | 24.0 | .18 | 2.8 | E | G-6 | 5.10 | 4.10 | 3.50 |

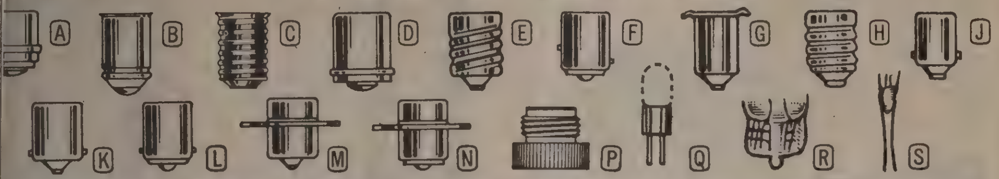
| Lamp No. | Design V | Design A | MSCP* Approx. | Base Fig. | Bulb | Net/10-Pack 1-9 Pkgs. | Net/10-Pack 10-49 Pkgs. |
|---|---|---|---|---|---|---|---|
| 605 | 6.15 | .50 | 3.4 | H | G-4½ | $ 1.80 | $ 1.40 |
| 958 | 5.5 | 2.00 | 14.0 | L | G-16½ | 36.00 | 29.30 |
|  | 6.0 | .82 | 5.0 |  |  |  |  |
| 965 | 9.8 | .50 | 6.0 | H | T-4½ | 2.30 | 1.80 |
| 1003 | 12.8 | .94 | 15.0 | K | B-6 | 2.20 | 1.80 |
| 1004 | 12.8 | .94 | 15.0 | L | B-6 | 2.20 | 1.80 |
| 1016* | 12.8 | 1.34 | 21.0 | F | S-8 | 4.10 | 3.30 |
|  | 14.0 | .57 | 6.0 |  |  |  |  |
| 1034 | 12.8 | 1.80 | 32.0 | F | S-8 | 3.10 | 2.50 |
|  | 14.0 | .51 | 4.0 |  |  |  |  |
| 1047 | 26.0 | 2.70 | 105.00 | K | RP-11 | 9.50 | 7.70 |
| 1073* | 12.8 | 1.80 | 32.00 | K | S-8 | 2.20 | 1.80 |
| 1129* | 6.4 | 2.63 | 21.00 | K | S-8 | 2.30 | 1.90 |
| 1130* | 6.4 | 2.60 | 21.00 | L | S-8 | 3.10 | 2.50 |
| 1133* | 6.2 | 3.91 | 32.00 | K | RP-11 | 4.00 | 3.30 |
| 1141* | 12.8 | 1.44 | 21.00 | K | S-8 | 2.20 | 1.80 |
| 1142* | 12.8 | 1.44 | 21.00 | L | S-8 | 2.60 | 2.10 |
| 1143* | 12.5 | 2.00 | 32.00 | K | RP-11 | 5.30 | 4.30 |
| 1154* | 6.4 | 2.63 | 21.00 | F | S-8 | 2.90 | 2.40 |
|  | 7.0 | .75 | 3.0 |  |  |  |  |
| 1158* | 6.4 | 2.63 | 21.00 | L | S-8 | 3.10 | 2.50 |
|  | 7.0 | .75 | 3.0 |  |  |  |  |
| 1184* | 5.5 | 6.36 | 50.00 | L | RP-11 | 5.70 | 4.60 |
| 1209 | 6.1 | 3.93 | 32.00 | M | RP-11 | 10.10 | 8.20 |
| 1224 | 32.0 | .16 | 3.0 | E | G-6 | 4.90 | 4.00 |
| 1240* | 32.0 | 3.5 | 225.0 | N | G-16½ | 16.10 | 13.10 |
| 1251* | 28.0 | .23 | 3.0 | K | G-6 | 3.70 | 3.00 |
| 1252* | 24.0 | .23 | 3.0 | L | G-6 | 4.20 | 3.40 |
| 1385* | 28.0 | ..... | 20W | K | R-12 | 18.00 | 14.60 |
| 1449 | 14.0 | .20 | 2.0 | H | G-3½ | 1.30 | 1.00 |
| 1458 | 20.0 | .25 | 4.2 | H | G-5 | 2.70 | 2.20 |
| 1471 | 12.0 | .26 | 2.3 | E | G-6 | 5.50 | 4.50 |
| 1476 | 18.0 | .17 | 2.2 | H | T-3 | 4.00 | 3.30 |
| 1477 | 24.0 | .17 | 3.3 | H | T-3 | 5.00 | 4.10 |
| 1482 | 6.0 | .45 | 2.2 | H | G-4½ | 2.60 | 2.10 |
| 1483 | 6.0 | .04 | .10 | H | G-4½ | 2.60 | 2.10 |
| 1487 | 14.0 | .21 | 1.4 | H | T-3¼ | 2.00 | 1.60 |
| 1488 | 14.0 | .15 | 1.5 | J | T-3¼ | 2.10 | 1.70 |
| 1489 | 6.5 | 2.75 | 25.0 | K | T-5 | 23.80 | 19.30 |
| 1490 | 3.2 | .16 | .20 | J | T-3¼ | 1.60 | 1.30 |
| 1491* | 2.4 | .80 | 1.3 | L | G-8 | 8.30 | 6.70 |
| 1492 | 2.5 | 1.50 | 3.2 | L | S-8 | 15.20 | 12.40 |
| 1493 | 6.5 | 2.80 | 23. | L | S-8 | 9.40 | 7.70 |
| 1503 | 5.9 | 6.53 | 50. | M | RP-11 | 11.70 | 9.50 |
| 1630 | 6.5 | 2.75 | 23.0 | N | S-8 | 12.30 | 10.00 |
| 1705 | 14.0 | .08 | .50 | S | T-1¾ | 5.00 | 4.10 |
| 1728 | 1.35 | .06 | .01 | S | T-1¾ | 3.70 | 3.00 |
| 1738 | 2.7 | .06 | .04 | S | T-1¾ | 3.70 | 3.00 |
| 1763 | 6.1 | 4.10 | ........ | M | S-11 | 11.40 | 9.30 |
| 1764 | 28.0 | .04 | .34 | M | S-11 | 4.10 | 3.30 |
| 1764LSV | 28.0 | .06 | .34 | M | S-11 | 6.80 | 5.50 |
| 1767* | 2.5 | .20 | .22 | C | T-1¾ | 5.90 | 4.80 |
| 1768* | 6 | .20 | .63 | C | T-1¾ | 7.00 | 5.70 |
| 1783 | 2.5 | .20 | .22 | S | T-1¾ | 3.60 | 2.90 |
| 1813 | 14.4 | .10 | .86 | J | T-3¼ | 2.10 | 1.70 |
| 1815* | 14.0 | .20 | 1.4 | J | T-3¼ | 1.80 | 1.40 |
| 1816 | 13 | .33 | 3.0 | J | T-3¼ | 1.70 | 1.40 |
| 1819* | 28 | .04 | .34 | J | T-3¼ | 2.60 | 2.10 |
| 1820 | 28 | .10 | 1.6 | J | T-3¼ | 2.80 | 2.20 |
| 1821 | 28 | .17 | 1.6 | H | T-3¼ | 6.10 | 4.90 |
| 1822 | 36 | .10 | 2.5 | J | T-3¼ | 4.80 | 3.90 |
| 1828 | 37.5 | .05 | .65 | J | T-3¼ | 5.20 | 4.20 |
| 1829* | 28 | .075 | 1.0 | J | T-3¼ | 2.70 | 2.20 |
| 1835 | 55.0 | .05 | 1.1 | J | T-3¼ | 5.90 | 4.80 |
| 1847 | 6.3 | .15 | .38 | J | T-3¼ | 1.40 | 1.10 |
| 1850 | 5 | .09 | .25 | J | T-3¼ | 2.70 | 2.20 |
| 1855 | 6.3 | .80 | 3.6 | J | T-4½ | 2.80 | 2.30 |
| 1866 | 6.3 | .25 | .65 | J | T-3¼ | 1.70 | 1.40 |
| 1869 | 10.0 | .014 | .002 | S | T-1¾ | 8.90 | 7.20 |
| 1891 | 14.0 | .233 | 1.8 | J | T-3¼ | 1.20 | 1.00 |
| 1892 | 14.4 | .12 | .75 | J | T-3¼ | 2.00 | 1.60 |
| 1893 | 14.0 | .33 | 2.0 | J | T-3¼ | 1.40 | 1.10 |
| 2102 | 18.0 | .04 | .15 | S | T-1¾ | 6.60 | 5.40 |
| 2107 | 10.0 | .04 | .08 | S | T-1¾ | 10.10 | 8.20 |
| 2112 | 6.3 | .20 | .55 | S | T-1¾ | 6.00 | 4.90 |
| 2124 | 2.5 | .35 | ........ | S | GTL-1¾ | 17.00 | 13.80 |
| 2158 | 3.0 | .015 | .002 | S | T-1¾ | 10.50 | 8.50 |
| 2162 | 14.0 | .088 | .50 | S | T-1¾ | 5.10 | 4.20 |
| 2180 | 6.3 | .04 | .02 | S | T-1¾ | 8.50 | 6.90 |
| 2181 | 6.3 | .20 | .40 | S | T-1¾ | 4.60 | 3.70 |
| 2182 | 14.0 | .08 | .30 | S | T-1¾ | 4.90 | 4.00 |
| 2185 | 28.0 | .04 | .20 | S | T-1¾ | 8.50 | 6.90 |
| 2187 | 28.0 | .04 | .30 | S | T-1¾ | 7.20 | 5.80 |
| 7323 | 6.3 | .20 | .55 | C | T-1¾ | 10.70 | 8.70 |

*Mean Spherical Candlepower is the measurement of the integrated light output of the lamp operated at design vol
†At 5 volts. ‡Special, not illustrated. ***See following page fo numbers.** §Single Contact.

# ICAGO MINIATURE LAMP WORKS

SPECIALISTS IN DESIGN & MANUFACTURE OF MINIATURE ILLUMINATING, INDICATING AND ENERGY EMITTING DEVICES

## BASE STYLES FOR CHICAGO MINIATURE LAMPS



Sub-Midget Flanged, (B) Midget Grooved, (C) Midget Screw, (D) Midget Flanged, (E) Candelabra, (F) DC Bayonet Index, (G) niature Flange, (H) Miniature Screw, (J) Miniature Bayonet, (K) SC Bayonet, (L) DC Bayonet, (M) SC Prefocus, (N) DC Preus, (P) Threaded Knurled, (Q) Bi-Pin, (R) Wedge, (S) Wire Terminal. (SC for Single Contact; DC for Double Contact.)

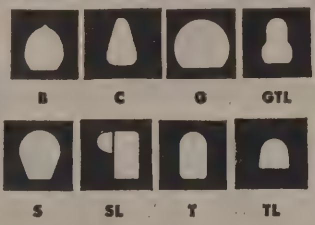
## MINIATURE AND SUBMINIATURE LAMPS

| amp No. | Design V | Design A | MSCP* Approx. | Base Fig. | Bulb | Net/10-Pack 1-9 Pkgs. | Net/10-Pack 10-49 Pkgs. | Net/10-Pack 50 Up Pkgs. |
|---|---|---|---|---|---|---|---|---|
| -220 | 6.3 | .33 | .......... | J | TL-2¾ | $34.70 | $28.20 | $24.10 |
| -282 | 3.8 | .33 | .......... | S† | SL-3¾ | 24.30 | 19.70 | 16.90 |
|  | 28.0 | .17 | 3.0 | J | T-3¼ | 2.40 | 2.00 | 1.70 |
|  | 28.0 | .04 | .340 | B | T-1¾ | 7.20 | 5.80 | 5.00 |
| SV | 28.0 | .06 | .340 | B | T-1¾ | 13.10 | 10.60 | 9.10 |
|  | 28.0 | .04 | .......... | C | T-1¾ | 11.00 | 9.00 | 7.70 |
|  | 14.0 | .08 | .......... | B | T-1¾ | 11.00 | 8.90 | 7.60 |
|  | 2.7 | .06 | .......... | D | T-1¾ | 6.60 | 5.40 | 4.60 |
|  | 6.0 | .04 | .03 | D | T-1¾ | 8.40 | 6.80 | 5.80 |
|  | 6.3 | .20 | .......... | D | T-1¾ | 8.20 | 6.60 | 5.70 |
|  | 10.0 | .04 | .......... | D | T-1¾ | 10.50 | 8.50 | 7.30 |
| -363 | 28.0 | .04 | .......... | S | TL-1½ | 7.00 | 5.70 | 4.80 |
| -373 | 2.5 | .35 | .......... | B | TL-1¾ | 13.40 | 10.90 | 9.30 |
| -374 | 2.5 | .35 | .......... | S | TL-1¾ | 11.90 | 9.70 | 8.30 |
|  | 6.3 | .04 | .020 | D | T-1¾ | 16.00 | 13.00 | 11.10 |
|  | 6.3 | .20 | .40 | D | T-1¾ | 8.50 | 6.90 | 5.90 |
|  | 14.0 | .08 | .30 | D | T-1¾ | 9.70 | 7.90 | 6.70 |
|  | 28.0 | .04 | .......... | C | T-1¾ | 10.10 | 8.20 | 7.00 |
| -428 | 5.0 | .18 | .35 | D | T-1¾ | 18.70 | 15.20 | 13.00 |
| -503 | 6.3 | .35 | .......... | J | TL-2¾ | 28.10 | 22.80 | 19.50 |
|  | 6.0 | .20 | .......... | S | T-1¼ | 8.60 | 7.00 | 6.00 |
|  | 5.0 | .06 | .032 | S | T-1 | 13.10 | 10.70 | 9.10 |
| S15* | 5.0 | .06 | .032 | S | T-1 | 15.20 | 12.40 | 10.60 |
|  | 5.0 | .06 | .032 | A | T-1 | 15.90 | 12.90 | 11.00 |
| S15* | 5.0 | .06 | .032 | A | T-1 | 17.70 | 14.40 | 12.30 |
|  | 5.0 | .06 | .053 | S | T-1 | 13.10 | 10.70 | 9.10 |
| S15* | 5.0 | .06 | .053 | S | T-1 | 15.20 | 12.40 | 10.60 |
|  | 5.0 | .06 | .053 | A | T-1 | 15.90 | 12.90 | 11.00 |
| S15* | 5.0 | .06 | .053 | A | T-1 | 17.70 | 14.40 | 12.30 |
|  | 5.0 | .075 | .088 | S | T-1 | 13.10 | 10.70 | 9.10 |
| S15* | 5.0 | .075 | .088 | S | T-1 | 15.20 | 12.40 | 10.60 |
|  | 5.0 | .075 | .088 | A | T-1 | 15.90 | 12.90 | 11.00 |
| S15* | 5.0 | .075 | .088 | A | T-1 | 17.70 | 14.40 | 12.30 |
|  | 5.0 | .115 | .147 | S | T-1 | 13.10 | 10.70 | 9.10 |
| S15* | 5.0 | .115 | .147 | S | T-1 | 15.20 | 12.40 | 10.60 |
|  | 5.0 | .115 | .147 | A | T-1 | 15.90 | 12.90 | 11.00 |
| S15‡ | 5.0 | .115 | .147 | A | T-1 | 17.70 | 14.40 | 12.30 |
| -750 | 6.3 | .19 | .......... | A | TL-2¾ | 24.50 | 19.90 | 17.00 |
|  | 10.0 | .45 | .......... | J | T-3¼ | 2.40 | 2.00 | 1.70 |
|  | 28.0 | .08 | .......... | J | T-3¼ | 3.60 | 2.90 | 2.50 |
|  | 9.8 | .50 | 1500 FC | H | T-4½ | 2.30 | 1.80 | 1.60 |
| -967 | 120 | .02 | 1500 FC | J | T-2 | 8.30 | 6.80 | 5.80 |
|  | 5.0 | .06 | .......... | S | T-¾ | 20.70 | 16.80 | 14.40 |
|  | 5.0 | .06 | .......... | S | T-¾ | 18.70 | 15.20 | 13.00 |
|  | 28.0 | .024 | .......... | A | T-1 | 23.60 | 19.20 | 16.40 |
|  | 5.0 | .115 | .147 ± 25% | S | T-¾ | 18.70 | 15.20 | 13.00 |
| • | 5.0 | .125 | .22 | S | T-1 | 20.40 | 16.60 | 14.20 |
| • | 6.0 | .22 | .63 | D | T-1¾ | 15.30 | 12.40 | 10.60 |
| • | 6.3 | .20 | .55 | S | T-1¼ | 6.80 | 5.50 | 4.70 |
|  | 28.0 | .04 | .34 | S | T-1¼ | 9.00 | 7.30 | 6.30 |
| • | 6.0 | .20 | .63 | D | T-1¼ | 12.60 | 10.20 | 8.70 |
| • | 1.35 | .06 | .006 | D | T-1¼ | 8.80 | 7.20 | 6.10 |
|  | 28.0 | .04 | .......... | ‡ | T-1¼ | 14.60 | 11.90 | 10.10 |
|  | 28.0 | .04 | .......... | § | T-1¼ | 15.30 | 12.40 | 10.60 |
| • | 3.0 | .19 | .25 | D | T-1¼ | 15.00 | 12.10 | 10.40 |
| • | 14.0 | .08 | .23 | S | T-1¼ | 6.50 | 5.20 | 4.50 |
|  | 5.0 | .08 | .......... | S | T-1¾ | 18.70 | 15.20 | 13.00 |
| • | 5.0 | .06 | .032 | A | T-1¾ | 5.90 | 4.80 | 4.10 |

an Spherical Candlepower. †Silvered base. ‡Special midget ged, not illustrated. §Special screw, not illus. •New vs. former 7216 = CM8-715F1; 7337 = CM8-428L; 8610 = CM8-610; = CM8-628; 8631 = CM8-631; 8637 = CM8-637; 8640 = CM8- 8805 = CM8-805.

### BULB SHAPES AND SIZES

The bulb is the glass envelope which houses the lamp filament assembly, and contains the vacuum or gas seal. A letter and number identifies bulb shape and approximate bulb diameter in eighths of an inch. Popular bulb shapes are:



**Examples:**

T-1 is ⅛" dia.
GTL-1¾ is 7/32" dia.
G-6 is ¾" dia.
S-11 is 1⅜" dia.
G-16½ is 2 1/16" dia.

## CM7 SERIES BI-PIN LAMPS

| Lamp No. CM7- | Design Volts | Design Amps | MSCP* Approx. | Base Fig. | Bulb | Net/10-Pack 1-9 Pkgs. | Net/10-Pack 10-49 Pkgs. | Net/10-Pack 50 Up Pkgs. |
|---|---|---|---|---|---|---|---|---|
| 7327 | 28.0 | .04 | .34 | Q | T-1¾ | $ 6.50 | $ 5.20 | $4.50 |
| 7328 | 6.0 | .20 | .64 | Q | T-1¾ | 6.80 | 5.50 | 4.70 |
| 7330 | 14.0 | .08 | .50 | Q | T-1¾ | 6.50 | 5.20 | 4.50 |
| 7838 | 2.7 | .06 | .04 | Q | T-1¾ | 8.80 | 7.20 | 6.10 |
| 7375 | 3.0 | .015 | .002 | Q | T-1¾ | 13.30 | 10.80 | 9.20 |

*Mean Spherical Candlepower.

## STANDARD VOLTAGE LAMPS

| Lamp No. | Design Volts | Design Watts | Base Fig. | Bulb | Net Each |
|---|---|---|---|---|---|
| 3S6/5 | 120–125 | 3 | E | S-6 | $0.55 |
| 6S6 | 115–125 | 6 | E | S-6 | .24 |
| 6S6 | 130 | 6 | E | S-6 | .29 |
| 6S6 | 145 | 6 | E | S-6 | .55 |
| 6S6DC | 120 | 6 | L | S-6 | .40 |
| 6T4½/1 | 115–125 | 6 | E | T-4½ | .75 |
| 7C7 | 115–125 | 7 | E | C-7 | .21 |
| 10C7 | 115–125 | 10 | E | C-7 | .30 |
| 10C7DC* | 115–125 | 10 | L | C-7 | .40 |
| 10S6C | 230 | 10 | E | S-6 | .63 |

## NEON GLOW LAMPS

Cold-cathode gas discharge type lamps. Neon gas ionizes and glows when voltage is applied. Lamp 83(5AH) is a circuit glow lamp; all others are neon indicator lamps.

| Lamp No. NE-§ | Design Volts | Design W | A | Base Fig. | Bulb | Net/10-Pack 1-99 Pkgs. | Net/10-Pack 100-499 Pkgs. | Net/10-Pack 500Up Pkgs. |
|---|---|---|---|---|---|---|---|---|
| 2(A1A) | 105–125 | 1/25 | 0.3 | S | T-2 | $1.80 | $1.05 | $0.80 |
| 2D(C7A)* | 105–125 | 1/10 | 1.0 | D‡ | T-2 | 13.40 | 8.02 | 5.94 |
| 2H(C2A) | 105–125AC | 1/4 | 2.0 | S | T-2 | 2.00 | 1.19 | .88 |
| 45(B7A) | 110–125 | 1/4 | 2.0 | E | T-4½ | 15.30 | 9.17 | 6.79 |
| 48(B9A) | 110–125 | 1/4 | 2.0 | L | T-4½ | 12.50 | 7.47 | 5.53 |
| 51(B1A) | 110–125 | 1/25 | 0.3 | J | T-3¼ | 4.40 | 2.65 | 1.96 |
| 51H(B2A) | 110–125AC | 1/4 | 2.0 | J | T-3¼ | 4.40 | 2.65 | 1.96 |
| 83(5AH) | 60–100 | ..... | 10.0 | S | T-2 | 4.30 | 2.55 | 1.89 |

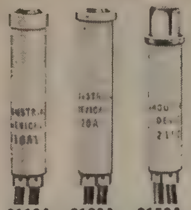
§Numbers in parentheses are ASA (American Standards Association) numbers. ‡Single contact.

## ★MILITARY (MS) EQUIVALENTS

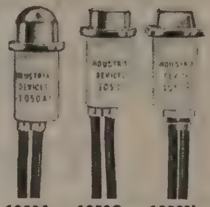
| p . | MS Number | Lamp No. | MS Number | Lamp No. | MS Number | Lamp No. | MS Number | Lamp No. | MS Number | Lamp No. | MS Number | Lamp No. | MS Number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -3 | 15610-2 | 46 | 15536-1 | 88 | 15584-1 | 313 | 25231-313 | 1133 | 15565-1 | 1385 | 35480-2 | 683‡ | 24367-683‡ |
| -6 | 15610-1 | 47 | 15571-2 | 90 | 15569-4 | 323 | 15530-1 | 1141 | 35478-4 | 1491 | 14468-1 | 685‡ | 24515-685‡ |
|  | 15611-1 | 51 | 15573-1 | 93 | 35478-93 | 327 | 25237-327 | 1142 | 15584-4 | 1767 | 15612-3 | 713‡ | 24367-713‡ |
|  | 15611-3 | 53 | 15573-3 | 94 | 15584-2 | 328 | 25237-328 | 1143 | 15565-3 | 1768 | 15612-1 | 714‡ | 24515-714‡ |
|  | 15587-1 | 55 | 15572-1 | 131 | 15611-4 | 365 | 15611-2 | 1154 | 35481-1 | 1815 | 15571-8 | 715‡ | 24367-715‡ |
|  | 15587-2 | 64 | 15569-1 | 222 | 15537-1 | 387 | 18209 | 1158 | 15584-13 | 1819 | 15571-6 | 718‡ | 24515-718‡ |
|  | 15536-4 | 67 | 15570-4 | 301 | 25238-301 | 1016 | 35481-2 | 1184 | 15564-1 | 1829 | 25231-1829 | NE2D |  |
|  | 15536-3 | 68 | 15569-6 | 304 | 15569-8 | 1073 | 35478-1073 | 1240 | 15618-5 | 10C7DC | 16123 | (C7A) | 25252-NE2 |
|  | 15571-1 | 82 | 15569-3 | 305 | 35478-305 | 1129 | 35478-1129 | 1251 | * | 680‡ | 24367-680‡ |  |  |
|  | 15571-11 | 87 | 35478-87 | 307 | 25232-307 | 1130 | 15584-3 | 1252 | 15579-1 | 682‡ | 24515-682‡ |  |  |

70-1251. ‡Also AS15 (aged and selected with candlepower indicated) versions; e.g., 680AS15 = 24367–680AS15.

# Industrial Devices Pilot Lights


2110A 2120A 2150A
Ⓐ

Series 2600
Ⓑ


1050A 1050C 1050N
Ⓒ

2330
INDUSTRIAL
DEVICES
2330
Ⓓ

## NEON PILOT LIGHTS

Enhance as well as beautify any product; complement and highlight design while inviting attention. Rugged, long life design (10,000 hours) is unaffected by vibration or shock. Tamper-proof housing; mount quickly. UL Recognized; CSA approved.

### GLO-DOT SERIES (FIG. A)

Available in three lens configurations. Includes NE-2H neon lamp for 115 VAC operation. Built-in 22,000-ohm resistor. Hardened spring-steel speednut has rust-resistant finish. Mounts in ⁵⁄₁₆″ dia. hole. With 4½″ leads 22 AWG stripped ½″; insul. is 105° C plastic.

| Lens Color | Series 2110A |  | Series 2120A |  | Series 2150A |  |
|---|---|---|---|---|---|---|
|  | IDI No. | Net Ea. | IDI No. | Net Ea. | IDI No. | Net Ea. |
| Red | 2110A1 | 67c | 2120A1 | 67c | 2150A1 | 69c |
| Clear | 2110A2 | 67c | ........ | ........ | ........ | ........ |
| Amber | 2110A3 | 67c | 2120A3 | 67c | 2150A3 | 69c |
| White | 2110A4 | 67c | 2120A4 | 67c | 2150A4 | 69c |

### SERIES 2600 (FIG. B)

**IDI No. 2620K1** (Red), **2620K3** (Amber) or **2620K4** (White)—Mounts in ⅞″ dia. hole. Net Each, Lots of 1–24..........**69c**

### OMNI-GLOW SERIES (FIG. C)

Choice of three lens styles. Comes with NE-2H neon lamp for 115 VAC operation. Built-in 22,000-ohm resistor. Hardened spring-steel speednut has rust-resistant finish. Fits ½″ dia. hole. With 4½″ leads 22 AWG stripped ½″; 105° C plastic insulation.

| Lens Color | Series 1050A |  | Series 1050C |  | Series 1050N |  |
|---|---|---|---|---|---|---|
|  | IDI No. | Net Ea. | IDI No. | Net Ea. | IDI No. | Net Ea. |
| Red | 1050A1 | 69c | 1050C1 | 69c | 1050N1 | 69c |
| Clear | 1050A2 | 69c | ........ | ........ | ........ | ........ |
| Amber | 1050A3 | 69c | 1050C3 | 69c | 1050N3 | 69c |
| White | 1050A4 | 69c | 1050C4 | 69c | 1050N4 | 69c |

### LINE-O-LITE SERIES (FIG. D)

Comes with LT2-32-1 neon lamp for 115 VAC operation. Built-in 17,000-ohm resistor. Hardened spring-steel speednut has rust-resistant finish. Fits 1⅛″ x .400″ mtg. hole; snap-fit into panels .055–.070″ thick without speednut. With 4½″ leads 22 AWG stripped ½″; 105° C plastic insulation.
**IDI No. 2330D1** (Red), **2330D3** (Amber) or **2330D4** (White)—Net Each..........................................**74c**

### GLO-DOT 2990D SERIES

Low-cost, one-piece lens body indicator lights have built-in incandescent lamp in choice of 6, 12 or 28 volts. Leads 4½″ long 24 AWG insulated. Push-on speednut mounting; requires ⁵⁄₁₆″ dia. mounting hole.

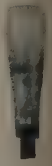
| Lens Color | 6 Volts |  | 12 Volts |  | 28 Volts |  |
|---|---|---|---|---|---|---|
|  | IDI No. | Net Ea. | IDI No. | Net Ea. | IDI No. | Net Ea. |
| Red | 2990D1-6V | 59c | 2990D1-12V | 59c | 2990D1-28V | 59c |
| Amber | 2990D3-6V | 59c | 2990D3-12V | 59c | 2990D3-28V | 59c |
| White | 2990D4-6V | 59c | 2990D4-12V | 59c | 2990D4-28V | 59c |
| Green | 2990D5-6V | 59c | 2990D5-12V | 59c | 2990D5-28V | 59c |
| Blue | 2990D6-6V | 59c | 2990D6-12V | 59c | 2990D6-28V | 59c |
| Yellow | 2990D7-6V | 59c | 2990D7-12V | 59c | 2990D7-28V | 59c |

2990D Series

### GLO-DOT 2990P SERIES

One-piece lens body indicator lights have built-in incandescent lamp in choice of 6, 12 or 28 volts. Requires ½″ dia. mounting hole, comes with plug button bezel and low profile lens.

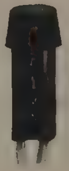
| Lens Color | 6 Volts |  | 12 Volts |  | 28 Volts |  |
|---|---|---|---|---|---|---|
|  | IDI No. | Net Ea. | IDI No. | Net Ea. | IDI No. | Net Ea. |
| Red | 2990P1-6V | 69c | 2990P1-12V | 69c | 2990P1-28V | 69c |
| Amber | 2990P3-6V | 69c | 2990P3-12V | 69c | 2990P3-28V | 69c |
| White | 2990P4-6V | 69c | 2990P4-12V | 69c | 2990P4-28V | 69c |
| Green | 2990P5-6V | 69c | 2990P5-12V | 69c | 2990P5-28V | 69c |
| Blue | 2990P6-6V | 69c | 2990P6-12V | 69c | 2990P6-28V | 69c |
| Yellow | 2990P7-6V | 69c | 2990P7-12V | 69c | 2990P7-28V | 69c |


2990P Series

### LED GLO-DOT 2100 SERIES

Low cost, highly reliable, shock and vibration resistant. Ideal for solid state and battery operations for low power and low voltage. Units have a built-in rectifier diode. Comes with ⁵⁄₁₆″ diameter GC lens. Lamp available in choice of 6, 12 or 28 volts.

| Lens Color | 6 Volts |  | 12 Volts |  | 28 Volts |  |
|---|---|---|---|---|---|---|
|  | IDI No. | Net Ea. | IDI No. | Net Ea. | IDI No. | Net Ea. |
| Red | 2190L1-6V | $1.98 | 2190L1-12V | $1.98 | 2190L1-28V | $1.98 |


2100 Series

### OMNI-GLO SERIES 1090A AND 1051A

Versatile general purpose pilot lights. Choice of 6, 12, 28 or 250 volts lamp. Fits ½″ dia. hole. With 4½″ leads 22 AWG stripped ½″ 105° C plastic insulation.

| Lens Color | 6 Volts* |  | 12 Volts* |  | 28 Volts |  | 250 Volts |  |
|---|---|---|---|---|---|---|---|---|
|  | IDI No. | Net Each | IDI No. | Net Each | IDI No. | Net Each | IDI No. | Net Each |
| Red | 1090A1-6V | 89c | 1090A1-12V | 89c | 1090A1-28V | 89c | 1051A1 | 69c |
| Clear | ........ | ........ | ........ | ........ | ........ | ........ | 1051A2 | 69c |
| Amber | 1090A3-6V | 89c | 1090A3-12V | 89c | 1090A3-28V | 89c | 1051A3 | 69c |
| White | 1090A4-6V | 89c | 1090A4-12V | 89c | 1090A4-28V | 89c | 1051A4 | 69c |
| Green | 1090A5-6V | 89c | 1090A5-12V | 89c | 1090A5-28V | 89c | ........ | ........ |
| Blue | 1090A6-6V | 89c | 1090A6-12V | 89c | 1090A6-28V | 89c | ........ | ........ |

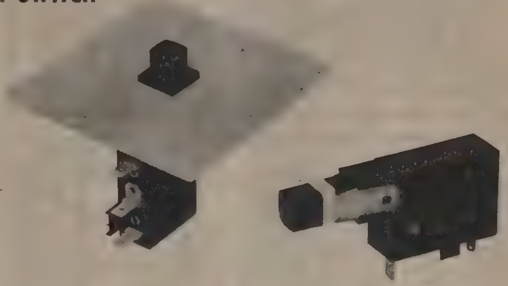
*Matches Series 1050A in appearance.

**QUANTITY DISCOUNTS AVAILABLE ON REQUEST**

## NEW LUMA SWITCH

satile, SPST lighted on-off pushbutton. High brightness n lamp with built-in resistor. Lamp operates at 125 VAC. tch rated 10 amps, ⅓ hp, 125 VAC. Mounting hole, ½″ dia.

| Lens Color | Square Lens | | Round Lens | |
|---|---|---|---|---|
| | IDI No. | Net Each | IDI No. | Net Each |
| Red | 3300A1 | $2.49 | 3300B1 | $2.49 |
| Clear | 3300A2 | 2.49 | 3300B2 | 2.49 |
| mber | 3300A3 | 2.49 | 3300B3 | 2.49 |
| Vhite | 3300A4 | 2.49 | 3300B4 | 2.49 |



## MINI-SLIDE INCANDESCENT PILOT LIGHT ASSEMBLIES

2800
h 2811

3060
with 3111

2801
with 2811

with 3121

3130 Series

Bright, highly visible light assemblies utilize miniature slide-base incandescent lamps. Rated 5000 hours life. Available in a variety of colors. Foolproof installation. UL Recognized; CSA approved.

**Series 2800:** Choice of black or stainless bezel. Self-locking, torque-limiting nylon mtg. nut; molded polycarbonate lens is screw-in type for easy lamp replacement. Fits 1¹⁄₁₆″ dia. mtg. hole.

**Series 3040:** Sockets molded from black nylon. Designed to accept short slide base indicator lamps.

**Series 3060:** Choice of round or square lens of molded polycarbonate; snaps on for easy front-panel lamp replacement. Mounts in ½″ dia. hole with hardened spring-steel speednut with rust-resistant finish.

**Series 3130 Legend Lights:** Offers larger message area and brighter illumination. Available in two, three or four terminal versions. Units are easy to install, easily relamped, stay secure, and have long life. Assemblies utilize short slide base indicator lamps. Molded polycarbonate sockets, leads can be attached by soldering or with quick connect receptacles for .205″ x .020″ tab. Mount in either .885″ x .500/.510″ rectangular hole or .500/.510″ double circles on ½″ centers. Two push on speednuts are supplied with each unit socket.

### SOCKETS

| IDI No. | Description | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-24 | 25-49 | 50-99 | 100-499 | 500-999 |
| 2800 | All plastic (black bezel) | $0.57 | $0.54 | $0.50 | $0.43 | $0.38 |
| 2801 | Stainless steel bezel | .60 | .57 | .53 | .46 | .41 |
| 3040 | For use with indicator lamps | .31 | .28 | .27 | .25 | .23 |
| 3060 | For use with pilot lamps | .33 | .30 | .29 | .28 | .25 |
| 3130 | Individual contacts (4 terminals) | .72 | .63 | .60 | .55 | .51 |
| 3131 | One side common (3 terminals) | .70 | .61 | .58 | .53 | .49 |
| 3132 | Both sides common (2 terminals) | .69 | .60 | .57 | .52 | .48 |

### LENSES FOR ABOVE SOCKETS

| Lens Color | For Series 2800 | | For Series 3060 Angle Lens* | | For Series 3040 & 3060 Round Lens | | For Series 3040 & 3060 Square Lens | | For Series 3130 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | IDI No. | Net | IDI No. | Net | IDI No. | Net | IDI No. | Net | IDI No. | Net |
| l | 2811 | $0.22 | 3151 | $0.21 | 3111 | $0.21 | 3121 | $0.21 | 3141 | $0.45 |
| ar | 2812 | .22 | 3152 | .21 | 3112 | .21 | 3122 | .21 | 3142 | .45 |
| ber | 2813 | .22 | 3153 | .21 | 3113 | .21 | 3123 | .21 | 3143 | .45 |
| ite | 2814 | .22 | 3154 | .21 | 3114 | .21 | 3124 | .21 | 3144 | .45 |
| een | 2815 | .22 | 3155 | .21 | 3115 | .21 | 3125 | .21 | 3145 | .45 |
| le | 2816 | .22 | 3156 | .21 | 3116 | .21 | 3126 | .21 | 3146 | .45 |
| low | 2817 | .22 | 3157 | .21 | 3117 | .21 | 3127 | .21 | 3147 | .45 |

with 3060 socket and indicator lamps only.

### LAMPS

able in two lgths., shorter – indi-; longer – pilot.

| np .* | Watts | Net | Lamp No.* | Watts | Net |
|---|---|---|---|---|---|
| | .2 | $0.51 | 18ESB | .7 | $0.51 |
| | .2 | .51 | 24CSB | .4 | .51 |
| | .2 | .51 | 24ESB | 1.0 | .51 |
| | .8 | .56 | 24PSB | 1.7 | .56 |
| B | .1 | .77 | 28ESB | 1.1 | .51 |
| B | .2 | .51 | 28PSB | 1.1 | .56 |
| B | .4 | .51 | 48ESB | 1.9 | .56 |
| B | .4 | .51 | 48PSB | 2.5 | .56 |
| B | 2.0 | .56 | 60PSB | 3.0 | .56 |
| B | .3 | .51 | 120PSB | 3.0 | .56 |
| B | .6 | .51 | | | |

ix indicates voltage (e.g. 4ESP 4V); PSB indicates pilot lamps.

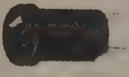
### INDIVIDUAL SOCKETS

Available in round or rectangular styles. Models 3001 and 3002 molded from black nylon and accept indicator lamps; model 3061 is molded black phenolic and accepts the longer pilot slide base lamps. Mount in either ½″ dia. hole or standard D shaped hole. Push-on speed nuts are supplied with the sockets.

**Model 3001**—For use with indicator lamps. Net Each .................. **29c**

**Model 3002**—For use with indicator lamps. Net Each .................. **29c**

**Model 3061**—For use with pilot lamps. Net Each ........................ **33c**


3001

3002

### COLOR END CAPS

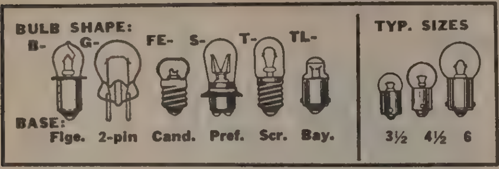
Designed for use with models 3001, 3002, and 3060. Permits 180° visibility.
**Any Model**—Specify. Net Each....... **8c**

| Color | Small Plastic No. | Large Plastic No. | Large Pyrex No. |
|---|---|---|---|
| Red | 3031 | 3011 | 3021 |
| White | 3034 | 3014 | 3024 |
| Green | 3035 | 3015 | 3025 |
| Blue | 3036 | 3016 | 3026 |
| Yellow | 3037 | 3017 | 3027 |

**QUANTITY DISCOUNTS AVAILABLE ON REQUEST**

# General Electric Miniature Lamps

## PANEL, PILOT, FLASHLIGHT LAMPS



| Lamp No. | Bulb | Base§ | Design | | Net Price* | |
|---|---|---|---|---|---|---|
| | | | Volts | Amps | Each | Box10 |
| PR2• | B-3½ | S.C. min. flanged | 2.38 | 0.50 | $0.24 | $ 1.46 |
| PR3• | B-3½ | S.C. min. flanged | 3.57 | .50 | .24 | 1.46 |
| PR4• | B-3½ | S.C. min. flanged | 2.33 | .27 | .25 | 1.47 |
| PR6• | B-3½ | S.C. min. flanged | 2.47 | .30 | .24 | 1.46 |
| PR7 | B-3½ | S.C. min. flanged | 3.7 | .30 | .33 | 1.99 |
| PR12• | B-3½ | S.C. min. flanged | 5.95 | .50 | .25 | 1.47 |
| PR13 | B-3½ | S.C. min. flanged | 4.75 | .50 | .24 | 1.46 |
| 6 | S-8 | D.C. bayonet | 6.4 | 3.00 | .68 | 4.06 |
| 8 | S-8 | D.C. bayonet | 8.0 | 2.20 | .79 | 4.72 |
| 10 | G-3½ | Min. two-pin | 2.5 | .50 | .40 | 2.39 |
| 13 | G-3½ | Min. screw | 3.7 | .30 | .21 | 1.23 |
| 14• | G-3½ | Min. screw | 2.47 | .30 | .21 | 1.23 |
| 27 | G-4½ | Min. screw | 4.9 | .30 | .25 | 1.49 |
| 31 | G-4½ | Min. screw | 6.15 | .30 | .31 | 1.87 |
| 39 | T-3¼ | Min. bayonet | 6.3 | .36 | .56 | 3.37 |
| 40 | T-3¼ | Min. screw | 6.3 | .15 | .17 | 1.01 |
| 41 | T-3¼ | Min. screw | 2.5 | .50 | .33 | 1.97 |
| 43 | T-3¼ | Min. bayonet | 2.5 | .50 | .33 | 1.97 |
| 44• | T-3¼ | Min. bayonet | 6.3 | .25 | .17 | 1.03 |
| 45 | T-3¼ | Min. bayonet | 3.2 | .35 | .28 | 1.67 |
| 46 | T-3¼ | Min. screw | 6.3 | .25 | .17 | 1.00 |
| 47• | T-3¼ | Min. bayonet | 6.3 | .15 | .17 | 1.03 |
| 48 | T-3¼ | Min. screw | 2.0 | .06 | .33 | 1.97 |
| 49 | T-3¼ | Min. bayonet | 2.0 | .06 | .28 | 1.66 |
| 50 | G-3½ | Min. screw | 7.5 | .22 | .20 | 1.20 |
| 51• | G-3½ | Min. bayonet | 7.5 | .22 | .18 | 1.06 |
| 53•♯ | G-3½ | Min. bayonet | 14.4 | .12 | .20 | 1.18 |
| 55• | G-4½ | Min. bayonet | 7.0 | .41 | .20 | 1.19 |
| 57•♯ | G-4½ | Min. bayonet | 14 | .24 | .20 | 1.21 |
| 57X | G-4½ | Min. bayonet | 14 | .24 | .22 | 1.32 |
| 63• | G-6 | S.C. bayonet | 7.0 | .63 | .25 | 1.50 |
| 67•♯ | G-6 | S.C. bayonet | 13.5 | .59 | .26 | 1.56 |
| 67K | G-6 | Candelabra screw | 13.5 | .41 | .89 | 5.36 |
| 71K | G-6 | Candelabra screw | 22 | .18 | .89 | 5.36 |
| 89• | G-6 | S.C. bayonet | 13.0 | .58 | .26 | 1.57 |
| 90• | G-6 | D.C. bayonet | 13.0 | .58 | .28 | 1.65 |
| 93• | S-8 | S.C. bayonet | 12.8 | 1.04 | .40 | 2.37 |
| 112 | TL-3 | Min. screw | 1.2 | .22 | .21 | 1.23 |
| 123 | G-3½ | Min. screw | 1.25 | .30 | .22 | 1.31 |
| 131 | G-3½ | Min. screw | 1.3 | .10 | .24 | 1.43 |
| 136 | G-4½ | Min. screw | 1.25 | .60 | .29 | 1.71 |
| 158• | T-3¼ | Wedge | 14 | .24 | .25 | 1.52 |
| 159 | T-3¼ | Wedge | 6.3 | .15 | .32 | 1.94 |
| 222• | TL-3 | Min. screw | 2.25 | .25 | .21 | 1.23 |
| 223 | FE-3¾ | Min. screw | 2.25 | .25 | .33 | 2.00 |
| 224 | TL-2¾ | Special 1½-turn thd. | 2.15 | .22 | .28 | 1.70 |
| 233 | G-3½ | Min. screw | 2.33 | .27 | .30 | 1.80 |
| 243 | TL-3 | Min. screw | 2.33 | .27 | .28 | 1.70 |
| 259 | T-3¼ | Wedge | 6.3 | .25 | .26 | 1.53 |
| 313• | T-3¼ | Min. bayonet | 28 | .17 | .42 | 2.53 |
| 327• | T-1¾ | S.C. midget flanged | 28 | .04 | .83 | 4.99 |
| 328 | T-1¾ | S.C. midget flanged | 6 | .20 | .66 | 3.94 |
| 330• | T-1¾ | S.C. midget flanged | 14 | .08 | 1.11 | 6.68 |
| 331 | T-1¾ | S.C. midget flanged | 1.35 | .06 | 1.25 | 7.50 |
| 338 | T-1¾ | S.C. midget flanged | 2.7 | .06 | 1.11 | 6.67 |
| 345 | T-1¾ | S.C. midget flanged | 6 | .04 | 1.93 | 11.60 |
| 363 | G-3½ | Min. bayonet | 14 | .20 | .29 | 1.74 |
| 401 | G-4½ | Min. screw, flasher | 1.25 | .22 | .46 | 2.77 |
| 405 | G-4½ | Min. screw, flasher | 6.5 | .50 | .47 | 2.83 |
| 406 | G-4½ | Min. screw, flasher | 2.6 | .30 | .32 | 1.91 |
| 407• | G-4½ | Min. screw, flasher | 4.9 | .30 | .28 | 1.66 |
| 425• | G-4½ | Min. screw | 5 | .50 | .27 | 1.60 |
| 428 | G-4½ | Min. screw | 12.5 | .25 | .32 | 1.91 |
| 431R† | G-4½ | Min. bayonet | 14 | .25 | .46 | 2.66 |
| 432 | G-4½ | Min. screw | 18 | .25 | .37 | 2.23 |
| 432G‡ | G-4½ | Min. screw | 18 | .25 | .72 | 4.19 |
| 432R† | G-4½ | Min. screw | 18 | .25 | .72 | 4.19 |
| 433 | G-4½ | Min. bayonet | 18 | .25 | .39 | 2.31 |
| 502 | G-4½ | Min. screw | 5.1 | .15 | .22 | 1.31 |
| 509K | G-6 | Candelabra screw | 24 | .18 | .44 | 2.54 |
| 605 | G-4½ | Min. screw | 6.15 | .50 | .31 | 1.81 |
| 965 | T-4½ | Min. screw | 9.84 | .50 | .38 | 2.29 |
| 1034•♯ | S-8 | D.C. indexing | 12.8 | 1.80 | .54 | 3.25 |
| | | (2-pos. taillight) | 14 | .51 | | |
| 1034A▲ | S-8 | D.C. indexing | 12.8 | 1.80 | .71 | 4.27 |
| | | (2-pos. taillight) | 14 | .51 | | |
| 1073 | S-8 | S.C. bayonet | 12.8 | 1.80 | .39 | 2.32 |
| 1129 | S-8 | S.C. bayonet | 6.4 | 2.63 | .40 | 2.41 |
| 1141 | S-8 | S.C. bayonet | 12.8 | 1.34 | .39 | 2.32 |
| 1154•♯ | S-8 | D.C. indexing | 6.4 | 2.63 | .51 | 3.06 |
| | | (2-pos. taillight) | 7.0 | .75 | | |
| 1156• | S-8 | S.C. bayonet | 12.8 | 2.10 | .57 | 3.40 |
| 1157• | S-8 | D.C. indexing | 12.8 | 2.10 | .54 | 3.25 |
| | | (2-pos. taillight) | 14 | .59 | | |
| 1157A▲ | S-8 | D.C. indexing | 12.8 | 2.10 | .78 | 4.65 |
| | | (2-pos. taillight) | 14 | .59 | | |
| 1176• | S-8 | D.C. bayonet | 12.8 | 1.34 | .50 | 2.97 |
| | | (2-pos. taillight) | 14 | .59 | | |
| 1224K | G-6 | Candelabra screw | 32 | .16 | $0.84 | $ 5.02 |
| 1240 | G-16½ | D.C. prefocus | 32 | 3.5 | 2.72 | 16.30 |
| 1404 | G-6 | S.C. bayonet | 10 | .09 | 1.41 | 8.47 |
| 1408 | T-3¼ | Min. bayonet | 10 | .13 | .39 | 2.31 |
| 1446 | G-3½ | Min. screw | 12 | .20 | .38 | 2.30 |
| 1447 | G-3½ | Min. screw | 18 | .15 | .26 | 1.57 |
| 1449 | G-3½ | Min. screw | 14 | .20 | .21 | 1.27 |
| 1458 | G-5 | Min. bayonet | 20 | .25 | .45 | 2.69 |
| 1474 | T-3 | Min. screw | 14 | .17 | .55 | 3.27 |
| 1476 | T-3 | Min. screw | 18 | .17 | .68 | 4.09 |
| 1477 | T-3 | Min. screw | 24 | .17 | .84 | 5.06 |
| 1487 | T-3¼ | Min. screw | 14 | .20 | .33 | 1.97 |
| 1488 | T-3¼ | Min. bayonet | 14 | .15 | .35 | 2.11 |
| 1490 | T-3¼ | Min. bayonet | 3.2 | .16 | .27 | 1.63 |
| 1491 | G-8 | D.C. bayonet | 2.4 | .80 | 1.39 | 8.36 |
| 1493 | S-8 | D.C. bayonet | 6.5 | 2.75 | 1.59 | 9.56 |
| 1630 | S-8 | D.C. prefocus | 6.5 | 2.75 | 2.08 | 12.50 |
| 1651 | S-8 | S.C. bayonet | 5 | 0.60 | 1.04 | 6.26 |
| 1724 | S-11 | D.C. bayonet | 6.2 | 4.50 | 1.35 | 8.10 |
| 1763 | S-11 | S.C. prefocus | 6.1 | 4.10 | 1.93 | 11.56 |
| 1768 | T-1¾ | Midget screw | 6 | .20 | 1.18 | 7.07 |
| 1769 | T-1¾ | Midget screw | 2.5 | .20 | 1.40 | 8.42 |
| 1775 | T-1¾ | Midget screw | 6.3 | .075 | 1.44 | 8.66 |
| 1809 | T-3¼ | Min. bayonet | 2 | .06 | .72 | 4.34 |
| 1813 | T-3¼ | Min. bayonet | 14.4 | .10 | .35 | 2.10 |
| 1815 | T-3¼ | Min. bayonet | 14 | .20 | .30 | 1.79 |
| 1819 | T-3¼ | Min. bayonet | 28 | .04 | .43 | 2.59 |
| 1822 | T-3¼ | Min. bayonet | 36 | .10 | .82 | 4.90 |
| 1828 | T-3¼ | Min. bayonet | 37.5 | .05 | .87 | 5.24 |
| 1829 | T-3¼ | Min. bayonet | 28 | .07 | .46 | 2.74 |
| 1835 | T-3¼ | Min. bayonet | 55 | .05 | .99 | 5.94 |
| 1847 | T-3¼ | Min. bayonet | 6.3 | .15 | .23 | 1.40 |
| 1850 | T-3¼ | Min. bayonet | 5 | .09 | .46 | 2.73 |
| 1855 | T-4½ | Min. bayonet | 6.3 | .80 | .48 | 2.87 |
| 1866 | T-3¼ | Min. bayonet | 6.3 | .25 | .29 | 1.73 |
| 1881 | T-3¼ | Min. bayonet | 15.5 | .24 | .39 | 2.35 |
| 1891 | T-3¼ | Min. bayonet | 14 | .24 | .21 | 1.26 |
| 1892 | T-3¼ | Min. bayonet | 14.4 | .12 | .33 | 1.99 |
| 1898 | T-3¼ | Min. bayonet | 14 | .33 | .51 | 3.06 |

*Inside frosted. †Outside coated red. ‡Outside coated green. §S.C. indicates single contact; D.C., double contact; Min., miniature. ♯Available in blister; price on request. ▲Outside coated amber. **•Popular types. *FET included where applicable.**

§S.C., single contact; D.C., double contact; Min., miniature. **•Popular types. *FET included where applicable.**

## NEON INDICATING GLOW LAMPS

Gaseous-discharge type for use as indicators. Average useful life, 25,000 hours AC; Types NE-17, 45, 48, 57, 58, 7,500 hours; Types NE-30, 34, 56, 79, 10,000 hours; Type NE-51, 15,000 hours. DC is approximately 60% of AC values. **Ambient Temperature:** Not to exceed 300° F.

| Lamp No. | Nom. Watts | Volts (Circ.) | Bulb (Clear) | Base | Res.* Ohms | Net Each* |
|---|---|---|---|---|---|---|
| A1B | 1/25 | 105–125 | T-2 | Wire term. | 220K | $0.21 |
| A1C‡ | 1/10 | 105–125 | T-2 | Wire term. | 68K | .22 |
| NE-2D (C7A) | 1/12 | 105–125 | T-2† | SC Mid. Flg. | 100K | 1.34 |
| NE-2E (A9A) | 1/12 | 105–125 | T-2† | Wire term. | 100K | .20 |
| NE-2H (C2A)‡ | ¼ | 105–125 | T-2† | Wire term. | 30K | .20 |
| NE-2J (C9A)‡ | ¼ | 105–125 | T-2† | SC Mid. Flg. | 30K | 1.34 |
| NE-2V (A2B) | 1/12 | 105–125 | T-2 | Wire term. | 100K | .22 |
| NE-17 (B5A) | ¼ | 105–125 | T-4½ | DC Bay. | 30K | 1.58 |
| NE-30 (J5A) | 1 | 105–125 | S-11 | Med. Scr.♯ | 7.5K | 2.50 |
| NE-32 (L5A) | 1 | 105–125 | G-10 | DC Bay. | 7.5K | 2.12 |
| NE-34 (R2A) | 2 | 105–125 | S-14 | Med. Scr. | 3.5K | 3.29 |
| NE-40 (R6A) | 3 | 105–125 | S-14 | Med. Scr. | 2.2K | 4.84 |
| NE-45 (B7A) | ¼ | 105–125 | T-4½ | Cand. Scr. | 30K | 1.53 |
| NE-48 (B9A) | ¼ | 105–125 | T-4½ | DC Bay. | 30K | 1.25 |
| NE-51 (B1A) | 1/25 | 105–125 | T-3¼ | Min. Bay. | 220K | .44 |
| NE-51H(B2A)‡ | 1/7 | 105–125 | T-3¼ | Min. Bay. | 47K | .44 |
| NE-56 (J9A) | 1 | 210–250 | S-11 | Med. Scr.♯ | 33K | 2.53 |
| NE-57 (F3A) | ¼ | 105–125 | T-4½ | Cand. Scr.♯ | 30K | 1.76 |
| NE-58 (F4A) | ½ | 210–250 | T-4½ | Cand. Scr. | 100K | 1.65 |
| NE-79 (R1A) | 1 | 105–125 | S-7 | DC Bay. | 7.5K | 2.35 |
| AR-1 (W1A)▲ | 2 | 105–125 | S-14 | Med. Scr. | 3.5K | 3.53 |

*Lamps with screw base have proper ballast built-in. Those with bayonet base or wire terminals do not have them, but are to be supplied and attached by user. Resistance shown for normal operation at indicated circuit volts. †Formed tip bulb. ‡Use 135 V minimum for satisfactory DC operation. §Round end bulb. ♯Center electrode connected to base shell. ▲Argon indicator lamp. ***FET included.**

## CIRCUIT COMPONENT NEON LAMPS

For use as voltage indicators, regulators, switching, etc. All ratings below are DC; all bulb types are T-2 except: NE-67 (T-3¼) and NE-16 (T-4½). All have parallel-post electrodes (W-11), except NE-16, fireman's hat electrodes (P-3). **Ambient Temperature:** −60° F to +165° F, limit.

| Lamp No. | Starting Volts DC | Operating Volts DC | mA DC | Base | Net Each |
|---|---|---|---|---|---|
| NE-23 (5AH) | 60–90 | 59* | 0.3 | Wire term. | $0.22 |
| NE-68 (5AC)† | 60–90 | 52–65 | 0.3 | Wire term. | .60 |
| NE-76 (5AG-A)† | 68–76 | 50–60 | 0.4 | Wire term. | 1.16 |
| NE-81 (5AG)† | 64–80 | 50–60 | 0.3 | Wire term. | .89 |
| NE-83 (5AH)† | 60–100 | 61* | 10.0 | Wire term. | .43 |
| NE-86 (5AJ)† | 55–90 | 57* | 1.5 | Wire term. | .40 |
| NE-3 (8AA1) | 55–90 | 55*‡ | 0.3 | Tel. Slide | 1.20 |
| NE-4 (8AB1) | 60–90 | 59* | 0.3 | Tel. Slide | .92 |
| NE-5 (8AC1) | 120–150 | 60–80 | 0.5 | Tel. Slide | 1.12 |
| NE-67 (6AC) | 55–90 | 56* | 0.2 | Min. Bay. | .54 |
| NE-16 (7AA) | 67–87 | 53–65 | 1.5 | DC Bay. | 1.56 |

*Average, after 100 hours burning at rated current. Individual lots may vary from average. †Leads are tinned. ‡Average greater than indicated value.

# relco® Miniature Lamps

## MINIATURE LAMPS PRICE SCHEDULE

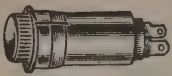
| mp No. | Net Each, Lots of 10 | 100 | 500 | 1000 |
|---|---|---|---|---|
| R2 | $0.13 | $0.11 | $0.09 | $0.085 |
| R3 | .13 | .11 | .09 | .085 |
| R4 | .13 | .11 | .09 | .085 |
| R5 | .23 | .19 | .16 | .153 |
| R6 | .13 | .11 | .09 | .085 |
| R7 | .18 | .15 | .13 | .115 |
| R12 | .13 | .11 | .09 | .085 |
| R13 | .13 | .11 | .09 | .085 |
| R15 | .14 | .11 | .09 | .087 |
| R18 | .19 | .16 | .14 | .125 |
|  | .11 | .09 | .075 | .071 |
|  | .11 | .09 | .075 | .071 |
|  | .14 | .11 | .09 | .086 |
|  | .17 | .14 | .12 | .109 |
|  | .28 | .23 | .20 | .183 |
|  | .09 | .07 | .06 | .059 |
|  | .18 | .15 | .13 | .115 |
| 2 | .23 | .19 | .165 | .149 |
| 3 | .18 | .15 | .13 | .115 |
| 4 | .09 | .07 | .06 | .06 |
| 5 | .15 | .12 | .10 | .097 |
| 5 | .09 | .07 | .063 | .058 |
| 7 | .09 | .07 | .063 | .06 |
| 8 | .18 | .15 | .13 | .115 |
| 9 | .15 | .12 | .10 | .096 |
| 0 | .11 | .09 | .075 | .07 |
| 1 | .09 | .07 | .065 | .06 |
| 2 | .23 | .19 | .16 | .149 |
| 3 | .10 | .08 | .075 | .066 |
| 5 | .10 | .08 | .075 | .067 |
| 7 | .11 | .08 | .075 | .068 |
| 8 | .13 | .11 | .09 | .085 |
| 7 | .14 | .11 | .093 | .088 |
| 8 | .20 | .16 | .14 | .127 |
| 7 | .25 | .20 | .17 | .159 |
| 8 | .25 | .20 | .17 | .158 |
| 9 | .14 | .11 | .10 | .089 |
| 0 | .15 | .12 | .10 | .093 |
| 3 | .21 | .17 | .145 | .134 |
| 4 | .24 | .19 | .16 | .15 |
| 7 | .18 | .15 | .12 | .105 |
| 12 | .11 | .09 | .075 | .071 |
| 23 | .12 | .09 | .08 | .076 |
| 30 | .15 | .12 | .10 | .092 |
| 31 | .13 | .10 | .09 | .083 |
| 58 | .13 | .11 | .09 | .085 |
| 59 | .18 | .14 | .12 | .113 |
| 61 | .14 | .11 | .09 | .086 |
| 94 | .13 | .11 | .09 | .085 |
| 11 | .25 | .20 | .17 | .159 |
| 12 | .28 | .23 | .20 | .183 |
| 19 | .28 | .23 | .19 | .181 |
| 22 | .11 | .09 | .075 | .071 |
| 33 | .18 | .13 | .11 | .105 |
| 39 | .21 | .17 | .14 | .134 |
| 40 | .19 | .15 | .13 | .121 |
| 43 | .16 | .13 | .11 | .099 |
| 45 | .17 | .14 | .12 | .11 |
| 59 | .18 | .14 | .12 | .089 |
| 63 | .17 | .14 | .12 | .112 |
| 01 | .29 | .24 | .20 | .188 |
| 02 | .28 | .23 | .19 | .178 |
| 03 | .27 | .22 | .19 | .176 |
| 04 | .34 | .27 | .23 | .215 |
| 13 | .22 | .18 | .15 | .143 |
| 27 | .44 | .36 | .30 | .281 |
| 28 | .35 | .28 | .24 | .222 |
| 30 | .58 | .48 | .40 | .377 |
| 31 | .67 | .55 | .47 | .436 |
| 34 | .65 | .54 | .46 | .422 |
| 335 | 1.00 | .83 | .70 | .649 |
| 336 | 1.00 | .83 | .70 | .646 |
| 337 | 1.18 | .98 | .84 | .767 |
| 338 | .60 | .50 | .42 | .388 |
| 342 | 1.21 | 1.00 | .84 | .782 |
| 344 | .94 | .77 | .65 | .61 |
| 345 | .76 | .63 | .53 | .493 |
| 346 | .86 | .71 | .60 | .561 |
| 349 | .74 | .62 | .52 | .48 |
| 367 | .95 | .79 | .67 | .617 |
| 370 | 1.04 | .86 | .74 | .674 |
| 373 | 1.20 | .99 | .83 | .774 |
| 380 | 1.45 | 1.20 | 1.02 | .94 |

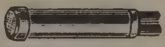
| Lamp No. | Net Each, Lots of 10 | 100 | 500 | 1000 |
|---|---|---|---|---|
| 381 | $0.77 | $0.64 | $0.54 | $0.50 |
| 382 | .88 | .73 | .62 | .571 |
| 386 | 1.05 | .87 | .74 | .684 |
| 387 | .50 | .41 | .35 | .326 |
| 388 | 1.05 | .87 | .73 | .68 |
| 398 | .88 | .61 | .51 | .477 |
| 407 | .15 | .12 | .10 | .096 |
| 425 | .15 | .12 | .10 | .093 |
| 458 | .26 | .22 | .18 | .153 |
| 502 | .12 | .09 | .08 | .076 |
| 680 | 1.19 | .99 | .83 | .773 |
| 682 | 1.44 | 1.20 | 1.00 | .936 |
| 683 | 1.19 | .99 | .83 | .773 |
| 685 | 1.44 | 1.20 | 1.00 | .936 |
| 713 | 1.19 | .99 | .83 | .773 |
| 714 | 1.44 | 1.20 | 1.00 | .936 |
| 715 | 1.19 | .99 | .83 | .773 |
| 718 | 1.44 | 1.20 | 1.00 | .936 |
| 755 | .22 | .18 | .15 | .143 |
| 756 | .29 | .24 | .20 | .19 |
| 757 | .33 | .27 | .23 | .209 |
| 1003 | .20 | .16 | .14 | .131 |
| 1004 | .20 | .16 | .14 | .131 |
| 1034 | .28 | .23 | .20 | .183 |
| 1073 | .20 | .16 | .14 | .131 |
| 1129 | .21 | .17 | .14 | .136 |
| 1141 | .20 | .16 | .14 | .131 |
| 1142 | .24 | .19 | .16 | .15 |
| 1154 | .27 | .22 | .18 | .173 |
| 1155 | .23 | .19 | .16 | .149 |
| 1156 | .30 | .24 | .21 | .192 |
| 1157 | .28 | .23 | .20 | .183 |
| 1158 | .28 | .23 | .20 | .181 |
| 1251 | .34 | .28 | .24 | .219 |
| 1408 | .23 | .20 | .16 | .134 |
| 1445 | .13 | .11 | .09 | .085 |
| 1458 | .25 | .20 | .16 | .156 |
| 1705D | .46 | .38 | .32 | .296 |
| 1728D | .34 | .28 | .24 | .219 |
| 1730D | .76 | .63 | .53 | .493 |
| 1738D | .34 | .28 | .24 | .219 |
| 1739D | .47 | .39 | .33 | .305 |
| 1762D | .34 | .28 | .24 | .217 |
| 1764D | .37 | .31 | .27 | .242 |
| 1784D | .51 | .43 | .36 | .332 |
| 1810 | .60 | .50 | .42 | .388 |
| 1813 | .19 | .15 | .13 | .122 |
| 1815 | .16 | .13 | .11 | .104 |
| 1816 | .16 | .13 | .11 | .102 |
| 1819 | .24 | .19 | .16 | .15 |
| 1820 | .25 | .20 | .17 | .162 |
| 1829 | .25 | .20 | .17 | .159 |
| 1847 | .13 | .10 | .09 | .081 |
| 1850 | .25 | .20 | .17 | .159 |
| 1864 | .31 | .26 | .22 | .201 |
| 1869D | .81 | .67 | .57 | .525 |
| 1891 | .11 | .09 | .08 | .073 |
| 1892 | .18 | .15 | .13 | .115 |
| 1895 | .15 | .12 | .10 | .096 |
| 1906 | .46 | .39 | .32 | .27 |
| 2102D | .60 | .50 | .42 | .388 |
| 2107D | .92 | .74 | .65 | .593 |
| 2112D | .55 | .45 | .39 | .354 |
| 2114D | .54 | .44 | .38 | .345 |
| 2158D | .95 | .79 | .67 | .617 |
| 2169D | .91 | .74 | .64 | .59 |
| 2174D | .46 | .38 | .32 | .30 |
| 2180D | .77 | .64 | .54 | .50 |
| 2181D | .42 | .34 | .29 | .271 |
| 2182D | .45 | .37 | .31 | .291 |
| 2187D | .65 | .54 | .46 | .421 |

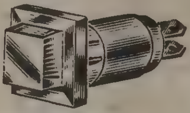
### NEON-GLOW INDICATOR LAMPS

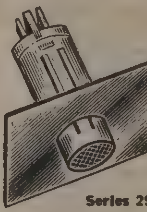
| Lamp No. | Net Each, Lots of 10 | 1000 | 2500 | 5000 |
|---|---|---|---|---|
| A1A(NE-2) | $0.17 | $0.10 | $0.076 | $0.065 |
| A1AT(NE-2T) | .17 | .10 | .076 | .065 |
| A1B | .20 | .122 | .09 | .08 |
| A1C | .21 | .124 | .091 | .081 |
| A2A(NE-2A) | .17 | .10 | .076 | .065 |
| A9A(NE-2E) | .19 | .113 | .083 | .074 |
| C2A(NE-2H) | .19 | .113 | .083 | .074 |

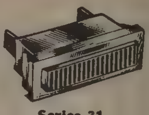
# LEECRAFT® Indicator Lights

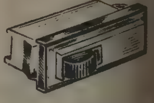

Series 32, 32R Cylindrical Lens


Series 36, 41


Series 32R Square Lens


Series 29


Series 31 and 31D


Series 51

## SERIES 32, 32R AND 35 SNAPLITE® INDICATOR LIGHTS

UL and CSA Approved. Wide variety of lens and housing colors. Available with either high brightness neon or miniature incandescent lamps. Supplied with 6" insulated 18-ga. wire leads; available with .187" tab terminals at same price by adding suffix **T** to model (e.g., 32-G1-2111**T**).

### WITH CYLINDRICAL LENS*

| Leecraft No.* | Rating |  | Net Each |  | Net/ 100 |
|---|---|---|---|---|---|
|  | Volts | mA | 1-24 | 25-99 |  |
| **32†** | 110–125 | ⅓ W | **$1.08** | **$0.88** | **$53.55** |
| **32-G1** | 6.3 | 200 | **1.47** | **1.14** | **68.75** |
| **32-G2** | 6 | 40 | **1.53** | **1.45** | **93.35** |
| **32-G3** | 14 | 80 | **1.47** | **1.21** | **71.28** |
| **32-G5** | 28 | 40 | **1.47** | **1.14** | **68.46** |
| **35†** | 210–250 | ⅓ W | **1.08** | **.88** | **53.55** |

### WITH CHROME RING*

| Leecraft No.*‡ | Rating |  | Net Each |  | Net/ 100 |
|---|---|---|---|---|---|
|  | Volts | mA | 1-24 | 25-99 |  |
| **32R†** | 110–125 | ⅓ W | **$1.16** | **$0.95** | **$57.75** |
| **32RG1** | 6.3 | 200 | **1.53** | **1.21** | **73.08** |
| **32RG2** | 6 | 40 | **1.60** | **1.50** | **98.65** |
| **32RG3** | 14 | 80 | **1.47** | **1.25** | **75.57** |
| **32RG5** | 28 | 40 | **1.47** | **1.21** | **72.52** |
| **35R†** | 210–250 | ⅓ W | **1.16** | **.95** | **57.75** |

†Neon; all others incandescent. ‡Fits .500"–.513" hole size; for .514"–519" hole size, add letter **C** (e.g., 32**C**R, 32**C**RG1, etc.); same price.

### * ADD LENS, COLOR SUFFIXES

Add suffix for lens and housing color desired. (Example: 32-**1113**=indicator with black housing and amber lens.) Add **T** designation to end of color suffix when ordering indicator with tab terminals. (Example: 32-1113**T**=indicator with black housing, amber lens and tab terminals.)

### *FLAT CYLINDRICAL LENS

| Housing Color | Lens Color |  |  |  |
|---|---|---|---|---|
|  | Red | Amber | Clear | White |
| Black | **1111** | **1113** | **1117** | **1115** |
| White | **2111** | **2113** | **2117** | **2115** |
| Red | **3111** | **3113** | **3117** | **3115** |

### *STOVE PIPE LENS

|  |  |  |  |  |
|---|---|---|---|---|
| Black | **1211** | **1213** | **1217** | **1215** |
| White | **2211** | **2213** | **2217** | **2215** |
| Red | **3211** | **3213** | **3217** | **3215** |

### *FLUSH TYPE LENS

|  |  |  |  |  |
|---|---|---|---|---|
| Black | **1311** | **1313** | **1317** | **1315** |
| White | **2311** | **2313** | **2317** | **2315** |
| Red | **3311** | **3313** | **3317** | **3315** |

### *HI-HAT TYPE LENS

|  |  |  |  |  |
|---|---|---|---|---|
| Black | **1511** | **1513** | **1517** | **1515** |
| White | **2511** | **2513** | **2517** | **2515** |
| Red | **3511** | **3513** | **3517** | **3515** |

### *SQUARE LENS

|  |  |  |  |  |
|---|---|---|---|---|
|  | **R2911** | **R2913** | **R2917** | **R2915** |

## SERIES 36 AND 41 TINEON® MINIATURE INDICATORS

Supplied with either high brightness neon or miniature incandescent lamps. Fits 5/16" dia. hole; includes speed nut. Series 41-00 used with incandescent lamps or neon lamps without resistor. Series 36-00 supplied with neon lamps and built-in resistor. Available with one or two-digit legends hot stamped on lens and in multiple strip assemblies. Available with or without bezel in a variety of housing colors, with flush and hi-hat lens. Wire leads, 5/16" mtg. hole.

### WITHOUT ALUMINUM BEZEL

| Leecraft No.* | Rating |  | Net Each |  | Net/ 100 |
|---|---|---|---|---|---|
|  | Volts | mA | 1-24 | 25-99 |  |
| **36N†** | 110–125 | ⅓ W | **$1.03** | **$0.82** | **$53.55** |
| **36HN†** | 210–250 | ⅓ W | **1.03** | **.82** | **53.55** |
| **41N†** | 250 max | . . . . | **.99** | **.79** | **53.55** |
| **41N-G1** | 6.3 | 200 | **1.47** | **1.04** | **67.50** |
| **41N-G2** | 6 | 40 | **1.49** | **1.32** | **92.11** |
| **41N-G3** | 14 | 80 | **1.42** | **1.08** | **71.05** |
| **41N-G5** | 28 | 40 | **1.37** | **1.04** | **67.73** |

### WITH ALUMINUM BEZEL

|  |  |  |  |  |  |
|---|---|---|---|---|---|
| **36EN†** | 110–125 | ⅓ W | **$1.21** | **$1.00** | **$65.10** |
| **36HEN†** | 210–250 | ⅓ W | **1.21** | **1.00** | **65.10** |
| **41EN†** | 250 max | . . . . | **1.16** | **.93** | **60.90** |
| **41EN-G1** | 6.3 | 200 | **1.60** | **1.14** | **75.00** |
| **41EN-G2** | 6 | 40 | **1.62** | **1.45** | **99.56** |
| **41EN-G3** | 14 | 80 | **1.53** | **1.21** | **77.49** |
| **41EN-G5** | 28 | 40 | **1.50** | **1.14** | **74.67** |

†Neon; all others incandescent.

### *ADD LENS, COLOR SUFFIXES 36-N AND HN, 41-N COLORS

Add suffix for color desired. (Example: 36HN-**3311**=indicator with red housing and red lens.)

| Housing Color | Lens Color |  |  |  |
|---|---|---|---|---|
|  | Red | Amber | White | Clear |
| Black | **1311** | **1313** | **1315** | **1317** |
| White | **2311** | **2313** | **2315** | **2317** |
| Red | **3311** | **3313** | **3315** | **3317** |
| Gray | **7311** | **7313** | **7315** | **7317** |

### 36-EN AND HEN, 41-EN COLORS

Add suffix for color desired. (Example: 36HEN-**2311**=210–250 volts with red flush type lens.) With aluminum bezel, white housing.

| Lens | Red | Amber | Clear | White |
|---|---|---|---|---|
| Flush | **2311** | **2313** | **2317** | **2315** |
| Hi-Hat | **2111** | **2113** | **2117** | **2115** |

## SERIES 29 REAR MOUNT INDICATOR LIGHTS

Lights snap in from rear of panel, locking in place with no additional hardware needed. Removable by compressing release mechanism on unit. Mtg. hole .510" to .520". Available with either wire leads or male tab terminals. Designate tabs by placing **T** after part number when ordering (e.g., 29H-2411**T**). Incandescent versions available, write for information and pricing. UL and CSA Approved. Rated ⅓ W.

| Leecraft Number* | Volts | Net Each |  | Net/ 100 |
|---|---|---|---|---|
|  |  | 1-24 | 25-99 |  |
| **29** | 125 | **$1.17** | **$0.95** | **$58.43** |
| **29H** | 250 | **1.17** | **.95** | **58.43** |

*Add color suffix for housing and lens color desired. (Example: 29H-**2431T**=Indicator with white housing, red lens, 250 volts and tab terminals.)

| Housing Color | Lens Color |  |  |  |
|---|---|---|---|---|
|  | Red | Amber | Clear | White |
| White | **2431** | **2433** | **2437** | **2435** |
| Black | **1431** | **1433** | **1437** | **1435** |

## SERIES 31 AND 31D RECTANGULAR INDICATORS

Provides maximum message display in compact area. Includes long-life high brightness neon or incandescent lamp. Series 31 and 31H equipped with 18-gauge insulated leads. Series 31T and 31HT equipped with .250" brass tabs; .187" tabs also available. White nylon housing with chrome-plated bezel. Mtg. hole 1.281" x .395"; ½" d. behind panel. Rated ⅓ watt at 110–125 volts. Series 31D special units incorporate two lamps, 3 terminations, in standard housing; can activate two legends separately or simultaneously, write for specifications and information. UL and CSA Approved.

| Leecraft No.* | Rating |  | Net Each |  | Net/ 100 |
|---|---|---|---|---|---|
|  | Volts | mA | 1-24 | 25-99 |  |
| **31†** | 110–125 | ⅓ W | **$1.16** | **$0.93** | **$57.75** |
| **31-G1** | 6.3 | 200 | **1.47** | **1.27** | **73.76** |
| **31-G2** | 6 | 40 | **1.60** | **1.50** | **98.31** |
| **31-G3** | 14 | 80 | **1.47** | **1.25** | **76.23** |
| **31-G5** | 28 | 40 | **1.47** | **1.21** | **73.43** |
| **31H†** | 210–250 | ⅓ W | **1.16** | **.93** | **57.75** |
| **31D†** | 110–125 | ⅓ W | **1.81** | **1.46** | **94.50** |

*When ordering, add suffix for lens color desired (e.g., 31H-**2111** for 210-250 V light with red lens). All above lights also available with .250" tab terminals at same price; to order add suffix **T** (e.g., 31H-2111**T**).

| Red | Amber | Clear | White | Blue | Green |
|---|---|---|---|---|---|
| **2111** | **2113** | **2117** | **2115** | **2114** | **2112** |

†Neon; all others incandescent.

## SERIES 51 SLIDELITE™ SLIDE/SWITCH PILOT LIGHTS

Available in either high-brightness neon or miniature incandescent lamp. Snap-in mounting in panel hole 1.281" x .395". Available with either wire leads or male quick-connect terminals. SPST switch and self-wiping contacts rated 6 amps at 125 volts. UL and CSA Approved.

| Model No.* | Volts | Lamp Cur. | Net Each |  | Net/ 100 |
|---|---|---|---|---|---|
|  |  |  | 1-24 | 25-99 |  |
| **51†** | 110–125 | ⅓ W | **$1.69** | **$1.19** | **$101.59** |
| **51-G1** | 6.3 | .2 A | **1.81** | **1.30** | **118.52** |
| **51-G2** | 6 | .04 A | **2.08** | **1.56** | **144.38** |
| **51-G3** | 12–14 | .08 A | **1.81** | **1.30** | **115.13** |
| **51-G5** | 28 | .04 A | **1.81** | **1.30** | **111.18** |
| **51H†** | 210–250 | ⅓ W | **1.69** | **1.19** | **101.59** |

*Add suffix for lens color desired. (Example: 51H-**2131**=250-volt Slidelite, with red lens.) Part numbers listed have tab terminals. For wire leads omit **T** at end of number, (e.g., 51-**2131T** becomes 51-**2131**).

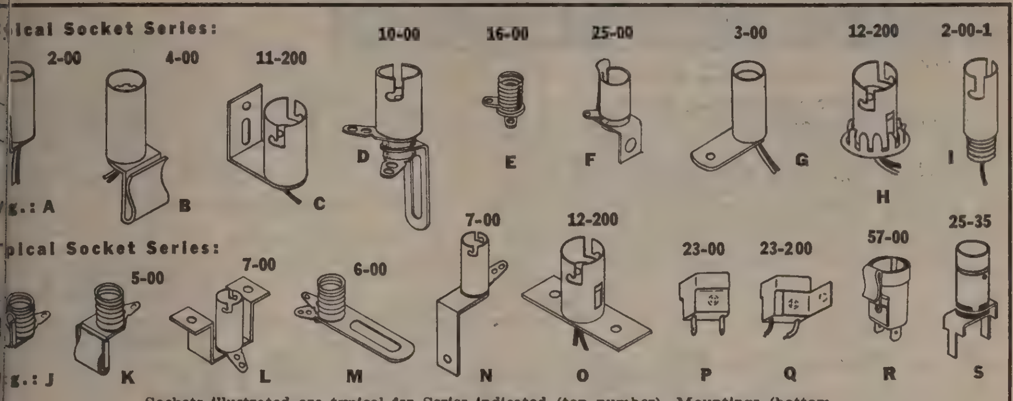
| Red | Green | Amber | Blue | White |
|---|---|---|---|---|
| **2131T** | **2132T‡** | **2133T** | **2134T‡** | **2135T** |

†Neon; all others incandescent. ‡Colors not recommended for neon.

**LEECRAFT INDICATOR LIGHTS AND SOCKETS ARE AVAILABLE IN A WIDE VARIETY OF MODIFICATIONS. WRITE US FOR FULL INFORMATION.**

# EECRAFT® Lamp Sockets

## OPEN TYPE BRACKET-MOUNTED LAMP SOCKETS



Sockets illustrated are typical for Series indicated (top number). Mountings (bottom letter) are referred to in tables below. Terminals or leads as stated below.

des heavy cadmium plated steel nting brackets, .025″–.032″; less lens amp. Wide variety of bracket styles, able with wire leads or solder termi- Many other types are available; for information.

### RIES 2-00 MINIATURE BAYONET

-in 22 gauge wire leads, 6″ long, for voltage incandescent lamps such as ¼, G-3½ or G-4½. Includes insulating e, except models with suffix -1, which bracket grounded to shell.

| raft . | Mtg. | Net Each 1-24 | Net Each 25-99 | Net/ 100 |
|---|---|---|---|---|
| | A | $0.65 | $0.38 | $31.50 |
| | B | .65 | .38 | 31.50 |
| | C | .65 | .38 | 31.50 |
| | D | .65 | .38 | 31.50 |
| | E | .65 | .38 | 31.50 |
| | F | .65 | .38 | 31.50 |
| | G | .65 | .38 | 31.50 |
| -1 | F | .65 | .38 | 31.50 |
| -1 | H | .65 | .38 | 31.50 |
| N-1 | I | .82 | .60 | 46.20 |

### RIES 3-00 MINIATURE BAYONET

sed in molded phenolic for NE-51 , low voltage incandescent lamps. t-in 6″ wire leads. Rated 75 watts at volts. UL and CSA Approved.

| | | | | |
|---|---|---|---|---|
| | A | $0.69 | $0.47 | $37.80 |
| | C | .69 | .47 | 37.80 |
| | D | .69 | .47 | 37.80 |
| | F | .69 | .47 | 37.80 |
| | G | .69 | .47 | 37.80 |

### RIES 7-00 MINIATURE BAYONET

ned solder terminals, for low voltage ndescent lamps such as T-3¼, G-3½ -4½. Insulating sleeve available.

| | | | | |
|---|---|---|---|---|
| | A | $0.58 | $0.34 | $25.20 |
| | B | .58 | .34 | 25.20 |
| | K | .58 | .34 | 25.20 |
| | D | .58 | .34 | 25.20 |
| | E | .58 | .34 | 25.20 |
| | F | .58 | .34 | 25.20 |
| | L | .58 | .34 | 25.20 |
| | G | .58 | .34 | 25.20 |
| | N | .58 | .34 | 25.20 |
| | S | .71 | .52 | 40.00 |

### SERIES 5-00 MINIATURE SCREW

Tinned solder terminals, 60°–90° apart, for low voltage incandescent lamps.

| Leecraft No. | Mtg. | Net Each 1-24 | Net Each 25-99 | Net/ 100 |
|---|---|---|---|---|
| 5-03 | J | $0.55 | $0.37 | $27.00 |
| 5-04 | K | .55 | .37 | 27.00 |
| 5-05 | C | .55 | .37 | 27.00 |
| 5-06 | D | .55 | .37 | 27.00 |
| 5-07 | E | .55 | .37 | 27.00 |
| 5-08 | F | .55 | .37 | 27.00 |

### SERIES 16-00 MIDGET SCREW

Solder terminals, for P-2½, T-1¾ lamp.

| | | | | |
|---|---|---|---|---|
| 16-07 | E | $0.69 | $0.47 | $37.80 |
| 16-08 | F | .69 | .47 | 37.80 |

### SERIES 4-00 CANDELABRA SCREW

Heavy molded phenolic housing extends well above socket shell; for incandescent or neon lamps, such as NE-45, S6 or 10C7. Rated 75 watts at 125 volts; 18 gauge wire leads. UL and CSA Approved.

| | | | | |
|---|---|---|---|---|
| 4-01 | A | $0.69 | $0.47 | $37.80 |
| 4-02 | B | .69 | .47 | 37.80 |
| 4-05 | C | .69 | .47 | 37.80 |
| 4-06 | D | .69 | .47 | 37.80 |
| 4-08 | F | .69 | .47 | 37.80 |
| 4-12 | G | .69 | .47 | 37.80 |

### SERIES 6-00 CANDELABRA SCREW

Tinned solder terminals, for incandescent lamps such as G6 and S6.

| | | | | |
|---|---|---|---|---|
| 6-05 | C | $0.58 | $0.40 | $28.50 |
| 6-06 | D | .58 | .40 | 28.50 |
| 6-07 | E | .58 | .40 | 28.50 |
| 6-08 | F | .58 | .40 | 28.50 |
| 6-11 | L | .58 | .40 | 28.50 |
| 6-13 | M | .58 | .40 | 28.50 |

### SERIES 23-00 WEDGE BASE

Rapid insertion and secure positioning of wedge lamps. Molded housing. Types 23-07 and 23-24 have slotted hole, double contact terminals; others have wire leads.

| | | | | |
|---|---|---|---|---|
| 23-07 | P | $0.58 | $0.40 | $31.50 |
| 23-24 | Q | .58 | .40 | 31.50 |
| 23-207 | P | .65 | .47 | 37.80 |
| 23-224 | Q | .65 | .47 | 37.80 |

### SERIES 10-00, 11-200 SINGLE CONTACT CANDELABRA BAYONET

Similar to double contact candelabra types. Series 10-00 has solder terminals; 11-200 has wire leads.

| Leecraft No. | Mtg. | Net Each 1-24 | Net Each 25-99 | Net/ 100 |
|---|---|---|---|---|
| 10-06 | D | $0.65 | $0.39 | $31.50 |
| 10-08 | F | .65 | .39 | 31.50 |
| 11-271 | C | .65 | .47 | 37.80 |
| 11-272 | D | .65 | .47 | 37.80 |

### SERIES 12-200 DOUBLE CONTACT CANDELABRA BAYONET

Wire leads, for incandescent and neon lamps such as NE-48, G6, S6 or 10C7. Brackets of .035″–.042″ steel (12-240 is clip mounted). Contacts mounted in phenolic disc, separately sprung by small coils. UL and CSA Approved.

| | | | | |
|---|---|---|---|---|
| 12-207 | E | $0.80 | $0.54 | $50.00 |
| 12-225 | O | .80 | .54 | 50.00 |
| 12-240 | H | .80 | .54 | 50.00 |
| 12-271 | C | .80 | .54 | 50.00 |
| 12-272 | D | .80 | .54 | 50.00 |

### SERIES 57-00 DOUBLE CONTACT CANDELABRA BAYONET

Molded phenolic housing, with male tab terminals that fit into terminal boards with female quick-connect terminals. Brackets of .035″-.042″ steel. For incandescent and neon lamps, such as NE-48, S6. Rated 75 watts. UL and CSA Approved.

| | | | | |
|---|---|---|---|---|
| 57-24 | Q | $0.69 | $0.47 | $37.80 |
| 57-45 | R | .69 | .47 | 37.80 |

### SERIES 25-00 MIDGET GROOVED

Subminiature sockets for T-1¾ midget grooved base lamps, including lens-end lamps. Tinned solder lugs (available with wire leads). Size, ⅜″ h.; spaced on centers as close as ¼″.

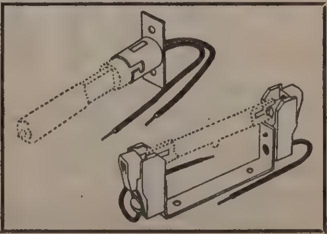
| | | | | |
|---|---|---|---|---|
| 25-06 | D | $0.82 | $0.60 | $53.55 |
| 25-08 | F | .82 | .60 | 53.55 |
| 25-12 | G | .82 | .60 | 53.55 |
| 25-35 | S | .94 | .73 | 70.00 |

## LAMPHOLDERS FOR SINGLE-ENDED AND DOUBLE-ENDED QUARTZ IODINE LAMPS

**s 2200 Double Contact, Bayonet Base**—Single-ended socket permits lamp to be tioned accurately, securely while minimizing possibility of shaking loose from vibra- . Swift, simple installation. Eliminates extra bulb handling required with screw-in sockets. Optimum heat sink for cool operation. Commonly used for stage, film and lighting; optical devices and instruments; and, general lighting. With 6″ Teflon® lated leads. Meets UL specifications. Net Each, Lots 1–24. . **$1.60**; 25–99. . **$1.20** per 100: Lots of 100–249. . . . . . . . . . . . . . . . **$95.00**; 250–499. . . . . . . . . . . . . . **$90.00**

**s 26-00 Recessed Single Contact**—For double ended recessed single contact (RSC) lamps. Used primarily for sign lighting, photocopy equipment, general floodlighting. vy molded ceramic housing, silver-plated copper contacts; insulated bracket mount- Rated 600 V at 2000 W. **No. 26-07:** With ¼″ male tab terminal that fits std. female k connect terminals. **No. 26-207:** With built-in wire lead 4″ lg., stripped ½″ on ends, and CSA Approved to 200° C. Net Each, Lots of 1–24. . . **$1.17**; 25–99. . . **$ 1.05** per 100: Lots of 100–249. . . . . . . . . . . . . **$93.71**; 250–499. . . . . . . . . . . . . **88.20**

g. DuPont trademark.

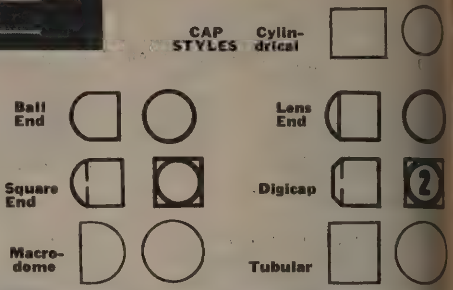


SHELLY

# Miniature Indicator Lights

Cap
Lamp
Base

BRITE-EYE AND GLO-EYE



## BRITE-EYE INDICATOR LIGHTS

Extremely small and lightweight re-lampable indicator uses no lamp base or socket, weighs only 0.3 grams complete. Easily installed and re-lamped from front of panel without tools; locks into place. Ideal for computer logic boards, high density control panels, instrument dials, aircraft and test equipment applications. Meets requirements of MS 90308 with standard console dimensions. Brightness is greater than indicators five times as large; indicates even in direct sunlight. Current drain as low as 8 mA. Base and cap molded from heat-resistant Lexan‡; mounts on .225" centers. Mounting hole size, .191" dia.; base ⅛" deep. Solder terminals. Easily mounted on ⅛" circuit board if desired.

‡G. E. Trademark.

COMPLETE UNIT PRICES†

| Lamp No. | Volts | Amps | MSCP* | Life, Hours | BEP or BEC Base Net Each, Lots of | | | BEPH or BECH Base Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1-9 | 10-49 | 50-99 | 1-9 | 10-49 | 50-99 |
| 4 | 1.5 | .015 | .01 | 5K | $2.82 | $2.36 | $2.00 | $2.92 | $2.46 | $2.10 |
| 81 | 1.5 | .060 | .03 | 16K | 2.41 | 2.02 | 1.71 | 2.51 | 2.12 | 1.81 |
| 80 | 3.0 | .008 | .01 | 16K | 2.82 | 2.36 | 2.00 | 2.92 | 2.46 | 2.10 |
| 72 | 3.0 | .060 | .03 | 100K | 2.41 | 2.02 | 1.71 | 2.51 | 2.12 | 1.81 |
| 8 | 5.0 | .015 | .02 | 10K | 2.82 | 2.36 | 2.00 | 2.92 | 2.46 | 2.10 |
| 210 | 5.0 | .020 | .03 | 10K | 2.41 | 2.02 | 1.71 | 2.51 | 2.12 | 1.81 |
| 683 | 5.0 | .060 | .05 | 100K | 2.00 | 1.68 | 1.41 | 2.10 | 1.78 | 1.51 |
| 246 | 5.0 | .060 | .15 | 10K | 2.41 | 2.02 | 1.71 | 2.51 | 2.12 | 1.81 |
| 715 | 5.0 | .115 | .15 | 40K | 2.00 | 1.68 | 1.41 | 2.10 | 1.78 | 1.51 |
| 11 | 6.0 | .066 | .10 | 10K | 2.00 | 1.68 | 1.41 | 2.10 | 1.78 | 1.51 |
| 74 | 10.0 | .027 | .10 | 10K | 2.82 | 2.36 | 2.00 | 2.92 | 2.46 | 2.10 |
| 66 | 12.0 | .060 | .15 | 16K | 2.82 | 2.36 | 2.00 | 2.92 | 2.46 | 2.10 |
| 75 | 18.0 | .026 | .15 | 10K | 2.82 | 2.36 | 2.00 | 2.92 | 2.46 | 2.10 |
| 62 | 28.0 | .024 | .15 | 16K | 2.82 | 2.36 | 2.00 | 2.92 | 2.46 | 2.10 |

*Mean spherical candlepower. †For macrodome or tubular cap, add 3c to price.

SEE FOLLOWING PAGE FOR GLO-EYE INDICATOR LIGHTS

## TRANS-EYE INDICATOR LIGHTS

Similar to Brite-Eye series, but with built-in transistor driver. Silicon NPN or PNP planar transistors assure high reliability and high temperature characteristics. Lamp current capability, 150 mA max. Operating voltage, 36 VDC max. Temperature range, −20° C to +100° C operating. Base 1⁵⁄₃₂" lg.; base lead ⅝" lg.; emitter lead ½" lg.; lamp terminal ⅛" lg. Models TE201 and TE202 supplied without built-in resistor.

LAMPS AND RESISTORS (IF REQUIRED)

| Lamp No. | Volts | Amps | MSCP* | Life, Hours | Current Drive | Base Resistor, Ohms |
|---|---|---|---|---|---|---|
| 4 | 1.5 | .015 | .01 | 5K | 250 µA | 1.5K |
| 81 | 1.5 | .060 | .03 | 16K | 1 mA | 470 |
| 80 | 3.0 | .008 | .01 | 16K | 250 µA | 8.2K |
| 72 | 3.0 | .060 | .03 | 100K | 1 mA | 2.2K |
| 8 | 5.0 | .015 | .02 | 10K | 250 µA | 16K |
| 210 | 5.0 | .020 | .03 | 10K | 350 µA | 10K |
| 683 | 5.0 | .060 | .05 | 100K | 1 mA | 3.9K |
| 246 | 5.0 | .060 | .15 | 10K | 1 mA | 3.9K |
| 715 | 5.0 | .115 | .15 | 40K | 2 mA | 1.8K |
| 11 | 6.0 | .066 | .10 | 10K | 1.1 mA | 3.9K |
| 74 | 10.0 | .027 | .10 | 10K | 500 µA | 18K |
| 66 | 12.0 | .060 | .15 | 16K | 1 mA | 10K |
| 75 | 18.0 | .026 | .15 | 10K | 500 µA | 33K |
| 62 | 28.0 | .024 | .15 | 16K | 500 µA | 47K |

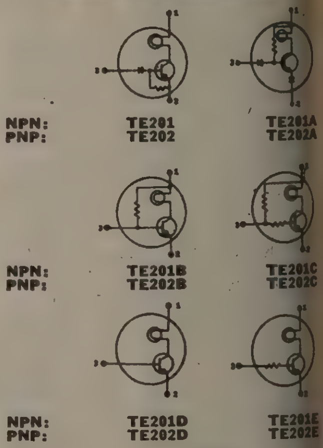
*Mean spherical candlepower.

COMPLETE UNIT PRICES†

| Base No. (See Circuit Configurations) | Lamp No. 11, 683 or 715 Net Each, Lots of | | | Lamp No. 72, 81, 210 or 246 Net Each, Lots of | | | Lamp No. 4, 8, 62, 66, 74, 75 or 80 Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-9 | 10-49 | 50-99 | 1-9 | 10-49 | 50-99 | 1-9 | 10-49 | 50-99 |
| TE201, TE202 | $3.90 | $3.55 | $3.23 | $4.31 | $3.89 | $3.53 | $4.72 | $4.23 | $3.82 |
| TE201A, TE202A | 4.30 | 3.95 | 3.63 | 4.71 | 4.29 | 3.93 | 5.12 | 4.63 | 4.22 |
| TE201B, TE202B | 4.30 | 3.95 | 3.63 | 4.71 | 4.29 | 3.93 | 5.12 | 4.63 | 4.22 |
| TE201C, TE202C | 5.10 | 4.75 | 4.43 | 5.51 | 5.09 | 4.73 | 5.87 | 5.43 | 5.02 |
| TE201D, TE202D | 5.10 | 4.75 | 4.43 | 5.51 | 5.09 | 4.73 | 5.87 | 5.43 | 5.02 |
| TE201E, TE202E | 5.70 | 5.35 | 5.03 | 6.11 | 5.69 | 5.33 | 6.47 | 6.03 | 5.62 |

†For macrodome or tubular cap, add 3c to price.

CIRCUIT CONFIGURATIONS



### HOW TO ORDER

Use full number when ordering:

BEP 715 R L P — 1.8K
Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ

Ⓐ **BASE TYPE: BEP**—Brite-Eye panel mount. **BEPH**—Brite-Eye panel mount with heat barrier. **BEC**—Brite-Eye circuit board mount; specify PC board thickness. **BECH**—Brite-Eye circuit board mount with heat barrier. **TE201, -A, -B, -C, -D, -E**—Trans-Eye NPN; see circuit diagrams. **TE202, -A, -B, -C, -D, -E**—Trans-Eye PNP; see circuit diagrams. **BEPR**—Glo-Eye base.

Ⓑ **LAMP:** See pricing tables for various lamps available in Brite-Eye and Trans-Eye designs, above.

Ⓒ **CAP COLOR:** Translucent: **Y**, Yellow; **W**, White; **R**, Red; **B**, Blue; **A**, Amber; **G**, Green. Transparent: **B**, Blue; **C**, Clear; **R**, Red; **A**, Amber; **G**, Green. SEE CAP TYPE (E) for ordering details.

Ⓓ **CAP STYLE: B**—Ball end. **L**—Lens end. **S**—Square end. **D**—Digicap: Square cap with embossed number, letter or symbol. **C**—Cylindrical. **M**—Macrodome. **T**—Tubular. For caps M and T, add **3c** to prices shown. For 1-digit or 2-digit legend on caps C, D or T add **25c** to prices shown.

Ⓔ **CAP TYPE: P**—Transparent (colors red, green, amber, blue or clear); **L**—Translucent (colors red, green, amber, blue, yellow or white only).

Ⓕ **BASE RESISTOR VALUE:** For use only when ordering Trans-Eye lights, if built-in resistor is desired select the value desired from Base Resistor column in table for circuit configurations A through E.

## MINIATURE INDICATOR LIGHTS (CONT'D)

### GLO-EYE ULTRA-BRIGHT NEON INDICATOR LIGHTS

ar to Brite-Eye series; housing presses into .191″ hole and locks in position without additional hardware. Gold-plated r terminals are easily accessible on rear of housing. May be ted on .225″ centers. Weight is less than ½ gram. Produces ations much brighter than units of greater size. Lamps are 3I A1K type covered by MIL-L-15098B. Resistor is ⅛ watt, ral. Unless otherwise specified a 390K resistor will be sup- Physical diameter dimensions are compatible with the -Eye and Trans-Eye indicator lights. Available in seven cap styles, transparent only, in red, amber or clear.

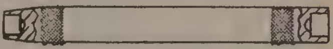
| Lamp No. | Volts | Amps | MSCP* | Life, Hours | BEPR Base Net Ea., Lots of | | |
|---|---|---|---|---|---|---|---|
| | | | | | 1-9 | 10-49 | 50-99 |
| 95 | 115 VAC | .001 | .01 | 5K | $2.45 | $2.12 | $1.83 |
| 95† | 115 VAC | .001 | .01 | 5K | 2.48 | 2.15 | 1.86 |

*Mean spherical candlepower. †With macrodome or tubular cap.

**SEE PRECEDING PAGE FOR GLO-EYE ILLUSTRATION AND ORDERING INFORMATION**

### BRITE-EYE/TRANS-EYE INSTALLATION TOOL

le-ended tool for installation of Brite-Eye or Trans-Eye indicator light with any cap Size, .40″ dia. x 3½″ long.
y No. 601879—Net Each.................................................**$5.00**



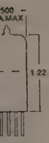
## SUBMINIATURE READOUTS

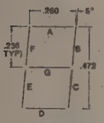
### SUBMINIATURE READOUT TUBES

Low-voltage readout tubes provide 6000 ft.-lamberts brightness at 5 volts (23 mA per segment). Space-saving design for PC board or socket mounting on 0.5″ centers. Slanted characters are .47″ high, .26″ wide. Unlimited color filtering. Totally compatible with IC circuitry. **Recommended Segment Voltage:** 3.5–5.0 volts DC or AC. **Segment Current:** 23 mA at 5 VDC. **Life:** 100,000 hours at 5 VDC. **Viewing Angle:** 140° (included angle). **Segment Luminance:** 6000 ft.-lamberts typical at 5 VDC. **Response Time:** Accent to visibility, 15 msec typical; descent to 50% luminance, less than 20 msec. **Temperature Range:** −50° to +70° C. **Construction:** Glass envelope; tungsten segments; alumina insulator; Dumet pins. **Vibration:** MIL-STD-202D, Method 201A. **Shock:** MIL-STD-202D, Method 213A, Condition J. **Size:** .500″ dia. x 1.50″ high, maximum, not including pins. Pins are .250″ lg. on .250″ dia. pattern. Fits TO-5 socket or can be dip soldered to board.

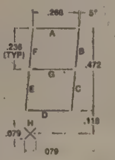
| helly umber | Readout | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-99 | 100 Up |
| A2300 | 0 to 9 | $4.05 | $3.55 | $3.15 |
| A2310 | 0 to 9, left decimal point | 4.20 | 3.70 | 3.30 |
| A2320 | Plus/minus sign, 1 | 3.25 | 2.75 | 2.50 |

**DIMENSIONS**

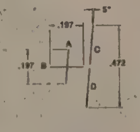




DA-2300



DA-2310

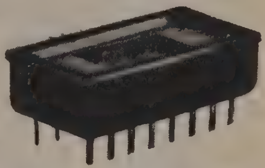


DA-2320

**PIN CONNECTIONS**

| lay | Pin Connections | | |
|---|---|---|---|
| | DA-2300 | DA-2310 | DA-2320 |
| | 3, 4, 5, 7, 8, 9 | 3, 4, 5, 7, 8, 9 | .......... |
| | 5, 8 | 5, 8 | 6, 8 |
| | 3, 4, 6, 7, 8 | 3, 4, 6, 7, 8 | .......... |
| | 4, 5, 6, 7, 8 | 4, 5, 6, 7, 8 | .......... |
| | 5, 6, 8, 9 | 5, 6, 8, 9 | .......... |
| | 4, 5, 6, 7, 9 | 4, 5, 6, 7, 9 | .......... |
| | 3, 4, 5, 6, 7, 9 | 3, 4, 5, 6, 7, 9 | .......... |
| | 5, 7, 8 | 5, 7, 8 | .......... |
| | 3, 4, 5, 6, 7, 8, 9 | 3, 4, 5, 6, 7, 8, 9 | .......... |
| | 4, 5, 6, 7, 8, 9 | 4, 5, 6, 7, 8, 9 | .......... |
| | .......... | .......... | 7, 9 |
| | .......... | .......... | 7 |
| | .......... | 1 | .......... |
| | 3, 5, 6, 7, 8, 9 | 3, 5, 6, 7, 8, 9 | .......... |
| | 3, 4, 7, 9 | 3, 4, 7, 9 | .......... |
| | 3, 4, 6, 7, 9 | 3, 4, 6, 7, 9 | .......... |
| | 3, 6, 7, 9 | 3, 6, 7, 9 | .......... |
| | 3, 5, 6, 8, 9 | 3, 5, 6, 8, 9 | .......... |
| | 3, 4, 5, 8 | 3, 4, 5, 8 | .......... |
| | 3, 4, 9 | 3, 4, 9 | .......... |
| | 3, 6, 7, 8, 9 | 3, 6, 7, 8, 9 | .......... |
| | 3, 4, 5, 8, 9 | 3, 4, 5, 8, 9 | .......... |
| | 4, 5, 6, 8, 9 | 4, 5, 6, 8, 9 | .......... |

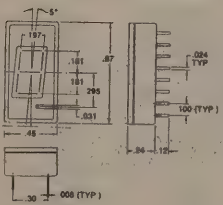
### MICRO-MINIATURE, LOW CURRENT 7-SEGMENT READOUT

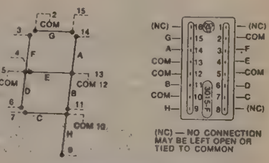


Low-voltage operation; delivers 700 ft.-lamberts brightness at 5 volts (8 mA per segment). Miniaturized design with case depth only 0.24″ nominal. Slanted characters are .362″ high, .197″ wide: Mounts on PC board or 16-pin dual in-line IC socket, on 0.5″ centers. Totally compatible with integrated circuitry. Unlimited color filtering. Right decimal point included. **Recommended Segment Voltage:** 4.0 to 6.5 volts DC or AC. **Segment Current:** 8 ma at 5 VDC. **Life:** 250,000 hours at 5 VDC. **Viewing Angle:** 100° (included angle). **Segment Luminance:** 700 ft.-lamberts typical at 5 VDC. **Response Time:** Ascent to visibility, 8 msec typical; descent to 50% luminance, less than 15 msec. **Temperature Range:** −50° to +70° C. **Construction:** Glass face plate; tungsten filament segments; general purpose phenolic insulator; Kovar contacts. **Vibration:** MIL-STD-202D, Method 201A. **Shock:** MIL-STD-202D, Method 213A, Condition J. **Size:** .87″ x .45″ x .24″ plus leads (.12″ long).

**Shelly No. 3015F-CN**—Net Each, Lots of 1–24..........**$3.95**
Lots of 25–99..........**$3.45** Lots of 100 Up.......... **3.05**

**DIMENSIONS AND WIRING DIAGRAMS**





**Segment Configuration Wiring Diagrams**

**PIN CONNECTIONS**

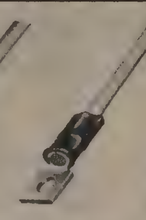
| Display | Pin Connections |
|---|---|
| 0 | 3, 6, 7, 11, 14 and 15 |
| 1 | 11 and 14 |
| 2 | 4, 6, 7, 14 and 15 |
| 3 | 4, 7, 11, 14 and 15 |
| 4 | 3, 4, 11 and 14 |
| 5 | 3, 4, 7, 11 and 15 |
| 6 | 3, 4, 6, 7 and 11 |
| 7 | 11, 14 and 15 |
| 8 | 3, 4, 6, 7, 11, 14 and 15 |
| 9 | 3, 4, 11, 14 and 15 |
| • | 9 |
| A | 3, 4, 6, 11, 14 and 15 |
| C | 3, 6, 7 and 15 |
| E | 3, 4, 6, 7 and 15 |
| F | 3, 4, 6 and 15 |
| H | 3, 4, 6, 11 and 14 |
| J | 6, 7, 11 and 14 |
| L | 3, 6 and 7 |
| P | 3, 4, 6, 14 and 15 |
| U | 3, 6, 7, 11 and 14 |
| Y | 3, 4, 7, 11 and 14 |

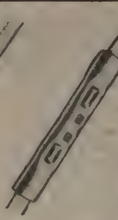
Pins 2, 5, 10, 12 and 13 must be connected to common.

A

B

C


D


E

F

G

H

## VINYLUGS

To order, select the loose-piece catalog number that meets wire range, tongue type, and stud size. For strip terminals wound on a reel for automatic installation, add prefix S to terminal number (e.g., SBA16-2). Loose-piece terminals are packaged in quantities of 1000 pieces for BA16 and BA14 terminals; 500 pieces for BA10 terminals. Strip-form SBA16 and SBA14 are supplied in reels of 5000 terminals; 3000, larger stud sizes; 2000, SBA10.

### 22-16 AWG WIRE RANGE

Accommodate insulation dia. 0.145″ max. Color code, red. U/L Listed, for sizes 18 AWG and 16 AWG. AWG 18–16. Hand tools for installation of loose-piece terminals are Y10ME-4, Y16MRE-1, and MR8-89-1. Die insert number for installing strip terminal is CVM4-1.

**RING-TONGUE TERMINALS (FIG. A)**

| Stud Size | Burndy Loose-Piece Number | Size, In. | | Strip-Terminals* | |
|---|---|---|---|---|---|
| | | Tong. Width | Max. Overall Lgth. | Burndy Number | Shear Module Number |
| 1, 2 | **BA16-2** | .22 | .71 | | |
| 3, 4 | **BA16-4** | .22 | .71 | **SBA16-4** | SVM14-1 |
| 5, 6 | **BA16-6** | .25 | .74 | **SBA16-6** | SVM3-1 |
| 8 | **BA16-8** | .31 | .85 | **SBA16-8** | SVM5-1 |
| 10 | **BA16-10** | .31 | .85 | **SBA16-10** | SVM5-1 |
| 12, ¼ | **BA16-14** | .40 | .99 | **SBA16-14†** | SVM8-1 |
| 5⁄16 | **BA16-516** | .53 | 1.15 | **SBA16-516†** | SVM9-1 |
| ⅜ | **BA16-38** | .53 | 1.15 | | |
| **FORK-TONGUE TERMINALS (FIG. B)** | | | | | |
| 1, 2 | **BA16F2** | .17 | .75 | | |
| 4–6 | **BA16F6** | .28 | .80 | **SBA16F6** | SVM15-1 |
| 6–8 | **BA16F8** | .31 | .86 | **SBA16F8** | SVM16-1 |
| 8–10 | **BA16F10** | .41 | .95 | **SBA16F10†** | SVM17-1 |
| 8–10 | **BA16F10T1** | .36 | .93 | **SBA16F10T1†** | SVM18-1 |
| **FLANGED-FORK-TONGUE TERMINALS (FIG. C)** | | | | | |
| 1, 2 | **BA16Z2** | .17 | .78 | | |
| 4–6 | **BA16Z6** | .28 | .83 | **SBA16Z6** | SVM15-1 |
| 6–8 | **BA16Z8** | .31 | .88 | **SBA16Z8** | SVM16-1 |
| 8–10 | **BA16Z10** | .41 | .96 | **SBA16Z10†** | SVM17-1 |
| 8–10 | **BA16Z10T1** | .36 | .96 | **SBA16Z10T1†** | SVM18-1 |
| **RECTANGULAR-TONGUE TERMINALS (FIG. D)** | | | | | |
| 1, 2 | **BA16S2** | .17 | .75 | | |
| 4–6 | **BA16S6** | .28 | .80 | **SBA16S6** | SVM15-1 |
| 6–8 | **BA16S8** | .31 | .86 | **SBA16S8** | SVM16-1 |
| 8–10 | **BA16S10** | .41 | .95 | **SBA16S10†** | SVM17-1 |
| 8–10 | **BA16S10T1** | .36 | .93 | **SBA16S10T1†** | SVM18-1 |

### 16-14 AWG WIRE RANGE

Accommodate insulation dia. 0.180″ max. Color code, blue. U/L Listed for sizes AWG 16 to 14. Hand tools for installation of loose-piece terminals are Y10ME-4, Y14MRE-6, and MR8-89-1. Die insert number for installing strip terminal is CVM3-1.

**RING-TONGUE TERMINALS (FIG. A)**

| | | | | | |
|---|---|---|---|---|---|
| 1, 2 | **BA14-2** | .22 | .71 | | |
| 3, 4 | **BA14-4** | .22 | .71 | **SBA14-4** | SVM2-1 |
| 5, 6 | **BA14-6** | .25 | .74 | **SBA14-6** | SVM4-1 |
| 8 | **BA14-8** | .26 | .85 | **SBA14-8** | SVM6-1 |
| 10 | **BA14-10** | .31 | .85 | **SBA14-10** | SVM6-1 |
| 12, ¼ | **BA14-14** | .40 | .99 | **SBA14-14†** | SVM8-1 |
| 5⁄16 | **BA14-516** | .53 | 1.15 | **SBA14-516†** | SVM9-1 |
| ⅜ | **BA14-38** | .53 | 1.15 | | |
| **FORK-TONGUE TERMINALS (FIG. B)** | | | | | |
| 1, 2 | **BA14F2** | .17 | .75 | | |
| 4–6 | **BA14F6** | .28 | .80 | **SBA14F6** | SVM15-1 |
| 6–8 | **BA14F8** | .31 | .86 | **SBA14F8** | SVM16-1 |
| 8–10 | **BA14F10** | .41 | .95 | **SBA14F10†** | SVM17-1 |
| 8–10 | **BA14F10T1** | .36 | .93 | **SBA14F10T1†** | SVM18-1 |
| **FLANGED-FORK-TONGUE TERMINALS (FIG. C)** | | | | | |
| 1, 2 | **BA14Z2** | .17 | .78 | | |
| 4–6 | **BA14Z6** | .28 | .83 | **SBA14Z6** | SVM15-1 |
| 6–8 | **BA14Z8** | .31 | .88 | **SBA14Z8** | SVM16-1 |
| 8–10 | **BA14Z10** | .41 | .96 | **SBA14Z10†** | SVM17-1 |
| 8–10 | **BA14Z10T1** | .36 | .96 | **SBA14Z10T1†** | SVM18-1 |
| **RECTANGULAR-TONGUE TERMINALS (FIG. D)** | | | | | |
| 1, 2 | **BA14S2** | .17 | .75 | | |
| 4–6 | **BA14S6** | .28 | .80 | **SBA14S6** | SVM15-1 |
| 6–8 | **BA14S8** | .31 | .86 | **SBA14S8** | SVM16-1 |
| 8–10 | **BA14S10** | .41 | .95 | **SBA14S10†** | SVM17-1 |
| 8–10 | **BA14S10T1** | .36 | .93 | **SBA14S10T1†** | SVM18-1 |

*For AVM2-1, machine to automatically install vinylug terminals; strip length ¼″. †3000 terminals per reel, all others 5000 terminals per reel.

### 12-10 AWG WIRE RANGE

Accommodate insulation dia. 0.260″ max. Color code, yellow. U/L Listed for sizes AWG 10 to 12 (stranded only). Hand tools for installation of loose-piece terminals are Y10ME-4 and MR8-89-1. Die insert number for installing strip terminal is CVM2-1.

**RING-TONGUE TERMINALS (FIG. A)**

| Stud Size | Burndy Loose-Piece Number | Size, In. | | Strip Terminals* | |
|---|---|---|---|---|---|
| | | Tong. Width | Max. Overall Lgth. | Burndy Number | Shear Module Number |
| 3, 4 | **BA10-4** | .31 | .91 | | |
| 5, 6 | **BA10-6** | .31 | .91 | **SBA10-6** | SVM7-1 |
| 8 | **BA10-8** | .36 | 1.00 | **SBA10-8** | SVM13-1 |
| 10 | **BA10-10** | .36 | 1.00 | **SBA10-10** | SVM13-1 |
| 12, ¼ | **BA10-14** | .53 | 1.22 | **SBA10-14** | SVM10-1 |
| 5⁄16 | **BA10-516** | .53 | 1.22 | **SBA10-516** | SVM10-1 |
| ⅜ | **BA10-38** | .53 | 1.27 | **SBA10-38** | SVM11-1 |
| **FORK-TONGUE TERMINALS (FIG. B)** | | | | | |
| 4–6 | **BA10F6** | .28 | .95 | **SBA10F6** | SVM19-1 |
| 6–8 | **BA10F8** | .31 | .98 | **SBA10F8** | SVM7-1 |
| 8–10 | **BA10F10** | .41 | 1.07 | **SBA10F10** | SVM17-1 |
| 8–10 | **BA10F10T1** | .36 | 1.05 | | |
| **FLANGED-FORK-TONGUE TERMINALS (FIG. C)** | | | | | |
| 4–6 | **BA10Z6** | .28 | .99 | **SBA10Z6** | SVM19-1 |
| 6–8 | **BA10Z8** | .31 | 1.01 | **SBA10Z8** | SVM7-1 |
| 8–10 | **BA10Z10** | .41 | 1.09 | **SBA10Z10** | SVM17-1 |
| 8–10 | **BA10Z10T1** | .36 | 1.09 | | |
| **RECTANGULAR-TONGUE TERMINALS (FIG. D)** | | | | | |
| 4–6 | **BA10S6** | .28 | .95 | **SBA10S6** | SVM19-1 |
| 6–8 | **BA10S8** | .31 | .98 | **SBA10S8** | SVM7-1 |
| 8–10 | **BA10S10** | .41 | 1.07 | **SBA10S10** | SVM17-1 |
| 8–10 | **BA10S10T1** | .36 | 1.05 | | |

*For AVM2-1, machine to automatically install vinylug terminals; strip length 1⁄32″.

| Stud Size | Series BA14 or 16 | | | Series BA10 | | |
|---|---|---|---|---|---|---|
| | Net per 100, Lots of* | | | Net per 100, Lots of* | | |
| | Less Than 25,000 | 25,000-49,999 | 50,000-99,999 | Less Than 25,000 | 25,000-49,999 | 50,000-99,999 |
| 1–10 | $5.48 | $4.08 | $3.06 | $7.22 | $5.38 | $4.03 |
| 12–5⁄16 | 6.67 | 4.96 | 3.72 | 8.39 | 6.24 | 4.68 |
| ⅜ | 6.67 | 4.96 | 3.72 | 8.94 | 6.66 | 4.99 |
| | Series SBA14 or 16 | | | Series SBA10 | | |
| 4–14 | $3.68 | $3.16 | $2.63 | $5.66 | $4.85 | $4.04 |
| 5⁄16, ⅜ | 3.98 | 3.41 | 2.84 | 6.12 | 5.24 | 4.37 |

## VINYLINK (FIG. F)

Quality performance splice at minimum cost. Made of pure copper tubing, electro-tin plated for corrosion resistance. Dimpled center section provides positive wire stop. Color-coded vinyl insulation sleeve. Std. carton for BS10, 500; others, 1000 pieces.

| Wire Range | Burndy Number | Color Code | Size, In. | | Net per 100, Lots of | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Max. Lgth. | Max. Dia. | Less Ctn. | Ctn.-4999 | 5M-9999 | 10M Up |
| 22–16 | **BS16** | Red | .99 | .145 | $5.80 | $4.42 | $3.31 | $2.76 |
| 16–14 | **BS14** | Blue | .99 | .180 | 5.80 | 4.42 | 3.31 | 2.76 |
| 12–10 | **BS10** | Yellow | 1.21 | .260 | 9.24 | 7.04 | 5.28 | 4.40 |

## TYPES YSV, YSV-H HYLINK (FIG. E)

Compression splices for a wide range of flexible cable, commercial stranded cable, aircraft cable, and solid wire. Inspection holes for visual check of cable insertion. Made of copper, tinplated. Type YSV-H, available with insulation grips.

| Wire Size | Burndy Number | Lgth., In. | Std. Ctn. | Lot Qty. | Net per 100 | | |
|---|---|---|---|---|---|---|---|
| | | | | | Less Ctn. | Ctn. | Lot-999* |
| 22–18 | **YSV18** | .62 | 100 | 500 | $ 5.98 | $ 4.67 | $ 3.74 |
| 22–18 | **YSV18-H** | .89 | 200 | 500 | 8.64 | 6.75 | 5.40 |
| 20–14 | **YSV14** | .63 | 100 | 500 | 5.98 | 4.67 | 3.74 |
| 20–14 | **YSV14-H** | .94 | 200 | 500 | 8.64 | 6.75 | 5.40 |
| 12–10 | **YSV10** | .75 | 50 | 500 | 8.65 | 6.76 | 5.41 |
| 12–10 | **YSV10-H** | 1.06 | 200 | 500 | 18.11 | 14.15 | 11.32 |
| 9 | **YSV9C-L** | .75 | 50 | 500 | 16.23 | 12.68 | 10.14 |
| 8 | **YSV8C-L** | 1.00 | 50 | 250 | 17.67 | 13.81 | 11.05 |
| 6 | **YSV6C-L** | 1.12 | 50 | 250 | 28.80 | 22.50 | 18.00 |
| 4 | **YSV4C-L** | 1.12 | 50 | 250 | 40.80 | 31.88 | 25.50 |
| 2 | **YSV2C-L** | 1.41 | 25 | 100 | 51.52 | 40.25 | 32.20 |
| 1 | **YSV1C-L** | 1.41 | 10 | 50 | 56.80 | 44.38 | 35.50 |
| 1/0 | **YSV25-L** | 1.53 | 10 | 50 | 92.16 | 72.00 | 57.60 |
| 2/0 | **YSV26-L** | 1.78 | 10 | 50 | 106.56 | 83.25 | 66.60 |
| 3/0 | **YSV27-L** | 1.81 | 10 | 50 | 148.00 | 115.63 | 92.50 |
| 4/0 | **YSV28-L** | 1.94 | 10 | 50 | 167.68 | 131.00 | 104.80 |

**★Larger quantity prices on request.**

# BURNDY HYLUGS, CLASPS, INSULUGS

## TYPE YAV HYLUG (FIG. G)

iece, uninsulated lugs for terminating a wide range of ercial stranded cable, solid wire, and aircraft stranded Copper construction is tin-plated to resist corrosion and oration. Meets the requirements of MIL-T-7928(AWG) as s MIL-E-16366(SHIPS).

| Stud Size | Burndy Number | Size, Inches Width | Size, Inches Overall Lgth. | Net per 100, Lots of* 1-99 |
|---|---|---|---|---|
| 4 | YAV18-T4 | .19 | .58 | $ 3.87 |
| 4, 5, 6 | YAV18-L33 | .25 | .63 | 3.87 |
| 4, 5, 6 | YAV18-T5 | .31 | .73 | 3.87 |
| 6, 7, 8 | YAV18-T1 | .31 | .73 | 3.87 |
| 8, 9, 10 | YAV18 | .31 | .73 | 3.87 |
| 4, 5, 6 | YAV14-L33 | .25 | .67 | 3.87 |
| 4, 5, 6 | YAV14-T5 | .31 | .75 | 3.87 |
| 6, 7, 8 | YAV14-T1 | .31 | .75 | 3.87 |
| 8, 9, 10 | YAV14-L36 | .29 | .71 | 3.87 |
| 8, 9, 10 | YAV14 | .31 | .75 | 3.87 |
| ¼ | YAV14-T2 | .42 | .95 | 5.25 |
| 5/16 | YAV14-T3 | .44 | .95 | 5.25 |
| 8, 9, 10 | YAV12-G2 | .30 | .78 | 5.07 |
| 4, 5, 6 | YAV10-T7 | .30 | .89 | 5.61 |
| 6, 7, 8 | YAV10-T11 | .38 | .94 | 5.61 |
| 8, 9, 10 | YAV10-L36 | .29 | .77 | 5.61 |
| 8, 9, 10 | YAV10 | .38 | .94 | 5.61 |
| ¼ | YAV10-T3 | .47 | 1.09 | 6.28 |
| 5/16 | YAV10-T2 | .53 | 1.10 | 6.28 |
| ⅜ | YAV10-T4 | .56 | 1.14 | 6.28 |
| 8, 9, 10 | YAV9C-L36 | .31 | .94 | 9.78 |
| ¼ | YAV9C-T9 | .44 | 1.14 | 11.59 |
| 5/16 | YAV9C-T4 | .52 | 1.24 | 11.59 |

## TYPE YZ CLASP

for commercial stranded cable, AWG #22 thru #10; solid #22 thru #9; and aircraft stranded cable, AN22 thru AN10. Identical halves make up a complete clasp disconnect that ot be separated by direct tensile stress. Available with tion grips on #22 thru #14 sizes. Locking tabs.

| Burndy Number | Size, Inches Lgth. | Size, Inches Width | Max. Cable O.D. | Finish Type | Net per 100, Lots 1-99* |
|---|---|---|---|---|---|
| YZ18-H | 1.00 | .20 | .120″ | Silver | $13.76 |
| YZ18-H1 | .94 | .20 | .120″ | Silver | 13.76 |
| YZ14-H | 1.00 | .20 | .150″ | Silver | 13.76 |
| YZ14-H1 | .94 | .20 | .150″ | Silver | 13.76 |
| YZ14-H2 | .94 | .20 | .150″ | Tin | 9.12 |
| YZ10 | 1.07 | .28 | .......... | Silver | 16.64 |
| YZ10-1 | 1.01 | .28 | .......... | Silver | 16.64 |

## TYPE YAE INSULUG (FIG. H)

-coded and nylon insulated; made of pure electrolytic r for max. conductivity; tin-plated to resist corrosion and ain low contact resistance. Permanently locked-in position ting sleeves; insulation grips; and, inspection holes to t visual check of wire insertion. Meet requirements of T-7928C(ASG). Also available banded.

| Stud Size | Burndy Number | Size, Inches O.D. | Size, Inches Overall Lgth. | Color of Sleeve | Net per 100, Lots 1-99* |
|---|---|---|---|---|---|
| 2 | YAE22-N6 | .25 | .60 | Black | $ 8.71 |
| 4 | YAE22-N4 | .25 | .60 | | 8.71 |
| 4, 5, 6 | YAE22-N1 | .25 | .60 | | 8.71 |
| 6, 7, 8 | YAE22-N3 | .31 | .77 | | 8.71 |
| 8, 9, 10 | YAE22-N2 | .31 | .77 | | 8.71 |
| 2 | YAE22-G12† | .25 | .69 | Amber | 8.71 |
| 4, 5, 6 | YAE22-G13† | .25 | .69 | | 8.71 |
| 6, 7, 8 | YAE22-G14† | .31 | .78 | | 8.71 |
| 8, 9, 10 | YAE22-G15† | .31 | .78 | | 8.71 |
| 4, 5, 6 | YAE22-G3† | .25 | .85 | Black | 9.95 |
| 4, 5, 6 | YAE22-H† | .31 | .85 | | 9.95 |
| 8, 9, 10 | YAE22-H2† | .31 | .85 | | 9.95 |
| 2 | YAE18-N29 | .14 | .71 | Red | 8.71 |
| 2 | YAE18-N27 | .19 | .73 | | 8.71 |
| 2 | YAE18-N18 | .25 | .76 | | 8.71 |
| 4 | YAE18-N7 | .18 | .76 | | 8.71 |
| 4 | YAE18-N26 | .22 | .75 | | 8.71 |
| 4 | YAE18-N17 | .22 | .75 | | 8.71 |
| 4, 5, 6 | YAE18-N25 | .22 | .75 | | 8.71 |
| 4, 5, 6 | YAE18-N21 | .22 | .75 | | 8.71 |
| 4, 5, 6 | YAE18-G43 | .22 | .75 | | 8.71 |
| 6, 7, 8 | YAE18-N24 | .28 | .87 | | 8.71 |
| 6, 7, 8 | YAE18-N1 | .28 | .87 | | 8.71 |
| 8, 9, 10 | YAE18-N | .28 | .87 | | 8.71 |
| ¼ | YAE18-N2 | .45 | 1.07 | | 9.85 |
| 5/16 | YAE18-N3 | .45 | 1.07 | | 9.85 |
| ⅜ | YAE18-N15 | .45 | 1.07 | | 9.85 |
| 4, 5, 6 | YAE14-N43† | .25 | .78 | Blue | 8.71 |
| 6, 7, 8 | YAE14-N1† | .31 | .89 | | 8.71 |
| 8, 9, 10 | YAE14-N† | .31 | .89 | | 8.71 |
| ¼ | YAE14-N2† | .45 | 1.07 | | 9.85 |
| 5/16 | YAE14-N3† | .45 | 1.07 | | 9.85 |
| ⅜ | YAE14-N4 | .53 | 1.15 | | 9.85 |
| ½ | YAE14-N74 | .72 | 1.31 | | 9.85 |
| 6, 7, 8 | YAE12-N9† | .27 | .90 | Green | 9.95 |
| 6, 7, 8 | YAE12-N1 | .31 | 1.01 | | 9.95 |
| 8, 9, 10 | YAE12-N | .31 | 1.01 | | 9.95 |
| ¼ | YAE12-N2† | .45 | 1.20 | | 10.94 |
| 5/16 | YAE12-N3† | .53 | 1.23 | | 10.94 |
| ⅜ | YAE12-N4 | .53 | 1.27 | | 10.94 |
| 4, 5, 6 | YAE10-N5 | .38 | 1.09 | Yellow | 10.86 |
| 6, 7, 8 | YAE10-N11 | .38 | 1.09 | | 10.86 |
| 8, 9, 10 | YAE10-N | .38 | 1.09 | | 10.86 |
| ¼ | YAE10-N3 | .54 | 1.33 | | 10.97 |
| 5/16 | YAE10-N2 | .54 | 1.33 | | 10.97 |
| ⅜ | YAE10-N4 | .54 | 1.33 | | 10.97 |

## TYPE YAE-Z INSULUGS

Spade, or fork-tongue. Same features as YAE type.

| Wire Size | Stud Size | Burndy Number | Size, Inches O.D. | Size, Inches Overall Lgth. | Color of Sleeve | Net per 100, Lots 1-99* |
|---|---|---|---|---|---|---|
| 22–16 | 2 | YAE18-Z1† | .18 | .78 | Red | $8.71 |
| | 4, 5, 6 | YAE18-Z2† | .28 | .85 | | 8.71 |
| | 6, 7, 8 | YAE18-Z3† | .31 | .93 | | 8.71 |
| | 8, 9, 10 | YAE18-Z4† | .36 | 1.03 | | 8.71 |
| 1614 | 4, 5, 6 | YAE14-Z2† | .28 | .86 | | 8.71 |
| | 6, 7, 8 | YAE14-Z3† | .31 | .94 | | 8.71 |
| | 8, 9, 10 | YAE14-Z4† | .36 | 1.03 | | 8.71 |
| 14–12 | 4, 5, 6 | YAE12-Z2† | .28 | .98 | Green | 9.95 |
| | 6, 7, 8 | YAE12-Z3† | .31 | 1.09 | | 9.95 |
| | 8, 9, 10 | YAE12-Z4† | .36 | 1.17 | | 9.95 |

## †BANDED INSULUGS

Same as YAE and YAE-Z versions, but banded for automatic installation using Bandolug machine series SME. Available in 1000-lug reels. When ordering, use reel numbers only.

| Burndy Bandolug Reel No. | Equivalent Burndy Number | Net per Reel, Lots of 1-4 | Net per Reel, Lots of 5-9 | Net per Reel, Lots of 10 Up |
|---|---|---|---|---|
| SE22-G12 | YAE22-G12 | $ 72.64 | $54.48 | $45.40 |
| SE22-G13 | YAE22-G13 | 72.64 | 54.48 | 45.40 |
| SE22-G14 | YAE22-G14 | 72.64 | 54.48 | 45.40 |
| SE22-G15 | YAE22-G15 | 72.64 | 54.48 | 45.40 |
| SE22-H | YAE22-H | 90.40 | 67.80 | 56.50 |
| SE22-H2 | YAE22-H2 | 90.40 | 67.80 | 56.50 |
| SE18-N7 | YAE18-N7 | 72.64 | 54.48 | 45.40 |
| SE18-N17 | YAE18-N17 | 72.64 | 54.48 | 45.40 |
| SE18-G43 | YAE18-G43 | 72.64 | 54.48 | 45.40 |
| SE18-N1 | YAE18-N1 | 72.64 | 54.48 | 45.40 |
| SE18-N | YAE18-N | 72.64 | 54.48 | 45.40 |
| SE18-N2 | YAE18-N2 | 81.44 | 61.08 | 50.90 |
| SE18-N3 | YAE18-N3 | 81.44 | 61.08 | 50.90 |
| SE18-N15 | YAE18-N15 | 81.44 | 61.08 | 50.90 |
| SE18-Z1 | YAE18-Z1 | 72.64 | 54.48 | 45.40 |
| SE18-Z2 | YAE18-Z2 | 72.64 | 54.48 | 45.40 |
| SE18-Z3 | YAE18-Z3 | 72.64 | 54.48 | 45.40 |
| SE18-Z4 | YAE18-Z4 | 72.64 | 54.48 | 45.40 |
| SE14-N43 | YAE14-N43 | 72.64 | 54.48 | 45.40 |
| SE14-N1 | YAE14-N1 | 72.64 | 54.48 | 45.40 |
| SE14-N | YAE14-N | 72.64 | 54.48 | 45.40 |
| SE14-N2 | YAE14-N2 | 81.44 | 61.08 | 50.90 |
| SE14-N3 | YAE14-N3 | 81.44 | 61.08 | 50.90 |
| SE14-Z1 | YAE14-Z1 | 72.64 | 54.48 | 45.40 |
| SE14-Z2 | YAE14-Z2 | 72.64 | 54.48 | 45.40 |
| SE14-Z3 | YAE14-Z3 | 72.64 | 54.48 | 45.40 |
| SE14-Z4 | YAE14-Z4 | 72.64 | 54.48 | 45.40 |
| SE12-N1 | YAE12-N1 | 95.52 | 71.64 | 59.70 |
| SE12-N | YAE12-N | 95.52 | 71.64 | 59.70 |
| SE12-N2 | YAE12-N2 | 105.28 | 78.96 | 65.80 |
| SE12-N3 | YAE12-N3 | 105.28 | 78.96 | 65.80 |
| SE12-Z2 | YAE12-Z2 | 95.52 | 71.64 | 59.70 |
| SE12-Z3 | YAE12-Z3 | 95.52 | 71.64 | 59.70 |
| SE12-Z4 | YAE12-Z4 | 95.52 | 71.64 | 59.70 |

## TYPE YSE INSULINK

Nylon insulated for splicing aircraft and commercial flexible cables. Made of pure electrolytic copper, links are tin-plated. All sizes have insulation grips and cable stops. Available as an insulated terminal.

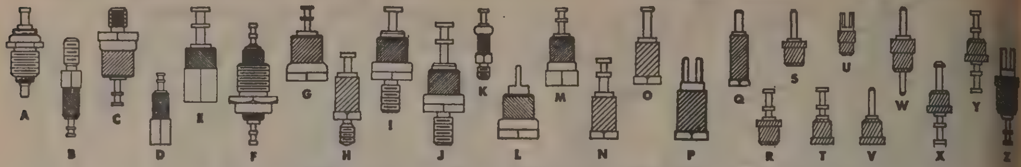
| Wire Size | Burndy Number | Lgth., In. | Max. Cable O.D. | Sleeve Color | Net per 100, Lots 1-99* |
|---|---|---|---|---|---|
| 22–18 | YSE18-H | 1.14 | .120″ | Red | $18.96 |
| 16–14 | YSE14-H | 1.28 | .150″ | Blue | 19.91 |
| 12–10 | YSE10 | 1.05 | .209″ | Yellow | 22.53 |

## ★QUANTITY PRICES

| Net per 100, Lots of 1-99 | 100-999 | 1000-3999 | 4000-4999 | 5000-9999 | 10,000 Up |
|---|---|---|---|---|---|
| $ 3.87 | $ 3.87 | $ 2.88 | $ 2.88 | $ 2.10 | $ 1.80 |
| 5.07 | 5.07 | 3.78 | 3.78 | 2.75 | 2.36 |
| 5.25 | 5.25 | 3.70 | 3.90 | 2.84 | 2.44 |
| 5.61 | 5.61 | 4.18 | 4.18 | 3.04 | 2.61 |
| 6.28 | 6.28 | 4.67 | 4.67 | 3.40 | 2.92 |
| 8.71 | 8.71 | 6.48 | 6.48 | 4.74 | 4.05 |
| 9.12 | 7.13 | 7.13 | 5.70 | 4.40 | 3.93 |
| 9.78 | 9.78 | 7.28 | 7.28 | 5.30 | 4.55 |
| 9.85 | 9.85 | 7.33 | 7.33 | 5.36 | 4.58 |
| 9.95 | 9.95 | 7.41 | 7.41 | 5.42 | 4.63 |
| 10.86 | 10.86 | 8.08 | 8.08 | 5.91 | 5.05 |
| 10.94 | 10.94 | 8.14 | 8.14 | 5.96 | 5.09 |
| 10.97 | 10.97 | 8.16 | 8.16 | 5.97 | 5.10 |
| 11.59 | 11.59 | 8.62 | 8.62 | 6.28 | 5.39 |
| 13.76 | 10.75 | 10.75 | 8.60 | 6.72 | 6.00 |
| 16.64 | 13.00 | 13.00 | 10.40 | 8.10 | 7.23 |
| 18.96 | 18.96 | 14.11 | 14.11 | 10.23 | 8.82 |
| 19.91 | 19.91 | 14.82 | 14.82 | 10.74 | 9.26 |
| 22.53 | 22.53 | 16.77 | 16.77 | 12.16 | 10.48 |

CAMBRIDGE THERMIONIC CORPORATION
**CAMBION®**

# INSULATED TERMINALS, HANDLES AND BOARDS



## STUD-TAPPED AND RIVET-MOUNTING INSULATED TERMINALS

**Insulating Material:** Teflon for Nos. 1502 thru 1511, 1945 and 1947; phenolic for 1581 and 1795; diallyl for 4810 thru 4895; all others ceramic.

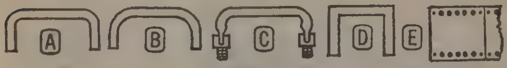
| Cambion Number* | MIL-T-55155 Number | Fig. | Net Each, Lots of§ 50-99 | 100-499 | 500-999 | 1000-2499 | 2500-4999 |
|---|---|---|---|---|---|---|---|
| 1502-01-0519 | FT20XA01 | A | $0.60 | $0.46 | $0.43 | $0.38 | $0.35 |
| 1503-01-0519† | SE09(0/9)E01 | B | .38 | .29 | .27 | .24 | .22 |
| 1504-01-0519† | SE09(0/9)E02 | B | .38 | .29 | .27 | .24 | .22 |
| 1510-01-0519† | SE10(0/9)D01 | D | .38 | .29 | .27 | .24 | .22 |
| 1511-01-0519† | SE10(0/9)D02 | E | .38 | .29 | .27 | .24 | .22 |
| 1581-01-01 | .............. | C | .38 | .29 | .27 | .24 | .22 |
| 1581-03-01 | .............. | C | .38 | .29 | .27 | .24 | .22 |
| 1581-04-01 | .............. | C | .38 | .29 | .27 | .24 | .22 |
| 1795-01-01 | .............. | F | .66 | .51 | .47 | .42 | .39 |
| 1942-01/02-05‡ | SE21X03/05 | C | .42 | .32 | .30 | .26 | .25 |
| 1942-01/02-01‡ | .............. | C | .42 | .32 | .30 | .26 | .25 |
| 1945-01-0519 | .............. | C | .56 | .43 | .40 | .35 | .33 |
| 1945-02-0519 | .............. | C | .56 | .43 | .40 | .35 | .33 |
| 1947-01-0519 | .............. | G | .60 | .46 | .43 | .38 | .35 |
| 1947-02-0519 | .............. | G | .60 | .46 | .43 | .38 | .35 |
| 1980-03-01 | .............. | I | .40 | .31 | .28 | .25 | .24 |
| 1980-05-01 | .............. | I | .40 | .31 | .28 | .25 | .24 |
| 1983-05-01 | .............. | I | .40 | .31 | .28 | .25 | .24 |
| 1990-01-01 | .............. | F | .80 | .62 | .57 | .50 | .47 |
| 1990-01-05 | FT01XA01 | F | .80 | .62 | .57 | .50 | .47 |
| 1992-05-01 | .............. | I | .40 | .31 | .28 | .25 | .24 |
| 1994-01-01 | .............. | J | .40 | .31 | .28 | .25 | .24 |
| 1994-02-01 | .............. | J | .40 | .31 | .28 | .25 | .24 |
| 1995-01-01 | .............. | I | .40 | .31 | .28 | .25 | .24 |
| 2012-01-05 | FT01XA02 | F | 1.42 | 1.09 | 1.01 | .89 | .84 |
| 2012-01-01 | .............. | F | 1.42 | 1.09 | 1.01 | .89 | .84 |
| 2045-01/02-05‡ | SE21XE01/2 | C | .42 | .32 | .30 | .26 | .25 |
| 2045-01/02-01‡ | .............. | C | .42 | .32 | .30 | .26 | .25 |
| 2255-01/03-05‡ | SE22XE01/3 | K | .42 | .32 | .30 | .26 | .25 |
| 2255-01/03-03‡ | .............. | K | .42 | .32 | .30 | .26 | .25 |
| 2384-02-01 | .............. | L | .60 | .46 | .43 | .38 | .35 |
| 2432-01/02-01‡ | .............. | L | .52 | .40 | .37 | .33 | .31 |
| 3648-01/02-01‡ | .............. | M | .42 | .32 | .30 | .26 | .25 |
| 3650-01/02-01‡ | .............. | M | .42 | .32 | .30 | .26 | .25 |
| 4810-01-0516 | .............. | B | .29 | .22 | .21 | .18 | .17 |
| 4814-01-0516† | SE20(0/9)D01 | N | .32 | .25 | .23 | .20 | .19 |
| 4815-01-0516 | .............. | N | .32 | .25 | .23 | .20 | .19 |
| 4820-01-0516† | SE20(0/9)D02 | N | .37 | .28 | .26 | .23 | .22 |
| 4826-01-0516 | .............. | N | .32 | .25 | .23 | .20 | .19 |
| 4827-01-0516 | .............. | N | 32c | 25c | 23c | 20c | 19c |
| 4838-01-0516† | SE19(0/9)E01 | O | 32c | 25c | 23c | 20c | 19c |
| 4862-01-0516 | .............. | P | 36c | 28c | 26c | 23c | 21c |
| 4863-01-0516 | .............. | P | 36c | 28c | 26c | 23c | 21c |
| 4870-01-0516 | .............. | H | 27c | 21c | 19c | 17c | 16c |
| 4872-01-0516 | .............. | O | 29c | 22c | 21c | 18c | 17c |
| 4878-01-0516 | .............. | O | 29c | 22c | 21c | 18c | 17c |
| 4884-01-0516 | .............. | Q | 29c | 22c | 21c | 18c | 17c |
| 4894-01-0516† | SE18(0/9)E01 | H | 27c | 21c | 19c | 17c | 16c |
| 4895-01-0516† | SE18(0/9)E02 | H | 29c | 22c | 21c | 18c | 17c |

## TEFLON• PRESS-MOUNT INSULATED TERMINALS

Easy mounting: Press into hole for permanent, rigid installation.
•DuPont trademark.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 4015-01-0519 | .............. | R | 19c | 17c | 14c | 14c | ..... |
| 4025-01/03-0519‡ | .............. | R | 18c | 15c | 13c | 13c | ..... |
| 4026-01/03-0519‡ | .............. | R | 19c | 17c | 14c | 14c | ..... |
| 4027-01/03-0519‡ | .............. | R | 19c | 17c | 14c | 14c | ..... |
| 4029-01-0519† | SE08(0/9)B01 | S | 17c | 14c | 13c | 12c | ..... |
| 4033-01/02-0519‡ | .............. | T | 19c | 17c | 14c | 14c | ..... |
| 4034-01/03-0519‡ | .............. | T | 19c | 17c | 14c | 14c | ..... |
| 4051-01-0519† | SE07(0/9)B01 | R | 19c | 17c | 14c | 14c | ..... |
| 4078-01-0519 | .............. | R | 21c | 18c | 16c | 15c | ..... |
| 4115-01-0519 | .............. | R | 26c | 22c | 20c | 18c | ..... |
| 4122-01-0519 | .............. | U | 39c | 34c | 30c | 28c | ..... |
| 4132-01-0519 | .............. | U | 39c | 34c | 30c | 28c | ..... |
| 4140-01-0519† | SE07(0/9)B02 | R | 17c | 14c | 13c | 12c | ..... |
| 4152-01-0519† | FT05(0/9)B01 | S | 21c | 18c | 16c | 15c | ..... |
| 4167-01-0519† | FT06(0/9)B01 | V | 19c | 17c | 14c | 14c | ..... |
| 4168-01-0519† | FT05(0/9)B02 | S | 19c | 17c | 14c | 14c | ..... |
| 4176-01-0519† | FT03(0/9)B02 | W | 19c | 17c | 14c | 14c | ..... |
| 4182-01/03-0519‡ | .............. | X | 19c | 17c | 14c | 14c | ..... |
| 4185-01-0519† | FT04(0/9)B01 | X | 19c | 17c | 14c | 14c | ..... |
| 4188-01-0519† | FT03(0/9)B01 | W | 17c | 14c | 13c | 12c | ..... |
| 4193-01-0519† | FT05(0/9)B03 | S | 17c | 14c | 13c | 12c | ..... |
| 4194-01-0519† | FT06(0/9)B02 | V | 19c | 17c | 14c | 14c | ..... |
| 4197-01-0519† | FT04(0/9)B02 | X | 19c | 17c | 14c | 14c | ..... |
| 4263-01-0519 | .............. | Y | 31c | 27c | 23c | 22c | ..... |
| 4267-01-0519 | .............. | Z | 39c | 34c | 30c | 28c | ..... |
| 4281-01-0519† | FT03(0/9)B03 | W | 19c | 17c | 14c | 14c | ..... |
| 4410-01-0319 | .............. | W | 19c | 17c | 14c | 14c | ..... |

*Suffix **-05** (e.g., 1502-01-**05**19) indicates electro-solder plating; **-01**, silver plating; **-03**, gold plating. †Suffix indicates standard color: **16**, blue for diallyl units; **19**, white for Teflon units. MIL-T-55155 dash numbers **(0/9)** indicate range of colors available. Colors other than standard may be made to order in minimum of 500 unit quantities: for diallyl, add **1c** each; for Teflon, add **2c** each. To order nonstandard colors, replace **19** or **16** final endings of Cambion No. with: **-11**, brown; **-12**, red; **-13**, orange; **-14**, yellow; **-15**, green: **-17**, violet; **-18**, gray. ‡Dash numbers (e.g., 1942-**01**-05 or 1942-**02**-05) indicate varying stud lengths available; specify with order. §Minimum standard package is 50 pieces.



## HANDLES

| Cambion Number | Fig. | Metal | Mtg. Ctrs., In. | Ht., In. | Net Each, Lots 10-99 | 100-499 |
|---|---|---|---|---|---|---|
| 1075-01-02 | A | Brass* | 4.562 | 1 | $1.67 | $1.46 |
| 1220-01-02 | A | Brass* | 1.25 | 1 | 1.58 | 1.39 |
| 1220-02-02 | A | Brass* | 2.0 | 1 | 1.67 | 1.46 |
| 1220-03-02 | A | Brass* | 3.0 | 1 | 1.75 | 1.53 |
| 1250-01-02 | A | Brass* | 2.0 | 1.312 | 1.40 | 1.23 |
| 1250-02-02 | A | Brass* | 3.0 | 1.312 | 1.51 | 1.32 |
| 1258-01-02 | B | Brass* | .875 | .520 | .71 | .62 |
| 1264-01-02 | A | Brass* | 3.0 | 1.312 | 1.51 | 1.32 |
| 1270-01-14 | A | Alum.† | 4.0 | 1.875 | 1.75 | 1.53 |
| 1278-01-14 | C | Alum.† | 2.0 | 1.500 | 1.25 | 1.09 |
| 1278-02-14 | C | Alum.† | 4.0 | 1.500 | 1.43 | 1.25 |
| 1280-03-02 | A | Brass* | 4.0 | 1.50 | 1.75 | 1.53 |
| 1290-02-14 | A | Alum.† | 3.0 | 1.50 | 1.12 | .98 |
| 1290-03-14 | A | Brass† | 4.0 | 1.50 | 1.30 | 1.14 |
| 1900-01-02 | D | Brass* | 4.0 | 1.85 | 4.05 | 3.55 |
| 1965-01-02 | A | Brass* | 6.437 | 1.75 | 1.75 | 1.53 |
| 2062-01-02 | D | Brass* | 4.0 | 1.85 | 3.90 | 3.45 |
| 2111-01-02 | B | Brass* | 3.0 | 1.281 | 2.34 | 2.05 |
| 2111-02-02 | B | Brass* | 4.562 | 1.50 | 2.66 | 2.33 |
| 2111-03-02 | B | Brass* | 6.438 | 1.75 | 2.99 | 2.61 |
| 2111-04-02 | B | Brass* | 9.0 | 1.75 | 3.30 | 2.87 |
| 2385-01-14 | B | Alum.† | 3.0 | 1.281 | 1.76 | 1.54 |
| 2385-02-14 | B | Alum.† | 4.562 | 1.50 | 1.90 | 1.66 |
| 2385-03-14 | B | Alum.† | 6.438 | 1.75 | 2.11 | 1.85 |
| 2720-01-22 | D | ‡ | 4.0 | 1.459 | 5.70 | 5.00 |

*Nickel finish; for black oxide, order **-12** (prices on request).
†Black anodize; for semi-frost anodize at same price, order **-18**.
‡Stainless steel.

**WRITE FOR FREE CAMBION CATALOG FOR COMPLETE LISTING OF ALL CAMBION PRODUCTS**

## ALL-SET TERMINAL BOARDS (FIG. E)

With terminals firmly mounted. Boards scribed into five sections. Each section has 10 terminals and 4 mounting holes in two rows except Nos. **1401-** which have only 5 terminals and two mounting holes in a single row. **Materials** are: **FBE**, cotton-fabric phenolic MIL-P-15035B; **GEE**, epoxy glass-cloth, MIL-P-18177B; **NPG**, nylon-fabric phenolic MIL-P-15047B. Min. order two.

| Cambion Number | Mat. | Size, Inches Th. x Width | Net Each, Lots of 2-9 | 10-99 | 100-499 |
|---|---|---|---|---|---|
| 1330-25-01-02 | GEE | 1/16 x 1⅛ | $5.50 | $3.95 | $3.45 |
| 1401-35-01-01 | FBE | 3/32 x ½ | 2.15 | 1.55 | 1.35 |
| 1401-35-01-02 | GEE | 3/32 x ½ | 3.30 | 2.38 | 2.08 |
| 1402-35-01-01 | FBE | 3/32 x 2 | 4.70 | 3.40 | 2.96 |
| 1402-35-01-02 | GEE | 3/32 x 2 | 7.65 | 5.50 | 4.80 |
| 1402-35-01-03 | NPG | 3/32 x 2 | 5.60 | 4.05 | 3.55 |
| 1402-45-01-01 | FBE | ⅛ x 2 | 4.70 | 3.40 | 2.96 |
| 1402-45-01-02 | GEE | ⅛ x 2 | 9.65 | 6.95 | 6.10 |
| 1402-45-01-03 | NPG | ⅛ x 2 | 5.60 | 4.05 | 3.55 |
| 1403-35-01-01 | FBE | 3/32 x 2½ | 4.95 | 3.55 | 3.10 |
| 1403-45-01-01 | FBE | ⅛ x 2½ | 4.95 | 3.55 | 3.10 |
| 1404-35-01-01 | FBE | 3/32 x 3 | 5.10 | 3.65 | 3.20 |
| 1404-45-01-01 | FBE | ⅛ x 3 | 5.10 | 3.65 | 3.20 |
| 1405-35-01-01 | FBE | 3/32 x 1 1/16 | 4.30 | 3.10 | 2.71 |
| 1405-25-01-01 | FBE | 1/16 x 1 1/16 | 4.30 | 3.10 | 2.71 |
| 1405-25-01-02 | GEE | 1/16 x 1 1/16 | 6.70 | 4.80 | 4.20 |
| 1406-35-01-01 | FBE | 3/32 x 1½ | 4.50 | 3.25 | 2.84 |
| 1406-45-01-01 | FBE | ⅛ x 1½ | 4.50 | 3.25 | 2.84 |

## FERRULES

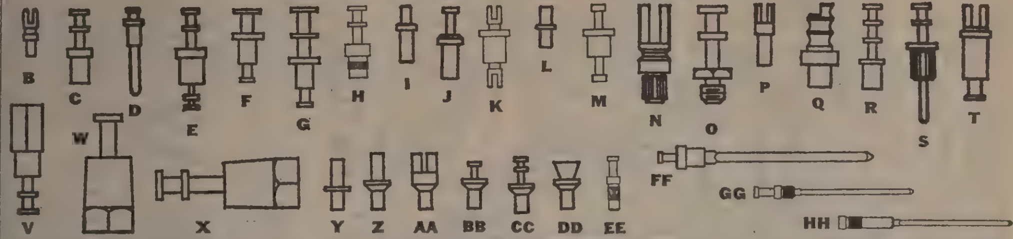
| Cambion Number | Metal | For Handle | Net Each, Lots of 20-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|
| 1211-01* | Brass | 1280 Series | 15c | 13c | 13c |
| 1212-01† | Alum. | 1290 Series | 31c | 27c | 26c |
| 1952-01* | Brass | 1220 Series | 17c | 15c | 14c |
| 1953-01† | Alum. | 1230 Series | 31c | 27c | 26c |
| 1954-01* | Brass | 1075, 1965, 1250, 1252, 1254 | 17c | 15c | 14c |
| 1988-01* | Brass | | 23c | 20c | 19c |
| 1989-01† | Alum. | 1270, 71 Series | 31c | 27c | 26c |

*Add suffix **-02** for nickel finish; **-12** for black oxide. †Add suffix **-14** for black anodize; **-18** for semi-frost anodize.

CAMBRIDGE THERMIONIC CORPORATION
CAMBION®

# Solder Terminals, Wire-Wrap† Pins and Swaging Tools

## SOLDER TERMINALS, WIRE-WRAP† PINS



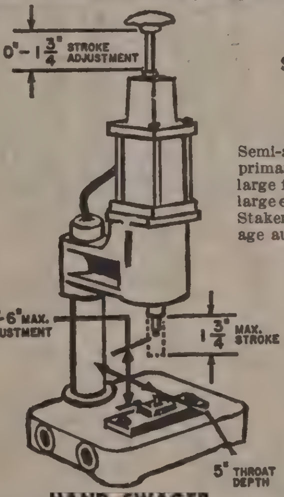
BION offers a full line of all styles and sizes of standard r terminals: Single and double turret, slotted, castellated, d and others. The most popular types are listed. Prices n are for the following standard platings: Plating code suffix silver; **-04**, electro-tin; **-05**, electro-solder; **-01-05**, both silver electro-solder (prices of other platings available on request). r by CAMBION Type No. with correct dash number for l thickness desired, followed by plating code suffix.

| No. ffix | Board Thickness | Dash No. Suffix | Board Thickness | Dash No. Suffix | Board Thickness |
|---|---|---|---|---|---|
| 11 | 1/64" | -3 | 3/32" | -6 | 1/4" |
| 1 | 1/32" | -4 | 1/8" | | |
| 2 | 1/16" | -5 | 5/32" | | |

| bion pe nber | Plating Code Suffix | Fig. | Mtg. Dia., In. | Description | Net per 1000, Lots 1000-4999 | 5000-9999 | 10M-24999 |
|---|---|---|---|---|---|---|---|
| -2/4 | -04 | A | .053 | Taper recep. | $44.10 | $41.30 | $36.10 |
| -1/2 | -01 | B | .047 | Thru hole | 24.90 | 23.30 | 20.30 |
| -1/3 | -01 | B | .047 | Thru hole | 27.70 | 25.90 | 22.70 |
| -2 | -01 | B | .112 | Slotted | 89.90 | 84.00 | 73.50 |
| -1/4 | -01 or -05 | C | .090 | Turret | 19.60 | 18.30 | 16.00 |
| -2 | -01 | D | .072 | Turret | 40.30 | 37.70 | 32.90 |
| -1/2 | -01 | D | .062 | Turret | 24.90 | 23.30 | 20.30 |
| -2/3 | -01 or -05 | E | .125 | Feed thru | 34.30 | 32.00 | 28.00 |
| -2/3 | -01 | F | .090 | Turret | 28.90 | 27.00 | 23.60 |
| -2/3 | -01 | G | .090 | Turret | 36.90 | 34.50 | 30.20 |
| -2/4 | -01 | E | .090 | Turret | 36.90 | 34.50 | 30.20 |
| -1 | -05 | H | .099 | Knurled tur., self-piercing | 20.60 | 19.20 | 16.80 |
| -2 | -04 | I | .060 | Pin | 27.20 | 25.40 | 22.20 |
| -2/3 | -04 | I | .060 | Pin | 27.20 | 25.40 | 22.20 |
| -2 | -04 | I | .060 | Pin | 36.40 | 34.10 | 29.80 |
| -2/3 | -01 | J | .112 | Turret | 27.50 | 25.70 | 22.50 |
| -1/4 | -05 | K | .116 | Dbl. slot ends thru-hole | 65.40 | 61.10 | 53.50 |
| -1/4 | -01 | J | .078 | Turret | 17.20 | 16.10 | 14.00 |
| -2 | -05 | L | .039 | PC eyelet thru hole | 23.70 | 22.20 | 19.40 |
| -2 | -05 | L | .046 | | 23.70 | 22.20 | 19.40 |
| -2 | -05 | L | .050 | | 23.70 | 22.20 | 19.40 |
| -2 | -05 | L | .059 | | 23.70 | 22.20 | 19.40 |
| -1/2 | -01-05 | M | .116 | Domed Turret | 24.30 | 22.70 | 19.80 |
| -2/4 | -05 | M | .116 | Tur. MIL-T-55155, SE13-XC04, 5, 6 | 24.30 | 22.70 | 19.80 |
| -1/5 | -01 | C | .112 | Turret | 24.70 | 23.10 | 20.20 |
| -1/5 | -01 | C | .090 | Turret | 17.60 | 16.40 | 14.40 |
| -2/4 | -01 | N | .150 | Knurled | 48.50 | 45.40 | 39.70 |
| -2/4 | -01 | G | .202 | Feed thru | 54.10 | 50.50 | 44.20 |
| -2 | -01 | O | 4-40 | Round base | 53.20 | 49.80 | 43.50 |
| -1/5 | -01 | C | .090 | Turret | 19.60 | 18.30 | 16.00 |
| -2 | -01 | J | .062 | Turret | 20.90 | 19.50 | 17.10 |
| -1/4 | -01-05 | C | .112 | Turret | 28.10 | 26.30 | 23.00 |
| -4 | -01 | N | .135 | Knurled | 77.70 | 72.60 | 63.60 |
| -2/4 | -01 | N | .112 | Knurled | 43.80 | 41.00 | 35.80 |
| -1/4 | -01 | P | .062 | Forked | 23.60 | 22.00 | 19.30 |
| -1/4 | -01 | J | .110 | Turret | 27.00 | 25.20 | 22.10 |
| -2 | -01 | C | .135 | Turret | 40.70 | 38.00 | 33.30 |
| -2 | -01 | P | .071 | Thru hole | 23.90 | 22.40 | 19.60 |
| -1/5 | -01 | P | .112 | Thru hole | 35.10 | 32.80 | 28.70 |
| -2/4 | -01 | Q | .112 | Half slot | 41.00 | 38.40 | 33.60 |
| -1/4 | -01 | G | .090 | Feed thru | 26.60 | 24.80 | 21.70 |
| -1/4 | -01 | E | .090 | Feed thru | 26.10 | 24.40 | 21.40 |
| -1/4 | -01 | J | .071 | Thru hole | 23.60 | 22.00 | 19.30 |
| -1/4 | -01 | C | .090 | Turret | 28.00 | 26.10 | 22.90 |
| -1/4 | -01-05 | E | .072 | Turret | 28.60 | 26.70 | 23.40 |
| -1/3 | -01-05 | J | .072 | Turret | 17.60 | 16.40 | 14.40 |
| -1/2 | -01-05 | F | .072 | Turret | 19.10 | 17.90 | 15.60 |
| -1/4 | -01-05 | C | .072 | Turret | 18.20 | 17.10 | 14.90 |
| -1/4 | -01-05 | G | .072 | Turret | 20.10 | 18.80 | 16.40 |
| -1/2 | -01 | O | 4-40 | Hex base | 59.60 | 55.70 | 48.80 |
| -1/4 | -01 | R | .090 | Turret | 24.60 | 23.00 | 20.10 |
| -1/4 | -01 | S | .120 | Knurled | 37.00 | 34.60 | 30.30 |
| -2/4 | -01 | R | .112 | Turret | 47.80 | 44.70 | 39.10 |
| -1/4 | -01 | J | .047 | Turret | 14.90 | 14.00 | 12.20 |
| -2/3 | -01 | T | .122 | Thru hole | 46.70 | 43.60 | 38.20 |
| -1/4 | -01 | B | .047 | Thru hole | 30.30 | 28.30 | 24.80 |
| -1/3 | -01 | J | .062 | Thru hole | 23.60 | 22.00 | 19.30 |
| -4 | -04 | C | .053 | .061 top taper receptacle | 47.10 | 44.10 | 38.60 |
| -3 | -04 | C | .053 | | 60.30 | 56.40 | 49.30 |
| -2/3 | -04 | F | .053 | | 78.50 | 73.40 | 64.30 |
| -2/4 | -01 | F | .116 | Thru hole | 49.40 | 46.20 | 40.40 |
| -1 | -01 | U | .047 | Half turret | 50.40 | 47.20 | 41.30 |
| -2/4 | -04 | J | .053 | Taper recep. | 58.40 | 54.60 | 47.80 |
| -1/2 | -05 | B | .032 | Slotted | 28.30 | 26.40 | 23.10 |
| -3 | -01 | V | .125 | Term.-spacer | 79.30 | 74.20 | 64.90 |
| -1 | -05 | W | 4-40 | Tapped mt. | 102.30 | 95.70 | 83.70 |
| -1 | -05 | X | 4-40 | Tapped mt. | 100.80 | 94.20 | 82.50 |

| Cambion Type Number | Plating Code Suffix | Fig. | Mtg. Dia., In. | Description | Net per 1000, Lots 1000-4999 | 5000-9999 | 10M-24999 |
|---|---|---|---|---|---|---|---|
| 2750-2/4 | -05 | Y | .060 | PC pin | $24.30 | $22.70 | $19.80 |
| 2751-2/4 | -05 | Z | .060 | PC pin | 24.30 | 22.70 | 19.80 |
| 2752-2/4 | -05 | AA | .060 | PC thru hole | 36.00 | 33.60 | 29.40 |
| 2753-2/3 | -05 | BB | .060 | PC turret | 24.30 | 22.70 | 19.80 |
| 2754-1/4 | -05 | CC | .060 | PC turret | 24.30 | 22.70 | 19.80 |
| 2755-2/3 | -05 | DD | .060 | PC thru hole | 24.30 | 22.70 | 19.80 |
| 2926-2 | -05 | AA | .060 | PC flared | 60.40 | 56.50 | 49.50 |
| 3653-1/3 | -01-05 | C | .062 | Turret | 19.30 | 18.00 | 15.80 |
| 3747-1 | -04 | EE | .056 | Turret‡ | 14.30 | 13.40 | 11.70 |
| 3748-2 | -04 | FF | .090 | .045 sq. swage mt.† | 72.70 | 68.00 | 59.50 |
| 3848-1 | -03* | GG | .056 | .025 sq. feed-thru† | 95.60 | 89.40 | 78.20 |
| 3854-1 | -03 | HH | .058 | .025 sq. press mt.† | 98.50 | 92.10 | 80.60 |
| 3854-1 | -04 | HH | .058 | | 69.10 | 64.70 | 56.60 |
| 3866-1 | -03* | GG | .058 | | 79.80 | 74.60 | 65.30 |
| 7336-1/4 | -05 | BB | .060 | PC flared; red lead brass/ ASTMB-140 | 24.10 | 22.50 | 19.70 |
| 7337-1/4 | -05 | CC | .060 | | 24.80 | 23.20 | 20.30 |
| 7338-1/4 | -05 | AA | .060 | | 39.50 | 36.90 | 32.30 |

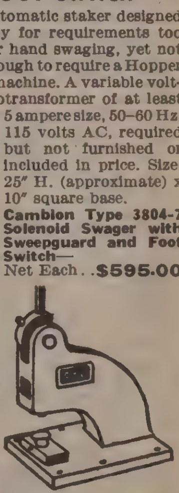
*Available with gold plating only. †Wire-wrap (Reg. Gardner-Denver TM). ‡Knurled mt. Additional quantities available on request. **Minimum standard package is 100 pieces.**



## TYPE 3804-7 SOLENOID SWAGER WITH SWEEPGUARD AND FOOT SWITCH

Semi-automatic staker designed primarily for requirements too large for hand swaging, yet not large enough to require a Hopper Staker machine. A variable voltage autotransformer of at least 5 ampere size, 50–60 Hz, 115 volts AC, required but not furnished or included in price. Size, 25" H. (approximate) x 10" square base.

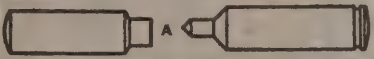
**Cambion Type 3804-7 Solenoid Swager with Sweepguard and Foot Switch**—
Net Each. . **$595.00**



## HAND SWAGER

Designed for quick, uniform swaging of solder terminals on terminal boards. Adjustable to a wide range of terminal board thicknesses. Swaging in place as far as 1 7/8" from board edge. Less tooling.

**Cambion Type 3802-1**—2 1/2" throat.
Net Each.......................**$49.50**
**Cambion Type 3803-1**—5" throat.
Net Each.......................**$79.50**



## SWAGING TOOLS

| ANVILS (FIG. A) Cambion Number | Cambion Number | Net Each | PUNCHES (FIG. B) Cambion Number | Cambion Number | Net Each |
|---|---|---|---|---|---|
| 6401 | 6419 | $8.00 | 6601 | 6618 | $8.00 |
| 6402 | 6420 | 8.00 | 6604 | 6619 | 8.00 |
| 6404 | 6430 | 8.00 | 6606 | 6629 | 8.00 |
| 6412 | 6447 | 8.00 | 6611 | 6654 | 8.00 |
| 6418 | .......... | 8.00 | 6617 | 6657 | 8.00 |

**Cambion No. 6098 Adapter**—For converting to hand set use.
Net Each.............................................**$8.00**

**SEND FOR COMPLETE CAMBION CATALOG FOR FULL DATA ON ALL CAMBION PRODUCTS**

# Keystone Terminals and Boards

## PRE-PUNCHED TERMINAL BOARDS IN CHOICE OF SIX PATTERNS

### PATTERN A

Holes .093" dia. spaced .265" x .265" C to C.

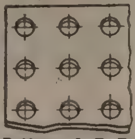
| Keystone No. | Size, In. W. x L. | No. of Holes W. x L. | Net Each, Lots of 1-19 | 20-99 |
|---|---|---|---|---|
| 1731* | .82 x 8.50 | 3 x 32 | $0.30 | $0.27 |
| 1737* | 1.88 x 8.50 | 7 x 32 | .39 | .35 |
| 1738* | 2.44 x 8.50 | 9 x 32 | .45 | .41 |
| 1785* | 3.25 x 8.50 | 13 x 32 | .42 | .38 |
| 1786* | 3.25 x 17.00 | 13 x 64 | .84 | .76 |
| 1806* | 4.88 x 4.88 | 18 x 18 | .43 | .39 |
| 1784* | 4.88 x 8.50 | 18 x 32 | .72 | .65 |
| 1739* | 4.88 x 17.00 | 18 x 64 | 1.20 | 1.10 |
| 1732* | 8.50 x 8.50 | 32 x 32 | 1.30 | 1.17 |
| 1733* | 8.50 x 17.00 | 32 x 64 | 1.90 | 1.68 |
| 1758 | 1.38 x 1.88 | 5 x 7 | .12 | .10 |
| 1760 | 1.38 x 4.00 | 5 x 15 | .21 | .19 |
| 1749 | 1.38 x 8.50 | 5 x 32 | .48 | .43 |
| 1759 | 1.88 x 2.94 | 7 x 11 | .17 | .15 |
| 1740 | 1.88 x 8.50 | 7 x 32 | .55 | .50 |
| 1741 | 2.44 x 8.50 | 9 x 32 | .62 | .56 |
| 1814 | 3.25 x 8.50 | 13 x 32 | .66 | .61 |
| 1816 | 3.25 x 17.00 | 13 x 64 | 1.21 | 1.09 |
| 1756 | 4.88 x 8.50 | 18 x 32 | .86 | .78 |
| 1742 | 4.88 x 17.00 | 18 x 64 | 1.65 | 1.48 |
| 1817 | 8.50 x 8.50 | 32 x 32 | 1.25 | 1.15 |
| 1757 | 8.50 x 17.00 | 32 x 64 | 2.85 | 2.55 |

*1/16" thick, also available in glass epoxy or paper base epoxy; all others, 3/32" thick. Also available in paper base epoxy; prices on request.

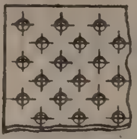
### PATTERN B

Holes .062" dia. spaced .187" x .187" C to C; 1/16" thick. Also available in XXXP copper clad (one side); prices on request.

| Keystone No. | Size, In. W. x L. | No. of Holes W. x L. | Net Each, Lots of 1-19 | 20-99 |
|---|---|---|---|---|
| 1761 | 1.38 x 8.50 | 6 x 45 | $0.39 | $0.35 |
| 1734 | 1.88 x 8.50 | 10 x 45 | .39 | .35 |
| 1812 | 2.44 x 3.38 | 12 x 17 | .16 | .14 |
| 1735 | 2.84 x 8.50 | 15 x 45 | .53 | .48 |
| 1824 | 3.66 x 6.75 | 19 x 35 | .45 | .40 |
| 1762 | 5.69 x 8.50 | 30 x 45 | .86 | .78 |
| 1736 | 5.69 x 17.00 | 30 x 90 | 1.65 | 1.50 |
| 1826 | 6.75 x 7.31 | 35 x 39 | .75 | .68 |
| 1828 | 7.31 x 10.50 | 38 x 56 | 1.20 | 1.08 |
| 1832 | 7.31 x 18.00 | 38 x 95 | 1.65 | 1.48 |
| 1763 | 8.50 x 17.00 | 45 x 90 | 1.90 | 1.68 |



Patterns A, B, E, F, H



Pattern G

### PATTERN E

Holes .100" dia. spaced .250" x .250" C to C.

| Keystone No. | Size, In. W. x L. | No. of Holes W. x L. | Net Each, Lots of 1-19 | 20-99 |
|---|---|---|---|---|
| 1750* | 2.13 x 4.00 | 8 x 16 | $0.25 | $0.22 |
| 1765* | 2.13 x 8.50 | 8 x 34 | .46 | .41 |
| 1766* | 3.63 x 8.50 | 14 x 34 | .62 | .56 |
| 1767* | 8.50 x 8.50 | 34 x 34 | 1.30 | 1.17 |
| 1768* | 8.50 x 17.00 | 34 x 68 | 2.13 | 1.92 |
| 1770 | 2.13 x 8.50 | 8 x 34 | .57 | .51 |
| 1771 | 8.50 x 8.50 | 34 x 34 | 1.75 | 1.57 |
| 1772 | 8.50 x 17.00 | 34 x 68 | 2.72 | 2.43 |

*1/16" thick; all others, 3/32" thick.

### PATTERN F

Holes .062" dia. spaced .200" x .200" C to C; 1/16" thick. Prices on request for glass epoxy, paper base epoxy, glass epoxy copper clad (one side or two sides) or copper clad (one side or two sides).

| Keystone No. | Size, In. W. x L. | No. of Holes W. x L. | Net Each, Lots of 1-19 | 20-99 |
|---|---|---|---|---|
| 1730 | 1.25 x 8.50 | 6 x 42 | $0.33 | $0.30 |
| 1835 | 3.00 x 4.50 | 15 x 22 | .36 | .32 |
| 1773 | 3.63 x 8.50 | 18 x 42 | .62 | .56 |
| 1775 | 3.63 x 17.00 | 18 x 85 | 1.05 | .94 |
| 1868 | 4.50 x 6.50 | 22 x 30 | .60 | .54 |
| 1869 | 4.50 x 8.50 | 22 x 42 | .76 | .68 |
| 1774 | 4.88 x 8.50 | 24 x 42 | .72 | .65 |
| 1776 | 4.88 x 17.00 | 24 x 85 | 1.20 | 1.10 |
| 1777 | 8.50 x 8.50 | 42 x 42 | 1.15 | 1.03 |
| 1778 | 8.50 x 17.00 | 42 x 85 | 1.90 | 1.68 |

Standardized perforated phenolic boar natural color Grade XXXP per M spec. 3115C. Economical and time savin permits circuit design flexibility. Six po ular patterns for most applications. Pap base epoxy, glass epoxy unclad, gla epoxy copper clad, or copper clad a available for some patterns. Special si or additional drilled holes supplied request.

### PATTERN H

Holes .120" dia. spaced .375" x .37 C to C.

| Keystone No. | Size, In. W. x L. | No. of Holes W. x L. | Net Each, Lots of 1-19 | 20- |
|---|---|---|---|---|
| 1743* | 1.88 x 8.25 | 5 x 22 | $0.40 | $0.3 |
| 1744* | 2.25 x 8.25 | 6 x 22 | .45 | .4 |
| 1782* | 4.13 x 8.25 | 11 x 22 | .68 | .6 |
| 1745* | 4.13 x 16.50 | 11 x 44 | 1.20 | 1.0 |
| 1746 | 1.88 x 8.25 | 5 x 22 | .55 | .5 |
| 1747 | 2.25 x 8.25 | 6 x 22 | .59 | .5 |
| 1783 | 4.13 x 8.25 | 11 x 22 | .82 | .7 |
| 1748 | 4.13 x 16.50 | 11 x 44 | 1.50 | 1.3 |
| 1941 | 6.00 x 8.25 | 16 x 22 | 1.35 | 1.2 |
| 1942 | 6.00 x 16.50 | 16 x 44 | 1.98 | 1.7 |
| 1943 | 8.25 x 8.25 | 22 x 22 | 1.65 | 1.4 |
| 1939 | 8.25 x 16.50 | 22 x 44 | 2.76 | 2.4 |

*1/16" thick; all others, 3/32" thick. Al available in paper base epoxy; prices request.

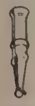
### PATTERN G

Holes .062" dia. staggered at alterna spacing on standard .100" grid; 1/16" thic Accepts "top hat" transistors since lea align properly. Prices on request for gla epoxy, paper base epoxy, or glass epo copper clad (one side or two sides).

| Keystone No. | Size, In. W. x L. | No. of Holes W. x L. | Net Eac Lots of 1-19 | 20- |
|---|---|---|---|---|
| 1752 | 1.75 x 4.00 | (8 x 19) x 2 | $0.25 | $0. |
| 1754 | 2.25 x 8.50 | (11 x 42) x 2 | .55 | . |
| 1753 | 3.50 x 4.00 | (17 x 19) x 2 | .37 | . |
| 1905 | 3.50 x 8.50 | (17 x 42) x 2 | .60 | . |
| 1906 | 3.50 x 17.00 | (17 x 85) x 2 | .90 | . |
| 1907 | 3.88 x 8.50 | (19 x 42) x 2 | .68 | . |
| 1908 | 4.88 x 8.50 | (24 x 42) x 2 | .86 | . |
| 1779 | 4.88 x 17.00 | (24 x 85) x 2 | 1.20 | 1. |
| 1780 | 8.50 x 8.50 | (42 x 42) x 2 | 1.30 | 1. |
| 1781 | 8.50 x 17.00 | (42 x 85) x 2 | 2.00 | 1. |

## EYELETS AND TERMINALS FOR ABOVE BOARDS

Terminals are MIL Spec. QQ626 silver-plated brass. Specify whether for 1/16" or 3/32" thick boards. Eyelets are hot tin dip finish brass for easy soldering. When ordering turret terminals, add **2** for 1/16" thick board (e.g., 1598-**2**); **3** for 3/32" thick board (e.g., 1598-**3**).



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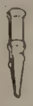

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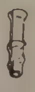

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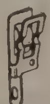

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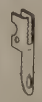

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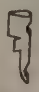

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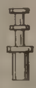

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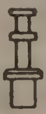

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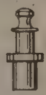

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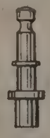

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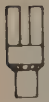

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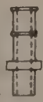

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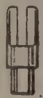

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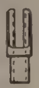

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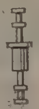

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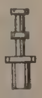

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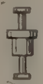

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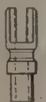

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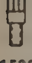

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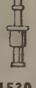

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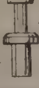

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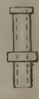

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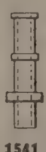

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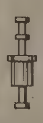

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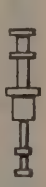

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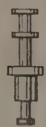

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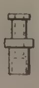

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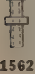

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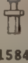

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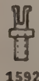

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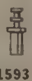

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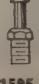

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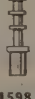

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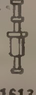

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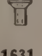

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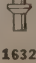

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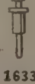

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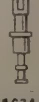


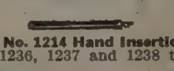
1634

#### FOR PATTERNS A AND E / FOR PATTERNS B, F, AND G

| Keystone No. | Net Per 100 | 1000 | Keystone No. | Net Per 100 | 100 |
|---|---|---|---|---|---|
| 1498‡ | $8.00 | $55.00 | 1499‡ | $1.75 | $12. |
| 1502 | 1.80 | 10.00 | 1500 | 1.75 | 15. |
| 1511 | 4.25 | 21.00 | 1508 | 2.00 | 13. |
| 1512 | 3.80 | 17.00 | 1526 | 2.70 | 13. |
| 1514 | 3.80 | 16.00 | 1562 | 2.20 | 15. |
| 1530 | 3.50 | 17.00 | 1584 | 3.50 | 17. |
| 1540 | 2.70 | 20.00 | 1592 | 3.00 | 23. |
| 1595 | 4.00 | 24.00 | 1593 | 2.50 | 16. |
| 1598 | 2.40 | 16.00 | 1613 | 3.00 | 14. |
| 1634 | 4.75 | 25.00 | 1631 | 4.00 | 20. |
| 33* | .85 | 5.75 | 1632 | 4.00 | 20. |
| 34† | .85 | 5.75 | 1633 | 3.50 | 19. |
|  |  |  | 1236§ | 1.75 | 12. |
|  |  |  | 1237§ | 1.75 | 12. |
|  |  |  | 1238§ | 1.75 | 12. |
|  |  |  | 23* | .85 | 5. |
| **FOR PATTERN H** |  |  |  |  |  |
| 1503 | $2.80 | $16.00 | 1525 | $5.20 | $25. |
| 1504 | 3.00 | 17.00 | 1532 | 2.30 | 17. |
| 1505 | 2.70 | 21.00 | 1541 | 5.25 | 35. |
| 1507 | 4.25 | 21.00 | 1542 | 5.25 | 30. |
| 1509 | 2.80 | 16.00 | 1545 | 5.00 | 33. |
| 1510 | 4.30 | 20.00 | 1551 | 5.00 | 31. |
| 1522 | 2.30 | 17.00 | 1553 | 2.85 | 18. |
| 43* | .95 | 6.00 | 44† | .95 | 6. |

*Eyelet for 1/16" thick board. †Eyelet f 3/32" thick board. ‡Terminals are silve plated; eyelets with hot tin dip finish f easy solderability. §Pre-tinned, taper section retains wire leads.

## TERMINAL STAKING TOOLS



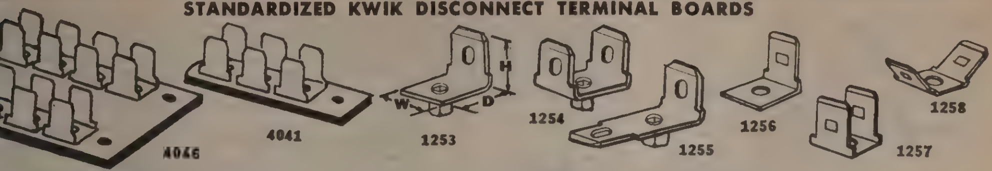
**Keystone No. 1214 Hand Insertion Tool**—For No. 1236, 1237 and 1238 terminal Net Each.........................**$1.5**

**Keystone No. 1322 Insertion Tool**—F No. 1499 and 1500 terminals. Net..**50**

**Keystone No. 1323 Insertion Tool**—F No. 1498 terminals. Net Each.....**75**

# Keystone Terminal Boards, Tools

## STANDARDIZED KWIK DISCONNECT TERMINAL BOARDS



solderless connections of several s to a common feed line. Material: hick fiberglass, NEMA GRADE ; rated for continuous operation at (300° F). Sheet color, tan. Backing ⅓₂″ thick fiber with drilled mountles. Terminals made of brass per QQ-B-613; No. 1253, 1254 and 1255 8″ thick hot tinned; No. 1256, 1257 258 are .032″ thick with bright plating. Mounting holes, .128″ dia., m ends.

### RMINALS FOR KWIK BOARDS

| stone nber | Size, Inches H. | D. | W. | Net/ 100 |
|---|---|---|---|---|
| 53* | .328 | .335 | .270 | $1.25 |
| 54* | .328 | .396 | .270 | 1.35 |
| 55* | .328 | .703 | .270 | 1.35 |
| 56 | .437 | .312 | .312 | 3.30 |
| 57 | .405 | .343 | .312 | 3.75 |
| 58 | .405 | .281 | .312 | 3.75 |

width, .205″; all others, .250″.

### WITH .250 TAB TERMINALS

Terminals have non-rotation tab base.

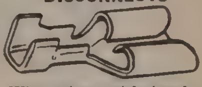
| Board Sizes, Inches W. x L. | Term. Holes Spaced | No. Terms./ Side | No. 1256 Term. Keystone No. | No. 1256 Net Each, Lots of 1-19 | No. 1256 Net Each, Lots of 20-99 | No. 1257 Term. Keystone No. | No. 1257 Net Each, Lots of 1-19 | No. 1257 Net Each, Lots of 20-99 | No. 1258 Term. Keystone No. | No. 1258 Net Each, Lots of 1-19 | No. 1258 Net Each, Lots of 20-99 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ½ x 1½ | Single | 2 | 4101 | $0.18 | $0.17 | 4116 | $0.18 | $0.17 | 4131 | $0.18 | $0.17 |
| ½ x 2¼ | Single | 4 | 4102 | .28 | .26 | 4117 | .33 | .29 | 4132 | .33 | .29 |
| ½ x 3 | Single | 6 | 4103 | .37 | .33 | 4118 | .44 | .40 | 4133 | .44 | .40 |
| ½ x 3¾ | Single | 8 | 4104 | .48 | .44 | 4119 | .50 | .46 | 4134 | .50 | .46 |
| ½ x 4½ | Single | 10 | 4105 | .55 | .53 | 4120 | .60 | .57 | 4135 | .60 | .57 |
| 1½ x 1½ | 1″ | 2 | 4106 | .34 | .30 | 4121 | .35 | .31 | 4136 | .35 | .31 |
| 1½ x 2¼ | 1″ | 4 | 4107 | .53 | .50 | 4122 | .55 | .53 | 4137 | .55 | .53 |
| 1½ x 3 | 1″ | 6 | 4108 | .67 | .64 | 4123 | .75 | .68 | 4138 | .75 | .68 |
| 1½ x 3¾ | 1″ | 8 | 4109 | .85 | .76 | 4124 | .94 | .86 | 4139 | .94 | .86 |
| 1½ x 4½ | 1″ | 10 | 4110 | 1.06 | .99 | 4125 | 1.17 | 1.07 | 4140 | 1.17 | 1.07 |
| 2 x 1½ | 1½″ | 2 | 4111 | .36 | .32 | 4126 | .37 | .33 | 4141 | .37 | .33 |
| 2 x 2¼ | 1½″ | 4 | 4112 | .54 | .52 | 4127 | .57 | .54 | 4142 | .57 | .54 |
| 2 x 3 | 1½″ | 6 | 4113 | .68 | .65 | 4128 | .76 | .69 | 4143 | .76 | .69 |
| 2 x 3¾ | 1½″ | 8 | 4114 | .90 | .82 | 4129 | .95 | .87 | 4144 | .95 | .87 |
| 2 x 4½ | 1½″ | 10 | 4115 | 1.08 | 1.01 | 4130 | 1.18 | 1.08 | 4145 | 1.18 | 1.08 |

### WITH .205 TAB TERMINALS

nals have 7⁄64″ square, extruded base eyelet.

| d s L. | Term. Holes Spaced | No. Terms./ Side | No. 1253 Term. Keystone No. | No. 1253 Net Each, Lots of 1-19 | No. 1253 Net Each, Lots of 20-99 | No. 1254 Term. Keystone No. | No. 1254 Net Each, Lots of 1-19 | No. 1254 Net Each, Lots of 20-99 | No. 1255 Term. Keystone No. | No. 1255 Net Each, Lots of 1-19 | No. 1255 Net Each, Lots of 20-99 | Backing Strip Keystone No. | Backing Strip Net Each, Lots of 1-19 | Backing Strip Net Each, Lots of 20-99 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ½ | Single | 2 | 4041 | $0.13 | $0.12 | 4056 | $0.13 | $0.12 | 4071 | $0.13 | $0.12 | 4401 | $0.08 | $0.07 |
| ¼ | Single | 4 | 4042 | .21 | .20 | 4057 | .21 | .20 | 4072 | .21 | .20 | 4402 | .08 | .07 |
|  | Single | 6 | 4043 | .27 | .25 | 4058 | .25 | .23 | 4073 | .27 | .25 | 4403 | .08 | .07 |
| ¾ | Single | 8 | 4044 | .36 | .32 | 4059 | .35 | .31 | 4074 | .35 | .31 | 4404 | .08 | .07 |
| ½ | Single | 10 | 4045 | .43 | .39 | 4060 | .42 | .36 | 4075 | .43 | .39 | 4405 | .08 | .07 |
| ½ | 1″ | 2 | 4046 | .24 | .22 | 4061 | .27 | .25 | 4076 | .25 | .23 | 4406 | .08 | .07 |
| ¼ | 1″ | 4 | 4047 | .42 | .36 | 4062 | .43 | .39 | 4077 | .43 | .39 | 4407 | .08 | .07 |
|  | 1″ | 6 | 4048 | .49 | .45 | 4063 | .50 | .46 | 4078 | .50 | .46 | 4408 | .08 | .07 |
| ¾ | 1″ | 8 | 4049 | .57 | .54 | 4064 | .61 | .58 | 4079 | .61 | .58 | 4409 | .09 | .08 |
| ½ | 1″ | 10 | 4050 | .65 | .62 | 4065 | .68 | .65 | 4080 | .68 | .65 | 4410 | .09 | .08 |
| ½ | 1½″ | 2 | 4051 | .25 | .23 | 4066 | .27 | .25 | 4081 | .27 | .25 | 4411 | .08 | .07 |
| ¼ | 1½″ | 4 | 4052 | .42 | .36 | 4067 | .43 | .39 | 4082 | .43 | .39 | 4412 | .08 | .07 |
|  | 1½″ | 6 | 4053 | .49 | .45 | 4068 | .51 | .47 | 4083 | .51 | .47 | 4413 | .08 | .07 |
| ¾ | 1½″ | 8 | 4054 | .58 | .55 | 4069 | .62 | .59 | 4084 | .62 | .59 | 4414 | .09 | .08 |
| ½ | 1½″ | 10 | 4055 | .66 | .63 | 4070 | .75 | .68 | 4085 | .75 | .68 | 4415 | .09 | .08 |

### FEMALE KWIK DISCONNECTS



Wire crimp with insulation support for above terminals. Wire range, #16–20.

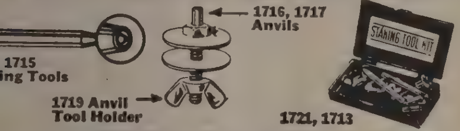
**Keystone No. 4469**—Fits tab .016″–.030″ th., .205″ wide. Net/100. . . **$2.25**

**Keystone No. 4470**—Fits tab .032″ thick, .250″ wide. Net/100. . . **$2.50**

### MOLDED VINYL PLASTIC BOOT

Slips over disconnects.

**Keystone No. 4471** (Clear), **4472** (Red), **4473** (Blue), **4474** (Yellow)—Net/100. . . . . . . . . **$2.50**



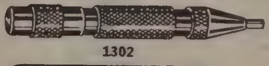
### STAKING TOOL KITS

terminals, rivets and eyelets with ease and safety. Pretool may be used with any drill press; adaptable for use k, arbor, punch or air presses. Or, use as a simple hand driving with hammer. Contoured, heat-treated steel for ear and professional performance. Kits are supplied with tions.

**ne No. 1721 Basic Staking Kit**—For single end terminals, or rivets. Box includes one each of 1714, 1715, 1716, 1717 1719 tool holder. No. 1714 tool handles .062″–.098″ shank 715 tool, .110″–.125″ shank dia.; 1716, anvil with .070″ 00″ end holes; 1717, anvil with .128″ and .152″ end holes; holds ¼″ dia. tools. Net Each Kit. . . . . . . . . . . . . . **$6.50**

**ne No. 1713 Master Staking Kit**—For single end, double eed-thru), fork terminals, extruded lugs, eyelets, rivets, onsists of one each of 1714, 1715, 1716, 1717, 1719 plus nal 1304, 1305, 1306, 1307, 1315, 1316, 1321, 1324, 1325, 1722 and 1726 tools. No. 1304 tool has .051″ dia. hole; 063″ dia. tool; 1306, .073″ dia. tool; 1307, .086″ dia. tool; 098″ dia. tool; 1315, .045″ dia. pin, for 1⁄16″ dia. eyelets; 068″ dia. pin, for 3⁄32″ eyelets or extruded lugs; 1321, 1325, anvil for 6-32 thread bushings; 1326, anvil for D. bushings; 1722, anvil with .053″ and .065″ end holes; nvil with .040″ and .060″ end slots for fork type terminals. ch Kit. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$25.00**

**ne No. 1707 Impact Staking Kit**—For automatic, hand operation. Impact handle produces light or heavy adjustable by turning of the spring tension cap. Uniform g action attained by pressing down handle. Interchangeools permit assembly of terminal boards, printed circuits nall components. Consists of one each 1315, 1316, 1321, 1717, 1722, 1726 tools plus additional 1310, 1311, 1312, ools; 1301 anvil holder; and, 1302 impact handle. No. ool with .053″ dia. hole; 1311, .062″ dia. tool; 1312, tool 0″–.072″ shank dia.; 1313, tool for .078″–.093″ shank 301, base for ¼″ dia. tools, with mounting holes for pert assembly to bench, felt covered base to prevent marring; ⁄2″ dia. x 5″ long impact handle, accepts 3-56 threaded et Each Kit. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$23.50**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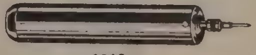
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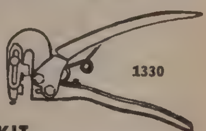

1330

### PROTOTYPE KIT

Ideal for 1⁄16″ and 3⁄32″ thick terminal boards for experimental or production runs. Saves costly tooling and set up charges.

**Keystone No. 1723 Prototype Kit**—Consists of 1⁄16″ and 3⁄32″ Bakelite§, blank and pre-punched boards; hardware such as eyelets, terminals, brackets, bushings, push-in terminals; complete terminal staking tool kit; and instructions.
Net Each Kit. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$17.00**

§Reg. Bakelite Corp. trademark.

### TEST PROBE KITS

Precision molded, low cost, sturdy, easily assembled accessory for signal generators, VTVM, oscilloscopes etc. Designed to contain required circuitry for signal tracers, demodulators, rectifying and isolation probes. **Size:** Handle, 1″ dia. x 5″ long; probe, 13⁄16″ long; terminal board, 11⁄16″ w. x 4″ lgth.; brass tube, 23⁄32″ I.D. x 3″ long.

**Keystone No. 1810 Test Probe Kit**—Consists of one each black hi-impact plastic handle, black phenolic cap, pre-punched terminal board, push-in type terminals, brass shield, senior solderless brass N.P., and screws for fastening cap to handle.
Net Each Kit. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$1.00**

**Keystone No. 1811 Test Probe Kit**—Same as 1810, but less terminal board, terminals and brass tube. Net Each Kit. . . **80c**

### ALL-PURPOSE HAND PUNCH

For punching sharp, burr-free holes in a variety of materials to 1⁄16″ thick untempered metal, 3⁄32″ phenolic, ¼″ Masonite or min. ¾″ dia. tubing. Shears eyelets, leaving clear undamaged hole; or, use as nibbler.

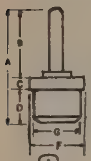
**Keystone No. 1330 Hand Punch**—Equipped with adjustable gauge. Replaces innumerable drill press operations. Depth of throat, 1¼″. Net Each (hand punch only). . . . . . . . . . . . **$13.00**

#### INDIVIDUAL DIE SETS

Consists of top and bottom tool.

**Keystone No. 1331** (for 1⁄16″ dia. hole), **1332** (.072″ dia.), **1333** (3⁄32″ dia.), **1334** (⅛″ dia.), **1335** (5⁄32″ dia.), **1336** (3⁄16″ dia.), **1337** (7⁄32″ dia.), **1338** (¼″ dia.)—Net Each. . . . . . . . . . . . . **$2.20**

# Sealectro PRESS-FIT® TEFLON* TERMINALS



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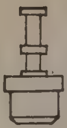
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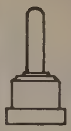
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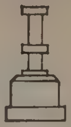
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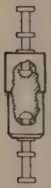
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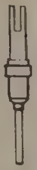
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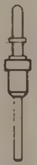
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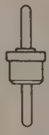
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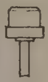
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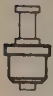
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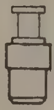
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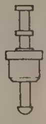
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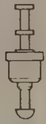
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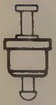
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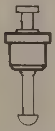
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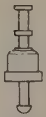
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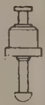
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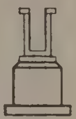
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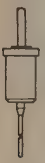
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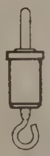
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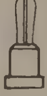
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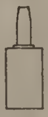
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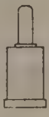
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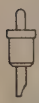
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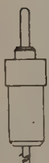
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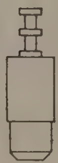
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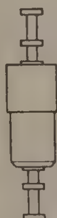
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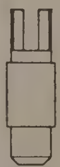
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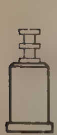
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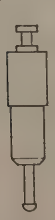
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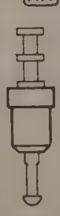
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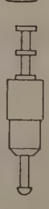

FF

Simplest, fastest, most economical terminal installation known. Practically unrestrict as to chassis material and thickness. Inexpensive insertion tool fits any drillpress hand arbor. Terminal, under pressure, slips into hole for rigid, permanent, trouble-f installation. Use tool listed for each particular terminal. Miniature units conservativ rated 4000 volts. Available in colors; designed for color coding.

*Registered DuPont tradema

## SUBMINIATURE STAND-OFFS

| Sealectro Number | Fig. | Tool | Dimensions, Inches | | | | | | Net per Lots of |
|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | F | G | |
| ST-SM-1 | A | B8 | .350 | .210 | .040 | .100 | .172 | .148 | $ 69. |
| ST-SM-1C2 | A | B8 | .410 | .210 | .040 | .160 | .172 | .148 | 70. |
| ST-SM-2C4 | A | B8 | .370 | .210 | .050 | .110 | .172 | .148 | 70. |
| ST-SM-8 | A | B81 | .370 | .210 | .040 | .120 | .172 | .148 | 90. |
| ST-SM-16 | A | B3-1 | .350 | .210 | .040 | .100 | .125 | .093 | 83. |
| ST-SM-19 | A | B8 | .365 | .193 | .040 | .132 | .172 | .148 | 91. |
| RST-SM-1 | C | B8X-1 | .350 | .210 | .040 | .100 | .172 | .148 | 77. |
| RST-SM-16 | C | B3-2X | .350 | .210 | .040 | .100 | .125 | .093 | 81. |
| RST-SM-3 | C | B3B | .250 | .130 | .031 | .089 | .125 | .104 | 122. |
| RST-SM-11 | C | B8G | .350 | .210 | .020 | .120 | .172 | .148 | 130. |
| ST-SM-1 TUR | B | B8 | .350 | .210 | .040 | .100 | .172 | .148 | 77. |
| ST-SM-1 TUR-C2 | B | B8 | .375 | .210 | .040 | .125 | .172 | .148 | 79. |
| ST-SM-4 | B | B16 | .350 | .210 | .040 | .100 | .200 | .179 | 112. |
| ST-MM-10 TUR | B | B3-2C | .310 | .170 | .040 | .100 | .125 | .093 | 136. |
| ST-SM-16 TUR | B | B3-2B | .350 | .210 | .040 | .100 | .125 | .093 | 97. |
| ST-SM-20 TUR | B | B18 | .350 | .210 | .040 | .100 | .218 | .185 | 112. |
| ST-SM-21 TUR | B | B18 | .375 | .210 | .040 | .125 | .218 | .185 | 137. |
| ST-SM-22 TUR | B | B8 | .428 | .210 | .093 | .125 | .172 | .148 | 120. |
| ST-SM-23 TUR | B | B22 | .350 | .210 | .040 | .100 | .250 | .204 | 124. |
| ST-SM-25 TUR | B | B8-A | .334 | .154 | .040 | .140 | .172 | .148 | 108. |
| ST-SM-29 TUR | B | B8-A | .445 | .250 | .040 | .165 | .172 | .148 | 85. |
| ST-SM-29 TUR-C2 | B | B8-A | .540 | .250 | .040 | .250 | .172 | .148 | 136. |
| RST-MM-10 TUR | D | B1-2 | .310 | .170 | .040 | .100 | .125 | .093 | 127. |
| RST-SM-1 TUR | D | B8X1 | .350 | .210 | .040 | .100 | .172 | .148 | 77. |
| RST-SM-20 TUR | D | B18 | .350 | .210 | .040 | .100 | .218 | .185 | 112. |
| RST-SM-21 TUR | D | B18 | .375 | .210 | .040 | .125 | .218 | .185 | 129. |
| RST-SM-25 TUR-C4 | D | B8X1 | .295 | .156 | .040 | .100 | .172 | .148 | 102. |
| RST-SM-31 TUR | D | B8X1 | .455 | .227 | .040 | .187 | .172 | .148 | 136. |
| RST-SM-38 TUR | D | B10 | .405 | .210 | .040 | .155 | .188 | .171 | 122. |
| DST-SM-105 TUR | E | B17 | .640 | .210 | .050 | .170 | .250 | .169 | 216. |

## SUBMINIATURE FEED-THRUS

| Sealectro Number | Fig. | Tool | Dimensions, Inches | | | | | | Net Per Lots of |
|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | F | G | |
| FT-MM-3SL | F | BO-1 | .510 | .100 | .040 | .090 | .093 | .075 | $165. |
| FT-MM-47 TUR-BC | G | BO-A | 1.500 | .210 | .040 | .125 | .093 | .075 | 460. |
| FT-SM-1 | H | B8-16 | .515 | .210 | .040 | .100 | .172 | .148 | 65. |
| FT-SM-2C4 | H | B8-18 | .535 | .210 | .050 | .110 | .172 | .148 | 91. |
| FT-SM-2C6 | H | B8-18 | .410 | .147 | .050 | .110 | .172 | .148 | 112. |
| FT-SM-9L2 | H | B8-16 | .407 | .125 | .040 | .132 | .172 | .148 | 117. |
| FT-SM-8 | H | B8-16 | .535 | .210 | .040 | .120 | .172 | .148 | 122. |
| FT-SM-9 | H | B8-16 | .535 | .210 | .040 | .132 | .172 | .148 | 86. |
| FT-SM-14 | H | B8-16 | .375 | .125 | .040 | .100 | .172 | .148 | 70. |
| FT-SM-16 | H | B3-1 | .515 | .210 | .040 | .100 | .125 | .093 | 79. |
| FT-SM-19 | H | B8-16 | .535 | .210 | .040 | .160 | .172 | .148 | 100. |
| FT-SM-52 | I | B6 | .225 | .125 | .040 | .060 | .150 | .125 | 121. |
| FT-SM-55 | I | B8-4 | .296 | .136 | .060 | .100 | .172 | .148 | 161. |
| FT-SM-59 | I | B3-1 | .225 | .125 | .040 | .060 | .125 | .093 | 130. |
| FT-SM-60 | I | B18-1 | .367 | .207 | .050 | .110 | .218 | .171 | 148. |
| FT-SM-62 | I | B8-13A | .367 | .207 | .050 | .110 | .172 | .148 | 112. |
| FT-SM-71 | J | B8-A | .303 | .133 | .040 | .100 | .172 | .148 | 126. |
| FT-SM-74 | K | B9-1 | .351 | .133 | .093 | .125 | .172 | .148 | 133. |
| FT-SM-1 TUR | L | B8 | .500 | .210 | .040 | .100 | .172 | .148 | 75. |
| FT-SM-1 TUR-C4 | L | B8 | .500 | .210 | .040 | .165 | .172 | .148 | 89. |
| FT-SM-1 TUR-L2 | L | B8 | .438 | .210 | .040 | .100 | .172 | .148 | 101. |
| FT-SM-16 TUR | L | B3-2B | .500 | .210 | .040 | .100 | .125 | .093 | 82. |
| FT-SM-2 TUR | M | B8 | .531 | .210 | .040 | .100 | .172 | .148 | 81. |
| FT-SM-2 TUR-C2 | M | B8 | .531 | .210 | .040 | .125 | .172 | .148 | 80. |
| FT-SM-21 TUR | M | B18 | .531 | .210 | .040 | .125 | .218 | .185 | 86. |
| FT-SM-22 TUR | M | B9 | .609 | .210 | .093 | .125 | .172 | .148 | 84. |
| FT-SM-32 TUR | N | B8 | .350 | .125 | .040 | .100 | .172 | .148 | 65. |
| FT-SM-18 TUR | O | B8 | .443 | .093 | .040 | .100 | .172 | .148 | 131. |
| FT-SM-36 TUR | O | B16 | .500 | .120 | .075 | .125 | .200 | .172 | 169. |
| RFT-SM-1 TUR | P | B8 | .500 | .210 | .040 | .100 | .172 | .148 | 81. |
| RFT-SM-18 TUR | Q | B8 | .443 | .093 | .040 | .100 | .172 | .148 | 159. |
| RFT-SM-32 TUR | Q | B8 | .350 | .125 | .040 | .100 | .172 | .148 | 119. |
| RFT-SM-602 SL | R | B3-6 | .200 | .100 | .020 | .080 | .125 | .093 | 203. |

## MINIATURE FEED-THRUS

| Sealectro Number | Fig. | Tool | Dimensions, Inches | | | | | | Net Per Lots of |
|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | C | D | F | G | |
| FT-310 | DD | B10 | .540 | .133 | .063 | .171 | .187 | .171 | $136. |
| FT-1000 | DD | B13 | .740 | ⅛ | .187 | .212 | 3/16 | .171 | 169. |
| FT-1500 | DD | B12-3 | .865 | ⅛ | .250 | .275 | 3/16 | .171 | 193. |
| FT-2500 | DD | B26 | 1.365 | ⅛ | .500 | .525 | ¼ | .217 | 317. |
| FT-4000 | DD | B26 | 1.965 | ⅛ | .800 | .525 | ¼ | .217 | 450. |
| FT-940D TUR | EE | B19-A | .828 | .281 | .094 | .210 | .218 | .185 | 186. |
| FT-950D TUR | EE | B12 | .828 | .281 | .125 | .200 | .187 | .171 | 173. |
| FT-990D TUR | FF | B9-3 | .836 | .250 | .187 | .165 | .172 | .148 | 174. |
| FT-995D TUR | FF | B9-3 | .836 | .250 | .125 | .230 | .172 | .148 | 196. |
| FT-1000D TUR | FF | B13-3B | .836 | .250 | .187 | .212 | .187 | .171 | 195. |
| FT-1100D TUR | FF | B12-3 | .836 | .250 | .250 | .150 | .187 | .171 | 224. |
| FT-2000D TUR | FF | B13 | 1.337 | .281 | .375 | .400 | .187 | .171 | 256. |
| FT-1550D TUR | GG | B24-A | 1.187 | .281 | .250 | .375 | .250 | .218 | 239. |
| FT-900 SL | HH | B11 | .593 | .203 | .150 | .100 | .187 | .171 | 211. |
| FT-1000 SL | II | B11 | .821 | 13/64 | .187 | .212 | 3/16 | .171 | 205. |
| FT-1000SL-1L | II | B11 | .821 | .203 | .187 | .212 | .187 | .171 | 204. |
| FT-1500 SL | II | BBX3 | .947 | 13/64 | .250 | .275 | 5/16 | .171 | 244. |
| FT-2000 SL | II | B11 | 1.197 | 13/64 | .375 | .400 | 3/16 | .171 | 319. |
| FT-E-12 | JJ | B9-4 | .175 | .050 | .110 | .172 | .148 | .033 | 81. |
| FT-E-15 | JJ | B9-5 | .190 | .050 | ..... | .218 | .185 | .045 | 108. |
| RFT-210 SL | KK | B10 | .586 | .125 | .040 | .140 | .187 | .171 | 214. |

# Sealectro PRESS-FIT® TEFLON* TERMINALS

## MINIATURE STANDOFFS

| ectro nber | Fig. | Tool | Dimensions, Inches A | B | C | D | F | G | Net Per M Lots of 100 |
|---|---|---|---|---|---|---|---|---|---|
| | Z | B3A | .346 | .156 | .103 | .087 | .125 | .104 | $136.30 |
| | Z | B12 | .431 | 5/32 | .125 | .150 | 3/16 | .165 | 144.45 |
| L2 | Z | B12 | .522 | .250 | .125 | .150 | .187 | .165 | 144.05 |
| L3 | Z | B12-2 | .556 | .281 | .125 | .150 | .187 | .165 | 150.65 |
| | Z | B13 | .493 | 5/32 | .187 | .150 | 3/16 | .165 | 157.35 |
| -L2 | Z | B13 | .584 | .250 | .187 | .150 | .187 | .165 | 161.00 |
| | Z | B12-3 | .556 | 5/32 | .250 | .150 | 3/16 | .165 | 150.65 |
| | Z | B13-3B | .831 | 9/32 | .400 | .150 | 3/16 | .165 | 193.55 |
| | Z | B26 | .968 | 9/32 | .500 | .187 | 1/4 | .215 | 225.30 |
| | Z | B26 | 1.268 | 9/32 | .800 | .187 | 1/4 | .215 | 307.15 |
| -L2 | Z | B9-3 | .598 | .250 | .187 | .165 | .172 | .148 | 135.85 |
| -L3 | Z | BB-3B | .681 | .281 | .200 | .200 | .187 | .165 | 143.30 |
| 0 | AA | B13 | .819 | .210 | .187 | .212 | 3/16 | .171 | 205.85 |
| 0 | AA | B24-1 | 1.187 | 9/32 | .250 | .375 | 1/4 | .218 | 286.55 |
| 0 | AA | B26 | 1.687 | 9/32 | .500 | .625 | 1/4 | .218 | 358.45 |
| L | BB | B11 | .478 | 13/64 | .125 | .150 | 3/16 | .171 | 152.50 |
| SL | BB | B11 | .540 | 13/64 | .187 | .150 | 3/16 | .171 | 167.55 |
| -SL-1L | BB | B11 | .540 | .203 | .187 | .150 | .187 | .171 | 167.55 |
| -SL | BB | B11 | .603 | 13/64 | .250 | .150 | 3/16 | .171 | 182.15 |
| -SL | BB | B25 | .890 | 13/64 | .500 | .187 | 1/4 | .217 | 253.80 |
| -SL | BB | B25 | 1.190 | 13/64 | .800 | .187 | 1/4 | .217 | 303.15 |
| | CC | B18-1B | .487 | .154 | .046 | .287 | .218 | .185 | 126.90 |
| 2 | CC | B18-1B | .583 | .250 | .046 | .287 | .218 | .185 | 126.90 |

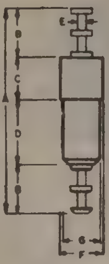
## PROBES AND PLUGS

| ectro nber | Fig. | Tool | Dimensions, Inches A | B | C | D | F | G | Net Per M Lots of 100 |
|---|---|---|---|---|---|---|---|---|---|
| | S | B18-1B | 2.083 | 1/4 | .046 | .287 | .218 | .185 | $192.70 |
| | S | B18-1B | .739 | 9/32 | .046 | .287 | .218 | .185 | 153.70 |
| | S | B18-1B | .739 | .281 | .046 | .287 | .218 | .185 | 151.60 |
| | S | B18-1B | .562 | .250 | .046 | .141 | .218 | .185 | 151.60 |
| | T | B18-1B | .833 | .250 | .046 | .287 | .218 | .185 | 174.00 |
| .2 | T | B18-1B | .682 | .250 | .046 | .141 | .218 | .185 | 188.45 |
| | U | B-6X | .365 | .194 | .046 | .125 | .150 | .120 | 317.30 |
| | V | None | .645 | .270 | .375 | ..... | .218 | ..... | 143.80 |
| | W | B22-X1 | .645 | .270 | .050 | .325 | .250 | .218 | 150.65 |
| | X | B8-14 | .538 | .130 | .046 | .175 | .172 | .148 | 192.95 |
| | Y | B23-1 | 1.531 | ..... | .157 | .375 | .250 | .220 | 225.30 |

## CONNECTORS AND TEST JACKS

| ectro nber | Fig. | Tool | Dimensions, Inches A | B | C | D | F | G | Net Per M Lots of 100 |
|---|---|---|---|---|---|---|---|---|---|
| | LL | S31 | 11/16 | .354 | .046 | .287 | .218 | .185 | $136.30 |
| | LL | S32 | .732 | .188 | .157 | .387 | .250 | .220 | 204.75 |
| C | MM | S2 | 7/16 | .120 | .046 | .271 | .218 | .185 | 200.70 |
| C | MM | S2 | .437 | .120 | .046 | .271 | .250 | .204 | 230.30 |
| C | MM | S2 | 7/16 | .120 | .046 | .271 | .218 | .185 | 177.80 |
| | MM | S1 | 41/64 | .187 | .050 | .400 | .218 | .185 | 200.55 |
| | MM | S7 | 3/8 | .060 | .046 | .269 | .218 | .170 | 270.25 |
| | MM | S5 | .345 | .120 | .046 | .179 | .172 | .148 | 199.30 |
| | MM | S4 | .449 | .120 | .046 | .283 | .142 | .120 | 244.85 |
| | MM | S2 | .467 | .120 | .035 | .047 | .301 | .054 | 178.80 |
| | NN | S17 | .408 | .187 | .046 | .175 | .172 | .148 | 286.70 |
| | OO | S23 | .435 | .105 | .046 | .284 | .218 | .184 | 194.60 |
| PC | PP | S8 | .500 | .250 | .062 | .316 | .250 | .218 | 327.70 |
| PC | QQ | .......... | .500 | .140 | ..... | .378 | .218 | .187 | 423.00 |
| PC | QQ | .......... | .400 | .140 | ..... | .378 | .218 | .187 | 423.00 |
| | RR | S18 | .437 | .156 | .065 | .216 | .250 | .185 | 243.45 |
| 04 | SS | S38 | .637 | ..... | .050 | ..... | .218 | .185 | 193.15 |

red DuPont trademark.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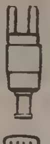
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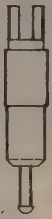
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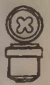
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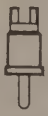
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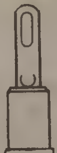
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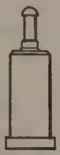
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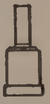
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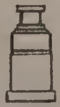
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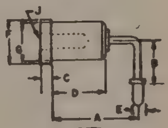
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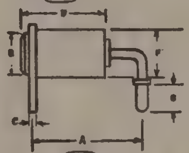
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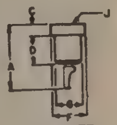
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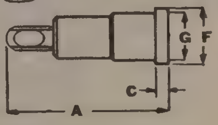
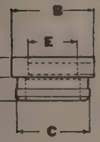
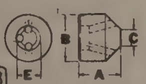

SS

## TRANSISTOR PADS AND HOLDERS

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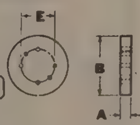
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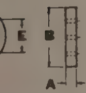

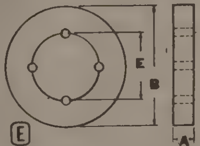
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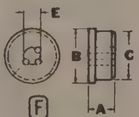
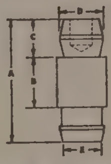
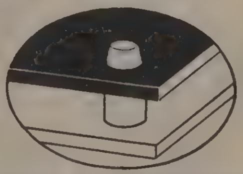

F

| | Fig. | Mtg. Hole | Dimensions, Inches A | B | C | D | E | Net Per M Lots of 100 |
|---|---|---|---|---|---|---|---|---|
| | A | .436 | .260 | .500 | .450 | .070 | .300 | $180.80 |
| | A | .281 | .260 | .320 | .295 | .045 | .183 | 119.80 |
| | A | .436 | .260 | .500 | .450 | .045 | .300 | 158.20 |
| | B | ...... | 1/4 | .281 | 5/32 | ...... | .140 | 194.60 |
| | C | ...... | .062 | .360 | ...... | ...... | .200 | 81.60 |
| | D | ...... | .062 | .360 | ...... | ...... | .200 | 66.45 |
| | E | ...... | .062 | .360 | ...... | ...... | .200 | 66.45 |
| | E | ...... | .060 | .225 | ...... | ...... | .100 | 42.95 |
| | F | ...... | .155 | .325 | .290 | ...... | .100 | 97.20 |
| | F | ...... | .155 | .325 | .290 | ...... | .200 | 97.20 |

## SPACER/BUSHINGS

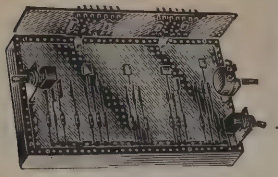


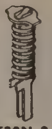


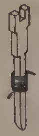
Mount and insulate PC boards on metal chassis or panels without nuts, bolts, or lock washers. Save assembly time while providing an economical and mechanical secure mounting device PC boards require only mating holes for the opposite end of the spacer/bushing and may be snapped on and off of the mother board at will. Mtg. hole .152″ dia. in .062″ thick chassis.

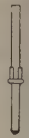
| Sealectro Number | Dimensions, Inches A | B | C | D | E | Net Per M Lots of 100 |
|---|---|---|---|---|---|---|
| 227298 | 1.021 | .750 | .141 | .187 | .150 | $100.35 |
| 227294 | .958 | .687 | .141 | .187 | .150 | 87.00 |
| 227290 | .896 | .625 | .141 | .187 | .150 | 80.90 |
| 227286 | .833 | .562 | .141 | .187 | .150 | 77.75 |
| 227282 | .771 | .500 | .141 | .187 | .150 | 74.80 |
| 227278 | .708 | .437 | .141 | .187 | .150 | 68.70 |
| 227274 | .646 | .375 | .141 | .187 | .150 | 63.50 |
| 227270 | .583 | .312 | .141 | .187 | .150 | 60.35 |
| 227266 | .521 | .250 | .141 | .187 | .150 | 57.40 |
| 227262 | .458 | .187 | .141 | .187 | .150 | 51.30 |
| 227258 | .396 | .125 | .141 | .187 | .150 | 48.15 |

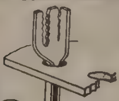
# Vector Terminals and Kits

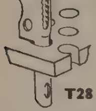

22X Typical Assembly


T30N-2


T44


K24


T9.4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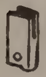
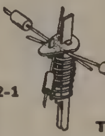
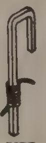

T42-1


T32


K32

## PUSH-IN TERMINALS

Zip push-in terminals push into appropriate size holes and hold without staking (may be staked if required). Use for experimental prototype or production applications. For faster insertion in circuit boards, order insertion tools.

| Vector Number | Fits Hole | Description | Net Pkg. |
|---|---|---|---|
| **T9.4 Pkg. 100** | .093 | Brass brite tin plated | $ 1.44 |
| **T9.4 Pkg. 1000** | .093 | Brass brite tin plated | 10.18 |
| **T28 Pkg. 100** | .062 | Beryl. copper, brite tin plated | 1.61 |
| **T28 Pkg. 1000** | .062 | Beryl. copper, brite tin plated | 11.44 |
| **T28S Pkg. 100** | .062 | Beryl. copper, silver plated | 1.72 |
| **T28S Pkg. 1000** | .062 | Beryl. copper, silver plated | 13.51 |
| **K24A Pkg. 50** | .042 | Phospher bronze, nickel gold plated | 1.44 |
| **K24A Pkg. 1000** | .042 | Phospher bronze, nickel gold plated | 20.59 |
| **K26A Pkg. 50** | .025 | Phospher bronze, nickel gold plated | .92 |
| **K26A Pkg. 1000** | .025 | Phospher bronze, nickel gold plated | 13.16 |
| **K32 Pkg. 100** | * | Phosphor bronze "J" pin | 1.49 |
| **K32 Pkg. 1000** | * | Phosphor bronze "J" pin | 11.50 |
| **T30-2 Pkg. 10** | .093 | Brass nickel, silver plated | 1.03 |
| **T30-2 Pkg. 100** | .093 | Brass nickel, silver plated | 7.70 |
| **T30-2 Pkg. 1000** | .093 | Brass nickel, silver plated | 54.97 |
| **T32 Pkg. 10** | .093 | Brass nickel, silver plated | 1.49 |
| **T32 Pkg. 100** | .093 | Brass nickel, silver plated | 10.89 |
| **T32 Pkg. 1000** | .093 | Brass nickel, silver plated | 80.24 |
| **T32-1 Pkg. 10** | .062 | Brass nickel, silver plated | 1.49 |
| **T32-1 Pkg. 100** | .062 | Brass nickel, silver plated | 10.89 |
| **T32-1 Pkg. 1000** | .062 | Brass nickel, silver plated | 80.24 |
| **T42-1 Pkg. 100** | .042 | Beryl. copper, tintilate plated | 1.82 |
| **T42-1 Pkg. 1000** | .042 | Beryl. copper, tintilate plated | 11.70 |
| **T44 Pkg. 100** | .042 | Phosphor bronze, tintilate plated | 2.96 |
| **T44 Pkg. 1000** | .042 | Phosphor bronze, tintilate plated | 21.48 |
| **A13** | ..... | Insertion tool for T44 type | 1.69 |
| **P91A** | ..... | Insertion tool for T28 type | 1.50 |
| **P92A** | ..... | Insertion tool for T30 type | .50 |
| **P122B** | ..... | Insertion tool for T9.4 type | 1.40 |
| **P136** | ..... | Insertion tool for T32 type | 1.49 |
| **P149** | ..... | Insertion tool for T42 type | 1.49 |

*Fits .025" square or .042" dia. hole.

## PHOTORESIST ETCHED CIRCUIT KITS

Designed to produce one or more sharply detailed etched circuit boards from an easily made master positive, in one hour. Positive artwork is used; no negative to be made, no photography required. Simply apply transfer patterns to Mylar* film for master positive, place on pre-photosensitized Vectorbord and expose to suitable light source. High speed etching with virtually no under-cutting is provided by vigorously shaking board and chemicals in closable plastic box.

*Reg. DuPont TM.

**Vector Kit No. 32XA**—Contains five copper clad, photoresist coated boards; two adhesive-backed artwork sheets with IC and transistor patterns; "rub-on" pattern for pads, lines, tabs; plastic box; etchant; developer; glass plate; 3 sheets Mylar; two sheets grid paper; tools. Net Each Kit .................... **$24.95**

**Vector Kit No. 32X**—Contains two boards; cut and peel sheet; transfer patterns; developer; etchant; touch-up resist; Mylar sheet; developing tray; glass plate. Net Each Kit ....... **$8.95**

## EXPERIMENTERS' ETCHED CIRCUIT KITS

Permits making quick, easy etched circuits without fancy art work, negatives or long waiting. Low cost, uncomplicated preliminary circuits can be made at any desk at a low cost. Contains everything needed, except hot water. Simply sketch the circuit on layout paper grid; apply etch resist on copper-clad board using resist ink or tape; place board in plastic bag; and, add hot water—in 45 minutes the circuit is ready to be washed and used. Board can be cut, drilled or punched as needed.

**Vector Kit No. 27X**—With two XXXP phenolic boards, 4½" x 6½", copper clad on one side—one with .062" holes on 0.2" centers, one unpunched; 1 sheet resist circles; 1 sheet resist tape strips; 2 bags of etchant; resist ink; 3 sheets 8½" x 11" layout paper; and full instructions. Net Each Kit ....... **$6.50**

**Vector Kit No. 27XA**—Similar to 27X, except built around "Vectoresist", rub-on transfer resist. Simply apply resist pattern to board by rubbing back of 10" x 15" sheet having assortment of varying width lines, circles, dots and connector pattern with three groups of 21, 22 and 22 contacts spaced .156" on centers. Boards, etchant same as 27X. Net Each Kit ............ **$6.50**

## EXPERIMENTERS' INTEGRATED CIRCUIT KITS

Designed for fast, easy hookup of nearly all IC packages and discrete components. Mounting surface is a pre-punched Mic Vectorbord with .042" dia. holes on 0.1" grid pattern, support by 2" high extruded aluminum Frame-Loc rails.

**Vector Kit No. 29X**—Includes 4.5" x 13.9" P pattern board an frame plus 14- and 16-pin DIP sockets, TO-5 sockets, transist sockets, flatpack adapter plates, T42-1 ZIP terminals, K2 inboard pins, adapter wafers, "Daisy Chain" patchboards, D extractor tool, P149A terminal insertion tool, bus strips, layo paper, wire, hardware. Net Each Kit ................ **$59.7**

**Vector Kit No. 30X**—Breadboard kit includes 8½" x 4½" pattern board plus bus strips, 100 T42-1 Micro-Klip terminals an P149 installation tool, 50 K32 "J" terminals, two sheets gr layout paper, adhesive to mount DIP sockets, bare and insulat hookup wire. Net Each Kit ...................... **$10.7**

**Vector Kit No. 31X**—Includes 4½" x 17" board with all hardwa in 30X kit plus 50 K24C inboard pins, two B20F pot and swit mounting brackets, screws, lockwashers and nuts, six sheets grid layout paper. Net Each Kit .................. **$17.5**

**Vector Kit No. 30XA**—Includes 8½" x 4½" board, 100 T42 Micro-Klip terminals and tool. Net Each Kit .......... **$4.5**

## EXPERIMENTERS' CHASSIS KITS

Save set-up time on experimental circuitry. Chassis, punch boards and solderless clips for quick set-up of circuits with simp hand tools. Some kits also permit soldering for permanent us

**Vector Kit No. 25X**—Punched phenolic deck 8½" x 17" x ¼" wood frame has .093" holes spaced .265" on grid. Employs T30N spring clip for quick, solderless connection; clip holds up to leads with low contact resistance. With tube and transistor socke See parts list, below, for kit contents. Net Each Kit... **$21.4**

**Vector Kit No. 22X**—Punched phenolic deck 4 13/16" x 8½" x mounted on aluminum channels. Employs T9.4 push-in termin for soldered component connection. Transistor sockets and flexi array of parts supplied (see listing, below) for widest applicatio Net Each Kit .................................. **$11.5**

**Vector Kit No. 22XA**—Professional size version of 22X. Extrud aluminum Frame-Loc chassis, 17" x 8½" x 2"; Vectorbord de with 3/32" holes on .265" centers. Eight transistor sockets, 124 Z push-in terminals, 100 springclips, 18 U-clips, 14 patchcords, e (Contents not listed below). Net Each Kit ........... **$28.0**

**Vector Kit No. 21X**—Same as 22X, but board 4 13/16" x 17" x and with tube sockets. See listing, below, for parts supplied. Net Each Kit .................................. **$16.7**

**Vector Kit No. 20X**—Same as 22X, but supplied with tube socke only. See parts listing, below, for contents. Net Each Kit.. **$6.7**

### KIT PARTS AND REPLACEMENT PRICES

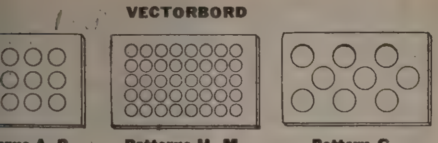
| Vector Number | Description | Qty. in Kit No. 20X | 21X | 22X | 25X | Ne Eac |
|---|---|---|---|---|---|---|
| **32AA18** | 4 13/16"x8½" phen. board | 1 | .... | 1 | .... | $0.8 |
| **64AA18** | 4 13/16"x17" phen. board | .... | 1 | .... | .... | 1.6 |
| **64AA32** | 8½"x17" phen. board | .... | .... | .... | 1 | 2.8 |
| ............ | Random "A" Vectorbords | .... | 2 | 2 | 2 | .... |
| **SR2-85-093** | 8½"x2" chassis rails, pair | 1 | .... | 1 | 1 | 1.9 |
| **SR2-48-093** | Same, 4.8"x2", pair | 1 | 1 | 1 | .... | 1.4 |
| **SR2-170-093** | Same, 17"x2", pair | .... | 1 | .... | 1 | 3.2 |
| **BR50** | Corner bracket for rails | 18 | 18 | 18 | 18 | . |
| **SC4-2** | Self-tap rail screws | 8 | 8 | 8 | 8 | . |
| **RA-2** | Power transistor socket | .... | 2 | 2 | 2 | . |
| **RA4.5** | Univ. transistor socket | .... | 4 | 6 | .... | .2 |
| **RA4.51** | Same, with pigtails | .... | .... | .... | 4 | .6 |
| **R72** | 7-pin min. socket | 3 | 3 | .... | 3 | . |
| **R92** | 9-pin socket | 3 | 3 | .... | 3 | . |
| **R8** | 8-pin socket and saddle | 2 | 2 | .... | 2 | . |
| **T9.62** | Tandem (2) push-in term. | .... | 4 | 2 | 4 | 1. |
| **T9.4** | Push-in solder terminal | 75 | 100 | 75 | 100 | 1.4 |
| **T30N-2** | Push-in solderless term. | 20 | 50 | 20 | 90 | 7.2 |
| **T32A** | Side-entry spring clip | .... | .... | .... | 10 | 10. |
| **T64** | Spring for T30N-2 | .... | 18 | 12 | 18 | . |
| **K6.09** | 9" patch cord | .... | 8 | 6 | 10 | 3. |
| **T57** | .20"x16" punched bus | .... | 3 | .... | 3 | 1.7 |
| **T58** | .20"x8" punched bus | 2 | 3 | .... | .... | 1.1 |
| **•1507/.313** | ¼" O.D. x .313" spacer | 6 | .... | .... | 6 | . |
| **•1513/.500** | Same, .500" lg. | 6 | 6 | .... | 6 | . |
| **•1114/.406** | 5/16" O.D. x 13/32" spacer | .... | 16 | 16 | 16 | . |
| **^07/.750** | 2-56x¾" screws, rd. hd. | 6 | 18 | 15 | .... | . |
| **^01/.250** | 2-56x¼" screws, rd. hd. | 6 | .... | .... | 10 | . |
| **■14/.875** | 2-56x⅞" screws, flat hd. | .... | .... | .... | 24 | . |
| **X09/.313** | #4x5/16" self-tap rd. hd. scr. | 12 | 16 | 15 | 16 | . |
| **X30/.750** | Same, ¾" lg. | 6 | 12 | .... | 12 | . |
| **NT-4-1** | #4 sheet metal nuts | .... | .... | .... | 12 | . |
| **0251-210-01** | 2-56 thd. steel nuts | 12 | 18 | 24 | 36 | 1. |
| **HD2.1** | Term. retainer clip | .... | 10 | 10 | 10 | . |
| **520** | Wafer for 7-pin socket | .... | .... | .... | 3 | . |
| **515** | Wafer for 8-pin socket | .... | .... | .... | 2 | . |
| **516** | Wafer for 9-pin socket | .... | .... | .... | 3 | . |
| **P92A** | Install tool for T30N-2 | 1 | 1 | 1 | 1 | . |
| **P122B** | Same, but for T9.4 term. | .... | 1 | .... | 1 | 1.4 |
| **2323A-20/5** | 50-ft. #20 bare tinned wire | .... | 1 | 1 | 1 | 1. |
| **2323A-20/6** | 20-ft. #20 insul. wire | .... | 1 | 1 | 1 | . |
| **K7** | Thumb pins | .... | 4 | 4 | 10 | 2. |
| **0079-02/5** | Plastic small parts box | 1 | 1 | 1 | 2 | . |
| **R173A-1** | "A" 8½"x17" layout paper | .... | 3 | .... | 3 | 2. |
| **R173A** | Same, 8½"x11" | 3 | .... | 3 | .... | 1. |
| **B20F** | L-type switch, pot. bkts. | .... | 2 | 2 | 2 | . |
| **B20G** | Same, Z-type | .... | .... | 2 | 2 | . |
| **0311-91-19** | Brkt.-to-¼" shaft washers | .... | 4 | 4 | 6 | . |
| **BR2** | 5/16"x21/32" L-bracket | .... | 4 | 2 | 2 | . |
| **BR4** | 5/16"x1 17/64" L-bracket | .... | 4 | 2 | 2 | . |
| **B25** | ½"x⅝"x7/16" Z-bracket | .... | 6 | 4 | 4 | . |
| **R393A-1/-2** | Number/letter transfers | .... | .... | .... | 1 | 2. |

**Package of:** *4; †10; ‡25; §50; #100. **Add Prefix When Orderi** •0865-(e.g., **0865-1507/.313**); ^0111-221-; ■0111-211-; X0111-4

**QUANTITY PRICES AVAILABLE ON REQUEST**

# Vector Boards and Cases

VECTORBORD



## TORBORD® PUNCHED TERMINAL BOARD

e in tan XXXP phenolic (MIL-P-3115B), ivory epoxy MIL-P-22324) or G-10 epoxy glass (MIL-P-18177), with hed holes for breadboards and prototypes. May be sawed, or punched. Copper clad types (2 oz.) may be etched. **"A"**: 0.091" holes on 0.265" centers. **Pattern "F"**: 0.062" 0.200" centers. **Pattern "G"**: 0.062" holes on 0.200" staggered. **Pattern "H"**: 0.062" holes on 0.100" x 0.100" **Pattern "B"**: .062" holes on 0.188" centers.

| No. | Pattern | Size, In. | No. of Holes | Net Each |
|---|---|---|---|---|
| | | **XXXP PHENOLIC** | | |
| | A | 8.51 x 2.41 x 1/16 | 32 x 9 | $0.52 |
| | A | 8.51 x 2.41 x 3/32 | 32 x 9 | .62 |
| | A | 8.51 x 4.80 x 3/32 | 32 x 18 | .87 |
| | F* | 8.51 x 4.5 x 1/16 | 42 x 22 | 1.04 |
| | F† | 8.51 x 4.5 x 1/16 | 42 x 22 | 1.37 |
| | B | 8.51 x 5.69 x 1/16 | 45 x 30 | .87 |
| | B | 16.97 x 5.69 x 1/16 | 90 x 30 | 1.89 |
| | A | 16.99 x 4.80 x 1/16 | 64 x 18 | 1.30 |
| | A | 16.99 x 4.80 x 3/32 | 64 x 18 | 1.66 |
| | A | 16.99 x 8.51 x 3/32 | 64 x 32 | 2.86 |
| | | **EPOXY PAPER** | | |
| EP | A | 8.51 x 4.80 x 3/32 | 32 x 18 | $1.64 |
| EP | A | 16.99 x 4.80 x 3/32 | 64 x 18 | 3.05 |
| EP | A | 16.99 x 8.51 x 3/32 | 64 x 32 | 5.39 |
| ‡ | F | 16.99 x 4.80 x 1/16 | 85 x 23 | 2.28 |
| P | G | 16.99 x 4.80 x 1/16 | 2(85 x 23) | 2.28 |
| P | G | 16.99 x 8.51 x 1/16 | 2(85 x 42) | 3.95 |
| | | **EPOXY GLASS** | | |
| E | A | 8.51 x 4.80 x 1/16 | 32 x 18 | $1.97 |
| EC1 | G* | 8.5 x 4.5 x 1/16 | 2(42 x 22) | 2.65 |
| EC2 | G† | 8.5 x 4.5 x 1/16 | 2(42 x 22) | 2.70 |
| E | G | 8.51 x 4.8 x 1/16 | 2(42 x 23) | 1.97 |
| E | A | 16.99 x 4.80 x 1/16 | 64 x 18 | 3.87 |
| EC1 | F* | 16.99 x 8.51 x 1/16 | 85 x 42 | 7.25 |
| E | G | 16.99 x 4.8 x 1/16 | 2(85 x 23) | 3.96 |

clad, 1 side. †Copper clad, 2 sides. ‡Irregular borders.

## MICRO-VECTORBORD PUNCHED INSULATING BOARD

ched epoxy glass or epoxy paper insulating board in f 1/32" or 1/16" thickness. P pattern is ideal for dual-in-line packages, sockets and other microminiature modules. EP eets MIL-P-22324. Epoxy glass meets MIL-P-18177. C1 ave 2 oz. copper one side; C2 has 2 oz. copper two sides. **"P"**: Has .042" dia. holes on 0.1" grid. **Pattern "M"**: . holes on .05" grid. **Other sizes and thicknesses available est.**

| or ber | Pattern | Size, Inches W. x L. x Th. | No. of Holes | Net Each, Lots of 1-19 | 20-99 | 100-199 |
|---|---|---|---|---|---|---|
| 32 | P | 2 x 6 x 1/32 | 59 x 19 | $ 0.89 | $ 0.80 | $0.75 |
| 32 | P | 4½ x 6 x 1/32 | 59 x 44 | 1.61 | 1.45 | 1.35 |
| 62EP | P | 4½ x 6½ x 1/16 | 64 x 44 | 1.69 | 1.52 | 1.42 |
| 62EP | P | 4½ x 8½ x 1/16 | 84 x 44 | 2.10 | 1.89 | 1.47 |
| 062 | P | 4½ x 17 x 1/16 | 169 x 44 | 4.36 | 3.92 | 3.66 |
| 062EP | P | 4½ x 17 x 1/16 | 169 x 44 | 3.83 | 3.45 | 3.22 |
| 062 | P | 8½ x 17 x 1/16 | 169 x 84 | 7.99 | 7.15 | 6.71 |
| 062C1 | P | 4½ x 17 x 1/16 | 169 x 44 | 5.89 | 5.30 | 4.95 |
| 062C2 | P | 8½ x 17 x 1/16 | 169 x 84 | 11.70 | 10.53 | 9.83 |
| 032 | M | 2 x 4 x 1/32 | 76 x 38 | .89 | .80 | .75 |
| -032C2 | M | 4 x 17 x 1/32 | 336 x 17 | 7.14 | 6.43 | 6.00 |

## BUS STRIP

hed narrow brass tinned strip mounts to prepunched with Zip push-in terminals or screws.

| No. | Length | Description | Net, Pkg. 10 |
|---|---|---|---|
| | 16" | .093" holes spaced .265" | $1.79 |
| | 8" | .093" holes spaced .265" | 1.10 |
| | 17" | .062" holes spaced .2" | 1.21 |
| | 14" | .042" holes spaced .1" | 2.39 |

## FLAT PACK IC ADAPTERS

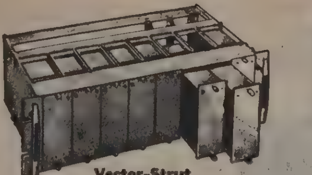
paper wafer (1/16") with copper etched pattern on .05" Provide easy mounting of 14-pin flat pack IC's to P Micro-Vectorbord. Micro-Klip terminals.

| r No. | Description | Net Each |
|---|---|---|
| -14 | Pkg. of four wafers, 1" x 1.6" | $2.10 |
| -14-1 | Single wafer, 4.8" x 4.5"; 12 pads | 3.36 |

## TUBE BASE SHIELDS

unting above socket as base for conventional bayonet type ields. Types **S7.17** and **S9.17** are commercial type. No. nd **S9.22** are military.

**No. S7.17**—7-pin, cadmium iridited steel. Net Each. . **7c**
**No. S7.22**—7-pin, nickel-plated brass. Net Each. . . . **18c**
**o. S9.17**—9-pin, cadmium iridited steel. Net Each. . . . . **5c**
**o. S9.22**—9-pin, nickel-plated brass. Net Each . . . . . . **19c**


Vector-Strut

Multi-Mod

## VECTOR-STRUT CAGES

Adjustable aluminum frames mount in 19" racks and accommodate "EFP" extended front panel cases (listed below).

**Vector No. CA-52-HE-89 Cage Kit**—5¼" high with 9" long sidewalls, cross members (triple T struts) and brackets, plus necessary assembly hardware. Case guides and EFP modules are ordered separately. Net Each . . . . . . . . . . **$19.90**

**Vector No. CMG-7 Guide Kit**—Case guides and hardware to mount eight 2" wide modules in above. Net Each. . . . . **$15.82**

**Vector No. CMG-4 Guide Kit**—Case guides and hardware to mount ten 1.6" wide modules. Net Each. . . . . . . . . **$18.33**

**Vector No. CMA-3-20 Cage**—Completely assembled, for eight 2" wide modules. Consists of CA-52-HE-89 and CMG-7 kits above, assembled. Net Each. . . . . . . . . . **$49.24**

**Vector No. CMA-3-16 Cage**—Completely assembled, for ten 1.6" wide modules. Net Each. . . . . . . . . . **$53.54**

**Vector No. EFP-204-6.6 Module**—Aluminum module case, 2" wide, fits CMA-3-20 cage above (or CA-52-HE-89 with CMG-7 kit). Accepts 4½" x 6½" circuit cards completely inside, in nine extruded grooves. Slide-out side covers for easy access, front and rear panels. Net Each. . . . . . . . . . **$6.07**

**Vector No. EFP-164-6.6 Module**—As above, but 1.6" wide for CMA-3-16 cage; six grooves. Net Each. . . . . . . . . . **$5.90**

**Vector-Strut Cages and EFP modules are available in many other sizes; write for information and prices.**

## MULTI-MOD CASES

Sleek and sturdy aluminum cases have .075" wide slots on .150" centers across case width for screw-free mounting of circuit cards or shielding panels. Easily removable fourth side permits side cover to slide off for quick access. Clear anodized.

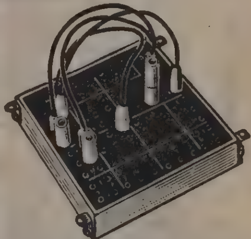
| Vector No. | Size, Inches Width | Length | Height | For Circuit Card Size, In. | Net Each |
|---|---|---|---|---|---|
| W16-31-31 | 1.6 | 3.10 | 3.10 | 2.98 x 2.98 | $2.38 |
| W20-46-31 | 2.0 | 4.61 | 3.10 | 2.98 x 4.50 | 2.81 |
| W20-66-46 | 2.0 | 6.61 | 4.61 | 4.49 x 6.50 | 3.73 |
| W30-66-46 | 3.0 | 6.61 | 4.61 | 4.49 x 6.50 | 4.55 |
| W30-86-46 | 3.0 | 8.61 | 4.61 | 4.49 x 8.50 | 5.01 |
| W30-100-80 | 3.0 | 10.00 | 8.00 | 7.88 x 9.89 | 6.44 |
| W30-140-80 | 3.0 | 14.00 | 8.00 | 7.88 x 13.89 | 7.78 |
| W45-66-46 | 4.5 | 6.61 | 4.61 | 4.49 x 6.50 | 4.74 |
| W45-86-46 | 4.5 | 8.61 | 4.61 | 4.49 x 8.50 | 5.73 |
| W45-100-46 | 4.5 | 10.00 | 4.61 | 4.49 x 9.89 | 6.27 |
| FT-3 | Rubber bumper feet (package of 8) | | | | .40 |

## VECTOR PAK CASES

Extruded aluminum cases designed to accommodate cards and be used as a plug-in unit. Removable base plate is flat .062" stock; may be clotted to pass circuit board plug tips. Sides slide open without removing base. Brushed satin finish.

| Vector No. | Size, Inches | Max. Card Size | Net Each |
|---|---|---|---|
| HF20-46-62/1 | 2 x 4.62 x 6.21 | 4½" x 6" | $4.58 |
| HF20-31-42/1 | 2 x 3.12 x 4.21 | 3" x 4" | 3.89 |
| HF20-31-86/1 | 2 x 3.12 x 8.68 | 3" x 8½" | 5.72 |

## PATCHBOARDS



Simple reliable units for single conductor patching on computers, control and test panels. Contacts are spaced on .265 centers and accept .090 diameter patchcords listed below. Reliable low resistance contacts (under .001 ohms) are beryllium copper nickel-plated and gold flashed with two holes for soldered leads. Solderless slip-on contacts (listed below) permit solderless connections to back. Alpha-numeric numbering supplied as standard on all units with letters running horizontally and numbers vertically, front and back. New aluminum extrusion frames all units for handsome, custom appearance. Panels are black with white letters and numbers. Mounting brackets furnished with all units.

| Vector No. | Description | Net Each |
|---|---|---|
| PB110-2 | 10 Contacts 2.985 x .600 x 1"‡ | $ 4.25 |
| PB210-2 | 20 Contacts 2.985 x .865 x 1"‡ | 4.45 |
| PB510-2 | 50 Contacts 2.985 x 1.660 x 1" | 6.45 |
| PB1010-2 | 100 Contacts 2.985 x 2.985 x 1" | 10.85 |
| PB1020-2 | 200 Contacts 5.635 x 2.985 x 1" | 21.60 |
| PB1520-2 | 300 Contacts 5.635 x 4.310 x 1" | 32.35 |
| K2.02-1 | Jumper (shorting plug) | 3.75* |
| K2.06 | 6" Patchcord, black | 3.04* |
| K2.09 | 9" Patchcord, yellow | 3.08* |
| K2.15 | 15" Patchcord, blue | 3.53* |
| 1723/1 | Solderless slip-on contact | 43.50† |
| K9.06 | 6" Cord, piggy back ea. end, black | .93 |
| K9.09 | 9" Cord, piggy back ea. end, yellow | .93 |
| K9.15 | 15" Cord, piggy back ea. end, blue | .93 |

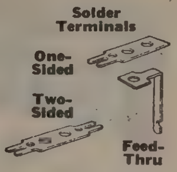
Net per package of: *25; †1000. ‡Two brackets; others four.

**QUANTITY PRICES AVAILABLE ON REQUEST**

# Vernitron BEAU® BARRIER TERMINAL STRIPS

**Open Back**

**Closed Back**



Molded of general purpose phenolic with nickel-plated brass scre and terminals, hot-tinned brass solder terminals. Available in ot styles and ratings, including: Series 10000 (10-amp), Series 13 (20-amp single row), Series 16000 (15-amp with 6-32 x ¼" screw Insulating/Marker Strips are available in vulcanized fiber phenolic. Write or call for prices.

| Series | Rating V rms | Rating Amps | Size, In. W. x H. | Barrier Spacing | Screw Size | Accep Wir |
|---|---|---|---|---|---|---|
| 14000 | 1100 | 15 | ⅞ x 13/32 | ⅜" | 5-40 x ¼" | #22-1 |
| 15000 | 3500 | 15 | ⅞ x 27/64 | ⅜" | 5-40 x ¼" | #22-1 |
| 18000 | 1100 | 20 | 1⅛ x ½ | 7/16" | 6-32 x ¼" | #16-1 |
| 19000 | 3000 | 20 | 1⅛ x 35/64 | 7/16" | 6-32 x ¼" | #16-1 |
| 21000 | 1600 | 30 | 1 5/16 x ⅝ | 9/16" | 8-32 x 5/16" | #14-1 |
| 22000 | 3300 | 30 | 1 5/16 x 21/32 | 9/16" | 8-32 x 5/16" | #14-1 |

## SERIES 14000 15-AMP OPEN BACK (1100 V rms)

Also available as Series 15000 with closed back barrier, rated 3500 V rms; to order, change prefix 14 to **15**; prices the same.

| No. of Sections | Mtg. Centers, In. | Without Terminals Vernitron No. | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | One-Sided Solder Terminals Vernitron No. | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | Feed-Thru Solder Terminals Vernitron No. | Net Each, Lots of 1-49 | 50-99 | 100-249 | 25 49 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ¾ | 14001 | $0.156 | $0.13 | $0.104 | $0.099 | 14101 | $0.186 | $0.155 | $0.124 | $0.118 | 14301 | $0.186 | $0.155 | $0.124 | $0.1 |
| 2 | 1⅛ | 14002 | .174 | .145 | .116 | .11 | 14102 | .216 | .18 | .144 | .137 | 14302 | .222 | .185 | .148 | .1 |
| 3 | 1½ | 14003 | .204 | .17 | .136 | .129 | 14103 | .27 | .225 | .18 | .171 | 14303 | .27 | .225 | .18 | .1 |
| 4 | 1⅞ | 14004 | .252 | .21 | .168 | .16 | 14104 | .366 | .305 | .244 | .232 | 14304 | .354 | .295 | .236 | .2 |
| 5 | 2¼ | 14005 | .312 | .26 | .208 | .198 | 14105 | .45 | .375 | .30 | .285 | 14305 | .438 | .365 | .292 | .2 |
| 6 | 2⅝ | 14006 | .36 | .30 | .24 | .228 | 14106 | .582 | .485 | .388 | .369 | 14306 | .51 | .425 | .34 | .3 |
| 7 | 3 | 14007 | .414 | .345 | .276 | .262 | 14107 | .612 | .51 | .408 | .388 | 14307 | .582 | .485 | .388 | .3 |
| 8 | 3⅜ | 14008 | .474 | .395 | .316 | .30 | 14108 | .696 | .58 | .464 | .441 | 14308 | .666 | .555 | .444 | .4 |
| 9 | 3¾ | 14009 | .522 | .435 | .348 | .331 | 14109 | .78 | .65 | .52 | .494 | 14309 | .75 | .625 | .50 | .4 |
| 10 | 4⅛ | 14010 | .594 | .495 | .396 | .376 | 14110 | .864 | .72 | .576 | .547 | 14310 | .834 | .695 | .556 | .5 |
| 11 | 4½ | 14011 | .63 | .525 | .42 | .399 | 14111 | .93 | .775 | .62 | .589 | 14311 | .90 | .75 | .60 | .5 |
| 12 | 4⅞ | 14012 | .702 | .585 | .468 | .445 | 14112 | 1.02 | .85 | .68 | .646 | 14312 | .984 | .82 | .656 | .6 |
| 13 | 5¼ | 14013 | .744 | .62 | .496 | .471 | 14113 | 1.104 | .92 | .736 | .699 | 14313 | 1.062 | .885 | .708 | .6 |
| 14 | 5⅝ | 14014 | .804 | .67 | .536 | .509 | 14114 | 1.188 | .99 | .792 | .752 | 14314 | 1.14 | .95 | .76 | .7 |
| 15 | 6 | 14015 | .864 | .72 | .576 | .547 | 14115 | 1.272 | 1.06 | .848 | .806 | 14315 | 1.218 | 1.015 | .812 | .7 |
| 16 | 6⅜ | 14016 | .906 | .755 | .604 | .574 | 14116 | 1.35 | 1.125 | .90 | .855 | 14316 | 1.302 | 1.085 | .868 | .8 |
| 17 | 6¾ | 14017 | .972 | .81 | .648 | .616 | 14117 | 1.428 | 1.19 | .952 | .904 | 14317 | 1.374 | 1.145 | .916 | .8 |
| 18 | 7⅛ | 14018 | 1.02 | .85 | .68 | .646 | 14118 | 1.512 | 1.126 | 1.008 | .958 | 14318 | 1.446 | 1.205 | .964 | .9 |
| 19 | 7½ | 14019 | 1.074 | .895 | .716 | .68 | 14119 | 1.59 | 1.325 | 1.06 | 1.007 | 14319 | 1.53 | 1.275 | 1.02 | .9 |
| 20 | 7⅞ | 14020 | 1.134 | .945 | .756 | .718 | 14120 | 1.674 | 1.395 | 1.116 | 1.06 | 14320 | 1.614 | 1.345 | 1.076 | 1.0 |
| 21 | 8¼ | 14021 | 1.20 | 1.00 | .80 | .76 | 14121 | 1.764 | 1.47 | 1.176 | 1.117 | 14321 | 1.692 | 1.41 | 1.128 | 1.0 |
| 22 | 8⅝ | 14022 | 1.248 | 1.04 | .832 | .79 | 14122 | 1.902 | 1.585 | 1.268 | 1.205 | 14322 | 1.812 | 1.51 | 1.208 | 1.1 |
| 23 | 9 | 14023 | 1.302 | 1.085 | .868 | .825 | 14123 | 1.956 | 1.63 | 1.304 | 1.239 | 14323 | 1.872 | 1.56 | 1.248 | 1.1 |
| 24 | 9⅜ | 14024 | 1.362 | 1.135 | .908 | .863 | 14124 | 2.016 | 1.68 | 1.344 | 1.277 | 14324 | 1.932 | 1.61 | 1.288 | 1.2 |
| 25 | 9¾ | 14025 | 1.428 | 1.19 | .952 | .904 | 14125 | 2.082 | 1.735 | 1.388 | 1.319 | 14325 | 1.998 | 1.665 | 1.332 | 1.2 |
| 26 | 10⅛ | 14026 | 1.488 | 1.24 | .992 | .942 | 14126 | 2.148 | 1.79 | 1.432 | 1.36 | 14326 | 2.058 | 1.715 | 1.372 | 1.3 |

## SERIES 18000 20-AMP OPEN BACK (1100 V rms)

Also available as Series 19000 with closed back barrier, rated 3000 V rms; to order, change prefix 18 to **19**; prices the same.

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ⅞ | 18001 | $0.186 | $0.155 | $0.124 | $0.118 | 18101 | $0.222 | $0.185 | $0.148 | $0.141 | 18301 | $0.222 | $0.185 | $0.148 | $0.1 |
| 2 | 1 5/16 | 18002 | .198 | .165 | .132 | .125 | 18102 | .264 | .22 | .176 | .167 | 18302 | .264 | .22 | .176 | .1 |
| 3 | 1¾ | 18003 | .264 | .22 | .176 | .167 | 18103 | .372 | .31 | .248 | .236 | 18303 | .36 | .30 | .24 | .2 |
| 4 | 2 3/16 | 18004 | .336 | .28 | .224 | .213 | 18104 | .474 | .395 | .316 | .30 | 18304 | .462 | .385 | .308 | .2 |
| 5 | 2⅝ | 18005 | .408 | .34 | .272 | .258 | 18105 | .582 | .485 | .388 | .369 | 18305 | .57 | .475 | .38 | .3 |
| 6 | 3 1/16 | 18006 | .468 | .39 | .312 | .296 | 18106 | .678 | .565 | .452 | .429 | 18306 | .66 | .55 | .44 | .4 |
| 7 | 3½ | 18007 | .552 | .46 | .368 | .35 | 18107 | .798 | .665 | .532 | .505 | 18307 | .768 | .64 | .512 | .4 |
| 8 | 3 15/16 | 18008 | .618 | .515 | .412 | .391 | 18108 | .90 | .75 | .60 | .57 | 18308 | .864 | .72 | .576 | .5 |
| 9 | 4⅜ | 18009 | .684 | .57 | .456 | .433 | 18109 | 1.002 | .835 | .668 | .635 | 18309 | .954 | .795 | .636 | .6 |
| 10 | 4 13/16 | 18010 | .762 | .635 | .508 | .483 | 18110 | 1.11 | .925 | .74 | .703 | 18310 | 1.068 | .89 | .712 | .6 |
| 11 | 5¼ | 18011 | .822 | .685 | .548 | .521 | 18111 | 1.218 | 1.015 | .812 | .771 | 18311 | 1.17 | .975 | .78 | .7 |
| 12 | 5 11/16 | 18012 | .888 | .74 | .592 | .562 | 18112 | 1.314 | 1.095 | .876 | .832 | 18312 | 1.266 | 1.055 | .844 | .8 |
| 13 | 6⅛ | 18013 | .96 | .80 | .64 | .608 | 18113 | 1.422 | 1.185 | .948 | .901 | 18313 | 1.38 | 1.15 | .92 | .8 |
| 14 | 6 9/16 | 18014 | 1.032 | .86 | .688 | .654 | 18114 | 1.53 | 1.275 | 1.02 | .969 | 18314 | 1.482 | 1.235 | .988 | .9 |
| 15 | 7 | 18015 | 1.098 | .915 | .732 | .695 | 18115 | 1.632 | 1.36 | 1.088 | 1.034 | 18315 | 1.59 | 1.325 | 1.06 | 1.0 |
| 16 | 7 7/16 | 18016 | 1.182 | .985 | .788 | .749 | 18116 | 1.74 | 1.45 | 1.16 | 1.102 | 18316 | 1.692 | 1.41 | 1.128 | 1.0 |
| 17 | 7⅞ | 18017 | 1.242 | 1.035 | .828 | .787 | 18117 | 1.848 | 1.54 | 1.232 | 1.17 | 18317 | 1.80 | 1.50 | 1.20 | 1.1 |
| 18 | 8 5/16 | 18018 | 1.314 | 1.095 | .876 | .832 | 18118 | 1.95 | 1.625 | 1.30 | 1.235 | 18318 | 1.914 | 1.595 | 1.276 | 1.2 |
| 19 | 8¾ | 18019 | 1.386 | 1.155 | .924 | .878 | 18119 | 2.07 | 1.725 | 1.38 | 1.311 | 18319 | 2.01 | 1.675 | 1.34 | 1.2 |
| 20 | 9 3/16 | 18020 | 1.458 | 1.215 | .972 | .923 | 18120 | 2.166 | 1.805 | 1.444 | 1.372 | 18320 | 2.13 | 1.775 | 1.42 | 1.3 |
| 21 | 9⅝ | 18021 | 1.53 | 1.275 | 1.02 | .969 | 18121 | 2.268 | 1.89 | 1.512 | 1.436 | 18321 | 2.226 | 1.855 | 1.484 | 1.4 |
| 22 | 10 1/16 | 18022 | 1.602 | 1.335 | 1.068 | 1.015 | 18122 | 2.376 | 1.98 | 1.584 | 1.505 | 18322 | 2.334 | 1.945 | 1.556 | 1.4 |
| 23 | 10½ | 18023 | 1.674 | 1.395 | 1.116 | 1.06 | 18123 | 2.472 | 2.06 | 1.648 | 1.566 | 18323 | 2.43 | 2.025 | 1.62 | 1.5 |
| 24 | 10 15/16 | 18024 | 1.728 | 1.44 | 1.152 | 1.094 | 18124 | 2.538 | 2.115 | 1.692 | 1.607 | 18324 | 2.55 | 2.125 | 1.70 | 1.6 |
| 25 | 11⅜ | 18025 | 1.788 | 1.49 | 1.192 | 1.132 | 18125 | 2.598 | 2.165 | 1.732 | 1.645 | 18325 | 2.604 | 2.17 | 1.736 | 1.6 |
| 26 | 11 13/16 | 18026 | 1.854 | 1.545 | 1.236 | 1.174 | 18126 | 2.664 | 2.22 | 1.776 | 1.687 | 18326 | 2.67 | 2.225 | 1.78 | 1.6 |

## SERIES 21000 30-AMP OPEN BACK (1600 V rms)

Also available as Series 22000 with closed back barrier, rated 3300 V rms; to order, change prefix 21 to **22**; prices the same.

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1⅛ | 21001 | $0.216 | $0.18 | $0.144 | $0.137 | 21101 | $0.252 | $0.21 | $0.168 | $0.16 | 21301 | $0.252 | $0.21 | $0.168 | $0.1 |
| 2 | 1 11/16 | 21002 | .234 | .195 | .156 | .148 | 21102 | .318 | .265 | .212 | .201 | 21302 | .318 | .265 | .212 | .2 |
| 3 | 2¼ | 21003 | .318 | .265 | .212 | .201 | 21103 | .438 | .365 | .292 | .277 | 21303 | .438 | .365 | .292 | .2 |
| 4 | 2 13/16 | 21004 | .402 | .335 | .268 | .255 | 21104 | .564 | .47 | .376 | .357 | 21304 | .558 | .465 | .372 | .3 |
| 5 | 3⅜ | 21005 | .486 | .405 | .324 | .308 | 21105 | .69 | .575 | .46 | .437 | 21305 | .684 | .57 | .456 | .4 |
| 6 | 3 15/16 | 21006 | .576 | .48 | .384 | .365 | 21106 | .822 | .685 | .548 | .521 | 21306 | .816 | .68 | .544 | .5 |
| 7 | 4½ | 21007 | .666 | .555 | .444 | .422 | 21107 | .954 | .795 | .636 | .604 | 21307 | .936 | .78 | .624 | .5 |
| 8 | 5 1/16 | 21008 | .75 | .625 | .50 | .475 | 21108 | 1.08 | .90 | .72 | .684 | 21308 | 1.074 | .895 | .716 | .6 |
| 9 | 5⅝ | 21009 | .834 | .695 | .556 | .528 | 21109 | 1.206 | 1.005 | .804 | .764 | 21309 | 1.194 | .995 | .796 | .7 |
| 10 | 6 3/16 | 21010 | .93 | .775 | .62 | .589 | 21110 | 1.344 | 1.12 | .896 | .851 | 21310 | 1.32 | 1.10 | .88 | .8 |
| 11 | 6¾ | 21011 | 1.008 | .84 | .672 | .638 | 21111 | 1.47 | 1.225 | .98 | .931 | 21311 | 1.446 | 1.205 | .964 | .9 |
| 12 | 7 5/16 | 21012 | 1.098 | .915 | .732 | .695 | 21112 | 1.59 | 1.325 | 1.06 | 1.007 | 21312 | 1.572 | 1.31 | 1.048 | .9 |
| 13 | 7⅞ | 21013 | 1.188 | .99 | .792 | .752 | 21113 | 1.728 | 1.44 | 1.152 | 1.094 | 21313 | 1.71 | 1.425 | 1.14 | 1.0 |
| 14 | 8 7/16 | 21014 | 1.278 | 1.065 | .852 | .809 | 21114 | 1.86 | 1.55 | 1.24 | 1.178 | 21314 | 1.836 | 1.53 | 1.224 | 1.1 |
| 15 | 9 | 21015 | 1.368 | 1.14 | .912 | .866 | 21115 | 1.992 | 1.66 | 1.328 | 1.262 | 21315 | 1.968 | 1.64 | 1.312 | 1.2 |
| 16 | 9 9/16 | 21016 | 1.452 | 1.21 | .968 | .92 | 21116 | 2.124 | 1.77 | 1.416 | 1.345 | 21316 | 2.094 | 1.745 | 1.396 | 1.3 |
| 17 | 10⅛ | 21017 | 1.542 | 1.285 | 1.028 | .977 | 21117 | 2.256 | 1.88 | 1.504 | 1.429 | 21317 | 2.22 | 1.85 | 1.48 | 1.4 |
| 18 | 10 11/16 | 21018 | 1.614 | 1.345 | 1.076 | 1.022 | 21118 | 2.352 | 1.96 | 1.568 | 1.49 | 21318 | 2.34 | 1.95 | 1.56 | 1.4 |
| 19 | 11¼ | 21019 | 1.734 | 1.445 | 1.156 | 1.098 | 21119 | 2.532 | 2.11 | 1.688 | 1.604 | 21319 | 2.502 | 2.085 | 1.668 | 1.5 |
| 20 | 11 13/16 | 21020 | 1.824 | 1.52 | 1.216 | 1.155 | 21120 | 2.664 | 2.22 | 1.776 | 1.687 | 21320 | 2.634 | 2.195 | 1.756 | 1.6 |
| 21 | 12⅜ | 21021 | 1.914 | 1.595 | 1.276 | 1.212 | 21121 | 2.796 | 2.33 | 1.864 | 1.771 | 21321 | 2.76 | 2.30 | 1.84 | 1.7 |
| 22 | 12 15/16 | 21022 | 1.998 | 1.665 | 1.332 | 1.265 | 21122 | 2.928 | 2.44 | 1.952 | 1.854 | 21322 | 2.892 | 2.41 | 1.928 | 1.8 |
| 23 | 13½ | 21023 | 2.094 | 1.745 | 1.396 | 1.326 | 21123 | 3.024 | 2.52 | 2.016 | 1.915 | 21323 | 3.006 | 2.505 | 2.004 | 1.9 |
| 24 | 14 1/16 | 21024 | 2.19 | 1.825 | 1.46 | 1.387 | 21124 | 3.12 | 2.60 | 2.08 | 1.976 | 21324 | 3.156 | 2.63 | 2.104 | 1.9 |
| 25 | 14⅝ | 21025 | 2.28 | 1.90 | 1.52 | 1.444 | 21125 | 3.21 | 2.675 | 2.14 | 2.033 | 21325 | 3.288 | 2.74 | 2.192 | 2.0 |
| 26 | 15 3/16 | 21026 | 2.376 | 1.98 | 1.584 | 1.505 | 21126 | 3.306 | 2.755 | 2.204 | 2.094 | 21326 | 3.42 | 2.85 | 2.28 | 2.1 |

*For two-sided solder terminals, change third digit in Vernitron No. from 1 to **2**; prices are the same as one-sided.

# waldom SOLDERLESS TERMINALS

## SOLDERLESS TERMINALS AND CONNECTORS

als are made from the finest materials. Annealed electrolytic copper and electro-tin plated.
ece design internally serrated, strength gussets and chamfered edge.
**TITE®:** Non-insulated terminals make positive connections and save labor—uniformly
connection. UL Recognized.
**KRIMP®:** Has all the advantages of the Krimptite® terminals, plus permanently attached
inyl plastic insulating sleeve. UL Recognized.

### SPADE TONGUE TERMINALS (FIG. A)

| asic Dimensions | | | Krimptite | | | | | Insulkrimp | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stud Size | Width | Stud Clearance | Length | Waldom Type | 100-999 Per C | 1000-4999 Per M | 5000 Up Per M | Length | Waldom Type | 100-999 Per C | 1000-4999 Per M | 5000 Up Per M |
| 3-4 | 1/4" | 7/32" | 5/8" | S-1116 | $2.50 | $17.80 | $13.90 | 13/16" | T-2116 | $5.15 | $38.00 | $29.75 |
| 5-6 | 19/64" | 7/32" | 5/8" | S-1014 | 2.50 | 17.80 | 13.90 | 13/16" | T-2014 | 5.15 | 38.00 | 29.75 |
| 8 | 19/64" | 7/32" | 5/8" | S-1030 | 2.50 | 17.80 | 13.90 | 13/16" | T-2030 | 5.15 | 38.00 | 29.75 |
| 10 | 5/16" | 5/16" | 3/4" | S-1032 | 2.50 | 17.80 | 13.90 | 15/16" | T-2032 | 5.15 | 38.00 | 29.75 |
| 5-6 | 19/64" | 7/32" | 5/8" | S-1015* | 2.65 | 18.75 | 14.70 | 13/16" | T-2015† | 5.15 | 38.00 | 29.75 |
| 8 | 19/64" | 7/32" | 5/8" | S-1033 | 2.65 | 18.75 | 14.70 | 13/16" | T-2033 | 5.15 | 38.00 | 29.75 |
| 10 | 23/64" | 9/32" | 3/4" | S-1016* | 2.65 | 18.75 | 14.70 | 15/16" | T-2016† | 5.15 | 38.00 | 29.75 |
| 10 | 3/8" | 5/16" | 25/32" | S-1017 | 3.65 | 26.05 | 20.40 | 1 3/32" | T-2017 | 6.70 | 49.20 | 38.45 |
| **HOOK TONGUE TERMINALS (FIG. B)** | | | | | | | | | | | | |
| 5-6 | 5/16" | 5/16" | 23/32" | S-1018* | $2.50 | $17.80 | $13.90 | 29/32" | T-2018 | $5.15 | $38.00 | $29.75 |
| 5-6 | 23/64" | 9/32" | 23/32" | S-1038 | 2.65 | 18.75 | 14.70 | 29/32" | T-2038 | 5.15 | 38.00 | 29.75 |
| **FLANGED SPADE TERMINALS (FIG. C)** | | | | | | | | | | | | |
| 5-6 | 19/64" | 7/32" | 5/8" | S-1080* | $2.50 | $17.80 | $13.90 | 13/16" | T-2080† | $5.15 | $38.00 | $29.75 |
| 8 | 19/64" | 7/32" | 5/8" | S-1081 | 2.50 | 17.80 | 13.90 | 13/16" | T-2081 | 5.15 | 38.00 | 29.75 |
| 10 | 3/8" | 1/4" | 23/32" | S-1582 | 2.50 | 17.80 | 13.90 | 29/32" | T-2582 | 5.15 | 38.00 | 29.75 |
| 5-6 | 19/64" | 7/32" | 5/8" | S-1083 | 2.65 | 18.75 | 14.70 | 13/16" | T-2083 | 5.15 | 38.00 | 29.75 |
| 8 | 19/64" | 7/32" | 5/8" | S-1084 | 2.65 | 18.75 | 14.70 | 13/16" | T-2084 | 5.15 | 38.00 | 29.75 |
| 10 | 3/8" | 1/4" | 23/32" | S-1585 | 2.65 | 18.75 | 14.70 | 29/32" | T-2585 | 5.15 | 38.00 | 29.75 |
| **RING TONGUE TERMINALS (FIG. D)** | | | | | | | | | | | | |
| 1-2 | 7/32" | 5/32" | 33/64" | S-1099 | $2.50 | $17.80 | $13.90 | 45/64" | T-2099 | $5.15 | $38.00 | $29.75 |
| 3-4 | 7/32" | 5/32" | 33/64" | S-1047 | 2.50 | 17.80 | 13.90 | 45/64" | T-2047 | 5.15 | 38.00 | 29.75 |
| 5-6 | 9/32" | 1/4" | 41/64" | S-1002* | 2.50 | 17.80 | 13.90 | 53/64" | T-2002† | 5.15 | 38.00 | 29.75 |
| 8 | 5/16" | 5/16" | 23/32" | S-1021 | 2.50 | 17.80 | 13.90 | 29/32" | T-2021 | 5.15 | 38.00 | 29.75 |
| 10 | 5/16" | 5/16" | 23/32" | S-1003* | 2.50 | 17.80 | 13.90 | 29/32" | T-2003† | 5.15 | 38.00 | 29.75 |
| 1/4 | 15/32" | .400" | 57/64" | S-1004 | 3.45 | 24.60 | 19.25 | 1 5/64" | T-2004 | 6.70 | 49.20 | 38.45 |
| 5/16 | 15/32" | .400" | 57/64" | S-1005 | 3.45 | 24.60 | 19.25 | 1 5/64" | T-2005 | 6.70 | 49.20 | 38.45 |
| 3/8 | 9/16" | 9/16" | 1 7/64" | S-1143 | 4.50 | 32.40 | 25.30 | 1 19/64" | T-2143 | 6.70 | 49.20 | 38.45 |
| 3-4 | 1/4" | 7/32" | 19/32" | S-1048 | 2.65 | 18.75 | 14.70 | 25/32" | T-2048 | 5.15 | 38.00 | 29.75 |
| 5-6 | 1/4" | 7/32" | 19/32" | S-1006* | 2.65 | 18.75 | 14.70 | 25/32" | T-2006† | 5.15 | 38.00 | 29.75 |
| 8 | 5/16" | 9/32" | 45/64" | S-1024 | 2.65 | 18.75 | 14.70 | 57/64" | T-2024 | 5.15 | 38.00 | 29.75 |
| 10 | 5/16" | 9/32" | 45/64" | S-1008* | 2.65 | 18.75 | 14.70 | 57/64" | T-2008† | 5.15 | 38.00 | 29.75 |
| 1/4 | 15/32" | .400" | 57/64" | S-1009 | 3.45 | 24.60 | 19.25 | 1 5/64" | T-2009 | 6.70 | 49.20 | 38.45 |
| 5/16" | 15/32" | .400" | 57/64" | S-1041 | 3.45 | 24.60 | 19.25 | 1 5/64" | T-2041 | 6.70 | 49.20 | 38.45 |
| 3/8 | 9/16" | 9/16" | 1 7/64" | S-1147 | 4.50 | 32.40 | 25.30 | 1 19/64" | T-2147 | 6.70 | 49.20 | 38.45 |
| 8 | 3/8" | 5/16" | 3/4" | S-1050 | 3.65 | 26.05 | 20.40 | 1 1/16" | T-2050† | 6.70 | 49.20 | 38.45 |
| 10 | 3/8" | 5/16" | 3/4" | S-1011* | 3.65 | 26.05 | 20.40 | 1 1/16" | T-2011 | 6.70 | 49.20 | 38.45 |
| 1/4 | 17/32" | 13/32" | 59/64" | S-1100 | 4.85 | 34.45 | 26.85 | 1 15/64" | T-2100 | 7.10 | 52.15 | 40.70 |
| 5/16 | 17/32" | 13/32" | 59/64" | S-1101 | 4.85 | 34.45 | 26.85 | 1 15/64" | T-2101 | 7.10 | 52.15 | 40.70 |
| 3/8 | 19/32" | 31/64" | 1 1/32" | S-1013 | 5.30 | 37.90 | 29.60 | 1 11/32" | T-2013 | 7.85 | 57.95 | 45.25 |
| **QUICK DISCONNECTS PUSH-ON TYPES (FIGS. E AND F)** | | | | | | | | | | | | |
| 1/4 Male (Fig. F) | | | 21/32" | S-1089* | $2.90 | $20.65 | $16.10 | 27/32" | T-2089† | $5.30 | $39.05 | $30.55 |
| 1/8 Female (Fig. E) | | | 39/64" | SS-1186 | 2.90 | 20.65 | 16.10 | 31/32" | ST-2186 | 5.30 | 39.05 | 30.55 |
| 3/16 Female (Fig. E) | | | 17/32" | SS-1187 | 2.90 | 20.65 | 16.10 | 47/64" | ST-2187 | 5.30 | 39.05 | 30.55 |
| 1/4 Female (Fig. E) | | | 41/64" | SS-1090 | 2.90 | 20.65 | 16.10 | 27/32" | ST-2090 | 5.30 | 39.05 | 30.55 |
| **BUTT CONNECTORS (FIG. G)** | | | | | | | | | | | | |
| ..................... | | | 9/16" | S-1019* | $2.80 | $19.75 | $15.40 | 15/16" | T-2019† | $6.10 | $44.90 | $35.15 |
| ..................... | | | 9/16" | S-1020 | 2.80 | 19.75 | 15.40 | 15/16" | T-2020 | 6.10 | 44.90 | 35.15 |
| ..................... | | | 9/16" | S-1046 | 4.90 | 35.10 | 27.45 | 1 1/16" | T-2046 | 8.30 | 61.35 | 47.90 |

### NYLON INSULATED CLOSED-END CONNECTORS (FIG. H)

| e | O.D. | Barrel Length | I.D. | Circular Mil Area | Length | Waldom Type | 100-999 Per C | 1000-4999 Per M | 5000 Up Per M |
|---|---|---|---|---|---|---|---|---|---|
| 4 | 5/16" | 11/32" | 1/4" | 600–5,180 | 39/64" | CE-2214 | $4.30 | $30.75 | $24.05 |
| 0 | 7/16" | 3/8" | 3/8" | 2,400–13,000 | 23/32" | CE-1610† | 6.30 | 45.00 | 35.15 |

## TERMINALS FOR USE WITH TERMINAL BLOCKS

minate circuit failures, these terminals are produced to exactly the right shape and width to fit arrier blocks indicated. Provide neat, inline appearance; cannot loosen, turn sideways, arc, and Rectangular tongue types are recommended for greatest reliability. Spade tongue terminals are t to install and remove; flanged spade types offer greater reliability. UL Recognized.

### KRIMPTITE NON-INSULATED TERMINALS

| Waldom Type | | | For Use with Terminal Blocks | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| t. gue I) | Spade Tongue (Fig. A) | Flanged Spade (Fig. C) | Jones Series | Kulka Series | Gen-Pro® Series | Marathon Series | Wire Range | Stud Size | 100-999 Per C | 1000-4999 Per M | 5000 Up Per M |
| 71 | S-1014 | S-1080 | 140 | 600 | 440 | 100 | 22–18 | 5 | $2.50 | $17.80 | $13.90 |
| 74 | S-1015 | S-1083 | | | | | 16–14 | | 2.65 | 18.75 | 14.70 |
| 19 | S-1501 | S-1510 | 141 | 601 | 441 | 200 | 22–18 | 6 | 2.50 | 17.80 | 13.90 |
| 46 | S-1529 | S-1538 | | | | | 16–14 | | 2.65 | 18.75 | 14.70 |
| 26 | S-1507 | S-1516 | 142 | 602 | 442 | 300 | 22–18 | 8 | 2.50 | 17.80 | 13.90 |
| 53 | S-1535 | S-1543 | | | | | 16–14 | | 2.65 | 18.75 | 14.70 |
| **INSULKRIMP VINYL-INSULATED TERMINALS** | | | | | | | | | | | |
| 071 | T-2014 | T-2080 | 140 | 600 | 440 | 100 | 22–18 | 5 | $5.15 | $38.00 | $29.75 |
| 074 | T-2015 | T-2083 | | | | | 16–14 | | 5.15 | 38.00 | 29.75 |
| 519 | T-2501 | T-2510 | 141 | 601 | 441 | 200 | 22–18 | 6 | 5.15 | 38.00 | 29.75 |
| 546 | T-2529 | T-2538 | | | | | 16–14 | | 5.15 | 38.00 | 29.75 |
| 526 | T-2507 | T-2516 | 142 | 602 | 442 | 300 | 22–18 | 8 | 5.15 | 38.00 | 29.75 |
| 553 | T-2535 | T-2543 | | | | | 16–14 | | 5.15 | 38.00 | 29.75 |

### ASSORTMENTS

**tment K-170 (Fig. J)**—Contains 215 Krimptite® (non-insulated) terminals of types indicated terisks (*) in listings above, plus Universal Crimping Tool. Each.......... $10.85

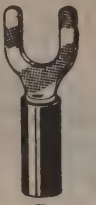
**tment K-180 (Fig. J)**—Contains 138 Insulkrimp® (insulated) terminals of types indi- by daggers (†) in listings above, plus Universal Crimping Tool. Net Each.......... $13.90

### UNIVERSAL CRIMPING TOOL (FIG. K)

ps both insulated and non-insulated terminal wires Nos. 22 through 10. Cuts and strips **CT-4070.** Net Each.......... $5.95

demark: Krimptite and Insulkrimp of Waldom; Gen-Pro of General Products.

**HERE ARE OVER 4000 ITEMS IN THE WALDOM LINE. ASK FOR CATALOG #767.**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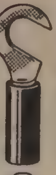
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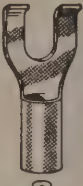
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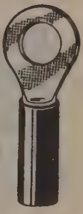
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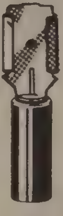
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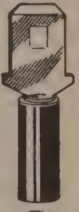
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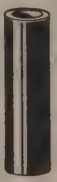
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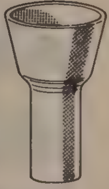
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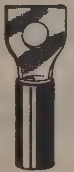
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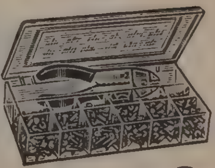
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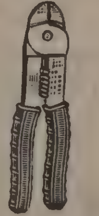
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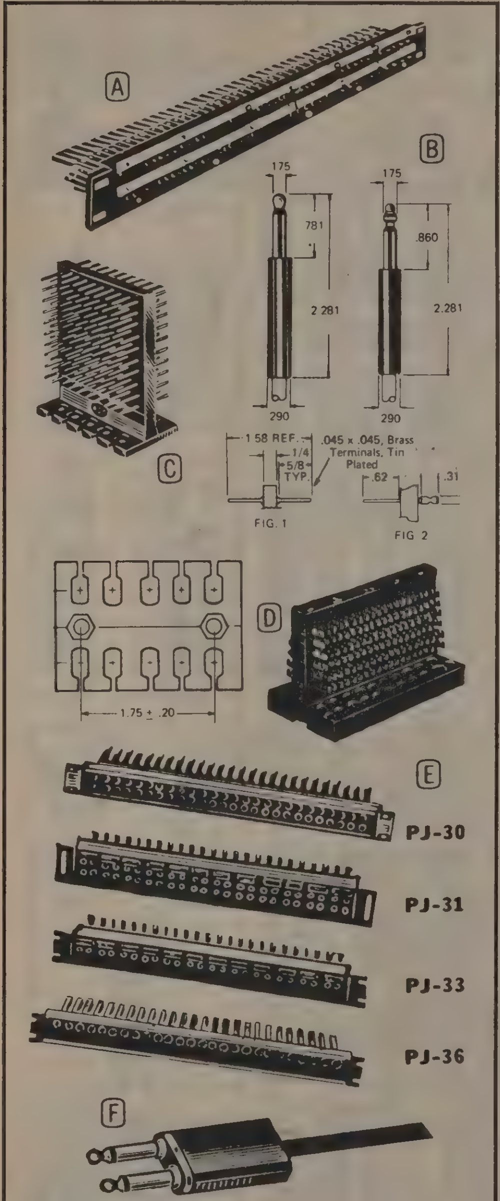
# JACKS, JACK PANELS, PATCH CORDS AND TERMINAL BLOCKS



## BANTAM JACK PANELS (FIG. A)

Compact patch fields for modern communications equipmen Double row panel holds 96 jacks (48 pairs), twice the number o standard size panel. Extruded black anodized aluminum pane 1¾" x 19". Panels with 104 jacks, panel inserts, and special components are available; write for information.

| ADC Type | Description | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-99 |
| PJ-731 | Panel, less jacks | $ 19.20 | $16.00 | $12.80 |
| PJ-739 | Panel with PJ-839 jacks | 116.40 | 97.00 | 77.60 |

## BANTAM PATCH CORDS (FIG. B)

Shielded cables with plastic jackets, molded-on plugs, brass plug components and integral strain reliefs. Double-plug patch cords are also available, with 2 or 3 conductors.

| ADC Type | Con-ductors | Length | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 |
| PJ-701 | 2 | 6" | $3.[illegible]0 | $3.00 | $2.40 |
| PJ-702 | 2 | 12" | 3.66 | 3.05 | 2.44 |
| PJ-704 | 2 | 24" | 3.78 | 3.15 | 2.52 |
| PJ-706 | 2 | 36" | 3.90 | 3.25 | 2.60 |
| PJ-708 | 2 | 48" | 4.02 | 3.35 | 2.68 |
| PJ-711 | 3 | 6" | 4.32 | 3.60 | 2.88 |
| PJ-712 | 3 | 12" | 4.38 | 3.65 | 2.92 |
| PJ-714 | 3 | 24" | 4.50 | 3.75 | 3.00 |
| PJ-716 | 3 | 36" | 4.62 | 3.85 | 3.08 |
| PJ-718 | 3 | 48" | 4.74 | 3.95 | 3.16 |

## "WRAPID" TERMINAL BLOCKS (FIG. C)

For high-density terminations; up to 120 connections in 2¼" x 3¾" space. Wrapped or wrapped and soldered connections. Terminals are electro-tin plated brass; block and fanning strip are black glass-filled nylon. Size, 1¾" w. x 2½" l. at base.

| ADC Type | Term. Style | No. of Term. | Ht. | Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 1-24 | 25-49 | 50-99 |
| PJ-604 | Solder (Fig. 1) | 40 | 1.75" | $3.27 | $2.72 | $2.18 |
| PJ-606 | | 60 | 2.25" | 4.00 | 3.33 | 2.66 |
| PJ-608 | | 80 | 2.75" | 4.80 | 4.00 | 3.20 |
| PJ-610 | | 100 | 3.25" | 5.50 | 4.58 | 3.65 |
| PJ-612 | | 120 | 3.75" | 6.60 | 5.50 | 4.40 |
| PJ-646 | Solder or Solderless (Fig. 2) | 60 | 2.25" | 5.40 | 4.50 | 3.60 |
| PJ-648 | | 80 | 2.75" | 6.35 | 5.30 | 4.10 |
| PJ-650 | | 100 | 3.25" | 6.85 | 5.75 | 4.60 |
| PJ-652 | | 120 | 3.75" | 7.80 | 6.50 | 5.70 |

## MOLDED TERMINAL BLOCKS WITH 20-PIN ROWS (FIG. D)

Molded black thermoplastic with electro-tin plated brass solder terminals in graduated lengths. Base, 3" wide x 6.062" long.

| ADC Type | No. of Term. | Rows | Height | Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 1-9 | 10-24 | 25-99 |
| PJ-103 | 60 | 3 | 2.593" | $ 5.85 | $ 4.88 | $ 3.90 |
| PJ-104 | 80 | 4 | 2.937" | 7.05 | 5.88 | 4.70 |
| PJ-105 | 100 | 5 | 3.281" | 8.25 | 6.88 | 5.50 |
| PJ-106 | 120 | 6 | 3.625" | 9.45 | 7.88 | 6.30 |
| PJ-108 | 160 | 8 | 4.312" | 11.85 | 9.88 | 7.90 |
| PJ-112 | 240 | 12 | 5.593" | 16.65 | 13.88 | 11.10 |

## JACK PANELS (FIG. E)

Steel-reinforced molded phenolic panels fit 19" rack. For use in TV, radio, recording studios and communication centers. Accepts standard double plugs; ⅝" spacing between rows. Type PJ-37 commonly used for "Line", "Equip", "Mon" jack sets. Available less jacks, or with PJ-339 or PJ-318 jacks.

| ADC Type | Panel Style | With Jacks | No. of Jacks | Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 1-9 | 10-24 | 25-99 |
| PJ-30 | Double | None | 52 | $12.90 | $10.75 | $ 8.60 |
| PJ-390 | Double | PJ-339 | 52 | 64.80 | 54.00 | 43.20 |
| PJ-31 | Double* | None | 48 | 9.45 | 7.88 | 6.30 |
| PJ-341 | Double* | PJ-318 | 48 | 42.75 | 35.63 | 26.50 |
| PJ-391 | Double* | PJ-339 | 48 | 57.30 | 47.75 | 38.20 |
| PJ-33 | Single | None | 24 | 8.52 | 7.10 | 5.68 |
| PJ-343 | Single | PJ-318 | 24 | 25.14 | 20.95 | 16.76 |
| PJ-393 | Single | PJ-339 | 24 | 32.40 | 27.00 | 21.60 |
| PJ-36 | Single | None | 26 | 8.70 | 7.25 | 5.80 |
| PJ-396 | Single | PJ-339 | 26 | 35.10 | 29.25 | 23.40 |
| PJ-37 | Triple† | None | 78 | 19.35 | 16.13 | 12.90 |

Panel Height: *2⅛"; †2⅝"; All others, 1¾".

## PATCH CORDS (FIG. F)

Nylon braid jacket, tinsel conductors, molded plug body, thermoplastic insulation and brass components.

### TWO-CONDUCTOR SHIELDED

| ADC Type | Length | With Plugs | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 |
| PJ-11 | 1 ft. | PJ-1 | $6.60 | $5.50 | $4.40 |
| PJ-12 | 2 ft. | PJ-1 | 6.75 | 5.63 | 4.50 |
| PJ-13 | 3 ft. | PJ-1 | 6.90 | 5.75 | 4.60 |
| PJ-14 | 4 ft. | PJ-1 | 7.13 | 5.94 | 4.75 |
| PJ-52 | 2 ft. | PJ-055B | 4.20 | 3.50 | 2.80 |
| PJ-54 | 4 ft. | PJ-055B | 4.86 | 4.05 | 3.24 |
| PJ-56 | 6 ft. | PJ-055B | 5.79 | 4.83 | 3.86 |
| PJ-472 | 2 ft.* | PJ-047R | 5.25 | 4.38 | 3.50 |
| PJ-474 | 4 ft.* | PJ-047R | 5.76 | 4.80 | 3.84 |
| PJ-476 | 6 ft.* | PJ-047R | 6.33 | 5.27 | 4.22 |

### THREE-CONDUCTOR SHIELDED

| ADC Type | Length | With Plugs | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 |
| PJ-72† | 2 ft. | PJ-2 | $ 6.42 | $ 5.35 | $ 4.28 |
| PJ-74† | 4 ft. | PJ-2 | 7.14 | 5.95 | 4.76 |
| PJ-76† | 6 ft. | PJ-2 | 7.98 | 6.65 | 5.32 |
| PJ-81 | 1 ft. | PJ-051R | 5.49 | 4.57 | 3.66 |
| PJ-82 | 2 ft. | PJ-051R | 5.82 | 4.85 | 3.88 |
| PJ-83 | 3 ft. | PJ-051R | 6.15 | 5.12 | 4.10 |
| PJ-84 | 4 ft. | PJ-051R | 6.48 | 5.40 | 4.32 |
| PJ-172 | 2 ft. | PJ-7 | 20.40 | 17.00 | 13.60 |
| PJ-174 | 4 ft. | PJ-7 | 21.60 | 18.00 | 14.40 |
| PJ-176 | 6 ft. | PJ-7 | 22.50 | 18.75 | 15.00 |

*Unshielded. †Cone-shaped tip prevents momentary shorts between tip and ring contacts.

# JACKS, PLUGS, VIDEO PANELS AND PATCH CORDS

## BANTAM JACKS (FIG. G)

niature 2-plug Bantam Jack Panels (on preceding page).
fil-Specs for long frame telephone jacks.

| C e | Con-ductors | Contact Schematic | Stack Ht. | Net Each, Lots of | |
|---|---|---|---|---|---|
| | | | | 1-99 | 100-499 |
| 03 | 2 | Fig. 1 | 13/32" | $0.90 | $0.60 |
| 05 | 3 | Fig. 2 | 43/64" | 1.30 | .85 |
| 18 | 2 | Fig. 3 | 13/32" | .78 | .52 |
| 23 | 2 | Fig. 4 | 27/64" | .66 | .44 |
| 24 | 3 | Fig. 5 | 43/64" | 1.32 | .88 |
| 36 | 2 | Fig. 6 | 5/8" | 1.23 | .82 |
| 38 | 3 | Fig. 7 | 35/64" | .75 | .50 |
| 39 | 3 | Fig. 8 | 17/32" | 1.05 | .70 |

## BANTAM LITES (NOT ILLUS.)

rilliance, half-size line lamps mount in Bantam Jack Panels.
50 mA at 24 V (6 or 12V types available).

| DC ype | Description | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-49 | 50-99 |
| -850 | Lamp socket | $0.84 | $0.70 | $0.56 |
| -862 | Bantam lamp | .66 | .55 | .44 |
| -729* | Lamp cap | .15 | .125 | .10 |

suffix **A** for amber, **G** for green, **R** for red or **W** for white.

## BANTAM 2+1 JACK PANELS (FIG. H)

maximum patching density with 48 three-conductor 2+1
n 19" panel. Solder or wrap terminals.

| DC ype | Jack Type | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-99 |
| -721 | PJ-821 | $210.00 | $175.00 | $140.00 |
| -721W | PJ-821W | 230.40 | 192.00 | 153.60 |

## PLUGS (FIG. I)

| C e | WE-Equiv. | Description | Color | Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 1-24 | 25-49 | 50-99 |
| 1R | WE-310 | 3-conductor | Red | $1.32 | $1.10 | $0.88 |
| 1B | WE-310 | 3-conductor | Black | 1.32 | 1.10 | .88 |
| 5R | None | 2-conductor | Red | .78 | .65 | .52 |
| 5B | None | 2-conductor | Black | .78 | .65 | .52 |
| 7 | WE-327 | Twin, 2-cond. | Black | 2.55 | 2.13 | 1.70 |
| | WE-425 | Twin, 3-cond. | Black | 5.40 | 4.50 | 3.60 |
| | WE-241 | Twin, 2-cond. | Black | 2.55 | 2.13 | 1.70 |

## TELEPHONE JACKS (FIG. J)

ard size jacks for patch panels.

| C e | WE-Equiv. | Con-tacts | Frame Style | Stack Ht. | Net Ea., Lots | |
|---|---|---|---|---|---|---|
| | | | | | 1-99 | 100-499 |
| 23 | 223-A | Fig. 4 | A | 7/16" | $0.60 | $0.40 |
| 03 | 203-A | Fig. 1 | A | 9/16" | .78 | .52 |
| 40 | 240-C | Fig. 2 | C | 3/4" | 1.23 | .82 |
| 41 | 241-A | Fig. 9 | A | 3/4" | 1.02 | .68 |
| 80 | 280-C | Fig. 10 | C | 23/32" | 1.80 | 1.20 |
| 18 | 218-A | Fig. 3 | A | 1/2" | .66 | .44 |
| 36 | 236-C | Fig. 11 | C | 19/32" | 1.14 | .76 |
| 38 | 438-C | Fig. 12 | C | 13/16" | 1.23 | .82 |
| 39 | 239-A | Fig. 8 | A | 9/16" | .92 | .62 |

## TWIN TELEPHONE JACKS (NOT ILLUS.)

| C pe | WE-Equiv. | Accepts Plug Type | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-24 | 25-99 | 100-499 |
| 10 | 410-A | PJ-047, -1, -327 | $2.40 | $2.00 | $1.60 |
| 82 | 482-A | PJ-051 or PJ-7 | 2.70 | 2.25 | 1.70 |
| 82W | ....... | PJ-051 or PJ-7 | 2.80 | 2.34 | 1.87 |

## "WRAPID" JACKS (NOT ILLUS.)

ped solderless terminals.

| ADC Type | Contact Schematic | Frame Drawing | Net Each, Lots of | |
|---|---|---|---|---|
| | | | 1-99 | 100-499 |
| J-238W | Fig. 13 | A | $0.72 | $0.48 |
| J-339W | Fig. 8 | A | 1.05 | .70 |

## COAX PANELS (FIG. K)

igh frequency signal switching (LF, MF, VHF and UHF).

| DC ype | Rows | Coax Jack Type | Net Each, Lots of | |
|---|---|---|---|---|
| | | | 1-4 | 5-9 |
| -1022 | Single | CJ-1000 | $130.00 | $104.00 |
| -1122 | Single | CJ-1100 | 130.00 | 104.00 |
| -1027 | Double | CJ-1000 | 255.00 | 202.00 |
| -1127 | Double | CJ-1100 | 255.00 | 202.00 |

## COAXIAL SINGLE JACKS (FIG. L)

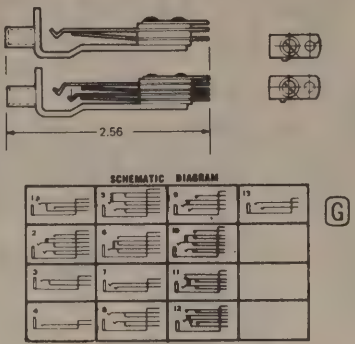
| DC ype | Pin Dia. | Description | Net Each, Lots of | |
|---|---|---|---|---|
| | | | 1-24 | 25-99 |
| 1000 | .090" | For RG-59 cable* | $4.50 | $3.60 |
| 1100 | .078" | For RG-59 cable* | 4.50 | 3.60 |
| 1011 | .090" | BNC conn. on back | 5.00 | 4.00 |
| 1111 | .078" | BNC conn. on back | 5.00 | 4.00 |

WT-412 crimping tool.

## COAXIAL PLUGS (FIG. M)

ia., .090".

| DC ype | Description | Net Ea., Lots | |
|---|---|---|---|
| | | 1-24 | 25-99 |
| -1040 | Terminating plug. 30 pF/75 ohms.<br>Equiv. WE-340C, RCA CC1140 | $4.50 | $3.60 |
| -1042 | Looping plug. Specify 50 or 75 ohm.<br>Equiv. WE-372A, RCA CP1142 | 6.00 | 4.80 |
| -1043 | Looping plug with monitor pins.<br>Equiv. RCA CP-1143 | 7.50 | 6.00 |



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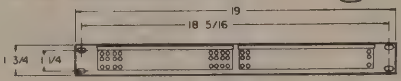
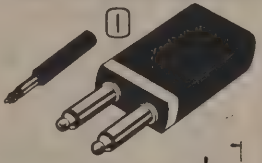
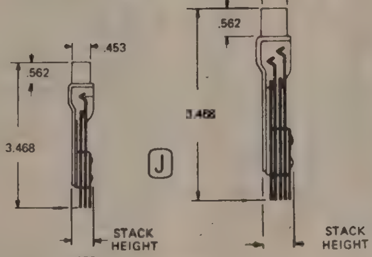
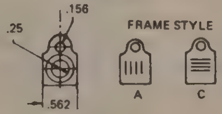
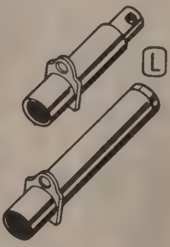
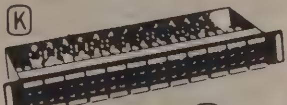


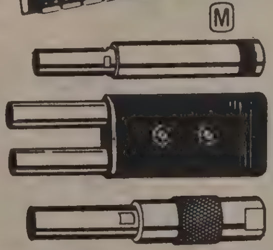


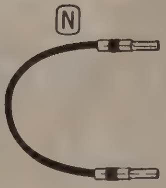












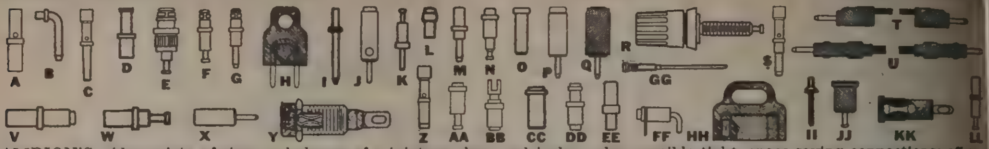
## PATCH CORDS (FIG. N)

| ADC Type | Length | Plug Type | Net Each, Lots of | |
|---|---|---|---|---|
| | | | 1-24 | 25-99 |
| CC-1072 | 12" | CP-1041 | $6.00 | $4.80 |
| CC-1074 | 24" | CP-1041 | 6.25 | 5.00 |
| CC-1076 | 36" | CP-1041 | 6.50 | 5.20 |
| CC-1172 | 12" | CP-1141 | 6.00 | 4.80 |
| CC-1174 | 24" | CP-1141 | 6.25 | 5.00 |
| CC-1176 | 36" | CP-1141 | 6.50 | 5.20 |

CAMBRIDGE THERMIONIC CORPORATION

**CAMBION®**

# MINIATURE PLUG AND JACK CONNECTOR



CAMBION'S wide variety of sizes and shapes of miniature plugs and jacks makes possible tight, space-saving connections; offers r liable "pluggability" for individual components or assemblies and provides unique PC board design possibilities with patching to from boards. Positive grip, with low contact resistance after may repeated insertions and extractions. Insulated or noninsulated typ —units for swaging, dip-soldering, press mount or threaded stud mounting. **To Order:** Use Cambion Type No. (1521); add Dash N from "Recommended Board Thickness" column to indicate board thickness or patch cord length, as the case may be. Final suffix show indicates finish; **03**, Gold; **04**, Electro-Tin; **05**, Electro-solder; **08**, Bright Alloy plating.

| Cambion Type Number | Fig. | Pin Dia. | Description | Recommended Board Thickness per Dash Number | | | | | Net Each, Lots of†† | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1/32 | 1/16 | 3/32 | 1/8 | 3/16 | 10-99 | 100-499 | 500-999 | 1000-2499* |
| 0016-1-03 | A | .062 | Jack for patch cord use; MS-3190 crimp barrel, size 16 | | | | | | $0.41 | $0.32 | $0.29 | $0.26 |
| 1521-1/3-03 | B | .040 | Pin-plug | -1 | -2 | -3 | ....... | ....... | .106 | .106 | .106 | .082 |
| 1781-1-03 | C | .061 | Taper pin | ....... | ....... | ....... | ....... | ....... | .10 | .10 | .10 | .078 |
| 2186-1/6-04 | D | .061 | Taper pin | -1 | -2 | -3 | -4 | -5• | .076 | .076 | .076 | .058 |
| 2265-1/4-03 | E | .080 | Jack-term. | ....... | -1 | -2 | -3 | -4 | .45 | .35 | .32 | .28 |
| 2378-1/5-03 | F | .045 | Jack-term. | -1 | -2 | -3 | -4 | -5 | .45 | .35 | .32 | .28 |
| 2378-1/5-08 | F | .045 | Jack | -1 | -2 | -3 | -4 | -5 | .37 | .28 | .26 | .23 |
| 2650-1/5-03 | G | .045 | Plug-jack | -1 | -2 | -3 | -4 | -5 | .52 | .40 | .37 | .33 |
| 2871-1-03† | H | .040 | Shorting plug; pins on .200" centers | | | | | | .39 | .30 | .28 | .25 |
| 2871-2-03† | H | .040 | Shorting plug; pins on .250" centers | | | | | | .39 | .30 | .28 | .25 |
| 2970-1/3-03 | I | .040 | Pin | -1 | -2 | -3 | ....... | ....... | .057 | .057 | .057 | .044 |
| 2971-1/3-03 | I | .040 | Pin | -1 | -2 | -3 | ....... | ....... | .048 | .048 | .048 | .037 |
| 3078-1-03 | J | .025 | Plug-jack | -1 | -2 | -3 | -4 | ....... | .30 | .23 | .21 | .19 |
| 3202-1/3-03 | K | .025 | Pin | -1 | -2 | -3 | ....... | ....... | .047 | .047 | .047 | .036 |
| 3220-1/4-05 | I | .045 | Pin | -1 | -2 | -3 | -4 | ....... | .035 | .035 | .035 | .027 |
| 3230-1-03 | L | .025 | Jack for .031" to .062" boards | | | | | | .37 | .28 | .26 | .23 |
| 3231-1/3-03 | I | .025 | Pin | -1 | -2 | -3 | ....... | ....... | .069 | .069 | .069 | .053 |
| 3232-1/3-03 | I | .040 | Pin | -1 | -2 | -3 | ....... | ....... | .066 | .066 | .066 | .051 |
| 3233-1/3-03 | I | .040 | Pin | -1 | -2 | -3 | ....... | ....... | .055 | .055 | .055 | .043 |
| 3263-1/4-03 | M | .025 | Plug-jack | -1 | -2 | -3 | -4 | ....... | .43 | .33 | .31 | .27 |
| 3266-1/4-03 | N | .016/.020 | Jack-term. | -1 | -2 | -3 | -4 | ....... | .43 | .33 | .31 | .27 |
| 3268-1-03 | O | .016/.020 | Jack for .031" to .156" boards | | | | | | .37 | .28 | .26 | .23 |
| 3278-1-03 | P | .040/.080 | Plug-jack adapter | | | | | | .24 | .18 | .17 | .15 |
| 3279-1-03 | Q | .040/.080 | Insulated 3278 | | | | | | .41 | .32 | .29 | .26 |
| 3284-1-03* | R | .040 | Insulated binding post with insulated jack | | | | | | 1.30 | 1.00 | .92 | .82 |
| 3285-1-03* | R | .080 | Insulated binding post with insulated jack | | | | | | 1.64 | 1.26 | 1.16 | 1.03 |
| 3286-1-03 | CC | .040 | Jack same as 3388, but with thru-hole | | | | | | .19 | .15 | .13 | .12 |
| 3293-1-03 | L | .025 | Jack same as 3230, but with thru-hole | | | | | | .19 | .15 | .13 | .12 |
| 3299-1/3-03 | S | .080 | Crimp-barrel plug; pin lgth.: -1 (.200") -2 (3/8") -3 (1/2") | | | | | | .138 | .138 | .138 | .107 |
| 3300-1/3-03† | T | .040 | Patch cord | -1 (2") | -2 (4") | -3 (6") | ....... | ....... | .85 | .73 | .64 | .58 |
| 3300-4/5-03† | T | .040 | Patch cord | ....... | ....... | ....... | -4 (8") | -5 (12") | .90 | .77 | .67 | .61 |
| 3301-1-03† | T | .040 | Patch cord—"Piggy-back assembly" | | | | | | .41 | .32 | .29 | .26 |
| 3306-2/3-03† | U | .040 | Patch cord | ....... | -2 (4") | -3 (6") | ....... | ....... | .54 | .46 | .40 | .36 |
| 3306-4/5-03† | U | .040 | Patch cord | ....... | ....... | ....... | -4 (8") | -5 (12") | .60 | .52 | .45 | .41 |
| 3308-1-03 | O | .040 | Pin—I. D. for wire | | | | | | .119 | .119 | .119 | .092 |
| 3309-1/4-03 | V | .025/.040 | Jack-jack | ....... | -1 | -2 | -3 | -4 | .45 | .35 | .32 | .28 |
| 3310-1/5-03 | M | .040 | Plug-jack | -1 | -2 | -3 | -4 | -5 | .43 | .33 | .31 | .27 |
| 3320-1/5-03 | W | .040 | Jack-term. | -1 | -2 | -3 | -4 | -5 | .43 | .33 | .31 | .27 |
| 3324-1/5-03 | W | .062 | Jack-term. | -1 | -2 | -3 | -4 | -5 | .43 | .33 | .31 | .27 |
| 3327-1-03 | X | .025 | Plug-jack adapter—.025 pin/.040 jack dia. | | | | | | .24 | .18 | .17 | .15 |
| 3358-1-03* | Y | .080 | Nylon-insulated jack (MS16108-1C thru -11C) | | | | | | .56 | .43 | .40 | .35 |
| 3359-1-0319 | Y | .080 | Teflon#-insulated jack (MS16108-12C) | | | | | | .56 | .43 | .40 | .35 |
| 3367-1-03 | Z | .040 | Jack for patch cord usage | | | | | | .37 | .28 | .26 | .23 |
| 3368-1-03 | S | .062 | Pin-crimp barrel plug for patch cord use | | | | | | .129 | .129 | .129 | .099 |
| 3375-2/5-03 | AA | .025 | Rivet-type jack-ter. | ....... | ....... | -2 | -3 | ■ | .43 | .33 | .31 | .27 |
| 3378-1-03 | Z | .040 | Jack for patch cord usage with 3367 jack | | | | | | .43 | .33 | .31 | .27 |
| 3379-2/5-03 | BB | .040 | Jack-term. | ....... | -2 | -3 | -4 | -5 | .48 | .37 | .34 | .30 |
| 3381-1-03* | Y | .080 | Nylon-insulated jack (MS16108-1A thru 11A) | | | | | | .56 | .43 | .40 | .35 |
| 3382-1-0319 | Y | .080 | Teflon-insulated jack (MS16108-12A) | | | | | | .56 | .43 | .40 | .35 |
| 3388-1-03 | CC | .040 | Jack for .031" to .156" boards | | | | | | .37 | .28 | .26 | .23 |
| 3389-2/3-03† | T | .025 | Patch cord | ....... | -2 (4") | -3 (6") | ....... | ....... | .85 | .73 | .64 | .58 |
| 3389-4-03† | T | .025 | Patch cord | ....... | ....... | ....... | -4 (8") | ....... | .90 | .77 | .67 | .61 |
| 3390-1-03 | B | .025 | Plug-jack patch cord assembly with 3078 plug-jack | | | | | | .34 | .26 | .24 | .21 |
| 3391-2/3-03† | T | .080 | Patch cord | ....... | -2 (4") | -3 (6") | ....... | ....... | 1.70 | 1.45 | 1.27 | 1.15 |
| 3391-4/5-03† | T | .080 | Patch cord | ....... | ....... | ....... | -4 (8") | -5 (12") | 1.72 | 1.48 | 1.29 | 1.17 |
| 3392-1/4-03 | DD | .040 | Jack-jack | ....... | -1 | -2 | -3 | -4 | .48 | .37 | .34 | .30 |
| 3393-1/4-03 | I | .025 | Pin | -1 | -2 | -3 | -4 | ....... | .042 | .042 | .042 | .032 |
| 3394-1/4-03 | EE | .025 | Jack | -1 | -2 | -3 | -4 | ....... | .37 | .28 | .26 | .23 |
| 3398-1-03 | CC | .080 | Jack for .031" to .250" boards | | | | | | .43 | .33 | .31 | .27 |
| 3422-1-03 | FF | .040 | Side mount jack for boards to .078" max. | | | | | | .45 | .35 | .32 | .28 |
| 3703-1-03 | CC | .025 | Jack for .031" to .094" boards | | | | | | .19 | .15 | .13 | .12 |
| 3704-1-03 | CC | .040 | Jack for .031" to .156" boards | | | | | | .19 | .15 | .13 | .12 |
| 3705-1/3-03† | T | .040 | Molded patch cord | -1 (2") | -2 (4") | -3 (6") | ....... | ....... | .93 | .80 | .70 | .63 |
| 3705-4/5-03† | T | .040 | Molded patch cord | ....... | ....... | ....... | -4 (8") | -5 (12") | 1.02 | .87 | .76 | .69 |
| 3745-1-03 | GG | .022 rd. | Jack/Wire Wrap▲ term. for .062" to .188" boards | | | | | | .32 | .25 | .23 | .20 |
| 3750-1-03 | O | .022 flat | Jack for .031" to .188" boards | | | | | | .19 | .15 | .13 | .12 |
| 3771-1-03† | H | .040 | Shorting plug; pins on .400" centers | | | | | | .43 | .33 | .31 | .27 |
| 3771-2-03† | H | .040 | Shorting plug; pins on .500" centers | | | | | | .43 | .33 | .31 | .27 |
| 3772-1/2-03 | O | .016/.020 | Jack for .031" to .188" boards; -2 has thru-hole | | | | | | .19 | .15 | .13 | .12 |
| 3775-1-03† | HH | .040 | Shorting jack; jack pins on .200" centers | | | | | | .68 | .52 | .48 | .43 |
| 3776-1-03† | HH | .040 | Shorting jack; jack pins on .400" centers | | | | | | .76 | .59 | .54 | .48 |
| 3844-1-03 | GG | .018 flat | Jack/Wire Wrap term. for .062" to .188" boards | | | | | | .32 | .25 | .23 | .20 |
| 3888-1-03 | FF | .080 | Side mount jack for .125" max. board thickness | | | | | | .78 | .60 | .55 | .49 |
| 3889-1-03 | II | .025 | Pin for 1/32" board thickness | | | | | | .053 | .053 | .053 | .041 |
| 4351-1-03§ | JJ | .045 | Teflon-insulated jack for .031" to .094" boards | | | | | | .67 | .52 | .48 | .42 |
| 4352-1-03§ | JJ | .040 | Teflon-insulated jack for .031" to .094" boards | | | | | | .37 | .28 | .26 | .23 |
| 4353-1-03§ | JJ | .040 | Teflon-insulated jack for .031" to .094" boards | | | | | | .37 | .28 | .26 | .23 |
| 4354-1-03§ | KK | .080 | Teflon-insulated jack for .031" to .125" boards | | | | | | .48 | .37 | .34 | .30 |
| 4355-1-03§ | KK | .080 | Teflon insulated jack for .031" to .125" boards | | | | | | .26 | .20 | .18 | .16 |
| 7004-1-03 | O | .030 | Jack for .031" to .188" boards | | | | | | .37 | .28 | .26 | .23 |
| 7005-1/5-03 | LL | .030 | Jack | -1 | -2 | -3 | -4 | -5 | .43 | .33 | .31 | .27 |

*Available with black (suffix **10**) or red (suffix **12**) insulation. †Available with black (suffix **10**), red (suffix **12**) or blue (suffix **16**) wir insulation. §Available with black (suffix **10**), red (suffix **12**) or white (suffix **19**) insulation. #Reg. DuPont TM. •Use **-6** for 1/4" bd. thick ness. ■Order **-4** for 5/32" bd. thickness, **-5** for 7/32" bd. thickness. ▲Reg. Gardner-Denver TM. ††Minimum standard package (plugs and jacks is 100 pieces. ***Larger Quantity Prices on Request. SEND FOR CAMBION CATALOG FOR DATA ON ALL PRODUCTS.**

# Jacks, Plugs and Clips

## SPADE LUGS, ALLIGATOR AND BATTERY CLIPS

| 33- Black | Fig. | Description | Net Price Each | Net Price 100* |
|---|---|---|---|---|
| 302 | A | Spade lug with molded plastic handle; fits #10 screws; use wire with banana plug or soldered directly | $0.17 | $14.00 |
| 312 | B | Alligator clip with plastic handle for banana plug or wire; jaws $\frac{3}{8}$" open; cadmium plated steel | .13 | 10.50 |
| 316 | B | Same, but with 6-32 screw or solder connection of wire | .14 | 11.67 |
| 320 | B | Same, but of solid copper; 6-32 screw or solder connection | .20 | 16.67 |
| 324 | B | Same as No. 33-310 but with extra long insulated handle | .15 | 12.50 |
| 326 | C | Alligator clip adapter takes banana plug in molded plastic | .29 | 24.00 |
| 328 | C | Same, but takes tip plug in plastic handle | .65 | 53.33 |
| 332 | B | Same, but takes either tip or banana plug in handle | .60 | 50.05 |
| 336 | D | Similar, but adapts std. tip plug to alligator clip | .51 | 42.35 |
| ...... | E | Mini-gator clip is extra small; solder connection; copper | .10 | 8.33 |
| ...... | E | Same, but cadmium plated steel | .07 | 6.18 |
| ...... | F | Metal alligator clip; $\frac{3}{8}$" opening; takes banana plug or wire soldered directly; cadmium plated steel | .09 | 7.12 |
| ...... | F | Same, but with 6-32 binding head screw | .11 | 9.17 |
| ...... | F | Same as No. 33-348 but all-copper | .16 | 13.33 |
| 362 | G | Flexible molded vinyl insulator fits over most allig. clips | .06 | 4.80 |
| ...... | H | Battery connecting, testing clip rated 5 A; $\frac{1}{2}$" jaw spread | .11 | 9.17 |
| ...... | H | Same, but rated 10 amps; $\frac{9}{16}$" jaw spread | .14 | 11.67 |

## PHONE PLUGS

| 33- Black | Fig. | Description | Net Price Each | Net Price 100* |
|---|---|---|---|---|
| 600 | I | Standard 2-conductor; screw terminals and plastic handle | $0.62 | $50.98 |
| ...... | J | Same, but metal, shielded handle | .86 | 70.81 |
| 606 | .... | 2-cond. standard with grounding terminal clamp | .58 | 48.15 |
| ...... | .... | Same, but metal, shielded handle | .82 | 67.97 |
| 612-2 | .... | 2-conductor standard with solder lugs; plastic handle | .51 | 42.48 |
| ...... | K | Stubby 2-conductor; metal handle; solder lugs | .65 | 53.81 |
| ...... | J | Standard metal 2-cond. shielded; solder lugs | 1.03 | 84.96 |
| 618 | .... | 2-conductor per PJ-055B; solder and screw connection | 1.03 | 84.96 |
| ...... | L | Special short barrel 2-cond. for mike or phone pickup to Revere/Wollensak tape recorders | 1.06 | 87.83 |
| 622 | N | Std. 2-conductor; $1\frac{1}{2}$" l. x $\frac{11}{16}$" plastic handle; screw term. | .65 | 53.81 |
| ...... | N | Same, but with 1" l. metal shielded handle | .82 | 67.96 |
| ...... | M | Same, but with $2\frac{1}{16}$" long metal shielded handle | 1.03 | 84.96 |
| 630-2 | .... | Clamp and solder lug, plastic handle 2-cond. jack .206" dia. | .62 | 50.98 |
| ...... | J | Same, but metal handle | .82 | 67.96 |
| 640-2 | O | 3-cond. std. with clamp and solder lug; plastic handle | .86 | 70.81 |
| ...... | P | Same, but with metal handle | 1.06 | 87.80 |
| 644 | O | Std. 3-cond. with plastic handle; screw terminals | .96 | 79.30 |
| ...... | P | Same, but with metal handle | 1.13 | 93.46 |
| ...... | N | Same, but 1" l. x $\frac{11}{16}$" O.D. handle for large dia. cables; metal handle has room for wired-in resistors or capacitors | 1.10 | 90.63 |
| 654 | .... | Solder, screw term. 3-cond. to meet PJ-068B requirements | 2.46 | 203.24 |
| ...... | J | Min. 2-cond. for hearing aids, etc.; tested 500 V breakdown; $1\frac{3}{8}$" l. x $\frac{9}{32}$" O.D.; metal, shielded handle; combination clamp and solder terminals | .79 | 65.13 |
| 662 | .... | Same, but with plastic handle | .58 | 48.15 |
| ...... | J | Same as 660, but combination clamp and screw terminals | .82 | 67.96 |
| 668 | .... | Same, but with plastic handle | .62 | 50.98 |

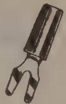
## PHONE JACKS

| 33- Black | Fig. | Description | Net Price Each | Net Price 100* |
|---|---|---|---|---|
| ...... | Q | Panel mounting, 2-conductor, open circuit jack | $0.34 | $28.32 |
| ...... | Q | Same, but closed circuit | .38 | 31.15 |
| ...... | Q | Same as 33-690 but meets JJ-034 requirements | .51 | 42.48 |
| ...... | Q | Open circuit 2-cond.; .210" I.D. sleeve for 33-630/2 plugs | .38 | 31.15 |
| ...... | Q | Closed circuit version of 33-700 | .45 | 36.82 |
| ...... | R | Panel mounting, 3-conductor, open circuit jack | .45 | 36.82 |
| ...... | R | Same, but closed circuit | .67 | 55.00 |
| ...... | R | Same as 33-708, but meets JJ-033 requirements | .72 | 59.13 |
| ...... | S | Miniature, open circuit, panel mount 2-conductor jack; mates with Nos. 33-660 through 33-670 plugs | .34 | 28.32 |
| ...... | S | Same, but closed circuit | .38 | 31.15 |
| ...... | T | Cord mounted, inline 2-cond. open circuit jack; solder lugs | 1.13 | 93.46 |
| 732 | .... | Same, but with plastic handle | .82 | 67.96 |
| ...... | T | Same as 33-730, but with screw terminals | 1.23 | 101.96 |
| 736 | .... | Black plastic handle version of 33-734 | .93 | 76.47 |
| ...... | T | Cord mounted, 3-cond. open circuit jack; solder lugs | 1.44 | 118.95 |
| ...... | T | Same, but with screw terminals | 1.58 | 130.28 |
| ...... | U | Miniature, inline cord type; with solder lugs; mates with 33-660 thru 33-670 plugs; metal handle | .96 | 79.30 |
| ...... | V | 3-conductor, single closed circuit, long frame panel mount jack | .86 | 70.83 |

## PHONO PIN PLUGS AND JACKS

| 33- Black | Fig. | Description | Net Price Each | Net Price 100* |
|---|---|---|---|---|
| ...... | AA | Solder type phono plug | $0.07 | $ 5.67 |
| ...... | BB | Combination clamp, solder type plug with removable metal handle | .34 | 28.32 |
| ...... | CC | Cord mounted jack with combination clamp and solder terminal; removable metal handle | .45 | 36.82 |
| 778 | DD | Solderless, right-angle plug; plastic shell; screw ass'y | .28 | 23.32 |
| ...... | DD | Same, but gray color | .28 | 23.32 |
| ...... | DD | Same, but yellow color | .28 | 23.32 |
| ...... | DD | Same, but blue color | .28 | 23.32 |
| ...... | EE | Single-hole mount phono jack; with nut and washer | .25 | 20.67 |
| ...... | FF | 2-hole rivet or screw mt. jack; oval metal plate | .09 | 7.33 |
| ...... | GG | Same, but round mounting plate | .10 | 8.50 |
| ...... | HH | Double phono pin jack $1\frac{1}{2}$" x 1"; four mtg. holes | .15 | 12.00 |
| ...... | .... | Triple phono pin jack $1\frac{15}{16}$" x 1"; 4 mtg. holes | .18 | 15.00 |
| ...... | II | Single hole panel mt. phono jack fits $\frac{9}{32}$" hole; with nut, washer and solder lug for ground | .24 | 19.83 |

netal (uncolored). †Available in bulk (100) pack only. *To order, add suffix BU to
er shown (example 33-300**BU**); price applies to quantities up to 499 pieces; for 500–999
, subtract 20% from price shown.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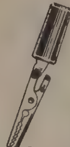
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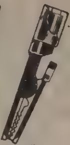
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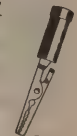
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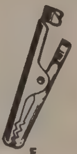
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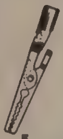
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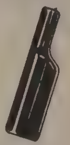
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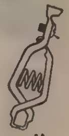
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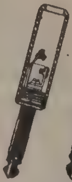
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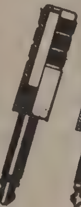
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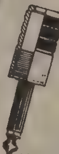
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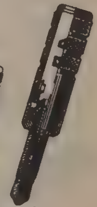
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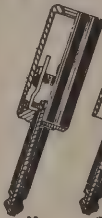
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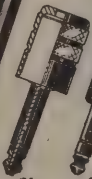
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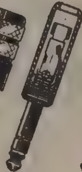
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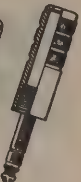
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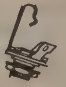
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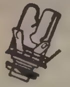
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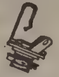
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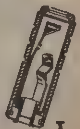
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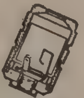
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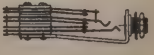
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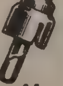
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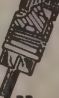
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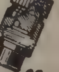
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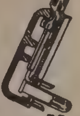
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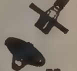
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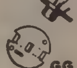
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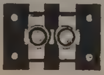
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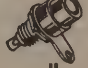
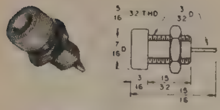

II

# BANANA JACKS AND PLUGS, PATCHCORD STACKING PLUG



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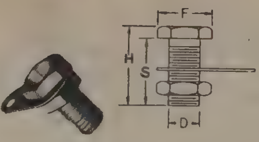

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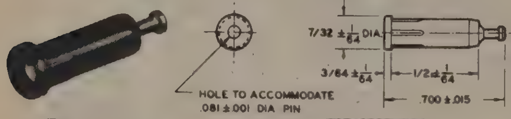

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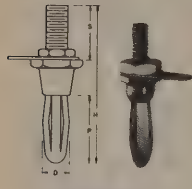
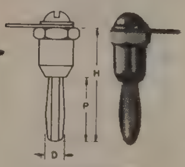


108-0750-001,
108-0750-002



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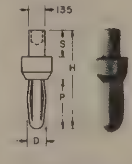

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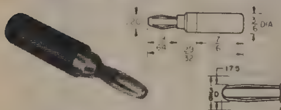
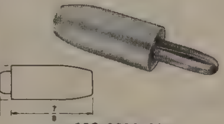
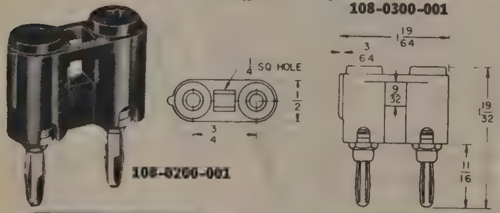


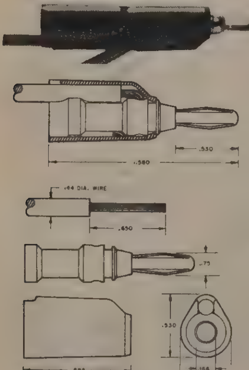
108-1000-001



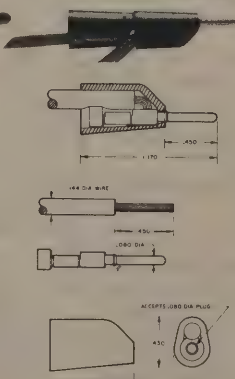
108-0300-001



108-0200-001



108-1080-001



105-1200-001

Engineering Kit

## BANANA JACKS

Completely insulated molded body with cadmium-plated ins Accommodates banana plugs of nominal .175″ dia. **Voltage Bre down:** 10,000 VDC. Capacity to 1/16″ panel, 2.4 pF nom. Mou in 21/64″ diameter circular, "D" or double flat hole (1/4″ across flat Single nut furnished for mounting, no other mounting hardwa needed. See Color Chart* on adjacent page.

**Johnson No. 108-0900-001**—Net Each........................1

## STANDARD BANANA JACKS

High quality, machined brass banana jack. Nickel-plated, f nished complete with solder terminal and nut.

| Johnson No. | Dimensions, Inches | | | | Hole Dia. | Thread | Net Eac |
|---|---|---|---|---|---|---|---|
| | F | D | S | H | | | |
| 108-0740-001 | 3/8 | 1/4 | 17/32 | 5/8 | .166″ | 1/4″-28 | 18 |

## RIB-LOC® PRESS-IN BANANA JACKS

Johnson RIB-LOC design permits substantial production li savings as no mounting hardware to handle and assemble. Installa tion by pressing into proper size chassis hole. Accept .120″ tip pl in recessed contact. Silver-plated brass contact. Brass solder te minal silver-plated and iridited for good solderability. Insulati body molded of low-loss polyamide. **Current Rating:** 10 amp **Peak Withstanding Voltage:** 5000. Capacity to 1/8″ panel: 1.4 p nom. Available in six colors, see Color Chart* on adjacent pag

**Johnson No. 108-1100-001**—Net Each........................11

## STANDARD BANANA PLUGS

Accurately machined brass studs extend the full length of plu providing extra strength. Nickel-silver springs are highly resista to corrosion. Bodies and hardware .0001″ nickel-plated. All banan plugs are available with beryllium copper springs and nick cadmium or silver plating. Wide selection of miniature solde type plugs is also available on special order. Quantities in speci platings or plugs should be sufficiently large for economic production runs. Solder terminal and nut or screw furnishe

| Johnson No. | Dimensions, Inches | | | | Thread | Net Each |
|---|---|---|---|---|---|---|
| | S | P | D | H | | |
| 108-0750-001 | 3/8 | 17/32 | .175 | 1 1/8 | 6-32 | 23¢ |
| 108-0750-002 | 3/4 | 17/32 | .175 | 1 1/2 | 6-32 | 24¢ |
| 108-0753-001 | ...... | 17/32 | .175 | 15/16 | 6-32 | 24¢ |

Similar to standard types listed above, except designed for rive ing. Springs are beryllium copper with cadmium plating.

| | | | | | | |
|---|---|---|---|---|---|---|
| 108-0754-001 | 7/32 | 13/32 | .155 | 13/16 | ........ | 15¢ |

## MINIATURE BANANA PLUGS

Extremely small insulated banana plugs with precision machine phosphor bronze body, nickel-plated. One-piece springs are bery lium copper, nickel-plated, .120″ dia. Polyamide sleeve. **Curren Rating:** 5 amps. Available in 6 colors, see Color Chart* on adjacen page.

**Johnson No. 108-1000-001**—Net Each........................36

## SOLDERLESS BANANA PLUGS

Compact, high voltage insulated plug for a wide variety of appl cations. Designed for fast, solderless connection of up to 16 gaug standard wire. Body and pin are made of one piece nickel-plate brass with high grade nickel-silver springs. Molded sleeve. **Curren Rating:** 15 amps. See Color Chart* on adjacent page.

**Johnson No. 108-0300-001**—Net Each........................25

## DUAL BANANA PLUGS

Extremely versatile plug for either solderless or set screw conne tion. Molded body incorporates polarity indication and strai relief hole for wire leads. Nickel-plated body and high qualit nickel-silver springs. Accurately machined brass studs extend fu length of pins for extra strength. **Voltage Breakdown:** 10,000 VD **Current Rating:** 15 amps. Capacity plug to plug, 1.3 pF. Se Color Chart* on adjacent page.

**Johnson No. 108-0200-001**—Solderless. Net Each.........75

**Johnson No. 108-0250-001**—With set screws. Net Each....85

## PATCHCORD STACKING PLUGS

Developed for custom patchboard assembly and replacement damaged molded patchboard plugs. Assembly of patchcords wit any length and color. Used with standard 0.144″ diameter rubbe or extra-flexible polyvinyl insulated wire. Plug body precisio machined brass with 0.0002″ nickel plating. Polyamide housin available in six colors. Operating temperature range, −55° C t +105° C.

### STACKING STANDARD BANANA PLUGS

Current rating, 15 amps. Assembly with impact punch and fixtu is recommended. Available in 6 colors, see Color Chart* o adjacent page.

**Johnson No. 108-1080-001**—Net Each........................37

### STACKING .080″ STANDARD TIP PLUGS

Current rating, 10 amps. Available in 6 colors, see Color Chart on adjacent page.

**Johnson No. 105-1200-001**—Net Each........................43

### ASSEMBLY PROCEDURE

First feed stripped wire through cross hole of metal contact, the insert contact and wire into housing. Finally place into fixture place tip of tool into rear of contact and snap contact into place

### ENGINEERING KITS

Contain material to assemble 30 patchcords in six colors.

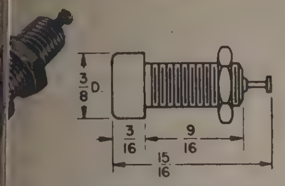
**Johnson Standard Banana Patchcord Stacking Plug Engineeri Kit No. 108-1299-001**—Contains 10 each of white, red, black green, yellow and blue standard banana plugs; one assembly too and one assembly fixture. Net Each........................**$21.95**

**Johnson No. .080″ Tip Patchcord Stacking Plug Engineering Ki No. 105-1299-001**—Contains 10 each of white, red, black, green yellow and blue color .080″ tip plugs; one assembly tool and on assembly fixture. Net Each........................**$24.95**

# TIP JACKS, PLUGS AND PRINTED CIRCUIT CONNECTORS

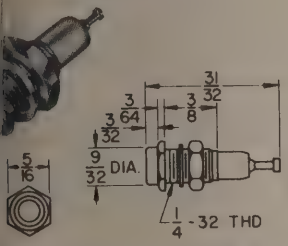
## TIP JACKS

### DELUXE TIP JACK



body with recessed closed entry
ontact. Silver-plated beryllium cop-
act spring; brass solder terminal is
dipped. **Current Rating:** 10 amps.
**Breakdown:** 11,000 VDC. Ca-
o ⅛" panel: 2 pF. ¼"-32 nut fur-
U.S. Patent No. 2,704,357. See
hart*.
**n No. 105-0600-001**—Net . . . . **22c**

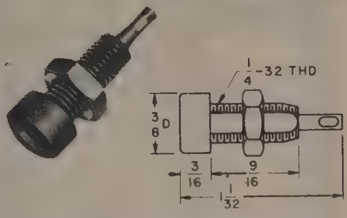
### METAL-CLAD TIP JACKS (MILITARY)



eliability tip jack for military use
ustrial applications. High quality
als withstand severe environmental
ature, vibration and salt spray con-
. Complies with MS-16108, Rev. F
L-STD-242A. Closed entry contact
prohibits entry of tip plug .085" or
preventing accidental contact dam-
careless probe insertion. Heavy
-plated brass jacket. Gold-plated
um copper contact spring exceeds
nsertion/withdrawal cycle require-
of MS-16108. **Current Rating:** 5
**Voltage Breakdown:** 8,000 VDC.
ity to ⅛" panel: 3.8 pF. ¼"-32 nut
ck washer furnished. Terminal style
ninal style C per MS-16108 available
ecial order. Brass solder terminal is
lated.
**on No. 105-0200-200**—Net . . . . **36c**

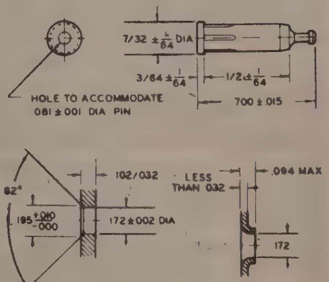
| MIL umber | E. F. Johnson Number | Color |
|---|---|---|
| 6108-1A | **105-0201-200** | White |
| 3108-2A | **105-0202-200** | Red |
| 3108-3A | **105-0203-200** | Black |
| 3108-4A | **105-0208-200** | Brown |
| 6108-5A | **105-0204-200** | Green |
| 3108-6A | **105-0206-200** | Orange |
| 6108-7A | **105-0210-200** | Blue |
| 6108-8A | **105-0207-200** | Yellow |
| 6108-9A | **105-0213-200** | Gray |
| 6108-10A | **105-0212-200** | Violet |

### STANDARD TIP JACK



Molded body with recessed, cadmium-plated formed phosphor bronze contact. **Current Rating:** 10 amps. **Voltage Breakdown:** 9000 VDC. Capacity to ⅛" panels: 2.0 pF. ¼"-32 nut furnished. See Color Chart* below.
**Johnson No. 105-0800-001**—Net . . . . **14c**

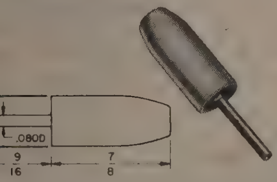
### RIB-LOC® PRESS-IN TIP JACKS



Johnson Rib-Loc design permits substantial production line savings as no mounting hardware to handle and assemble. Installation by only pressing into proper size chassis hole. Accept .080" tip plug in recessed, closed-entry type contact that rejects plugs .085" or larger to prevent accidental contact damage. Silver-plated beryllium copper contact spring. Brass solder terminal silver-plated and iridited for good solderability. Insulating body molded of low-loss polyamide. **Current Rating:** 10 amps. **Voltage Breakdown:** 5,000 VDC. Capacity to ⅛" panel: 1.4 pF nominal. See Color Chart* below.
**Johnson No. 105-1040-001**—Net . . . . **18c**

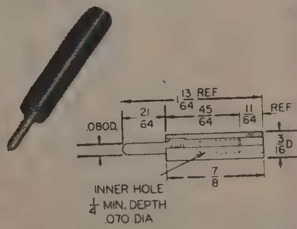
## TIP PLUGS

### SOLDERLESS TIP PLUG



letely insulated, molded sleeve. Re-
metal head prevents exposure of
surfaces when engaged in any stand-
p jack. All metal parts are nickel-
brass. Designed for solderless con-
n of up to 16 gauge stranded wire.
ll standard tip jacks. **Current Rating:**
ps. See Color Chart*.
**son No. 105-0300-001**—Net . . . . **20c**

### SUB-MINIATURE TIP PLUG

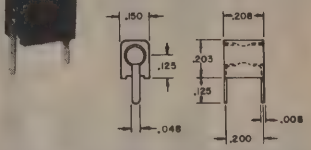


For use with miniature jack, .080" dia. tip. Nickel-plated machined brass body, solder type lead connection. See Color Chart*.
**Johnson No. 105-0770-001**—Net . . . . **22c**

## PRINTED CIRCUIT CONNECTORS

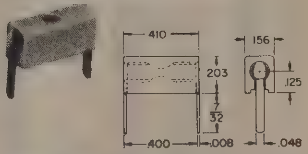
Sub-miniature tip jacks are rated at 5 amps max. current capacity. Operating voltage is 1500 volts rms at sea level and 350 volts rms at 50,000 feet. Contact resistance is less than 2 milliohms; capacitance between 2 adjacent jacks is less than one pF at 1 MHz. Body is of tough, low-loss polyamide per MIL-M-20693A; able to stand hard usage. Jacks equipped with beryllium copper contacts; contacts and terminals are silver-plated.

### NEW HORIZONTAL JACK



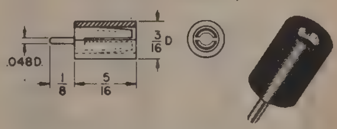
New design accepts 0.080" dia. tip plug in either end. Silver-plated and iridited beryllium-copper formed contact. Two terminals. Approx. one-half size of standard jack. See Color Chart* below.
**Johnson No. 105-1100-001**—Net Ea. . . **9c**

### HORIZONTAL JACK



Unique design accepts .080" dia. plug in either end, or from top or bottom. Silver-plated beryllium copper formed contact. Two terminals. See Color Chart* below. U.S. Patent No. 3,208,027. Without cross hole available on special order.
**Johnson No. 105-0750-001**—Net Ea. . . **9c**

### VERTICAL JACK



Mounts through single .052" hole, requires minimum mounting area. Silver-plated, machined beryllium copper contact. See Color Chart* below.
**Johnson No. 105-0850-001**—Net . . . . **14c**

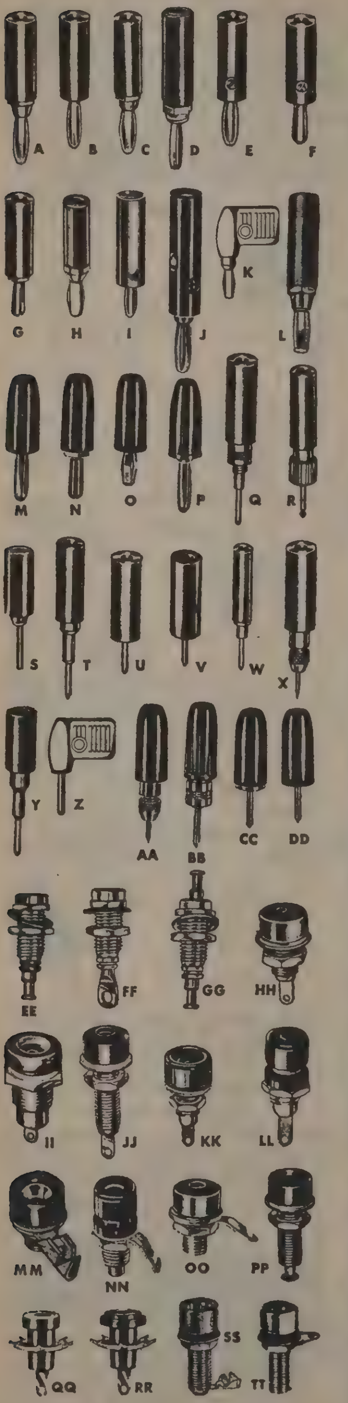
### *COLOR CHART

Connectors, unless otherwise specified are available in 6 molded colors to Federal Standard 595. Other colors listed are available as specials. E. F. Johnson No. for color desired is determined by adding color numbers on chart below to **6th** and **7th** digits of E. F. Johnson No. listed for series. To order 105-1040-001 in violet color, add **12** to **6th** and **7th** digits of series number and order 105-1052-001.

| Color | No. | Color | No. |
|---|---|---|---|
| White† | 01 | Yellow† | 07 |
| Red† | 02 | Brown | 08 |
| Black† | 03 | Blue† | 10 |
| Green† | 04 | Violet | 12 |
| Orange | 06 | Gray | 13 |

†Indicates colors available from stock. Other colors listed are available on special order for some items.

# H. H. Smith Jacks and Plugs



## INSULATED BANANA PLUGS*

| H. H. S. No. | Fig. | Description |
|---|---|---|
| 212 | A | Solderless with nickel-plated phosphor bronze spring; wire may also be soldered to brass stud or directly into plug; 1" handle |
| 232 | A | Same as above, but with silver-plated spring |
| 242 | A | Same, but with nickel-plated beryllium copper spring |
| 262 | A | Same, but with silver-plated beryllium copper spring |
| 211 | B | Solderless with nickel-plated phosphor bronze spring; 1" handle |
| 261 | B | Same, but with silver-plated spring |
| 271 | B | Same, but with nickel-plated beryllium copper spring |
| 281 | B | Same, but with silver-plated beryllium copper spring |
| 295 | C | Screw-term. solderless; nickel-plated phos. bronze spring; 1" handle |
| 296 | C | Same, but with silver-plated spring |
| 297 | C | Same, but with nickel-plated beryllium copper spring |
| 298 | C | Same, but with silver-plated beryllium copper spring |
| 239 | D | Internal spring collet solderless; phosphor bronze nickel-plated spring; 1¼" machined butyrate handle—specify red or black |
| 236 | D | Same, but cross-drilled hole in spacer for solderless connection |
| 204 | E | Set-screw solderless; nickel-plated phosphor bronze spring; 1" handle |
| 254 | E | Same, but nickel-plated beryllium copper spring |
| 213 | F | Split type with side screw; cross-slotted for spring tension |
| 253 | G | Soldered or solderless with internal stud; cross-slotted; 1" handle |
| 291 | H | Stud-soldered midget plug with ⅝" machined butyrate handle; 13/32" plug with nickel-plated phos. bronze spring; specify red or black |
| 292 | H | Same, but silver-plated spring |
| 293 | H | Same, but nickel-plated beryllium copper spring |
| 294 | H | Same, but silver-plated beryllium copper spring |
| 214 | I | Adapts tip plug to banana plug; molded butyrate handle with jack for tip plug; nickel-plated phosphor bronze spring; red or black |
| 1511 | J | Solderless banana plug; banana plugs in top and side of machined butyrate handle for unlimited, multiple circuits; phosphor bronze nickel-plated spring; specify red, black, yellow or green |
| 1512 | J | Same, but beryllium copper spring |
| 255 | K | Meter plug with 4-leaved nickel-plated phosphor bronze spring; specify red or black |
| 285 | L | Giant type with machined phenolic plastic handle, deep solder well; 6-leaved phosphor bronze nickel-plated spring; specify red or black |
| 476 | M | Molded nylon plug; soldered or solderless; phosphor bronze nickel-plated spring; specify color† |
| 477 | M | Same, but silver-plated phosphor bronze spring; specify color† |
| 478 | M | Same, but nickel-plated beryllium copper spring; specify color† |
| 479 | M | Same, but silver-plated beryllium copper spring; specify color† |
| 494 | N | Solderless split-type plug with molded nylon handle; specify color† |
| 426 | O | Midget version of No. 476; specify color† |
| 427 | O | Midget version of No. 477; specify color† |
| 428 | O | Midget version of No. 478; specify color† |
| 429 | O | Midget version of No. 479; specify color† |
| 455 | P | Solderless wrap-around version of No. 476; specify color† |
| 456 | P | Solderless wrap-around version of No. 477; specify color† |
| 457 | P | Solderless wrap-around version of No. 478; specify color† |
| 458 | P | Solderless wrap-around version of No. 479; specify color† |

## INSULATED TIP PLUGS*

| H. H. S. No. | Fig. | Description |
|---|---|---|
| 200 | Q | Solderless threaded type; 1" handle; 2⅛" long |
| 201 | Q | Same, but slightly smaller; 1" handle; 1 19/32" long |
| 250 | R | Sig. C. approved; prod tip recess holds plugs firmly; has 1" ethyl cellulose handle; specify red or black |
| 358 | R | Same, but with 3" handle |
| 237 | S | Easy-solder hollow tip; ⅝" molded butyrate handle, red or black |
| 229 | T | Heavy duty, easy solder connection; 1" handle, 2⅛" long |
| 203 | U | Short tip plug inserts flush to handle; 1" handle; 1½" long |
| 283 | V | Same as above, but solderless connection |
| 270 | W | Subminiature tip with 1" fiber handle; specify red or black |
| 216 | X | Phono needle tip with removable chuck; 1" handle; 1⅞" long |
| 215 | Y | Std. tip plug with jack for banana plug; ¾" molded butyrate handle; specify red or black |
| 235 | Z | Meter tip plug molded in two halves; specify red or black |
| 493 | AA | Removable chuck type with molded nylon handle and phono needle; specify color† |
| 490 | BB | Solderless type with molded nylon handle; specify color† |
| 492 | CC | Short version of above without knurled collar; specify color† |
| 491 | DD | Short tip plug; inserts flush to nylon handle; specify color† |

## INSULATED JACKS‡

| H. H. S. No. | Fig. | Description |
|---|---|---|
| 1501 | EE | Nylon tip jack with metal shell; wrap-around type; specify color† |
| 1502 | FF | Same, but spade terminal type; specify color† |
| 1503 | GG | Same, but feed-thru type; specify color† |
| 1505 | EE | Same as 1501 but all-nylon construction; specify color† |
| 1506 | FF | Spade terminal version of 1505; specify color† |
| 1507 | GG | Feed-thru version of 1505; specify color† |
| 202 | HH | Molded thermosetting plastic head; phone tip; mounted in 5/16" hole |
| 223 | HH | Same, but machined butyrate; specify red, black, yellow or green |
| 240 | II | Molded nylon tip jack rated 5,000 VAC, 60 Hz; specify color§ |
| 206 | JJ | Molded thermosetting plastic head combo jack takes standard phone or banana plugs |
| 282 | KK | Molded thermosetting plastic head meter type; specify color§ |
| 241 | LL | Molded nylon head; insulated from panel; specify color§ |
| 219 | MM | Molded thermosetting plastic head banana jack; recessed body |
| 221 | NN | Nylon head and washer; insulated from panel; for standard banana plugs; specify color§ |
| 205 | OO | Molded thermosetting plastic head banana jack |
| 256 | PP | Molded thermosetting plastic head banana jack; turret terminal |
| 279 | QQ | Phone tip jack with dished lockwasher "speedi-mount"; molded thermosetting plastic body; 13/32" dia. head |
| 299 | RR | Same as 279 except ½" dia. head |
| 286 | SS | Giant banana jack; fits ½" hole; panel to ¾"; tinned copper lug; machined butyrate head; specify red or black |
| 287 | TT | Same as 286 except brass tinned lug |

*Molded thermosetting plastic handle unless otherwise noted. Standard colors: r
black, yellow, green, blue or white except as otherwise noted. †For colors add su
**-101**, white; **-102**, red; **-103**, black; **-104**, green; **-105**, blue; **-106**, orange; **-107**, yell
**-108**, brown; **-112**, purple; **-113**, gray. ‡Standard colors: Red, black, yellow, green, b
or white except as otherwise noted. §Specify red, black, yellow, green or blue.
***Lots of 1–499, Net; 500–999, —16⅔%.**

## NON-INSULATED BANANA PLUGS AND JACKS

| Fig. | Description | Net Each* |
|---|---|---|
| A | 3/8" threaded stud; hex brass body; nickel-plated phos. bronze spring | 25c |
| B | 1/2" threaded stud; hex brass body; nickel-plated phos. bronze spring | 25c |
| C | Screw-on type; hex brass body; nickel-plated phos. bronze spring | 25c |
| C | Same, but with beryllium copper spring | 30c |
| D | 1/2" threaded stud; hex brass body; split type banana plug | 17c |
| E | Midget rivet type; silver-pl. brass body; phos. bronze silvered spring | 18c |
| F | Soldered or solderless type with hex body; phos. bronze spring | 25c |
| F | Same, but beryllium copper spring | 30c |
| G | 6-32 x 3/8" stud type; hex body; phos. bronze spring nickel-plated; 1 3/16" h. | 25c |
| G | Same, but 6-32 x 1/2" stud; 1 5/16" h. | 25c |
| G | Same, but 6-32 x 3/4" stud; 1 9/16" h. | 25c |
| G | Same, but 8-32 x 3/8" stud; 1 3/16" h. | 25c |
| G | Same, but 8-32 x 1/2" stud; 1 5/16" h. | 25c |
| G | Same, but 8-32 x 3/4" stud; 1 9/16" h. | 25c |
| H | 6-32 x 3/8" stud type; hex body; phos. bronze spring nickel-plated; 1 5/32" h. | 25c |
| H | Same, but 6-32 x 1/2" stud; 1 9/32" h. | 25c |
| H | Same, but 6-32 x 3/4" stud; 1 17/32" h. | 25c |
| H | Same, but 8-32 x 3/8" stud; 1 5/32" h. | 25c |
| H | Same, but 8-32 x 1/2" stud; 1 9/32" h. | 25c |
| H | Same, but 8-32 x 3/4" stud; 1 17/32" h. | 25c |
| I | Midget 4-40 x 3/8" stud; nickel-plated phos. bronze spring; 15/16" h. | 20c |
| I | Same, but 4-40 x 1/2" stud; 1 1/16" h. | 20c |
| I | Same, but 6-32 x 3/8" stud; 15/16" h. | 20c |
| I | Same, but 6-32 x 1/2" stud; 1 1/16" h. | 20c |
| J | Midget cross-slotted body type; 10-32 x 21/64" stud; 29/32" h | 12c |
| K | Midget banana jack accepts No. 111 plug | 9c |
| L | Submin. rivet type plug; silver-plated beryl. copper spring; 37/64" h. | 17c |
| M | Submin. 2-56 stud type plug similar to No. 191 | 17c |
| N | Submin. jack rivets direct to chassis or PC board | 9c |
| O | Submin. jack rivets direct to chassis or PC (Package of 100) | ** |
| P | Hex body jack with recessed head; fits 1/4" hole; panels to 5/16" thick | 15c |
| Q | Std. hex head banana jack fits 1/4" hole; panels to 3/8" thick | 15c |
| R | Giant plug with deep solder well; 6-leaved phos. bronze spring | 55c |
| S | Same, but screw fit instead of stud | 45c |
| T | Same as No. 186 but slimmer base | 45c |
| U | Giant banana jack fits 3/8" hole; panels to 1/2" thick | 40c |

The following types are also available as specified. For silver-plated phosphor
spring: Add 3c to price and *add 6 to number (431 becomes 437); †add 7 to num-
dd 4 to number. For nickel-plated beryllium copper spring: Add 4c to price and
2 to number; †add 13 to number; ‡add 3c to price and add 8 to number. For silver-
beryllium copper spring: Add 7c to price and *add 18 to number; †add 19 to
r; ‡add 6c to price and add 12 to number. **$1.30 per 100.

## NON-INSULATED TIP PLUGS AND JACKS

| Fig. | Description | Net Each* |
|---|---|---|
| V | Solderless with knurled collar force fit; 1 29/64" h. | 15c |
| W | Smaller version of above; 1 3/16" h. | 15c |
| X | Heavy-duty force fit type; large soldering well; accepts standard banana plugs; 1 13/32" h. | 13c |
| Y | Standard solder type; 1" long (Package of 100) | ** |
| Y | Large I.D. solder type; 1" long (Package of 100) | †† |
| Z | Drawn (all-hollow) solder type; 15/16" long (Package of 100) | ‡‡ |
| AA | Threaded solderless type; knurled collar; will fit plastic handle; 1 7/16" h. | 15c |
| BB | Smaller version of above; 1 3/16" h. | 15c |
| CC | Heavy duty threaded type; extra large solder well; 1 3/8" h. | 15c |
| DD | Needle tip with removable chuck; 1 5/32" h. | 22c |
| EE | Phone tip jack with hex nut; fits 1/4" hole; panels to 3/8" thick | 15c |
| FF | Headless version of above used with plastic cases | 12c |

r package of 100: **$2.50; ††$3.50; ‡‡$1.70.

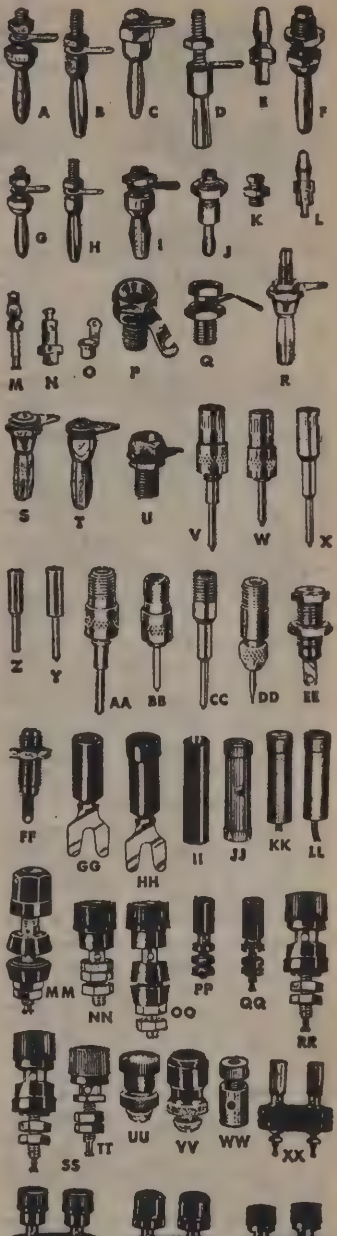
## TEST LEAD ACCESSORIES

| Fig. | Description | Net Each* |
|---|---|---|
| GG | Plastic handle spade lug; accepts banana plug; specify red or black | 14c |
| HH | Phone tip to space lug adapter; plastic handle; specify red or black | 40c |
| II | Banana plug splice of plastic; specify red, black, yellow or green | 25c |
| JJ | Phone tip plug splice of plastic; specify red, black, yellow or green | 30c |
| KK | Inline phone tip jack of plastic; specify red, black, yellow or green | 21c |
| LL | Inline banana jack of plastic; specify red, black, yellow or green | 21c |

## BINDING POSTS

| Fig. | Description | Net Each* |
|---|---|---|
| MM | Multi-purpose with banana plug receptacle, wire hole, washer hole, production punch and non-removable nylon head. For 1/16"–1/4" panels. Rated 30 amps, 2000 VAC rms test. Specify red, black, yellow, blue, green, white | 50c |
| NN | 5-way grounding type, red or black plastic, captive head; 8-32 thd. | 22c |
| NN | Same, but 6-32 threaded stud | 22c |
| NN | Same, 8-32 thd., with nickel-plated brass insert in head | 27c |
| NN | Same as No. 230 with nickel-plated brass insert in head | 27c |
| OO | All insulated version of No. 220; red or black plastic, captive head | 45c |
| OO | Same, but 6-32 threaded stud | 45c |
| OO | Same as No. 260 with nickel-plated brass insert in head | 50c |
| OO | Same as No. 259 with nickel-plated brass insert in head | 50c |
| PP | Metal 5-way post has captive hex nickel-plated brass head | 30c |
| QQ | Same as No. 137 but with wrap-around terminal | 35c |
| RR | Molded nylon grd. type with nickel-plated brass insert; red or black | 35c |
| SS | Same, but with Bakelite washer to insulate from chassis; red or black | 35c |
| TT | Molded nylon grounding type; nickel-plated brass insert; red or black | 30c |
| UU | Molded plastic post; brass threaded insert; specify red or black | 25c |
| VV | Molded plastic post; brass threaded insert; specify red or black | 25c |
| WW | Nickel-plated brass post for phone tips or banana plugs | 23c |
| UU | Nickel-plated brass post with screw and lockwasher | 25c |
| XX | Dual assembly; metal heads; molded black styrene insul. cross-slotted for forward or sideways phone tip insertion | 85c |
| YY | Dual assembly; black plastic heads; styrene washer cross-slotted | 70c |
| YY | Same, both heads red | 70c |
| YY | Same, one red and one black head | 70c |
| YY | Same as 224 but with nickel-plated brass insert in head; black | 80c |
| YY | Same, both heads red | 80c |
| YY | Same, one red and one black head | 80c |
| ZZ | Same as No. 263, but heads are molded nylon; both heads black | 95c |
| ZZ | Same, both heads red | 95c |
| ZZ | Same, one red and one black head | 95c |
| AB | Same as No. 263, but heads are molded nylon; both heads black | 70c |
| AB | Same, both heads red | 70c |
| AB | Same, one red and one black head | 70c |

of 1–499, Net; 500–999, −16⅔%.



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**FOR PURCHASING AGENTS AND ENGINEERS**

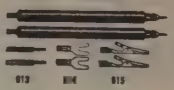
Gives full specifications, parts data and dimensional drawings on all H. H. Smith components. Send for your copy today.

# H. H. Smith Test Leads & Prods

## TEST LEADS

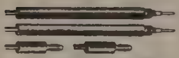
A

B



C

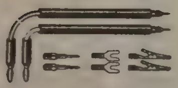
D



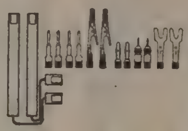
E

F

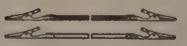
G



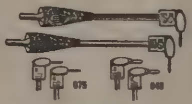
H



J

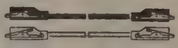


M



K

L



### SOLDERLESS TIP TEST LEADS (FIG. A)

Molded butyrate handles per Fed. Spec. L-P349A, Type 3, Class MS; red and black. Solderless tip of nickel-plated brass. 4" long x ⅜" diameter. Flexible rubber covered wire leads 50" long, also colored red and black.

| H.H.S. No. | Meter End | Net Price per Pair |
|---|---|---|
| 600 | Phone tips | $1.05 |
| 601 | Spade lugs | 1.05 |
| 602 | Alligator clips | 1.10 |

### PHONO NEEDLE TEST LEADS (FIG. B)

Molded butyrate handles per Fed. Spec. L-P349A, Type 3, Class MS; red and black. Nickel-plated brass body. Nickel-plated steel needle tips. Flexible rubber covered wire leads 50" long, red and black.

| H.H.S. No. | Meter End | Net Price per Pair |
|---|---|---|
| 613 | Phone tips | $1.05 |
| 614 | Spade lugs | 1.05 |
| 615 | Alligator clips | 1.10 |

### ALL SOLDERLESS TEST LEADS (FIG. C)

Molded butyrate handles per Fed. Spec. L-P349A, Type 3, Class MS; red and black. Molded thermosetting plastic plug in red and black, per MIL-M-14 CFG. Solderless tip of nickel-plated brass.
**H. H. Smith No. 603**—Net/Pair...**$1.35**

### BANANA PLUG TEST LEADS (FIG. D)

Molded butyrate handles per Fed. Spec. L-P349A, Type 3, Class MS; red and black. Plug is molded phenolic; red and black. Solderless tip plug of nickel-plated brass. Nickel-plated brass body. Nickel-plated, four-leaved phosphor bronze spring.
**H. H. Smith No. 623**—Net/Pair...**$1.50**

### SOLDERLESS PROD METER TEST LEADS (FIG. E)

Molded butyrate handles per Fed. Spec. L-P349A, Type 3, Class MS; red and black. Solderless tip of nickel-plated brass. Elbow of molded thermosetting plastic, per MIL-M-14 CFG; red and black. Nickel-plated brass body. Nickel-plated, four-leaved phosphor bronze spring. 50" rubber covered kinkless test lead wire.

| H.H.S. No. | Meter End | Net Price per Pair |
|---|---|---|
| 625 | Phone tips | $1.50 |
| 685 | Banana plugs | 1.70 |

### NEEDLE PROD METER TEST LEADS (FIG. F)

Molded butyrate handles per Fed. Spec. L-P349A, Type 3, Class MS; red and black. Nickel-plated steel needle prod. Elbow of molded phenolic plastic, in red and black. Nickel-plated brass body. Nickel-plated, four-leaved phosphor bronze spring. Rubber covered 50" kinkless test lead wire.

| H.H.S. No. | Meter End | Net Price per Pair |
|---|---|---|
| 626 | Phone tips | $1.50 |
| 686 | Banana plugs | 1.70 |

### TEST LEAD KIT (FIG. G)

Includes one pair of test leads in red and black, with test prods on one end and banana plugs on the other; plus two phone tips, two alligator clips and two spade lugs.

| H.H.S. No. | Prod Type | Net Each |
|---|---|---|
| 610 | Solderless | $2.10 |
| 611 | Needle tip | 2.10 |

### UNIVERSAL TEST LEADS (FIG. H)

Fifty leads in one—completely interchangeable. One lead can make any required test lead combination. All parts adapt into prod handle or tip handle. Includes 5 kV rubber covered wire, 26 strands #34 copper, #20 AWG, insulated to .125" O.D. With plastic kit.
**H. H. Smith No. 699**—Net Each..**$4.00**

### MINIATURE UNIVERSAL TEST LEADS (FIG. H)

With miniature tips, clips, banana plugs and spade tips. One lead set makes any required test lead combination. All parts adapt into prod handle or meter tip. Includes 5 kV rubber covered wire, 26 strands #34 copper, #20 AWG, insulated to .125" O.D. With plastic kit.
**H. H. Smith No. 679**—Net Each..**$4.00**

### ALLIGATOR CLIP TEST LEADS (FIG. J)

Cadmium-plated steel clips.

| H.H.S. No. | Wire Length | Net Price per Pair |
|---|---|---|
| 604 | 12 inches | 82c |
| 605 | 24 inches | 85c |
| 606 | 36 inches | 88c |
| 607 | 48 inches | 91c |

### ALLIGATOR CLIP TEST LEADS WITH BOOTS (FIG. K)

Cadmium-plated steel clips. Vinyl plastic boots in red and black.

| H.H.S. No. | Wire Length | Net Price per Pair |
|---|---|---|
| 629 | 12 inches | $0.92 |
| 657 | 24 inches | .96 |
| 658 | 36 inches | .99 |
| 659 | 48 inches | 1.02 |

### MIDGET ALLIGATOR CLIP TEST LEADS (FIG. L)

Cadmium-plated steel clips. Vinyl plastic boots in red and black.

| | | |
|---|---|---|
| 716 | 12 inches | $0.92 |
| 717 | 24 inches | .94 |
| 718 | 36 inches | .96 |
| 719 | 48 inches | .99 |

### CROCODILE CLIP TEST LEADS (FIG. M)

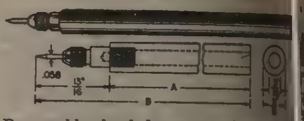
Cadmium-plated steel clips. Vinyl plastic boots in red and black. Molded phenolic plastic elbows in red and black. Nickel-plated brass tips. Nickel-plated, four-leaved phosphor bronze spring.
**H. H. Smith No. 648**—Net/Pair...**$1.30**

### CROCODILE CLIP TEST LEADS (FIG. M)

Cadmium-plated steel clips. Vinyl plastic boots in red and black. Molded phenolic plastic elbows in red and black. Nickel-plated brass tips. Nickel-plated, four-leaved phosphor bronze spring.
**H. H. Smith No. 675**—Net/Pair...**$1.20**

## TEST PRODS

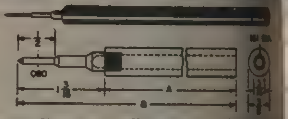
### PHONO NEEDLE TEST PROD



Removable chuck for easy replacement broken needles. Needle pierces corrosio or plating for positive meter reading Rated 12 amps AC for 10° C temperatur rise, continuous duty. Handle is molde butyrate per Fed. Spec. L-P349A, Type 3 Class MS; specify color, red or black. Plu is nickel-plated brass.

| H.H.S. No. | Handle (A) | Overall (B) | Net per C |
|---|---|---|---|
| 317 | 4" | 4$^{13}$/16" | $33.00 |
| 318 | 5½" | 6$^{5}$/16" | 38.00 |

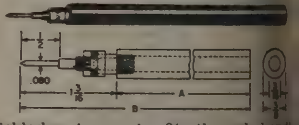
### THREADED HEAVY DUTY TEST PROD



Large diameter well permits soldering o heavy duty wire directly into plug. Fits standard phone tip jacks. Rated 12 amp AC for 10° C temperature rise, continuous duty. Molded butyrate handle per Fed Spec. L-P349A, Type 3, Class MS. Specify color, red, black. Nickel-plated brass plug.

| | | | |
|---|---|---|---|
| 319 | 4" | 5$^{3}$/16" | $30.00 |
| 329 | 5½" | 6$^{11}$/16" | 33.00 |

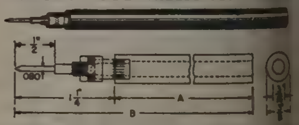
### THREADED SOLDERLESS TEST PROD



Solderless type; wire fits through handle and body of plug, then is wrapped around screw portion and tightened with knurled collar. Rated 12 amps AC for 10° C temperature rise, continuous duty. Molded butyrate handle per Fed. Spec. L-P349A Type 3, Class MS. Specify handle color red or black. Nickel-plated brass plug.

| | | | |
|---|---|---|---|
| 302 | 4" | 5¼" | $30.00 |
| 303 | 5½" | 6¾" | 33.00 |

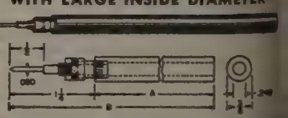
### FORCE FIT SOLDERLESS TEST PROD



Solderless type; wire fits through handle and body of plug, then is wrapped around screw portion and tightened with knurled collar. Rated 12 amps AC for 10° C temp rise, continuous duty. Molded butyrate handle per Fed. Spec. L-P349A, Type 3. Class MS. Specify handle color: red or black. Nickel-plated brass plug.

| | | | |
|---|---|---|---|
| 382 | 4" | 5¼" | $30.00 |
| 383 | 5½" | 6¾" | 33.00 |

### FORCE FIT SOLDERLESS TEST PROD WITH LARGE INSIDE DIAMETER



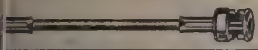
Solderless type; wire fits through handle and body of plug, then is wrapped around screw portion and tightened with knurled collar. Extra large inside diameter for heavy duty wire. Rated 12 amps AC for 10° C temp. rise, continuous duty. Handle is molded butyrate per Fed. Spec. L-P349A, Type 3, Class MS. Specify handle color: red or black. Nickel-plated brass plug.

| | | | |
|---|---|---|---|
| 352 | 4" | 5¼" | $30.00 |
| 353 | 5½" | 6¾" | 33.00 |

# H. H. Smith Patch Cords

## RF PATCH CORDS

### ENC MALE BOTH ENDS

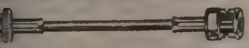


| . Smith No. | | | |
|---|---|---|---|
| B" | Wire "C" | Lgth. | Net Each |
| 12 | 1589-12 | 12" | $5.35 |
| 24 | 1589-24 | 24" | 5.45 |
| 36 | 1589-36 | 36" | 5.55 |
| 48 | 1589-48 | 48" | 5.65 |
| 60 | 1589-60 | 60" | 5.75 |

### NC FEMALE BOTH ENDS

| No. | Lgth. | Wire | Net Ea. |
|---|---|---|---|
| 12 | 12" | Type "C" (RG-58/U coaxial cable) | $6.10 |
| 24 | 24" | | 6.20 |
| 36 | 36" | | 6.30 |
| 48 | 48" | | 6.40 |
| 60 | 60" | | 6.50 |

### NC FEMALE TO BNC MALE



| | | | |
|---|---|---|---|
| 12 | 12" | Type "C" (RG-58/U coaxial cable) | $5.60 |
| 24 | 24" | | 5.70 |
| 36 | 36" | | 5.80 |
| 48 | 48" | | 5.90 |
| 60 | 60" | | 6.00 |

### MALE TO ALLIGATOR CLIPS

ting wave patterns, etc. One end ates with BNC male plug, other end sulated alligator clips (one red, one Cadmium-plated steel clips; molded nsulation.

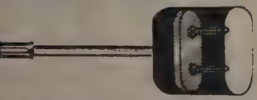
| H. Smith No. | | | |
|---|---|---|---|
| 'B" | Wire "C" | Lgth. | Net Each |
| -12 | 1587-12 | 12" | $5.35 |
| -24 | 1587-24 | 24" | 5.45 |
| -36 | 1587-36 | 36" | 5.55 |
| -48 | 1587-48 | 48" | 5.65 |
| -60 | 1587-60 | 60" | 5.75 |

### MALE TO ALLIGATOR CLIPS

onstruction as above, but with UHF onnector at one end.

| . Smith Number | | | | |
|---|---|---|---|---|
| | Wire "C" | Wire "D" | Lgth. | Net Each |
| 2 | 1586-12 | 1872-12 | 12" | $5.35 |
| 4 | 1586-24 | 1872-24 | 24" | 5.45 |
| 6 | 1586-36 | 1872-36 | 36" | 5.55 |
| [illegible] | 1586-48 | 1872-48 | 48" | 5.65 |
| 0 | 1586-60 | 1872-60 | 60" | 5.75 |

### BNC MALE TO SHIELDED DOUBLE PLUG



with standard dual binding post ¾" center. One end terminates with shielded banana plug, other end NC male plug. Molded butyrate er Fed. Spec. L-P349A, Type 3, 1S. Black anodized aluminum shield; plated brass plug; nickel-plated, aved beryllium copper spring.

| . No. | Lgth. | Wire | Net Ea. |
|---|---|---|---|
| -12 | 12" | Type "C" (RG-58/U coaxial cable) | $6.10 |
| -24 | 24" | | 6.20 |
| -36 | 36" | | 6.30 |
| -48 | 48" | | 6.40 |
| -60 | 60" | | 6.50 |

## PATCH CORD WIRE

RF and standard banana plug cords are supplied with wire indicated below.

| Wire Type | Description | Insulation | Jacket | Nominal Capacitance |
|---|---|---|---|---|
| "A" | 2-cond. tw. 18 ga. (65/36 strand) | Vinyl | Vinyl | 30 pF/foot |
| "B" | Shielded microphone cable | Polyethylene | Vinyl | 25 pF/foot |
| "C" | RG-58/U coaxial cable | Polyethylene | Vinyl | 50-ohm impedance |
| "D" | RG-11/U coaxial cable | Polyethylene | Vinyl | 20.5 pF/foot |

## STANDARD DUAL BANANA PLUG PATCH CORDS (¾" CENTERS)

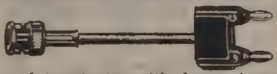
Mate with standard dual binding post having ¾" centers. Polarity indicated by the word "Ground" molded on side. Molded butyrate body per Fed. Spec. L-P349A, Type 3, Class MS, in black or gray to match wire. Nickel-plated, four-leaved beryllium copper spring. Wire as indicated above.

### DOUBLE PLUG BOTH ENDS

Interconnects unlimited number of multiple circuits on top and side. Each end terminates with molded double banana plug. Nickel-plated brass plug.

| H. H. Smith Number | | | | |
|---|---|---|---|---|
| Wire "A" | Wire "B" | Wire "C" | Lgth. | Net Each |
| 1530-12 | 1540-12 | 1580-12 | 12" | $4.35 |
| 1530-24 | 1540-24 | 1580-24 | 24" | 4.45 |
| 1530-36 | 1540-36 | 1580-36 | 36" | 4.55 |
| 1530-48 | 1540-48 | 1580-48 | 48" | 4.65 |
| 1530-60 | 1540-60 | 1580-60 | 60" | 4.75 |

### BNC MALE TO DOUBLE PLUG



One end terminates with double banana plug; other end with BNC male plug. Nickel-plated brass plug.

| H. H. Smith No. | | | |
|---|---|---|---|
| Wire "B" | Wire "C" | Lgth. | Net Each |
| 1544-12 | 1584-12 | 12" | $5.35 |
| 1544-24 | 1584-24 | 24" | 5.45 |
| 1544-36 | 1584-36 | 36" | 5.55 |
| 1544-48 | 1584-48 | 48" | 5.65 |
| 1544-60 | 1584-60 | 60" | 5.75 |

### PLUG TO "CROSS-PATCH" PLUGS

One end terminates with double banana plug; other end with "Cross-Patch" banana plugs, color-coded red and black. Interconnects unlimited number of multiple circuits on top, side. Nickel-plated brass body.

| H. H. Smith Number | | | | |
|---|---|---|---|---|
| Wire "A" | Wire "B" | Wire "C" | Lgth. | Net Each |
| 1523-12 | 1524-12 | 1525-12 | 12" | $5.35 |
| 1523-24 | 1524-24 | 1525-24 | 24" | 5.45 |
| 1523-36 | 1524-36 | 1525-36 | 36" | 5.55 |
| 1523-48 | 1524-48 | 1525-48 | 48" | 5.65 |
| 1523-60 | 1524-60 | 1525-60 | 60" | 5.75 |

### DOUBLE PLUG TO ALLIGATOR CLIPS

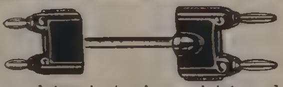
One end terminates with double banana plug; other end with insulated alligator clips (one red, one black). Nickel-plated brass plug. Cadmium-plated steel clip. Molded vinyl plastic insulation.

| H. H. Smith Number | | | | |
|---|---|---|---|---|
| Wire "A" | Wire "B" | Wire "C" | Lgth. | Net Each |
| 1531-12 | 1541-12 | 1581-12 | 12" | $5.35 |
| 1531-24 | 1541-24 | 1581-24 | 24" | 5.45 |
| 1531-36 | 1541-36 | 1581-36 | 36" | 5.55 |
| 1531-48 | 1541-48 | 1581-48 | 48" | 5.65 |
| 1531-60 | 1541-60 | 1581-60 | 60" | 5.75 |

## MINIATURE DUAL BANANA PLUG PATCH CORDS (½" CENTERS)

Mate with miniature dual binding posts or banana jacks having ½" centers. Polarity indicated by word "Ground" molded on side. Molded butyrate handles per Fed. Spec. L-P349A, Type 3, Class MS. Nickel-plated brass plug or body. Nickel-plated, four-leaved beryllium copper spring. Wire is RG-174/U coaxial cable.

### MINIATURE DUAL BANANA PLUG TO STANDARD DUAL BANANA PLUG



One end terminates in a miniature dual banana plug (½" centers); other end in standard dual banana plug (¾" centers). Interconnects unlimited number of multiple circuits, top and side.

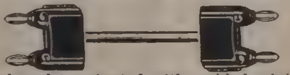
| H.H.S. No. | Lgth. | Wire | Net Ea. |
|---|---|---|---|
| 1729-12 | 12" | RG-174/U coaxial cable | $4.35 |
| 1729-24 | 24" | | 4.45 |
| 1729-36 | 36" | | 4.55 |
| 1729-48 | 48" | | 4.65 |
| 1729-60 | 60" | | 4.75 |

### MINIATURE DUAL BANANA PLUG TO "CROSS-PATCH" BANANA PLUGS

One end terminates with double banana plug (½" centers); other end with "Cross-Patch" miniature banana plugs, color-coded red and black.

| | | | |
|---|---|---|---|
| 1738-12 | 12" | RG-174/U coaxial cable | $5.35 |
| 1738-24 | 24" | | 5.45 |
| 1738-36 | 36" | | 5.55 |
| 1738-48 | 48" | | 5.65 |
| 1738-60 | 60" | | 5.75 |

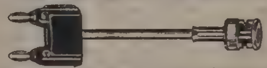
### MINIATURE DUAL BANANA PLUGS



Each end terminated with molded miniature double banana plug (½ centers).

| H.H.S. No. | Lgth. | Wire | Net Ea. |
|---|---|---|---|
| 1599-12 | 12" | RG-174/U coaxial cable | $4.35 |
| 1599-24 | 24" | | 4.45 |
| 1599-36 | 36" | | 4.55 |
| 1599-48 | 48" | | 4.65 |
| 1599-60 | 60" | | 4.75 |

### MINIATURE DUAL BANANA PLUG TO BNC MALE CONNECTOR



One end terminates with double miniature banana plug; other end with BNC male.

| | | | |
|---|---|---|---|
| 1748-12 | 12" | RG-174/U coaxial cable | $5.35 |
| 1748-24 | 24" | | 5.45 |
| 1748-36 | 36" | | 5.55 |
| 1748-48 | 48" | | 5.65 |
| 1748-60 | 60" | | 5.75 |

### MINIATURE DUAL BANANA PLUG TO INSULATED MINI-CLIPS

One end terminates with double banana plug; other end with insulated miniature clips. Cadmium-plated steel clip; vinyl insulation.

| | | | |
|---|---|---|---|
| 1739-12 | 12" | RG-174/U coaxial cable | $5.35 |
| 1739-24 | 24" | | 5.45 |
| 1739-36 | 36" | | 5.55 |
| 1739-48 | 48" | | 5.65 |
| 1739-60 | 60" | | 5.75 |

# H. H. Smith STANDARD DUAL TEST ADAPTER

## CABLE MOUNT DUAL BANANA PLUGS

1675

1676

1787

**H. H. Smith No. 1675 Set-Screw Plug**—Rear has ½" dia. cable guide, dual banana jacks on ¾" centers. Front has dual banana plugs on ¾" centers. Set-screws secure leads to conductors. Specify red or black. Net Each........................**72c**

**H. H. Smith No. 1676 Turret-Terminal Plug**—Same as above, but with turret terminals for permanent solder connection. Red or black. Net Each............**81c**

**H. H. Smith No. 1787 Shielded Plug**—Rear has mounting screw and locating boss, inline cable entry with flush cable guide. Front has dual banana plugs on ¾" centers. Turret terminals for permanent solder connection. Aluminum shield electrically connected to ground conductor; fully enclosed plug and mating binding posts to reduce noise pickup. Net..**$2.25**

## COMPONENT MOUNT DUAL PLUGS

1677

1694

1696

1678

1693

1770

**H. H. Smith No. 1677 Set-Screw Plug**—Rear has dual banana jacks on ¾" centers for stacking. Front has dual banana jacks on ¾" centers. Set-screws secure component leads to conductors. Specify red or black. Net Each...................**72c**

**H. H. Smith No. 1694 Set-Screw Phone Tip Plug**—Rear has dual banana jacks on ¾" centers for stacking. Front has dual .080" phone tips on ¾" centers. Set-screws secure component leads to conductors. Specify red or black. Net Each......**72c**

**H. H. Smith No. 1696 Four-Terminal Isolation Type Plug**—Rear has dual banana jacks on ¾" centers for stacking. Center has turret-terminal connections to isolated front and rear conductors in both Ground and Hot circuits for insertion of matching pad or other 4-terminal networks in input circuits of instruments. Front has dual banana plugs on ¾" centers. Specify red or black. Net Each..........**$3.25**

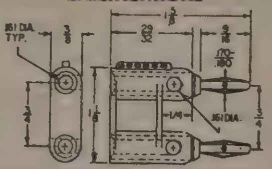
**H. H. Smith No. 1678 Turret-Terminal Plug**—Rear has dual banana jacks on ¾" centers for stacking. Front has dual banana jacks on ¾" centers. Turret terminals. Specify red or black. Net Each......**81c**

**H. H. Smith No. 1693 Phone Tip Plug**—Rear has dual phone tip jacks on ¾" centers for stacking. Front has dual .080" phone tips on ¾" centers. Turret terminal. Specify red or black. Net Each......**81c**

**H. H. Smith No. 1770 Three-Terminal Isolation Plug**—Rear has dual banana jacks on ¾" centers for stacking. Center has turret-terminal connections to isolated front and rear conductors in Hot circuit, straight-thru connection of Ground circuit, with terminal, for insertion of "T" and "P" networks in input-output circuits in instruments. Front has dual banana plugs on ¾" centers. Specify red or black. Net Each.........................**$2.50**

## SHORTING TYPE PLUGS

### SPECIFICATIONS



**Materials:** Body is molded butyrate per Fed. Spec. L-P349A, Type 3, Class MS; black color unless otherwise specified. Brass conductor per QQ-B-626 Comp. 22, ½ hard. Four-leaved beryllium copper spring, heat treated. Molded nylon head per MIL-P-20693A. Drawn aluminum shield. Cadmium-plated steel screws. **Finishes:** Conductor and spring, nickel-plate per QQ-N-290, Class I, Type VII. Gold-washed terminal. Non-tarnish connector. Black anodized shield. **Ratings:** 15 amps AC for 10° C temp. rise, continuous duty; 5000 VAC, 60 Hz continuous working voltage; except where limited by coaxial connectors. Capacity, 1.0 pF nominal between ¾" spaced connectors. Resistance, 1 milliohm or less per conductor.

1516

1683

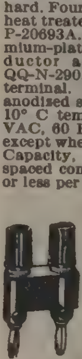
169

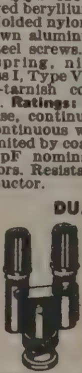
**H. H. Smith No. 1516 Dual Banana Pl**
—Rear has dual banana jacks on ¾" c
ters for stacking. Front has dual bana
plugs on ¾" centers; banana jack holes
side stacking. Busbar shorted across li
Specify red or black. Net Each...**$1.0**

**H. H. Smith No. 1683 Metal Shorti**
**Bar Plug**—Rear has 1⁄32" thick brass b
bar; 15 amps continuous duty. Front h
dual banana plugs on ¾" centers. Unit
flush to panel. Net Each.........7

**H. H. Smith No. 1692 Phone Tip Plug**
Rear has dual banana jacks on ¾" cent
for stacking. Front has dual .080" pho
tips on ¾" centers; banana jack holes
side stacking. Busbar shorted across li
Specify red or black. Net Each...**$1.0**

## DUAL BINDING POST ADAPTERS


1682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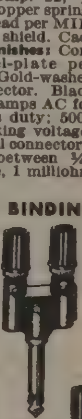
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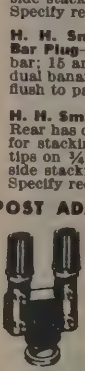
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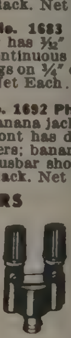
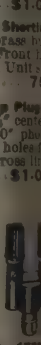

1689


177

1781

1691

1776

1780

1695

Rear of each adapter has insulated, dual 5-way binding posts, with red and black heads on ¾" centers. Banana jack holes for side stacking (except No. 1698). Front has plug or jack as indicated.

**H. H. Smith No. 1682 Binding Posts to Dual Banana Plugs**—Front has dual banana plugs on ¾" centers. Net..**$2.25**

**H. H. Smith No. 1684 Binding Posts to 2-Circuit Phone Plug**—Front has standard ¼" two-circuit phone plug. Net..**$4.60**

**H. H. Smith No. 1688 Binding Posts to BNC Male**—Front has BNC series coaxial plug. Net Each.........................**$4.60**

**H. H. Smith No. 1698 Binding Posts to Isolated BNC Male**—Front has BNC coaxial plug. Center has turret-terminal connections to isolated front and rear conductors in both Ground and Hot circuits for insertion of matching pad or other 4-term. networks in input. Net..**$10.00**

**H. H. Smith No. 1689 Binding Posts**
**BNC Female**—Front has BNC series f
male coaxial jack. Net Each......**$4.6**

**H. H. Smith No. 1776 Binding Posts**
**TNC Male**—Front has TNC series coax
plug. Net Each..................**$7.0**

**H. H. Smith No. 1777 Binding Posts**
**TNC Female**—Front has TNC series c
axial jack. Net Each............**$6.0**

**H. H. Smith No. 1780 Binding Posts**
**Type N Male**—Front has Type N coax
plug. Net Each..................**$7.0**

**H. H. Smith No. 1781 Binding Posts**
**Type N Female**—Front has Type N c
axial jack. Net Each............**$6.0**

**H. H. Smith No. 1695 Binding Posts**
**UHF Male**—Front has UHF series coax
plug. Net Each..................**$5.0**

**H. H. Smith No. 1691 Binding Posts**
**UHF Female**—Front has UHF series c
axial jack. Net Each............**$5.2**

## COAXIAL CONNECTOR ADAPTERS

1686

1687

1774

1775

1778

1779

1690

1697

Front of each adapter has dual banana plugs on ¾" centers. Banana jack holes for side stacking (except No. 1697). Rear has coaxial connector as indicated.

**H. H. Smith No. 1686 BNC Female to Banana Plugs**—Rear has BNC series coaxial jack. Net Each...............**$2.95**

**H. H. Smith No. 1687 BNC Male to Banana Plugs**—Rear has BNC series coaxial plug. Net Each.............**$3.60**

**H. H. Smith No. 1774 TNC Female to Banana Plugs**—Rear has TNC series coaxial jack. Net Each.............**$5.95**

**H. H. Smith No. 1775 TNC Male to Banana Plugs**—Rear has TNC series coaxial plug. Net Each.............**$6.50**

**H. H. Smith No. 1778 Type N Female**
**Banana Plugs**—Rear has Type N coax
jack. Net Each..................**$5.8**

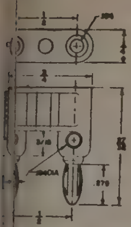
**H. H. Smith No. 1779 Type N Male**
**Banana Plugs**—Rear has Type N coax
plug. Net Each..................**$6.5**

**H. H. Smith No. 1690 UHF Female**
**Banana Plugs**—Rear has UHF series c
axial jack. Net Each............**$4.6**

**H. H. Smith No. 1697 BNC Female**
**Isolated Dual Banana Plugs**—Rear h
BNC series coaxial jack. Center has turre
terminal connections to isolated front a
rear conductors in both Ground and H
circuits for insertion of matching pad
other 4-terminal networks in input circuit
Net Each........................**$9.0**

# H. H. Smith Test Adapters

## MINIATURE DUAL TEST ADAPTERS



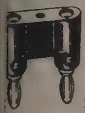
### SPECIFICATIONS

**Ratings:** 5 amps AC for 10° C temp. rise, continuous duty; 2000 VAC, 60 Hz continuous working voltage; except where limited by coaxial connectors. Capacity, 3.0 pF nominal between ½″ spaced conductors. Resistance, 1 milliohm or less per conductor.

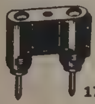
**Materials:** Molded butyrate body, Fed. Spec. L-P349A, Type 3, Class MS; black color unless otherwise specified. Brass conductor per QQ-B-626, Comp. 22, ½ hard. Four-leaded beryllium copper spring, heat treated. Molded nylon head per MIL-P-20693A. Cadmium-plated steel screws.

**Finishes:** Nickel-plated conductor per QQ-N-290, Class I, Type VII. Nickel-plated spring. Gold washed terminal. Non-tarnish plate connector.

### SET SCREW CONNECTION



1754



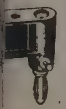
1749

as dual banana jacks on ½″ centers acking. Front has set-screws that component leads to conductors.

**Smith No. 1749 Banana Plugs**—has dual banana plugs on ½″ cen-pecify red or black. Net Each . . **72c**

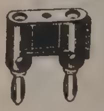
**Smith No. 1754 with .080″ Phone** Front has dual .080″ phone tips on nters. Specify red, black. Net . . . **72c**

### RRET TERMINAL CONNECTION



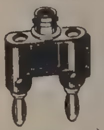
**H. H. Smith No. 1750**—Rear has dual banana jacks on ½″ centers for stacking. Front has dual banana plugs on ½″ centers. Turret terminals for permanent solder connection of leads. Specify red or black. Net Ea. . . **81c**

### PHONE TIP ADAPTER



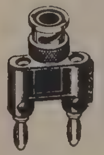
**H. H. Smith No. 1751**—Rear has dual .080″ phone tip jacks on ½″ centers for stacking. Front has dual banana plugs on ½″ centers. Specify red or black. Net Each. . . . . . . . . . . . **81c**

### BNC FEMALE TO BANANA PLUGS



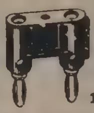
**H. H. Smith No. 1758**—Rear has BNC series coaxial jack; banana jack holes for stacking. Front has dual banana plugs on ½″ centers; banana jack holes for side stacking. Black. Net Each. . . . . . . . . **$3.00**

### BNC MALE TO BANANA PLUGS

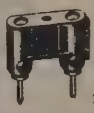


**H. H. Smith No. 1759**—Rear has BNC series coaxial plug. Front has dual banana plugs on ½″ centers; banana jack holes for side stacking. Black. Net Each. . . **$3.95**

### MOLDED-IN SHORTING ADAPTERS



1752



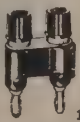
1753

Rear has dual banana jacks on ½″ centers for stacking. Busbar shorted across line.

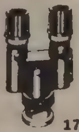
**H. H. Smith No. 1752 with Banana Plugs**—Front has dual banana plugs on ½″ centers; banana jack holes for side stacking. Specify red or black. Net Each. . . . . . **72c**

**H. H. Smith No. 1753 with Phone Tips**—Front has dual .080″ phone tips on ½″ centers. Banana jack holes for side stacking. Specify red or black. Net Each. . **72c**

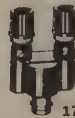
### BINDING POST ADAPTERS



1755



1756



1757

Rear has insulated, dual 5-way binding posts, with red and black heads on ½″ centers. Banana jack holes for side stacking.

**H. H. Smith No. 1755 Binding Posts to Dual Banana Plugs**—Front has dual banana plugs on ½″ centers. Black color. Net Each. . . . . . . . . . . . . . . . . . . . . . **$2.25**

**H. H. Smith No. 1756 Binding Posts to BNC Male**—Front has BNC coaxial plug. Black. Net Each. . . . . . . . . . . . . . . **$4.95**

**H. H. Smith No. 1757 Binding Posts to BNC Female**—Front has BNC coaxial jack. Black. Net Each. . . . . . . . . . **$4.60**

## STANDARD AND MINIATURE SINGLE TEST ADAPTERS

### DING POST TO BANANA PLUG

has insulated 5-way binding post. has standard or miniature banana Banana jack hole for side stacking.

| . No. | Description | Net Ea. |
|---|---|---|
| 25 | Standard Adapter | $1.10 |
| 35 | Miniature Adapter | 1.10 |

### INDING POST TO PHONE TIP

has insulated 5-way binding post. has standard .080″ phone tip. Banana hole for side stacking.

| . No. | Description | Net Ea. |
|---|---|---|
| 26 | Standard Adapter | $1.00 |
| 36 | Miniature Adapter | 1.00 |

### BINDING POST TO ISOLATED BANANA PLUG

has insulated 5-way binding post. t has standard or miniature banana Center has turret-terminal connec- to isolated front and rear conductors sertion of component in series input.

| S. No. | Description | Net Ea. |
|---|---|---|
| 027 | Standard Adapter | $1.10 |
| 037 | Miniature Adapter | 1.10 |

### BINDING POST TO ISOLATED PHONE TIP

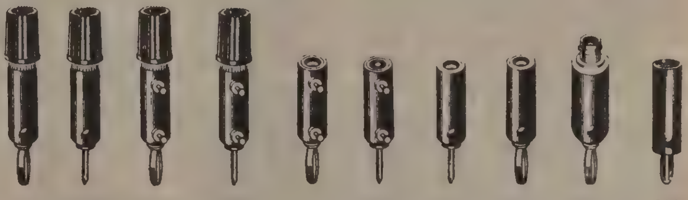
e as above, but with standard .080″ e tip at front.

| S. No. | Description | Net Ea. |
|---|---|---|
| 028 | Standard Adapter | $1.00 |
| 038 | Miniature Adapter | 1.00 |

### JACK TO ISOLATED PHONE TIP

has standard .080″ tip jack. Front .080″ phone tip. Center has turret-inal connections to isolated front and conductors for insertion of component ries input circuit.

| .S. No. | Description | Net Ea. |
|---|---|---|
| 030 | Standard Adapter | $0.95 |
| 040 | Miniature Adapter | .95 |



5025 5026 5027 5028 5029 5030 5031 5042 5032 214

**Ratings:** Standard types rated 15 amps continuous duty, 5000 VAC continuous working, except where limited by coaxial connector; miniature types rated 5 amps and 2000 VAC. Resistance, 1 milliohm or less when seated in proper mating connectors. **Materials:** Butyrate body per MIL-P-10408A, Type 1, Class 2; black or red color. Brass conductors per QQ-B-626, Comp. 22, half hard. Four-leaved beryllium copper springs (heat treated). Molded nylon heads per MIL-P-20693A. Cadmium-plated steel screws. **Finishes:** Conductors and springs are nickel plated per QQ-N-296, Class I, Type VII. Terminals are gold washed. **Size:** Standard Adapters: phone tip, .080″ dia. x ½″ long; banana plug, .180″/.170″ dia. x 9/16″ long; phone jack, .080″ dia.; banana jack, .161″ dia., body, ⅜″ dia. Miniature Adapters: phone tip, .080″ dia. x ⅜″ long; banana plug, .118″/.112″ dia. x 9/32″ long; phone jack, .080″ dia.; banana jack, .104″ dia.; body, ¼″ dia. **Color Code Suffix:** Add suffix **-103** to H. H. Smith No. for black body; suffix **-102** for red body.

### BANANA JACK TO ISOLATED BANANA PLUG

Rear has standard or miniature banana jack. Front has standard or miniature banana plug. Center has turret-terminal connection to isolated front and rear conductors for insertion of component in series input.

| H.H.S. No. | Description | Net Ea. |
|---|---|---|
| 5029 | Standard Adapter | $1.00 |
| 5039 | Miniature Adapter | 1.00 |

### STACKING SOLDERLESS PHONE TIP

Rear has standard or miniature banana jack for stacking. Front has .080″ phone tip. Side has wire lead hole that secures test lead with internal set-screw.

| H.H.S. No. | Description | Net Ea. |
|---|---|---|
| 5031 | Standard Adapter | $0.70 |
| 5041 | Miniature Adapter | .70 |

### STACKING SOLDERLESS MINIATURE BANANA PLUG

Rear has miniature banana jack for stacking. Front has miniature banana plug. Side has wire lead hole that secures test lead with internal set-screw.

**H. H. Smith No. 5042**—Net Each . . . **65c**

### BNC JACK TO BANANA PLUG

Rear has BNC series coaxial jack. Front has standard banana plug. Side banana jack hole for side stacking. Std. adapter.

**H. H. Smith No. 5032**—Net Each . **$2.00**

### TIP JACK TO BANANA PLUG

Rear has standard .080″ phone tip jack. Front has standard or miniature banana plug. Banana jack hole for side stacking.

| H.H.S. No. | Description | Net/100. |
|---|---|---|
| 214 | Standard Adapter | $50.00 |
| 5033 | Miniature Adapter | 50.00 |

# ALCOKNOB MACHINED ALUMINUM AND PLASTIC KNOBS

K-500B

K-1250S

KCVS-500A

KD-900

KPN-700

KN-501

KNS-701

PK-70B

PKS-90B-10

PKA-70B

PKB-70B

## ALCOKNOB ALUMINUM INSTRUMENT KNOBS

### STANDARD ANODIZED KNOBS FOR ¼″ SHAFTS

Modern, decorative knobs of machined aluminum. Offer one-piece construction and superior styling at moderate pricing.

| Alco No.* | O.D. x Ht. | Net Each, Lots of 1-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|
| K-500 | .500″ x .62″ | $0.50 | $0.45 | $0.43 | $0.40 |
| K-700 | .750″ x .62″ | .55 | .50 | .47 | .44 |
| K-900 | .937″ x .62″ | .65 | .59 | .56 | .52 |
| K-1250 | 1.250″ x .75″ | .75 | .68 | .64 | .60 |
| K-1250-S† | 1.250″ x 1.250″ | 1.55 | 1.40 | 1.33 | 1.24 |
| K-5700‡ | .500″ & .750″ x 1.24″ | 1.20 | 1.08 | 1.03 | .96 |
| K-7900 | .750″ & .937″ O.D. | 1.35 | 1.22 | 1.16 | 1.08 |

*Specify color: Add suffix **A**, natural/black pointer; **B**, black/white pointer; **G**, gold/red pointer. †Spinner knob, knurled handle; not available **G**. ‡Concentric knob, upper knob for inner shaft (⅛″ dia.), lower outer shaft (¼″ dia.); not available **G**.

### SKIRTED ANODIZED KNOBS FOR ¼″ SHAFTS

Decorative knobs with skirts of natural or black aluminum (**KS**) or acrylic plastic (**KSP**).

| Alco No.* | O.D. x Ht. | Skirt Dia. | Net Each, Lots of 1-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|
| KS-500 | .500″ x .625″ | .750″ | 65c | 59c | 56c | 52c |
| KS-700 | .750″ x .625″ | 1.125″ | 70c | 63c | 60c | 56c |
| KS-900 | .937″ x .725″ | 1.406″ | 90c | 81c | 77c | 72c |
| KSP-700 | .750″ x .625″ | 1.125″ | 65c | 59c | 56c | 52c |
| KSP-900 | .937″ x .625″ | 1.406″ | 70c | 63c | 60c | 56c |

*Specify color: Add suffix **A** for natural aluminum anodizing with black pointer; add **B** for black anodizing with white pointer.

### DELUXE KNOBS FOR ¼″ SHAFTS

Styled to enhance the appearance and improve the operation of quality equipment. Designed with unique, notched pointers for hi-fi/stereo, tape recorders, test and medical instruments.

| Alco No.* | O.D. x Ht. | Net Each, Lots of 1-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|
| KHF-500 | .500″ x .56″ | $0.50 | $0.45 | $0.43 | $0.40 |
| KHF-700 | .750″ x .56″ | .55 | .50 | .47 | .44 |
| KHF-900 | .937″ x .56″ | .65 | .59 | .56 | .52 |
| KHF-1250† | 1.250″ x .56″ | .75 | .68 | .64 | .60 |

*Specify color: Add suffix **A** for natural aluminum with indicator line; add **G** for gold with indicator line. †Supplied with 2 set screws; all others, with one set screw.

### MINIATURE ANODIZED KNOBS FOR ⅛″ SHAFTS

**K-1/8** types are machined aluminum with anodized finish and hairline indicator. Usable with switches and controls having ⅛″ shafts. **KC** types are skirted knobs for MRA Series Alcoswitches; machined aluminum anodized with hairline and two set screws.

| Alco No. | O.D.‡ | Finish | Skirt | Net Each, Lots of 1-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| K-500A-1/8 | .500″ | Natural | No | $0.50 | $0.45 | $0.43 | $0.40 |
| K-500B-1/8 | .500″ | Black | No | .50 | .45 | .43 | .40 |
| K-500G-1/8 | .500″ | Gold | No | .50 | .45 | .43 | .40 |
| KS-500A-1/8 | .500″ | Natural | Yes | .65 | .59 | .56 | .52 |
| KS-500B-1/8 | .500″ | Black | Yes | .65 | .59 | .56 | .52 |
| KC-500A | .473″ | Natural | Yes | .65 | .59 | .56 | .52 |
| KC-500B | .473″ | Black | Yes | .65 | .59 | .56 | .52 |
| KC-500A-10* | .473″ | Natural | Yes | .80 | .72 | .68 | .64 |
| KC-500B-10* | .473″ | Black | Yes | .80 | .72 | .68 | .64 |
| KCVS-500A† | .473″ | Natural | Yes | 1.10 | .99 | .94 | .88 |
| KCVS-500B† | .473″ | Black | Yes | 1.10 | .99 | .94 | .88 |
| KR-1 | Shaft reducer | | | .06 | .045 | .04 | .036 |

*Has engraved 0–9 numerals. †Special adjustable-stop types. ‡Does not include skirt.

### KNURLED ALUMINUM KNOBS

Available as custom knurl (series **KB**), skirted custom knur (series **KBS**), diamond knurl (series **KD**), straight knurl (serie **KN**), aluminum skirted (series **KNS**) or pointer (series **KPN**). All have hairline indicator except **KN-501, KN-501-1/8, KN-70** and series **KNS**, arrowhead indicator; **KBS-500-10** and **KBS-500-10-1/8**, engraved 0–9 numerals.

| Alco No. | O.D. | Finish* | Net Each, Lots of 1-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|
| KB-500 | .500″ | A, B | $0.65 | $0.59 | $0.56 | $0.52 |
| KB-500-1/8† | .500″ | A, B | .65 | .59 | .56 | .52 |
| KBS-500 | .500″ | A, B | .80 | .72 | .68 | .64 |
| KBS-500-1/8† | .500″ | A, B | .80 | .72 | .68 | .64 |
| KBS-500-10 | .500″ | A, B | .95 | .85 | .82 | .76 |
| KBS-500-10-1/8† | .500″ | A, B | .95 | .85 | .82 | .76 |
| KD-500 | .500″ | A, B, G | .60 | .54 | .51 | .48 |
| KD-500-1/8† | .500″ | A, B, G | .60 | .54 | .51 | .48 |
| KD-700 | .750″ | A, B, G | .65 | .59 | .56 | .52 |
| KD-900 | .937″ | A, B, G | .80 | .72 | .68 | .64 |
| KD-1250 | 1.250″ | A, B, G | .95 | .85 | .82 | .76 |
| KN-500 | .500″ | A, B | .60 | .54 | .51 | .48 |
| KN-500-1/8† | .500″ | A, B | .60 | .54 | .51 | .48 |
| KN-700 | .750″ | A, B | .65 | .59 | .56 | .52 |
| KN-900 | .937″ | A, B | .80 | .72 | .68 | .64 |
| KN-1250 | 1.250″ | A, B | .95 | .85 | .82 | .76 |
| KN-1750 | 1.750″ | A, B | 1.85 | 1.67 | 1.59 | 1.48 |
| KN-1750-S♯ | 1.750″ | A, B | 2.20 | 1.98 | 1.90 | 1.76 |
| KN-5700• | ▴ | A, B | 1.40 | 1.26 | 1.20 | 1.12 |
| KN-7900• | ▪ | A, B | 1.60 | 1.44 | 1.38 | 1.28 |
| KN-500 | .500″ | AB, BA | .75 | .68 | .64 | .60 |
| KN-500-1/8† | .500″ | AB, BA | .75 | .68 | .64 | .60 |
| KN-700 | .750″ | AB, BA | .85 | .77 | .73 | .68 |
| KN-900 | .937″ | AB, BA | 1.00 | .90 | .86 | .80 |
| KN-1250 | 1.250″ | AB, BA | 1.20 | 1.08 | 1.03 | .96 |
| KN-1750 | 1.750″ | AB, BA | 2.15 | 1.94 | 1.85 | 1.72 |
| KN-1750-S♯ | 1.750″ | AB, BA | 2.50 | 2.25 | 2.15 | 2.00 |
| KN-501 | .500″ | BA only | .80 | .72 | .68 | .64 |
| KN-501-1/8† | .500″ | BA only | .80 | .72 | .68 | .64 |
| KN-701 | .750″ | BA only | .85 | .77 | .73 | .68 |
| KNS-501‡ | .500″ | BA only | 1.00 | .90 | .86 | .80 |
| KNS-501-1/8†‡ | .500″ | BA only | 1.00 | .90 | .86 | .80 |
| KNS-701§ | .750″ | BA only | 1.15 | 1.04 | .99 | .92 |
| KPN-700 | .750″ | A, B | 1.40 | 1.26 | 1.20 | 1.12 |
| KPN-700 | .750″ | AB, BA | 1.60 | 1.44 | 1.38 | 1.28 |
| KPN-900 | .937″ | A, B | 1.75 | 1.57 | 1.50 | 1.40 |
| KPN-900 | .937″ | AB, BA | 1.95 | 1.75 | 1.67 | 1.56 |

*Specify color: Add suffix **A**, natural/black indicator; **B**, black/white indicator; **G**, gold/red indicator; **AB**, natural/black top, black indicator; **BA**, black/natural top, white indicator. †⅛″ shaft; all others ¼″. ‡Skirt O.D., .750″. §Skirt O.D., 1.125″. ♯With .512″ fingertip aluminum disc on top. •Concentric type. ▴.500″ and .750″ O.D., ▪.750″ and .937″ O.D.; upper knob for inner shaft (⅛″ dia.), lower knob for outer shaft (¼″ dia.).

## ALCOKNOB PLASTIC KNOBS

Designed to harmonize and enhance the appearance of any commercial or consumer electronic equipment. All knobs have attractive spun aluminum cap plate and black plastic bodies and skirts; equipped with molded-in brass bushing and standard 6-32 set screw. All knobs also provided with white paint-filled dot or hairline indicator. For ¼″ shafts unless otherwise indicated.

### KNURLED KNOBS

| Alco No. | Knob O.D., In. | Skirt O.D., In. | Net Each, Lots of 1-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|
| PH-15-18B | 1.000 | ........ | 25c | 23c | 22c | 20c |
| PH-14-17B | 1.200 | ........ | 30c | 27c | 26c | 24c |
| PH-13-16B | 1.400 | ........ | 35c | 32c | 30c | 28c |
| PK-50B-⅛* | .500 | .750 | 25c | 23c | 22c | 20c |
| PK-50B | .500 | .750 | 25c | 23c | 22c | 20c |
| PK-70B | .750 | 1.000 | 30c | 27c | 26c | 24c |
| PK-90B | .937 | 1.250 | 35c | 32c | 30c | 28c |
| PKS-90B† | .937 | 1.437 | 50c | 45c | 43c | 40c |
| PKS-90B-10‡ | .937 | 1.437 | 55c | 50c | 47c | 44c |
| PKS-1105B-10§ | .680 | 1.160 | 50c | 45c | 43c | 40c |
| PKS-1106B | .680 | 1.160 | 45c | 41c | 39c | 36c |

*For ⅛″ shafts. †Natural anodized aluminum dial skirt; black arrow indicator. ‡Natural anodized aluminum dial skirt; numerals 0–10 on skirt with 30° spacing. §Natural anodized aluminum dial skirt; numerals 0–9 with 36° spacing.

### STANDARD KNOBS

| | | | | | | |
|---|---|---|---|---|---|---|
| PKA-50B-⅛* | .500 | .812 | 30c | 27c | 26c | 24c |
| PKA-50B | .500 | .812 | 30c | 27c | 26c | 24c |
| PKA-70B | .750 | 1.000 | 35c | 32c | 30c | 28c |

*For ⅛″ shaft.

### FLUTED KNOBS

| | | | | | | |
|---|---|---|---|---|---|---|
| PKB-70B | .750 | 1.125 | 35c | 32c | 30c | 28c |
| PKB-90B | .937 | 1.500 | 40c | 36c | 34c | 32c |

### CONTROL KNOBS

| | | | | | | |
|---|---|---|---|---|---|---|
| PK-1100B | .750 | ........ | 35c | 32c | 30c | 28c |
| PK-1100R* | .750 | ........ | 35c | 32c | 30c | 28c |
| PK-1100B-1/8† | .750 | ........ | 35c | 32c | 30c | 28c |
| PK-1100R-1/8*† | .750 | ........ | 35c | 32c | 30c | 28c |
| PK-1108B | .937 | ........ | 50c | 45c | 43c | 40c |
| PKC-1111B | .750 & | .885‡ | 95c | 85c | 82c | 76c |
| PKC-1111R* | .750 & | .885‡ | 95c | 85c | 82c | 76c |
| PKP-194B§ | .937 | ........ | 65c | 59c | 56c | 52c |
| PKP-1109B | .885 | ........ | 60c | 54c | 51c | 48c |

*Red finish. †For ⅛″ shafts. ‡Concentric type; upper knob for inner shaft (⅛″), lower knob for outer shaft (¼″). §Bar pointer.

## STIC ANCHORS (FIG. A)

forms all other anchors, yet is more
ical. Holds screws or nails in any
l that can be drilled. After hole is
anchor is tapped in. Screw forms
reads. For No. 4—No. 20 wood
¼", 5⁄16", ⅜", 7⁄16", ½" lag screws
Can be cut with knife, pliers, etc.
vibration and moisture proof. Tem-
re range, −78° F to +220° F.

| Screw Specs |  | Anchor Length | Net per 100 |
|---|---|---|---|
| Size | Length |  |  |
| 4, 5, 6 | 1", 1¼"<br>1½" | ¾"<br>1" | $ 1.38<br>1.52 |
| 5, 6, 7, 8 | 1", 1¼"<br>1½"<br>2", 2½" | ¾"<br>1"<br>1½" | 1.69<br>1.91<br>2.30 |
| 7, 8, 9, 10 | 1", 1¼"<br>1½", 1¾"<br>2", 2½" | ¾"<br>1"<br>1½" | 1.91<br>2.17<br>2.64 |
| 9, 10, 12 | 1¼"<br>1½"<br>1¾", 2" | ¾"<br>1"<br>1½" | 2.30<br>2.60<br>3.08 |
| 14, 12 | 1½", 1¾"<br>2", 2½"<br>3", 3½" | 1"<br>1½"<br>2" | 3.05<br>3.65<br>4.25 |
| 16, 14, ¼" l.s. | 1½"<br>2", 2½"<br>3", 3½" | 1"<br>1½"<br>2" | 3.39<br>4.21<br>5.05 |
| 20, 18, 5⁄16" l.s. | 1½"<br>2", 2½"<br>3", 3½" | 1"<br>1½"<br>2" | 4.86<br>6.08<br>7.30 |
| ⅜" lag screw | 2½", 3"<br>3¼", 4"<br>4½", 5"<br>5½", 6" | 1½"<br>2"<br>2½"<br>3" | 8.80<br>11.00<br>13.25<br>16.50 |
| 7⁄16", ½" l.s. | 3½", 4"<br>4½", 5"<br>5½", 6" | 2"<br>2½"<br>3" | 14.70<br>18.40<br>22.00 |

## MBINATION KITS (FIG. C)

**o. K-6**—Contents: 100 No. 12 x 1"
rs; 100 pan head, slotted tapping
s (10 x 1"); one ¼" masonry drill.
x 3½" x 1¼" plastic case.
Each.......................... **$5.25**

**o. K-8**—Contents: 100 No. 8 x ¾"
rs; 100 pan head, slotted tapping
s (6 x ⅞"); one 3⁄16" masonry drill.
" x 2¾" x 1¼" plastic case.
Each.......................... **$4.10**

## STIC "MINI-WIRE" STAPLE

ination insulator and staple for small
. Single, easy-to-drive nail; wires
y snap in an out of staple.

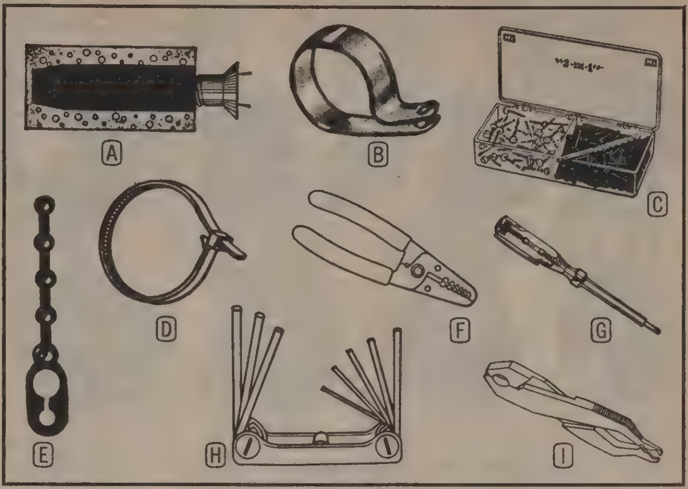
| b | Std. Packing |  | Wt./100 Oz. | Net per 1000 |
|---|---|---|---|---|
|  | Bag | Std. Pkg |  |  |
| P | 100 | 1000 | 5 | $10.20 |

## METAL CLAMPS (FIG. B)

**Metal** (**MP**)—Similar in design to
c clamps, but made from special .032"
plated steel; edges are smooth to pro-
ingers. Clamps close to round loop
ut being supported. **Insulated Metal**
—Loop portion of clamp has 1⁄32" thick
anent coating of polyvinylchloride to
abrasion and chemical action. Di-
ic strength, approx. 400 V/mil of
ng thickness. Temperature range,
F to +350° F. Black gloss finish.
types are ½" wide.

| e, In. | Suffix * | Net per 1000 |  |
|---|---|---|---|
|  |  | MP- | MI- |
| ⅛ | -2 | $10.95 | $27.23 |
| 3⁄16 | -3 | 11.18 | 28.13 |
| ¼ | -4 | 11.70 | 28.73 |
| 5⁄16 | -5 | 11.93 | 29.40 |
| ⅜ | -6 | 12.30 | 30.08 |
| 7⁄16 | -7 | 12.60 | 30.83 |
| ½ | -8 | 12.98 | 31.58 |
| 9⁄16 | -9 | 13.20 | 32.33 |
| ⅝ | -10 | 13.80 | 33.03 |
| 11⁄16 | -11 | 14.18 | 33.83 |
| ¾ | -12 | 14.55 | 34.88 |
| ⅞ | -14 | 15.45 | 36.30 |
|  | -16 | 16.43 | 50.10 |

er by complete catalog number, e.g.,
, **MI**-2, etc.



## PLASTIC CLAMPS (FIG. B)

Loop type clamps open to any diameter; made from virgin resins and carefully molded to close tolerances. Rounded edges protect wire insulation or tubing. Unaffected by atmospheric conditions; noncorrosive, non-sweating, non-rusting; will not support fungus growth. **Polypropylene** (**PPC**)—With built-in hinge. Temperature range, −20° to +220° F. Natural color. Excellent dielectric properties. **Ethyl Cellulose** (**EC**)—For general use. Temperature range, −66° to +180° F. **Nylon** (**NPC**)—For high temperatures. Strongest and toughest available. Temperature range, −66° to +340° F. NPC-2 thru NPC-8 ⅜" wide, all others ½" wide.

| Size, In. | * | Net per 1000 |  |  |
|---|---|---|---|---|
|  |  | EC- | NPC- | PPC- |
| ⅛ | -2 | $21.09 | $21.50 | $13.95 |
| 3⁄16 | -3 | 22.11 | 22.67 | 14.77 |
| ¼ | -4 | 23.12 | 24.75 | 15.39 |
| 5⁄16 | -5 | 24.13 | 27.00 | 16.74 |
| ⅜ | -6 | 25.14 | 28.43 | 17.06 |
| 7⁄16 | -7 | 26.15 | 30.15 | 18.32 |
| ½ | -8 | 27.17 | 31.80 | 19.34 |
| 9⁄16 | -9 | 28.18 | 36.75 | 20.40 |
| ⅝ | -10 | 29.20 | 42.00 | 22.35 |
| 11⁄16 | -11 | 30.21 | 44.34 | 23.10 |
| ¾ | -12 | 31.22 | 46.83 | 23.93 |
| ⅞ | -14 | 33.25 | 49.23 | 25.65 |
| 1 | -16 | 35.27 | 52.00 | 27.60 |
| 1⅛ | -18 | 37.29 | 59.84 | 31.13 |
| 1 3⁄16 | -19 | 38.31 | 62.35 | 32.93 |
| 1¼ | -20 | 39.32 | 64.74 | 35.48 |
| 1½ | -24 | 59.40 | 72.00 | 52.35 |

*Order by complete catalog number, e.g., **EC**-2, **NPC**-5, etc.

## "QUIK-WRAP"TM TIES (FIG. D)

Inexpensive, adjustable, self-locking cable ties made from virgin nylon for toughness, high tensile strength, exceptional dielectric properties and chemical resistance to common solvents. Serrations on tie engage teeth in head of tie when pulled through by hand or with a tool; locking is positive and permanent. Temperature range, −66° F to +340° F. Min. bundle diameter, ⅛". Min. tensile unlocking strength, 18 lbs., 13-240 and 13-340; 50 lbs., all others.

### STANDARD PACKAGE, 100

| Holub No. | Max. Bundle Dia. | Size, Inches Lgth. x W. | Net per Pkg. |  |
|---|---|---|---|---|
|  |  |  | 100-999 | 1000 Up |
| 13-240 | ¾" | 4 x .110 | $1.71 | $1.37 |
| 13-241 | 1¼" | 5½ x .190 | 2.25 | 1.80 |
| 13-242 | 1¾" | 6¾ x .190 | 2.75 | 2.20 |
| 13-243 | 3" | 11 x .190 | 6.00 | 4.80 |
| 13-244 | 4" | 14 x .190 | 6.85 | 5.50 |

### STANDARD PACKAGE, 1000*

| | | | | |
|---|---|---|---|---|
| 13-340 | ¾" | 4 x .110 | ..... | $13.25 |
| 13-341 | 1¼" | 5½ x .190 | ..... | 17.05 |
| 13-342 | 1¾" | 6¾ x .190 | ..... | 21.25 |
| 13-343 | 3" | 11 x .190 | ..... | 46.53 |
| 13-344 | 4" | 14 x .190 | ..... | 53.20 |

*Bulk packed.

## WIRE TIES (FIG. E)

Inexpensive wire ties can be removed and reused; applied to wire bundles like a belt. Will not loosen or slip; unique lock holds as tight as a buckle. Polypropylene ties are usable up to +220° F; nylon ties are usable from −60° F to +350° F.

| Holub No. | Material | Color | Net per Pkg., Pkg. of |  |
|---|---|---|---|---|
|  |  |  | 100 | 1000* |
| 90-B | Polyprop. | Blue | $1.50 | $12.00 |
| 90-R | Polyprop. | Red | 1.50 | 12.00 |
| 90-Y | Polyprop. | Yellow | 1.50 | 12.00 |
| 92-B† | Polyprop. | Blue | 3.30 | 26.50 |
| 92-R† | Polyprop. | Red | 3.30 | 26.50 |
| 92-Y† | Polyprop. | Yellow | 3.30 | 26.50 |
| 94-N | Nylon | Natural | 1.85 | 15.00 |
| 96-N† | Nylon | Natural | 4.20 | 33.50 |

*Bulk packed. †10" long; all others, 5" long.

## "LITTLE-7" WIRE STRIPPER (FIG. F)

High quality, inexpensive wire stripper and cutter for all commonly used wire (#16 to 6, solid; #18 to 8, stranded) plus conduit reamer. Six, accurate, sharp stripping holes are clearly marked. Two wire looping holes. Tempered, premium tool steel cutting blade, a full ½" long, is tempered for maximum dependability. Soft plastic grips for comfort; adjustable, "stafast" hinge bolt. Length, 6". Wt., 4 oz.
**Holub No. 18-850**—Net Each.... **$2.65**

## COMBINATION SCREWDRIVER AND NEON TESTLITE (FIG. G)

Extra handy screwdriver also tests circuits, switches, cords, motors, etc. Simply insert screwdriver tip while touching pocket clip with finger. If electricity is present, the handle glows. Works on one side of line only, indicating hot wire. Handles voltages 90 to 250 VAC. Length, 5" overall.
**Holub No. 79**—Net Each........ **$1.20**

## HEX KEY SET (FIG. H)

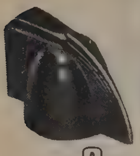
Saves time and money. Wrenches are always handy. Fold out convenience.
**Holub No. 18-275**—8-key set covers .050" to 5⁄32" sizes. Net Each........... **$1.80**
**Holub No. 18-276**—9-key set covers 5⁄16" to ¼" sizes. Net Each............. **$2.50**

## NYLON FUSE PULLERS (FIG. I)

Handy safety tool prevents danger of shock with pulling or replacing fuses. High dielectric nylon withstands many atmospheric conditions.
**Holub No. 67**—For glass fuses, 0–60 amps, 250 volts. Tweezer style. Net Ea.. **$0.75**
**Holub No. 68**—Same, but for small glass fuses, 0–100 amps, 250 volts. Net.. **$1.50**

# Kurz-Kasch Knobs

Thermosetting plastic knobs for any instrument requirement. Manufactured by the leading compression molding specialists, this is the most versatile and complete line available. **Material:** General purpose black phenolic is standard. **Setscrews:** Slotted-head setscrews supplied standard.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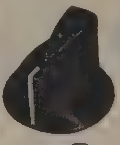
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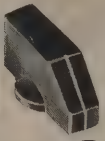
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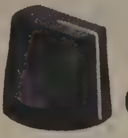
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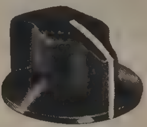
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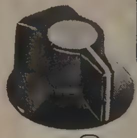
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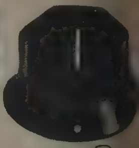
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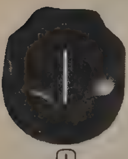
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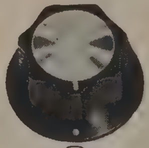
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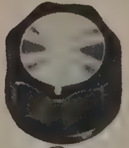
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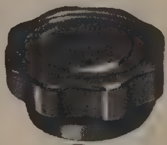
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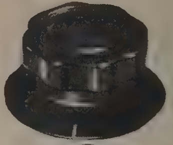
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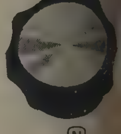
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## POINTERS AND BAR KNOBS

| K-K No.* | Fig. | Size, Inches O.D. x Height | Net per 1000, Lots of 1-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|
| S-292-1L | A | 1¼ x ⅝ | $120.00 | $ 91.00 | $ 85.00 |
| S-292-3L | A | 1¼ x ⅝ | 184.00 | 138.00 | 130.00 |
| S-293-1L | A | 2¼ x ⅝ | 204.00 | 153.00 | 143.00 |
| S-293-3L | A | 2¼ x ⅝ | 312.00 | 234.00 | 219.00 |
| S-246-1L | A | 1½ x ⅞ | 234.00 | 175.00 | 163.00 |
| S-246-3L | A | 1½ x ⅞ | 328.00 | 246.00 | 230.00 |
| AN-3220-1 | A | 1½ x ⅞ | 368.00 | 287.00 | 268.00 |
| AN-3220-3 | A | 1½ x ⅞ | 274.00 | 205.00 | 192.00 |
| S-658-1L | B | 1⅛ x 11/16 | 140.00 | 104.00 | 97.00 |
| S-626-1L | C | 1½ x ⅝ | 218.00 | 163.00 | 152.00 |
| S-400-1L | D | 15/16 x ¾ | 332.00 | 248.00 | 232.00 |
| S-657-1L | E | 1⅛ x ⅝ | 258.00 | 194.00 | 181.00 |
| S-657-3L | E | 1⅛ x ⅝ | 330.00 | 248.00 | 231.00 |
| S-1657-1L | F | 1⅛ x ⅝ | 494.00 | 370.00 | 321.00 |
| S-1657-3L | F | 1⅛ x ⅝ | 594.00 | 445.00 | 386.00 |

## PUSHBUTTONS

| | | | | | |
|---|---|---|---|---|---|
| S-328-30 | G | ½ x 15/16 | $ 98.00 | $73.00 | $68.00 |
| S-330-30 | G | 7/16 x 15/16 | 104.00 | 78.00 | 73.00 |
| S-343-30 | G | 7/16 x ⅝ | 104.00 | 78.00 | 73.00 |

## INSTRUMENT KNOB SERIES 600

Supplied standard with white indicator line; may be ordered without indicator line.

| | | | | | |
|---|---|---|---|---|---|
| S-645-1L | H | ¾ x 7/16 | $190.00 | $142.00 | $133.00 |
| S-645-3L | H | ¾ x 7/16 | 268.00 | 201.00 | 187.00 |
| S-645-5L | H | ¾ x 7/16 | 268.00 | 201.00 | 187.00 |
| S-645-21L | H | ¾ x 7/16 | 198.00 | 149.00 | 139.00 |
| S-647-1L | H | 1 x 19/32 | 192.00 | 143.00 | 134.00 |
| S-647-3L | H | 1 x 19/32 | 264.00 | 198.00 | 185.00 |
| S-648-1L | H | 1¼ x 21/32 | 198.00 | 148.00 | 139.00 |
| S-648-3L | H | 1¼ x 21/32 | 272.00 | 204.00 | 191.00 |
| S-653-1L | H | 1½ x ¾ | 216.00 | 163.00 | 152.00 |
| S-653-3L | H | 1½ x ¾ | 304.00 | 228.00 | 213.00 |
| S-649-1L | H | 2 x ⅞ | 518.00 | 389.00 | 337.00 |
| S-649-3L | H | 2 x ⅞ | 632.00 | 474.00 | 411.00 |

## INSTRUMENT KNOB SERIES 700

Supplied standard with white indicator line; may be ordered without indicator line.

| | | | | | |
|---|---|---|---|---|---|
| S-745-1L | I | ⅝ x 7/16 | $262.00 | $196.00 | $183.00 |
| S-745-3L | I | ⅝ x 7/16 | 346.00 | 260.00 | 243.00 |
| S-745-5L | I | ⅝ x 7/16 | 346.00 | 260.00 | 243.00 |
| S-745-21L | I | ⅝ x 7/16 | 274.00 | 206.00 | 192.00 |
| S-747-1L | I | 13/16 x 19/32 | 192.00 | 143.00 | 134.00 |
| S-747-3L | I | 13/16 x 19/32 | 264.00 | 198.00 | 185.00 |
| S-748-1L | I | 1 x 21/32 | 286.00 | 215.00 | 200.00 |
| S-748-3L | I | 1 x 21/32 | 364.00 | 273.00 | 255.00 |
| S-753-1L | I | 1¼ x ¾ | 310.00 | 232.00 | 217.00 |
| S-753-3L | I | 1¼ x ¾ | 402.00 | 301.00 | 281.00 |
| S-749-1L | I | 1⅝ x ⅞ | 620.00 | 466.00 | 403.00 |
| S-749-3L | I | 1⅝ x ⅞ | 740.00 | 554.00 | 480.00 |

***Suffix:** Indicates various features per table below.

| Suffix | Feature |
|---|---|
| -1 | Molded hole for ¼″ shaft, with 1 setscrew |
| -3 | Brass insert for ¼″ shaft, with 1 setscrew |
| -5 | Brass insert for ⅛″ shaft, with 1 setscrew |
| -21 | Molded hole for ⅛″ shaft, with 1 setscrew |
| -30 | For .052″ x 3/16″ flatted shaft with spring |
| -70 | Heavy duty brass insert for ¼″ shaft, with 1 setscrew |
| -BB | 2 slotted head setscrews available at extra cost: 1-99, $98.00/1000; 100-499, $73.00/1000; 500-999, 63.00/1000; 1000 Up, $49.00/1000 |

**LARGER QUANTITY PRICES AVAILABLE ON REQUEST.**

## DECORATIVE INLAY INSTRUMENT KNOB SERIES 1600

Furnished standard with indicator line; may be ordered without indicator line.

| K-K No.* | Fig. | Size, Inches O.D. x Height | Net per 1000, Lots of 1-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|
| S-1645-1L | J | ¾ x 7/16 | $384.00 | $288.00 | $268.00 |
| S-1645-3L | J | ¾ x 7/16 | 476.00 | 358.00 | 310.00 |
| S-1645-5L | J | ¾ x 7/16 | 476.00 | 358.00 | 310.00 |
| S-1645-21L | J | ¾ x 7/16 | 402.00 | 301.00 | 281.00 |
| S-1647-1L | J | 1 x 19/32 | 386.00 | 289.00 | 270.00 |
| S-1647-3L | J | 1 x 19/32 | 474.00 | 355.00 | 308.00 |
| S-1648-1L | J | 1¼ x 21/32 | 412.00 | 309.00 | 289.00 |
| S-1648-3L | J | 1¼ x 21/32 | 502.00 | 377.00 | 326.00 |
| S-1653-1L | J | 1½ x ¾ | 434.00 | 325.00 | 281.00 |
| S-1653-3L | J | 1½ x ¾ | 538.00 | 403.00 | 349.00 |
| S-1649-1L | J | 2 x ⅞ | 764.00 | 573.00 | 497.00 |
| S-1649-3L | J | 2 x ⅞ | 900.00 | 675.00 | 585.00 |

## DECORATIVE INLAY INSTRUMENT KNOB SERIES 1700

Furnished standard with indicator line; may be ordered without indicator line.

| | | | | | |
|---|---|---|---|---|---|
| S-1745-1L | K | ⅝ x 7/16 | $ 458.00 | $343.00 | $297.00 |
| S-1745-3L | K | ⅝ x 7/16 | 558.00 | 418.00 | 363.00 |
| S-1745-5L | K | ⅝ x 7/16 | 558.00 | 418.00 | 363.00 |
| S-1745-21L | K | ⅝ x 7/16 | 480.00 | 359.00 | 311.00 |
| S-1747-1L | K | 13/16 x 19/32 | 386.00 | 289.00 | 270.00 |
| S-1747-3L | K | 13/16 x 19/32 | 474.00 | 355.00 | 308.00 |
| S-1748-1L | K | 1 x 21/32 | 502.00 | 377.00 | 327.00 |
| S-1748-3L | K | 1 x 21/32 | 594.00 | 446.00 | 386.00 |
| S-1753-1L | K | 1¼ x ¾ | 528.00 | 396.00 | 272.00 |
| S-1753-3L | K | 1¼ x ¾ | 638.00 | 478.00 | 414.00 |
| S-1749-1L | K | 1⅝ x ⅞ | 868.00 | 651.00 | 564.00 |
| S-1749-3L | K | 1⅝ x ⅞ | 1010.00 | 757.00 | 656.00 |

## HEAVY DUTY INSTRUMENT KNOBS SERIES 300

Skirted knobs supplied standard with white indicator line; may be ordered without indicator line.

| K-K No.* | Fig. | Size, Inches O.D. x Height | Net per 1000, Lots of 1-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|
| S-319-3 | L | 1 x ⅝ | $ 262.00 | $ 197.00 | $183.00 |
| S-308-3 | L | 1⅛ x ⅝ | 268.00 | 200.00 | 187.00 |
| S-385-3 | L | 1⅜ x 11/16 | 418.00 | 313.00 | 292.00 |
| S-309-3 | L | 1⅝ x ¾ | 356.00 | 267.00 | 249.00 |
| S-310-3 | L | 2⅜ x ⅞ | 542.00 | 407.00 | 353.00 |
| S-380-3L | M | 1⅛ x 13/16 | 718.00 | 539.00 | 467.00 |
| S-381-70L | M | 1⅜ x 27/32 | 876.00 | 658.00 | 570.00 |
| S-311-3L | M | 1⅝ x ⅞ | 800.00 | 599.00 | 519.00 |
| S-312-70L | M | 2⅜ x 15/16 | 1400.00 | 1050.00 | 910.00 |

## HEAVY DUTY INSTRUMENT KNOBS SERIES 1300 WITH DECORATIVE ALUMINUM INLAY

| | | | | | |
|---|---|---|---|---|---|
| S-1319-3 | N | 1 x ⅝ | $492.00 | $369.00 | $319.00 |
| S-1308-3 | N | 1⅛ x ⅝ | 500.00 | 374.00 | 324.00 |
| S-1385-3 | N | 1⅜ x 11/16 | 730.00 | 548.00 | 475.00 |
| S-1309-3 | N | 1⅝ x ¾ | 626.00 | 470.00 | 407.00 |
| S-1310-3 | N | 2⅜ x ⅞ | 860.00 | 645.00 | 559.00 |

**EXCLUSIVE WARRANTY:**

**EXCLUSIVELY IN THE INDUSTRY, KURZ-KASCH WARRANTS ALL THEIR KNOBS FOR THE LIFE OF THE PRODUCT ON WHICH THEY ARE USED.**

# ) Kurz-Kasch Knobs

O

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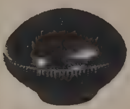
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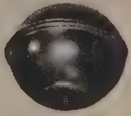
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## SNOB KNOB SERIES 900

900: Supplied with plain top and slotted set screw. **Type**
Same, but with spun aluminum inlay on top. **Type 2900:**

Same as 900, but with spun aluminum cap. **Type 3900:** Same as 900, but with metallic aluminum or gold (specify) ring on top.

| K-K umber* | Fig. | Size, Inches O.D. x Height | Net per 1000, Lots of 1-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|
| 902-1 | O | ½ x ⅝ | $210.00 | $158.00 | $147.00 |
| 902-1DL | O | ½ x ⅝ | 258.00 | 194.00 | 181.00 |
| 902-21 | O | ½ x ⅝ | 244.00 | 183.00 | 171.00 |
| 902-21DL | O | ½ x ⅝ | 292.00 | 219.00 | 204.00 |
| 903-1 | O | ¾ x ⅝ | 244.00 | 183.00 | 171.00 |
| 903-1DL | O | ¾ x ⅝ | 292.00 | 219.00 | 204.00 |
| 903-3 | O | ¾ x ⅝ | 374.00 | 280.00 | 261.00 |
| 903-3DL | O | ¾ x ⅝ | 422.00 | 317.00 | 274.00 |
| 904-1 | O | ⅞ x ⅝ | 268.00 | 202.00 | 188.00 |
| 904-1DL | O | ⅞ x ⅝ | 316.00 | 237.00 | 221.00 |
| 904-3 | O | ⅞ x ⅝ | 400.00 | 299.00 | 279.00 |
| 904-3DL | O | ⅞ x ⅝ | 448.00 | 336.00 | 291.00 |
| 905-1 | O | 1⅛ x 11/16 | 288.00 | 216.00 | 202.00 |
| 905-1DL | O | 1⅛ x 11/16 | 336.00 | 252.00 | 235.00 |
| 905-3 | O | 1⅛ x 11/16 | 418.00 | 314.00 | 293.00 |
| 905-3DL | O | 1⅛ x 11/16 | 466.00 | 350.00 | 303.00 |
| 906-1 | O | 1⅜ x ¾ | 294.00 | 221.00 | 206.00 |
| 906-1DL | O | 1⅜ x ¾ | 342.00 | 257.00 | 239.00 |
| 906-3 | O | 1⅜ x ¾ | 444.00 | 333.00 | 289.00 |
| 906-3DL | O | 1⅜ x ¾ | 492.00 | 369.00 | 320.00 |
| 907-1 | O | 1¾ x 13/16 | 388.00 | 292.00 | 272.00 |
| 907-1DL | O | 1¾ x 13/16 | 436.00 | 327.00 | 283.00 |
| 907-3 | O | 1¾ x 13/16 | 538.00 | 403.00 | 350.00 |
| 907-3DL | O | 1¾ x 13/16 | 586.00 | 440.00 | 381.00 |
| -1902-1 | P | ½ x ⅝ | 368.00 | 276.00 | 257.00 |
| -1902-1L | P | ½ x ⅝ | 452.00 | 339.00 | 294.00 |
| -1902-21 | P | ½ x ⅝ | 402.00 | 301.00 | 280.00 |
| -1902-21L | P | ½ x ⅝ | 486.00 | 364.00 | 315.00 |
| -1903-1 | P | ¾ x ⅝ | 402.00 | 301.00 | 280.00 |
| -1903-1L | P | ¾ x ⅝ | 486.00 | 364.00 | 315.00 |
| -1903-3 | P | ¾ x ⅝ | 532.00 | 399.00 | 345.00 |
| -1903-3L | P | ¾ x ⅝ | 616.00 | 462.00 | 400.00 |
| -1904-1 | P | ⅞ x ⅝ | 426.00 | 320.00 | 277.00 |
| -1904-1L | P | ⅞ x ⅝ | 510.00 | 383.00 | 327.00 |
| -1904-3 | P | ⅞ x ⅝ | 556.00 | 418.00 | 362.00 |
| -1904-3L | P | ⅞ x ⅝ | 640.00 | 481.00 | 417.00 |

| K-K Number* | Fig. | Size, Inches O.D. x Height | Net per 1000, Lots of 1-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|
| S-1905-1 | P | 1⅛ x 11/16 | $446.00 | $334.00 | $290.00 |
| S-1905-1L | P | 1⅛ x 11/16 | 530.00 | 397.00 | 344.00 |
| S-1905-3 | P | 1⅛ x 11/16 | 580.00 | 435.00 | 377.00 |
| S-1905-3L | P | 1⅛ x 11/16 | 660.00 | 495.00 | 428.00 |
| S-1906-1 | P | 1⅜ x ¾ | 472.00 | 355.00 | 308.00 |
| S-1906-1L | P | 1⅜ x ¾ | 556.00 | 418.00 | 362.00 |
| S-1906-3 | P | 1⅜ x ¾ | 622.00 | 466.00 | 404.00 |
| S-1906-3L | P | 1⅜ x ¾ | 706.00 | 529.00 | 459.00 |
| S-1907-1 | P | 1¾ x 13/16 | 588.00 | 432.00 | 382.00 |
| S-1907-1L | P | 1¾ x 13/16 | 672.00 | 504.00 | 437.00 |
| S-1907-3 | P | 1¾ x 13/16 | 738.00 | 553.00 | 479.00 |
| S-1907-3L | P | 1¾ x 13/16 | 822.00 | 616.00 | 533.00 |
| S-2902-1 | R | ½ x ⅝ | 378.00 | 284.00 | 265.00 |
| S-2902-1L | R | ½ x ⅝ | 484.00 | 362.00 | 314.00 |
| S-2902-21 | R | ½ x ⅝ | 412.00 | 309.00 | 288.00 |
| S-2902-21L | R | ½ x ⅝ | 516.00 | 387.00 | 336.00 |
| S-2903-1 | R | ¾ x ⅝ | 412.00 | 309.00 | 288.00 |
| S-2903-1L | R | ¾ x ⅝ | 516.00 | 387.00 | 336.00 |
| S-2903-3 | R | ¾ x ⅝ | 542.00 | 406.00 | 352.00 |
| S-2903-3L | R | ¾ x ⅝ | 646.00 | 485.00 | 420.00 |
| S-2904-1 | R | ⅞ x ⅝ | 436.00 | 328.00 | 284.00 |
| S-2904-1L | R | ⅞ x ⅝ | 542.00 | 406.00 | 352.00 |
| S-2904-3 | R | ⅞ x ⅝ | 568.00 | 425.00 | 367.00 |
| S-2904-3L | R | ⅞ x ⅝ | 672.00 | 504.00 | 437.00 |
| S-2905-1 | R | 1⅛ x 11/16 | 476.00 | 358.00 | 310.00 |
| S-2905-1L | R | 1⅛ x 11/16 | 582.00 | 437.00 | 378.00 |
| S-2905-3 | R | 1⅛ x 11/16 | 606.00 | 456.00 | 395.00 |
| S-2905-3L | R | 1⅛ x 11/16 | 712.00 | 534.00 | 463.00 |
| S-2906-1 | R | 1⅜ x ¾ | 504.00 | 378.00 | 328.00 |
| S-2906-1L | R | 1⅜ x ¾ | 610.00 | 457.00 | 395.00 |
| S-2906-3 | R | 1⅜ x ¾ | 654.00 | 430.00 | 424.00 |
| S-2906-3L | R | 1⅜ x ¾ | 758.00 | 569.00 | 492.00 |
| S-2907-1 | R | 1¾ x 13/16 | 640.00 | 481.00 | 417.00 |
| S-2907-1L | R | 1¾ x 13/16 | 746.00 | 560.00 | 485.00 |
| S-2907-3 | R | 1¾ x 13/16 | 790.00 | 592.00 | 513.00 |
| S-2907-3L | R | 1¾ x 13/16 | 894.00 | 671.00 | 582.00 |

## WING KNOB SERIES 700

| K-K No.* | Fig. | Size, Inches O.D. x Height | Net per 1000, Lots of 1-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|
| -3L-BB | S | 1¼ x ¾ | $700.00 | $525.00 | $455.00 |
| -3L-BB | S | 1½ x ¾ | 726.00 | 544.00 | 471.00 |

## WING KNOB SERIES 1700 WITH DECORATIVE ALUMINUM INLAY

| | | | | | |
|---|---|---|---|---|---|
| 0-3L-BB | T | 1¼ x ¾ | $ 984.00 | $738.00 | $640.00 |
| 1-3L-BB | T | 1½ x ¾ | 1010.00 | 757.00 | 656.00 |

## CONCENTRIC SERIES

| | | | | | |
|---|---|---|---|---|---|
| -1L† | U | 1 x 39/64 | $354.00 | $266.00 | $248.00 |
| -3L† | U | 1 x 39/64 | 454.00 | 341.00 | 295.00 |
| -3L-BB‡ | V | 1¼ x ¾ | 832.00 | 623.00 | 540.00 |
| -3L-BB† | V | 1½ x ¾ | 856.00 | 642.00 | 557.00 |

with S-645, 1645 as top knob. ‡Use with S-745, 1745 as top

## CORATIVE ALUMINUM KNOB SERIES 1000

shed standard with indicator line; may be ordered without
tor line.

| K-K No.* | Fig. | Size, Inches O.D. x Height | Net per 1000, Lots of 1-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|
| 000-21L | W | 7/16 x ⅝ | $1030.00 | $ 772.00 | $ 669.00 |
| 001-21L | W | ¾ x 9/16 | 1134.00 | 851.00 | 737.00 |
| 001-1L | W | ¾ x 9/16 | 1134.00 | 851.00 | 737.00 |
| 002-1L | W | 1 x 11/16 | 1324.00 | 992.00 | 860.00 |
| 003-1L | W | 1¼ x ¾ | 1586.00 | 1182.00 | 1024.00 |
| 004-1L | W | 1½ x 13/16 | 1932.00 | 1449.00 | 1256.00 |

## GEAR AND CONTROL BALLS

Supplied standard with molded threads.

| K-K No.* | Fig. | Size, Inches O.D. x Height | Thread | Net per 1000, Lots of 1-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|
| S-446-3 | X | 1¾ x 1¾ | ⅜-16 | $390.00 | $292.00 | $273.00 |
| S-446-5 | X | 1¾ x 1¾ | ½-13 | 390.00 | 292.00 | 273.00 |
| S-442-4 | Y | 2 x 1 5/16 | ⅜-24 | 296.00 | 222.00 | 207.00 |
| S-801-15C | Z | 1 x 1 | 5/16-18 | 170.00 | 128.00 | 119.00 |
| S-801-15D | Z | 1 x 1 | #10-32 | 150.00 | 112.00 | 104.00 |
| S-801-15E | Z | 1 x 1 | #10-24 | 150.00 | 112.00 | 104.00 |
| S-801-15F | Z | 1 x 1 | ⅜-24 | 170.00 | 128.00 | 119.00 |
| S-801-15G | Z | 1 x 1 | #8-32 | 150.00 | 112.00 | 104.00 |
| S-801-15Q | Z | 1 x 1 | ¼-28 | 170.00 | 128.00 | 119.00 |
| S-801-15T | Z | 1 x 1 | ¼-20 | 170.00 | 128.00 | 119.00 |
| S-801-15Z | Z | 1 x 1 | 5/16-24 | 170.00 | 128.00 | 119.00 |
| S-801-15EE | Z | 1 x 1 | ⅜-16 | 170.00 | 128.00 | 119.00 |

***Suffix:** Indicates various features per table below.

| Suffix | Feature |
|---|---|
| -1 | Molded hole for ¼" shaft, with 1 setscrew |
| -3 | Brass insert for ¼" shaft, with 1 setscrew |
| -5 | Brass insert for ⅛" shaft, with 1 setscrew |
| -21 | Molded hole for ⅛" shaft, with 1 setscrew |
| -30 | For .052" x 3/16" flatted shaft with spring |
| -70 | Heavy duty brass insert for ¼" shaft, with 1 setscrew |
| -BB | 2 slotted head setscrews available at extra cost: 1–99, **$98.00**/1000; 100–499, **$73.00**/1000; 500–999, **63.00**/1000; 1000 Up, **49.00**/1000 |

**OTHER KURZ-KASCH KNOBS INCLUDE LEVER KNOBS, PUSHBUTTONS, SPINNER KNOBS AND MIL TYPES. WRITE FOR FULL DETAILS AND QUANTITY PRICING.**

**LARGER QUANTITY PRICES AVAILABLE ON REQUEST.**

## CALIBRATED PLANETARY DRIVE DIALS

Recommended for all types of equipment. Knobs are black Bakelite*; dials are nickel-plated brass. **Type N** dial has a vernier scale; depth, 1⅜"; for ¼" shaft. **Type AM**, dials have dial pointer; depth, 1 7/16"; for ¼" shafts. Average Shpg. Wt., 1 lb.

| NRCI No. | Ratio | Scale | Dia. | Net Each, Lots of 1-99 | 100-999 | 1000 Up |
|---|---|---|---|---|---|---|
| **AM-2** | 5:1 | 0-100 range; 180° | 3" | $ 6.00 | $ 4.50 | $ 4.00 |
| **AM-5** | 5:1 | 200-0 range; 360° | 3" | 6.00 | 4.50 | 4.00 |
| **AM-6** | 5:1 | 0-150 range; 270° | 3" | 6.00 | 4.50 | 4.00 |
| **N-2** | 5:1 | 0-100 range; 180° | 4" | 18.00 | 13.50 | 12.00 |

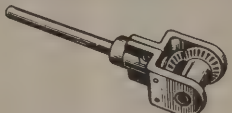
*Reg. Bakelite Corp. TM.

## ALL-PURPOSE KNOBS

National's series HRT and HRS knobs have a world-wide reputation in electronics. That popularity is due to a careful combination of functionality and beauty. Made of long-lasting Tenite; deeply knurled for sure grip. Type HRS has 7/16" chrome dial. Type HRT has a chrome insert. Average Shpg. Wt., 7 oz.

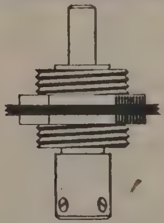
| NRCI No. | Specify Color | Description | Knob Dia. | Net Each, Lots of 1-99 | 100-999 | 1000 Up |
|---|---|---|---|---|---|---|
| **HRS-3** | Black or gray | 0-10 scale; 300° | 1 7/16" | $1.00 | $0.80 | $0.68 |
| **HRS-4** | Black or gray | 1-line scale | 1 7/16" | .90 | .72 | .60 |
| **HRS-5** | Black only | 0-10 scale; 180° | 1 7/16" | 1.10 | .88 | .75 |
| **HRT** | Black only | Chrome insert | 2⅛" | 1.10 | .85 | .74 |
| **HRT-M** | Black only | Chrome circle | 1½" | .75 | .56 | .50 |

## RAD RIGHT-ANGLE DRIVE



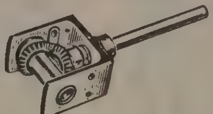
Precision right-angle drive for positive control of variable potentiometers and capacitors at right angle to front panel. Compact, space-saver can drive up to 2 units; provides 1:1 ratio. Rugged aluminum housing and gears for long-lived performance and dependability. Shaft 2½" lg. overall; ¼" diameter. Shpg. Wt., 10 oz.
**NRCI Model RAD**—Net Each....**$4.80**

## BALL REDUCTION DRIVES



Available in 10:1 and 5:1 reductions, in 4 new styles that satisfy any front or rear mounting requirements; including dial or pointer mounting. **NBD-1** and **-2** drives require only 1 in.-oz. input at no load, yet transmit outputs of 25-35 in.-oz. torque. Drives are equipped with hardened balls and are compactly packaged in nickel/silver housings. Dissimilar metals are used in the two races to give a combination of high traction with long life. Shpg. Wt., 1 lb.
**NRCI Model NBD1-1**—Net Each.**$5.00**
**NRCI Model NBD2-1**—Net Each. **5.00**

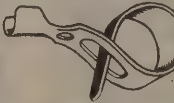
## PRAD PRECISION RIGHT-ANGLE DRIVE



Same as Model RAD, but with durable brass gears. Backlash less than 1½% overall. Bronze bearings are protected in a diecast zinc housing. Precise 1:1 ratio for high accuracy and maximum service. Shaft, 2½" lg. overall; ¼" diameter. Shpg. Wt., 10 oz.
**NRCI Model PRAD**—Net Each.**$24.00**

## PLATE CAPS AND GRID CAPS

SPP-3, -9


GG-8, -12, -24

**Type SPP-3** safety plate cap is made of L-4 steatite with silver or tin-plated beryllium copper grips. Fits ⅜" tube caps and has a terminal for .079" dia. wire. **Type SPP-9** plate cap is larger than type SPP-3; fits 9/16" tube caps and has a terminal for .100" dia. wire. **Grid** grips provide a positive fit on a variety of tube caps. Pressure on the clip provides secure contact and easy release. Available in two types and 3 sizes. Shpg. Wt., 7 oz.

| NRCI No. | Description | Net Each |
|---|---|---|
| **SPP-3** | ⅜" dia. for 807 | **30c** |
| **SPP-9** | 9/16" dia. for 866 | **30c** |
| **GG-8** | ¼" dia. for octals | **10c** |
| **GG-12** | 9/16" dia. for 866 | **10c** |
| **GG-24** | ⅜" dia. for regulars | **7c** |

## AVD REDUCTION MECHANISM

Time-tested mechanism that has been use
successfully in laboratory test equipmen
communications equipment and other pre
cision applications requiring a 5:1 redu
tion. Mounts easily on front of equipmen
panel by means of four 5/32" holes. Couplin
hubs made to specifications on reques
Shpg. Wt., 8 oz.
**NRCI Model AVD-250**—Net.....**$2.75**

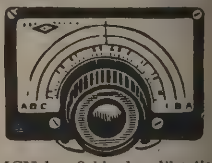
## SHAFT COUPLINGS

TX-8

TX-10

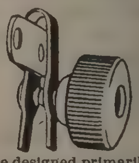
Compact couplings for joining two shaft
together. Ruggedly constructed of rigi
steatite that won't stretch or twist. Per
formance-proved in industrial, commercia
and amateur installation. **TX-8** is fully
insulated by ceramic disc; **TX-10** is Bake
lite insulated. Hubs and spiders are o
solid, nickel-plated brass. Includes two se
screws on each hub for firm, positive gri
on shaft. 1⅝" dia. max.; fits all ¼" dia
shafts. Shpg. Wt., 7 oz.
**NRCI Model TX-8**—
Net Ea., Lots of 1-99.............**$1.52**
100-999....**$1.00**; 1000 Up... **.88**
**NRCI Model TX-10**—
Net Ea., Lots of 1-99..............**96c**
100-999.......**72c**; 1000 Up......**64c**

## TYPE MCN VERNIER DIAL FOR INDIVIDUAL CALIBRATION



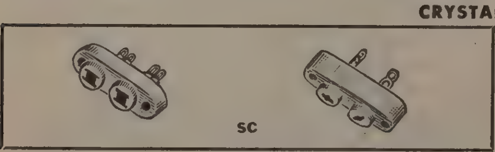
Type MCN has 3 blank calibration row
and a 0-to-100, 180 degree logging scal
Holes in pointer make calibration mark
5-to-1 "velvet vernier" drive. Mounts o
3½" rack panel and fits ¼" shaft. Size
3⅞" w. x 1/16" d. x 2¾" h. (extends
below dial frame). Shpg. Wt., 1 lb.
**NRCI Model MCN**—Net Each...**$9.7**

## ODL DIAL LOCK



Locking device designed primarily as a di
rim-clamp for NRCI's **O** and **K** type dial
Made of brass with nickel-plated finish.
convenient thumbscrew adjustment sim
plifies locking. Two 9/64" holes are provide
for panel mounting. Shipping Wt., 7 oz.
**NRCI Model ODL**—Net Each....**$1.5**

## CRYSTAL SOCKETS



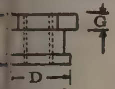
**Type CS Crystal Sockets**—Glazed ceramic body with unglaze
Dow Corning 200 treated surface.

| NRCI No. | Contacts Spaced | Pin Dia. | Contacts Silver-Plated | Net Each 1-99* |
|---|---|---|---|---|
| **CS-5** | .500" | .125" | Phosphor bronze | **45c** |
| **CS-6** | .486" | .095" | Phosphor bronze | **45c** |
| **CS-7** | .486" | .050" | Beryl. copper | **45c** |
| **CS-8** | .750" | .125" | Phosphor bronze | **45c** |

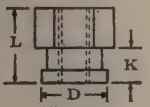
★LARGER QUANTITY PRICES AVAILABLE ON REQUEST

# CAPTIVE FASTENERS

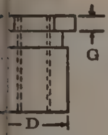
e fasteners are made of wear- t threaded material for installation ninum and brass using standard tainless steel type 303 passivated -F-14072, Finish E300. Also avail- carbon steel B1113 per Fed. QQ-S- th chromated cadmium finish per Q-P-416, Type II, Class C; add CAR (prices on request). **To Order Nuts:** Use prefix NCN and add riate code numbers for thread size, etal thickness, extension length (for 2 to 4 only), e.g., NCN-2X-2-0-2 **CN** standing for National Captive **X** for 2-56 screw; **2** for Type 2; **0** for etal thk.; **2** for 1/16" extension lgth.



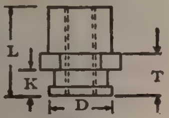
TYPE 1



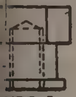
TYPE 2



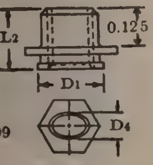
TYPE 3



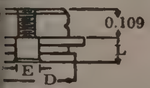
TYPE 4



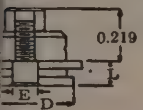
YPE 5



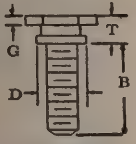
TYPE 6



YPE 7



YPE 8



STUD TYPE

### TYPE 1 CAPTIVE NUTS

Available in screw sizes and metal thicknesses listed in tables at the right. Table below provides critical dimensions for the metal thicknesses available.

| Metal Th. | G ±.005" | L ±.005" | Metal Th. | G ±.005" | L ±.005" |
|---|---|---|---|---|---|
| 1/16" | .019" | .058"⧗ | 3/16" | .029" | .177" |
| 3/32" | .029" | .085" | 1/4" | .029" | .236" |
| 1/8" | .029" | .117" | | | |

### TYPE 2 CAPTIVE NUTS

Extended hex head and threads may be used as standoff for compressive loads. For use in 1/16" metal; meet MIL-E-5400, MIL-E-16400 and MIL-P-11268. Counter-bore or other modifications on request. See tables at right for screw sizes, metal thicknesses and extension lengths. Dimension L equals sum of material thickness and extension length.

**Dimen. K±.005":** Metal Th. Code: 2, .046"; 3, .064"; 4, .096"; 6, .158"; 8, .221".

### TYPE 3 CAPTIVE NUTS

Provides extra thread length by extending cylindrical barrel. Can be used as orientation or guide device; or, as tensile load standoff. May be used in metal thicknesses greater than those listed in table. Dimension G same as for Type 1. Metal thickness **0** not available. Extension length **6** not available.

### TYPE 4 CAPTIVE NUTS

Sams as Type 3, except that the cylindrical barrel provides an excellent standoff for compression loads. Screw size **2X**, metal thickness **0**, and extension length **6** not available. Dimension L equals sum of material thickness and extension length.

| Metal Th. | K ±.005" | T ±.005" | Metal Th. | K ±.005" | T ±.005" |
|---|---|---|---|---|---|
| 1/16" | .039" | .058" | 3/16" | .148" | .177" |
| 3/32" | .056" | .085" | 1/4" | .207" | .236" |
| 1/8" | .088" | .117" | | | |

### OPTIONS FOR TYPES 1, 2, 3 AND 4 NUTS

### FIRST CODE—SCREW SIZE

| Code No. | Screw Size | Hex. In. | Mtg. Hole* | D† |
|---|---|---|---|---|
| 2X | 2-56 | 1/4 | .203 | .201 |
| 2 | 2-56 | 3/16 | .161 | .159 |
| 4S | 4-40 | 3/16 | .161 | .159 |
| 4 | 4-40 | 1/4 | .203 | .201 |
| 6 | 6-32 | 1/4 | .203 | .201 |
| 6X | 6-32 | 5/16 | .265 | .263 |
| 8 | 8-32 | 5/16 | .265 | .263 |
| 10 | 10-32 | 5/16 | .265 | .263 |
| 420 | 1/4-20 | 7/16 | .386 | .384 |
| 428 | 1/4-28 | 7/16 | .386 | .384 |
| 518 | 5/16-18 | 1/2 | .453 | .451 |
| 616 | 3/8-16 | 9/16 | .516 | .514 |

### THIRD CODE—METAL THICKNESS

See "Dim." sizes available under each type.

| Code No. | Dim. | Code No. | Dim. |
|---|---|---|---|
| 0 | .040" | 4 | 1/8" |
| 2 | 1/16" | 6 | 3/16" |
| 3 | 3/32" | 8 | 1/4" |

### FOURTH CODE—EXTENSION LENGTH

Not applicable to Type 1.

| Code No. | Dim. | Code No. | Dim. |
|---|---|---|---|
| 1 | 1/32" | 4 | 1/8" |
| 2 | 1/16" | 5 | 5/32" |
| 3 | 3/32" | 6 | 3/16" |

### TYPE 5 BLIND-HOLE CAPTIVE NUTS

Provides water-tight, blind hole for applications where through-tap is not required. Hex may provide flush fit or may extend above parent material after insertion to provide standoff. Made to your specifications: Supply blueprint with dimensions on screw size, hex size, extension length, depth and type of tap, metal thickness and counterbore, if required. **Prices on Quotation for Each Requirement.**

### TYPE 6 SELF-LOCKING CAPTIVE NUTS

Self-locking, wear-resistant, machined stainless-steel threaded inserts may be used in aluminum or brass. Provide reliable grip; easily applied. Meets MIL-N-25027 removal specifications. Size 4, 6 and 8 threads are NC-2B; size 10 is NF-2B. Available in four sizes to fit five metal thicknesses.

| Thread Size | | Other Dimensions | | | | Type Code No. | Material Thickness | | |
|---|---|---|---|---|---|---|---|---|---|
| Code No. | For Screw | Hex In. | Mtg. Hole* | D1 In.† | D4 In.‡ | | Code No. | Th., In. | L2 In. |
| 4 | 4-40 | 1/4 | .203" | .201 | .132 | 6 | 2 | 1/16 | .183 |
| 6 | 6-32 | 1/4 | .203" | .201 | .163 | | 3 | 3/32 | .210 |
| 8 | 8-32 | 5/16 | .265" | .263 | .189 | | 4 | 1/8 | .242 |
| 10 | 10-32 | 5/16 | .265" | .263 | .220 | | 6 | 3/16 | .302 |
| | | | | | | | 8 | 1/4 | .361 |

### CAPTIVE STUDS

n head, permanent steel stud for aluminum or brass sheet. y sizes. Threads NC-2A except No. 10, NF-2A. **To Order:** prefix **NCS-** with screw size, metal thickness and extended h codes.

| ew Size | Other Dimen. | | Metal Thickness | | | | Ext. Thd. | |
|---|---|---|---|---|---|---|---|---|
| Thd. Size | Hex In. | Mtg. Hole*■ | Code No. | Th. In. | G In.§ | T In.§ | Code No.• | B In.# |
| 2-56 | 3/16 | .161" | 0 | .040▲ | ..... | ..... | 6 | 3/16 |
| 4-40 | 3/16 | .161" | 2 | 1/16 | .019 | .058 | 8 | 1/4 |
| 4-40 | 1/4 | .203" | 3 | 3/32 | .029 | .085 | 10 | 5/16 |
| 6-32 | 1/4 | .203" | 4 | 1/8 | .029 | .117 | 12 | 3/8 |
| 8-32 | 5/16 | .265" | 6 | 3/16 | .029 | .177 | 14 | 7/16 |
| 10-32 | 5/16 | .265" | 8 | 1/4 | .029 | .236 | 16 | 1/2 |
| 1/4-20 | 7/16 | .386" | | | | | 20 | 5/8 |
| 1/4-28 | 7/16 | .386" | | | | | 24 | 3/4 |
| 5/16-18 | 1/2 | .453" | | | | | 32 | 1 |
| 3/8-16 | 9/16 | .516" | | | | | | |

### CAPTIVE STUDS PRICING

| ngth ode o.** | Screw Size Code No. | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-99 | 100-499 | 500-999 | 1000-2999 | 3000-4999* |
| -14 | 2, 4S | $0.20 | $0.18 | $0.13 | $0.091 | $0.088 |
| | 4, 6 | .215 | .19 | .14 | .098 | .094 |
| | 8, 10 | .23 | .20 | .15 | .105 | .10 |
| | 420, 428 | .30 | .28 | .21 | .147 | .14 |
| | 518 | .40 | .38 | .30 | .21 | .205 |
| | 616 | .45 | .42 | .32 | .224 | .22 |
| -22†† | 2, 4S | .23 | .21 | .155 | .109 | .105 |
| | 4, 6 | .245 | .22 | .165 | .116 | .112 |
| | 8, 10 | .26 | .23 | .185 | .13 | .126 |
| -30†† | 2, 4S | .28 | .25 | .18 | .126 | .121 |
| | 4, 6 | .295 | .26 | .19 | .133 | .128 |
| | 8, 10 | .31 | .27 | .21 | .147 | .142 |

### TYPES 7 AND 8 FLOATING CAPTIVE NUTS

Correct hole misalignments up to .015". Low profile, hex head and recessed cavity. Fits cramped chassis locations. Floating nut, inside stainless steel basket, moves 1/32" in 360° circle.

| Thread Size | | Other Dimensions | | | | Material Thickness | | |
|---|---|---|---|---|---|---|---|---|
| Code No. | For Screw | Hex. In. | Mtg. Hole* | D† In. | E♦ In. | Code No. | Th., In. | Lgth. In. |
| 4 | 4-40 | 11/32 | .292 | .290 | .144 | 2 | 1/16 | .058⧗ |
| 6 | 6-32 | 3/8 | .330 | .328 | .169 | 3 | 3/32 | .085 |
| 8 | 8-32 | 7/16 | .386 | .384 | .196 | 4 | 1/8 | .117 |
| 10 | 10-32 | 7/16 | .386 | .384 | .221 | | | |

### CAPTIVE NUTS PRICING

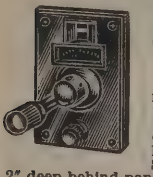
| Nut Type No. | Screw Size Code No. | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-99 | 100-499 | 500-999 | 1000-2999 | 3000-4999* |
| 1 | 2, 4S | $0.15 | $0.12 | $0.09 | $0.063 | $0.05 |
| 2, 3, 4‡ | | .16 | .13 | .095 | .067 | .054 |
| 1 | 2X, 4, 6 | .15 | .12 | .09 | .067 | .054 |
| 2, 3, 4‡ | | .16 | .13 | .095 | .07 | .058 |
| 1 | 6X, 8, 10 | .15 | .12 | .09 | .07 | .058 |
| 2, 3, 4‡ | | .16 | .13 | .095 | .074 | .062 |
| 1 | 420, 428 | .20 | .17 | .15 | .119 | .105 |
| 2, 3, 4‡ | | .21 | .18 | .16 | .126 | .11 |
| 1 | 518 | .20 | .17 | .16 | .13 | .108 |
| 2, 3, 4‡ | | .21 | .19 | .17 | .137 | .115 |
| 1 | 616 | .21 | .18 | .17 | .14 | .11 |
| 2, 3, 4‡ | | .23 | .20 | .18 | .147 | .12 |
| 6 | 4, 6 | .23 | .18 | .14 | .107 | .10 |
| 7 | | .35 | .33 | .30 | .21 | .16 |
| 8 | | .38 | .35 | .32 | .224 | .17 |
| 6 | 8, 10 | .25 | .19 | .15 | .111 | .105 |
| 7 | | .38 | .35 | .32 | .235 | .18 |
| 8 | | .41 | .37 | .34 | .249 | .19 |

002". †+.0, −.004". ‡±.001". §±.005". #±.015". •Other lengths, in 1/32" increments on request. ▲Material thickness. ■For **D** dimen-
s, subtract .002" (+.0, −.004"). ♦+.005", −.0". ⧗±.004". ‡Prices on extensions lengths over 5/16" on request. **Also available
es on request): 31-80. ††420, 428, 518 and 616 screw sizes.

**★LARGER QUANTITY PRICES ON REQUEST**

# Millen DIALS, KNOBS, SOCKETS, COUPLINGS, SHIELDS

## TYPE 10031 COUNTER DIAL



Rugged turns counter dial with 99-turn digital readout plus 0–100 vernier. Built-in dial lock. Direct drive for vacuum variable capacitors, rotary tunable inductors, multi-turn potentiometers, etc. Output coupling is a hub for ¼" dia. shaft. Size, 2⅞" w. x 3½" h. x 2" deep behind panel.

**Millen No. 10031**—Net Each . . **$20.00**

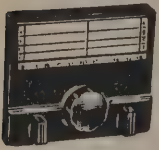
## TYPE 10030 COUNTER DIAL

Similar to above, but with cast aluminum bezel. Size, 3½" w. x 5⅞" h.

**Millen No. 10030**—Net Each . . . **$40.00**

## FRONT OF PANEL DIAL

### TYPE 10035



Easy to mount, with self-contained mechansim. Mounts entirely on front of panel, eliminating back-of-panel interference. Illuminated. 12:1 ratio. Provision for mounting and marking auxiliary controls such as switches, potentiometers, etc. Flat black art metal. Size, 8³⁄₁₆" x 6¹⁷⁄₃₂".

**Millen No. 10035**—Net Each . . . **$10.54**

## TYPE 10037 NO-STRING DIAL

No strings, no springs, no backlash possible. Illuminated slide-rule dial with 6½" scale. Supplied with scale bezel for front of panel. Bezel size, 7⅝" w. x 2⅝" h. Behind-the-panel space required is 9" w. x 5¾" h. x 1³⁄₁₆" deep overall. Reduction, 11:1.

**Millen No. 10037**—Net Each . . . **$13.05**

## FRONT OF PANEL DIAL

### TYPE 10039

Small but very readable dial with 7½:1 ratio. Scale is printed on vinylite and is easily removable for inking without disassembling the dial. Mounts easily on panel with two 6-32 screws. Size, only 4" x 3⁹⁄₃₂".

**Millen No. 10039**—Net Each . . . . . **$8.91**

## TYPE E212 MINIATURE DOUBLE PLUG

Miniature stacking plug of low-loss phenolic. Beryllium copper contact pins with bright alloy finish. One-piece through terminal permits stacking of plugs. 0.094" pins are spaced 0.5". Body, 1³⁄₁₆" x ⅜".

**Millen No. E212**—Net Each . . . . . **$1.08**

## SERIES 80000 ALUMINUM SHIELD CAN

Effective RF shielding for coils and transformers. Size, 1⅜" sq. x 4" high with 0.025" wall. Many other sizes are available in this series.

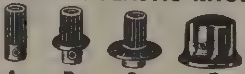
**Millen No. 80003**—Net Each . . . . . . . **71c**

## TYPE 10000 WORM DRIVES

Drive mechanisms offer 12:1, 16:1 or 48:1 step-down ratio. Rugged cast aluminum frame is drilled and tapped for secure mounting on either panel or chassis base. Spring-loaded nickel-plated brass anti-backlash gears. Stainless steel worm gear. ¼" dia. left- and right-hand output shafts. Size, 3" x 2⅜" x ½".

| Millen No. | Ratio | Net Each |
|---|---|---|
| 10000-A | 16:1 | $15.40 |
| 10000-B | 48:1 | 15.40 |
| 10000-C | 12:1 | 21.00 |

## MINIATURE PLASTIC KNOBS



A B C D

Black plastic knobs offer excellent appearance and miniature size. Easy to grip; ideal for compact equipment. Fitted with brass insert for ⅛" dia. shaft. All except Type A006 have slotted top for screwdriver blade adjustment.

| Millen No. | Fig. | Size, Dia. x H. | Net Each |
|---|---|---|---|
| A019 | A | ¼" x ⁹⁄₁₆" | 53c |
| A018 | B | ⁷⁄₁₆" x ⁹⁄₁₆" | 56c |
| A007 | C | ⅝" x ⁹⁄₁₆" | 61c |
| A006 | D | ¾" x ½" | 70c |
| A006-C | . . . . . . | White pointer | 94c |

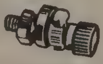
## SHAFT LOCKS

Wrench, thumb or lever operated shaft locks for ¼" dia. or ⅛" dia. shafts.

| Millen No. | Operation | For Shaft | Net Each |
|---|---|---|---|
| A061 | Wrench | ⅛" dia. | 46c |
| A062 | Thumb | ⅛" dia. | 70c |
| 10060 | Wrench | ¼" dia.* | 56c |
| 10061 | Wrench | ¼" dia. | 46c |
| 10062 | Thumb | ¼" dia. | 76c |
| 10063 | Lever | ¼" dia. | 94c |

*With bracket.

## TYPE 10050 DIAL LOCKS

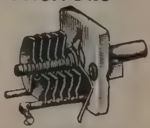


Rotation of knob depresses finger against dial and backing plate, without imparting any rotary motion to dial.

| Millen No. | Description | Net Each |
|---|---|---|
| 10050 | For dial to ³⁄₃₂" thick | 77c |
| 10050-A | With positioning key | 86c |
| 10050-A | With black oxide finish | 91c |
| A050 | Miniature; for dials up to ¹⁄₁₆" thick | 76c |

## VARIABLE CAPACITORS

19000



20000

Full line of variable air dielectric capacitors is available, from miniature to transmitting type.

| Millen No. | Cap., pF | Net Ea. |
|---|---|---|
| 19050 | 6.5 to 58 | $4.16 |
| 19140 | 9.7 to 148 | 4.98 |
| 20025 | 2.8 to 28.5 | 1.78 |
| 20050 | 3.9 to 59 | 1.97 |
| 28150-TM | 10 to 161 (dual) | 9.11 |

## CERAMIC INSULATORS

Ceramic grade L522 per MIL-I-10-A. Outside glazed.

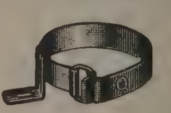
| Millen No. | Size | Net Each |
|---|---|---|
| 31001 | ½" dia. x 1" high | $0.31 |
| 31004 | 1¹⁄₁₆" dia. x 3½" high | .58 |
| 31008 | ½" dia. x 1½" high | .47 |
| 31009 | ½" dia. x 2" high | .49 |
| 31015 | 1½" dia. base x 3" cone | 1.63 |
| 32100 | Feed-thru bushing, ⅝" dia. x ¾" | .47 |

## CERAMIC SOCKETS

Low-loss ceramic tube and crystal sockets.

| Millen No. | Description | Net Each |
|---|---|---|
| 33004 | 4-pin barrier tube skt. | $0.85 |
| 33005 | 5-pin barrier tube skt. | .85 |
| 33008 | Octal tube socket | .85 |
| 33207 | 7-pin transmitting tube socket for 3E29, etc. | 1.64 |
| 33102 | Crystal socket for 0.094" pins spaced 0.487" | .49 |
| 33302 | Crystal socket for 0.050" pins spaced 0.487" | .35 |

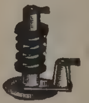
## TYPE 33087 TUBE BASE CLAMPS



Easy to use and install.

| Millen No. | Description | Net Ea. |
|---|---|---|
| 33087-A | Fits 1.125" dia. | 53c |
| 33087-C | Fits 1.250" dia. | 53c |
| 33087-E | Fits 1.375" dia. | 53c |

## RF CHOKES



These listings are typical of the wide Millen line of miniature and transmitting RF chokes.

### 34300 SERIES

| Millen No. | Induct. | Cur., mA | Net Ea. |
|---|---|---|---|
| 34300-1 | 1 μH | 1600 | 59c |
| 34300-2.7 | 2.7 μH | 1700 | 59c |
| 34300-5.5 | 5.5 μH | 665 | 59c |
| 34300-6.2 | 6.2 μH | 1820 | 59c |
| 34300-10 | 10 μH | 1260 | 59c |
| 34300-20 | 20 μH | 520 | 59c |
| 34300-25 | 25 μH | 510 | 59c |
| 34300-50 | 50 μH | 385 | 59c |
| 34300-68 | 68 μH | 230 | 59c |
| 34300-100 | 100 μH | 330 | 59c |
| 34300-200 | 200 μH | 265 | 59c |
| 34300-2500 | 2500 μH | 340 | 59c |

### J300 MINIATURE SERIES

| Millen No. | Induct. | Cur., mA | Net Ea. |
|---|---|---|---|
| J300-33 | 33 μH | 470 | 84c |
| J300-500 | 500 μH | 170 | 95c |

### 34100 SERIES CERAMIC CORE

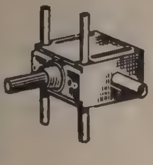
| Millen No. | Induct. | Cur., mA | Net Ea. |
|---|---|---|---|
| 34103 | 2.5 mH | 250 | 74c |
| 34105 | 1 mH | 300 | 87c |
| 34109 | 1 mH | 300* | 82c |

*Has 6-32 studs.

### TRANSMITTING CHOKES

| Millen No. | Induct. | Cur., mA | Net Ea. |
|---|---|---|---|
| 34140 | 1.4 mH | 500 | $2.54 |
| 34154 | 1 mH | 600 | 2.35 |

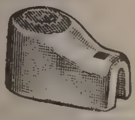
## RIGHT ANGLE DRIVE
## E 10012



ely compact, rovision for methods of ng. 1:1 ratio; dia. shafts. ½" x 1¹³⁄₃₂" x

**No. 10012—**
ch..**$11.50**

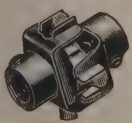
## CERAMIC PLATE CAPS



ic plate or grid ith hot tinned hor bronze Solder lug and t are one piece. dipped ter-

| on | Description | Net Each |
|---|---|---|
| | For 9⁄16" dia. | $0.39 |
| | For 0.36" dia. | .38 |
| | For ¼" dia. | .49 |
| B | For ¼" dia.; silver plated beryllium copper clip | .59 |
| | For 0.36" dia.; phenolic cap with snap release | 1.04 |

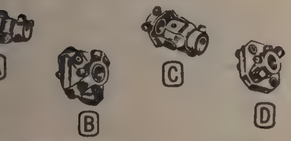
## MINIATURE COUPLINGS



M006 (illustrated) versal joint type, kel plated brass eramic insulation spring fingers. M008 is an in- d coupling with inserts; isolates from panel. Type is solid brass for afts. M-types are for ⅛" shafts.

| en . | Description | Net Each |
|---|---|---|
| | Univ. joint, insulated | $1.08 |
| | Solid brass; ⅛" shaft | .55 |
| | Univ., non-insulated | 1.08 |
| | Univ. joint "slide" | 1.21 |
| | Insulated | .79 |
| | Solid brass; ¼" shaft | .30 |

## FLEXIBLE COUPLINGS FOR ¼" SHAFTS



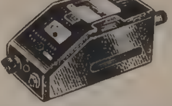
| len o. | Description (Fig.) | Net Each |
|---|---|---|
| 1 | Ceramic insulated with universal joint (A) | $0.86 |
| 2 | Ceramic insulated (B) | .86 |
| 5 | Brass univ. joint (C) | .86 |
| 5-B | Brass univ. joint; 128 in.-oz. max. torque (C) | 1.02 |
| 6 | Ceramic insulated "slide" coupling (D) | .86 |
| 6-B | Non-insul. "slide" | .86 |
| 6 | Molded, insul. flexible | .86 |

## INSULATED EXTENSIONS

-volt insulated shaft extensions for ntiometers. Knob-operated, or screw- er-operated locking types.

| len No. | Shaft | Type | Net Ea. |
|---|---|---|---|
| M023 | ⅛" dia. | Knob | $2.04 |
| M024 | ⅛" dia. | Locking | 2.43 |
| 9023 | ¼" dia. | Knob | 2.05 |
| 9024 | ¼" dia. | Locking | 2.43 |

## TYPE 90652
## SOLID STATE DIPPER



- **Seven Direct Reading Scales**
- **Wide Range— 1.6–300 MHz**
- **Sharp Dip**

MOS-FET oscillator has suppressed-zero system for greatly improved dip indication. Q-multiplier provides excellent sensitivity in absorption mode. With carrying case, seven coils and battery. Size, 11⅜" x 5⅛" x 4" high in carrying case.

**Millen No. 90652**—Net Ea...**$110.00**

**Millen No. 90651-A**—AC-operated tube-type grid dip meter with DC amplifier for sensitivity. Net Each.........**$103.50**

## TYPE 90901 ONE INCH MODULAR SCOPE

Miniature, panel mounting basic oscilloscope uses 1CP31 CRT. Vertical sensitivity, 48 V/cm. Horizontal sensitivity, 71 V/cm. Display unit only; no amplifiers, sweep or power supply included. Size, 2⅞" x 2¾" x 4⅝" behind panel. Less tube.

**Millen No. 90901**—Net Each....**$30.25**

**Millen No. 90912 Two Inch Oscilloscope**—Less 2BP1 tube. Net Each.....**$55.10**

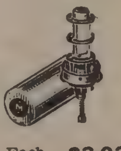
## COIL FORMS

Low-loss, mica filled phenolic plug-in forms. Size, 1" dia. x 1⅜".

**No. 45004**—4-pin. Net Each........**67c**

**No. 45005**—5-pin. Net Each.........**67c**

## SHIELDED COIL FORMS



Plug-in shielded permeability tuned coil forms. Octal plug of low-loss mica-filled phenolic. Form is ½" dia. polystyrene. Tuning core for frequencies to 35 MHz.

**No. 74001**—Tunable. Net Each...**$3.02**

**No. 74002**—Non-tunable. Net Ea.. **2.47**

## MAGNETIC SHIELDS, BEZELS

**Shield**

**Bezel**

Magnetic shields for cathode ray tubes and multiplier phototubes; bezels for CRT's.

**Millen No. 80042 Shield**—Medium permeability for 2BP1 CRT; field reduction ratio, 300. Net Each..........**$9.60**

**Millen No. 80802-B Shield**—High permeability for multiplier phototubes 2020, 4459, 4463, 5819, 6217, 6292, 6342-A, 6653-A, 6914, 6914-A and 8053; field reduction ratio, 700. Net Each....**$10.50**

**Millen No. 80802-E Shield**—High permeability for multiplier phototubes 6810-A, 6903, 7264, 7265, 7817, 7850; field reduction ratio, 850. Net Each.......**$12.15**

**Millen No. 80072 Bezel**—For 2BP1 CRT. Net Each..................**$2.62**

**Millen No. 80173-B Bezel**—For 1½" x 3" CRT. Net Each...............**$4.95**

## TYPE 90202 POWER SUPPLY

For Type 90901 or 90912 scope. Intermittent duty. Input, 117 VAC, 60 Hz. Output, 750 VDC at 3 mA and 6.3 VAC at 0.6 A. Size, 1⅞" x 2⅛" x 4⅝".

**Millen No. 90202**—
Net Each....**$30.25**

## LINE NOISE DETECTOR

Locates pulse interference on power line. Separates high frequency noise currents on line from power currents, and presents the noise currents to an oscilloscope or other external device.

**Millen No. 71001**—Net Each..**$210.00**

## SAFETY TERMINALS

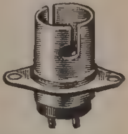
Type 37001 is phenolic, rated 7000 VDC at 2 amps. Type 37501 is low-loss mica-filled phenolic for RF; rated 4200 VDC.

**No. 37001**—Black. Net Each........**64c**

**No. 37001**—Red. Net Each.........**68c**

**No. 37501**—Yellow. Net Each.......**92c**

## 2-PIN BAYONET SOCKETS

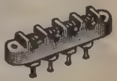


Type 33991 has black phenolic insulation, cadmium plated contacts; rated 2500 VDC. For 991. Type 33992 is low-loss mica-filled yellow phenolic.

**Millen No. 33991**—
Net Each........**91c**

**Millen No. 33992**—Net Each.....**$1.02**

## CERAMIC TERMINAL STRIPS



Ceramic Grade L522 per MIL-I-10A. Treated with silicone. Barriers between terminals; long leakage path on both sides of strip. One-piece cadmium plated brass terminals with 6-32 nickel plated brass binding head screws. Terminals are free-floating to eliminate strain on the ceramic during wide temperature variations. Type 37302 is rated 3500 VDC. Miniature E300 series is rated 1400 VDC.

**No. 37302**—2-terminal. Net......**$1.09**

**No. E302**—2-term. min. Net...... **1.10**

**No. E303**—3-term. min. Net...... **1.27**

**No. E304**—4-term. min. Net...... **1.58**

## BEARINGS

**Millen No. A066**—Miniature bearing for ⅛" dia. shaft. Nickel plated brass; fits 17⁄64" dia. hole. Net Each..........**53c**

**Millen No. 10066**—Bearing for ¼" dia. shaft; fits ½" hole. Net Each.......**47c**

## KNOBS AND KNOB DIALS

For ¼" dia. shaft. All have brass inserts.

**Millen No. 10002**—1⅛" black phenolic bar knob. Net Each..................**78c**

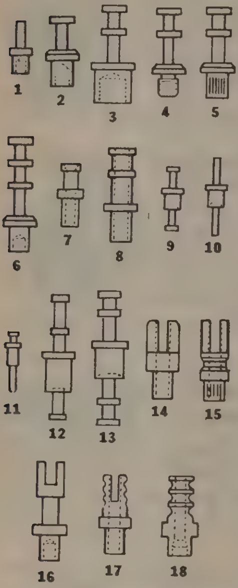
**Millen No. 10007-B**—1⅝" dial, bar knob; 10 div. over 180° CW. Net Each..**$1.07**

**Millen No. 10009-E**—2¾" dial; 360 div. over 360°. Net Each............**$3.80**

**Millen No. 10015-A**—1" dial, fluted knob; 180° clockwise. Net Each........**$1.02**

P M P
PRECISION METAL PRODUCTS

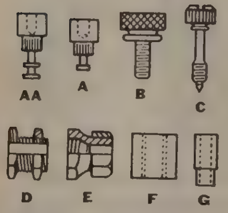
# TERMINAL BOARDS, TERMINALS AND HARDWARE



## TURRET TERMINALS

Silver-plated brass. Write for prices on other finishes.

| PMP No.* | Fig. | Dia., Inches | | | Height, In. | | Board Thickness* | Net per 1000, Lots of | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Shank (Thd.) | Turret | Shoulder | Above Board | Below Board | | 1-999 | 1000-4999 | 5000 Up |
| 1P4-26 | 1 | .090 | .040■ | .125 | .173 | ........ | 1/32-1/8 | $12.50 | $10.00 | $ 9.50 |
| 1S2-25 | 2 | .047 | .040 | .062 | .093 | ........ | 1/64-1/8 | 9.15 | 8.10 | 7.00 |
| 1S4-19 | 2 | .090 | .070 | .125 | .181 | ........ | 1/32-1/8 | 9.30 | 7.90 | 6.70 |
| 1S6-17 | 2 | .112 | .145 | .187 | .234 | ........ | 1/32-3/16 | 12.50 | 11.00 | 10.10 |
| 1D3-8 | 3 | .061 | .062 | .093 | .156 | ........ | 1/64-1/8 | 11.50 | 9.90 | 8.10 |
| 1D3-11† | 3 | .072 | .050 | .093 | .186 | ........ | 1/64-1/8 | 9.90 | 8.10 | 7.50 |
| 1D4-6 | 3 | .090 | .093 | .125 | .237 | ........ | 1/32-1/8 | 9.00 | 7.70 | 7.00 |
| 1D5-5 | 3 | .090 | .109 | .156 | .281 | ........ | 1/32-1/8 | 13.20 | 11.00 | 10.10 |
| 1D6-1 | 3 | .112 | .145 | .187 | .360 | ........ | 1/32-1/4 | 12.50 | 11.00 | 10.10 |
| 1D6-15 | 4 | 4-40 | .145 | .187 | .360 | ........ | 1/8 & 3/16 | 17.05 | 16.50 | 15.40 |
| 1D6-16 | 4 | 4-40 | .145 | .187‡ | .360 | ........ | 1/8 & 3/16 | 17.05 | 16.50 | 15.40 |
| 1KD3-9 | 5 | .061§ | .062 | .093 | .156 | ........ | 1/64-1/8 | 14.50 | 12.10 | 11.10 |
| 1KD6-2 | 5 | .112§ | .145 | .187 | .360 | ........ | 1/32-3/16 | 15.95 | 14.15 | 12.40 |
| 1T4-13 | 6 | .090 | .093 | .125 | .316 | ........ | 1/32-1/8 | 11.00 | 9.90 | 9.10 |
| IT6-12 | 6 | .112 | .145 | .187 | .484 | ........ | 1/32-3/16 | 19.50 | 18.20 | 17.40 |
| 2S4-38 | 7 | .061 | .093 | .125 | .156 | .043# | 1/64-1/8 | 11.00 | 10.45 | 8.80 |
| 2S4-39 | 7 | .071 | .096 | .125 | .187 | .043# | 1/64-1/8 | 11.00 | 10.45 | 8.80 |
| 2S6-35 | 7 | .110 | .141 | .187 | .187 | .067# | 1/32-3/16 | 14.00 | 12.50 | 10.40 |
| 2D5-33 | 8 | .078 | .109 | .156 | .328 | .043# | 1/32-1/8 | 22.00 | 19.75 | 16.40 |
| 2D6-29 | 8 | .112 | .145 | .187 | .328 | .078# | 1/32-1/4 | 12.00 | 10.50 | 9.90 |
| 3SS3-67 | 9 | .078 | .050 | .093 | *.104 | .082 | 1/64-1/8 | 8.50 | 7.35 | 7.00 |
| 3SS4-65 | 9 | .090 | .062 | .125 | .133 | .113 | 1/32-1/8 | 11.00 | 9.40 | 9.00 |
| 3SS5-63 | 9 | .116 | .070 | .156 | .156 | .125 | 1/32-1/8 | 11.00 | 9.40 | 9.00 |
| 3PP4-66 | 10 | .090 | ........ | .125 | .177 | .156 | 1/32-1/8 | 18.50 | 15.90 | 14.75 |
| 3SP2-60 | 11 | .062 | .045 | .078 | .078 | .140 | 1/64-1/8 | 12.50 | 11.20 | 9.35 |
| 3SP3-59 | 11 | .072 | .050 | .093 | .078 | .250 | 1/64-1/8 | 12.50 | 11.20 | 9.35 |
| 3DS3-58 | 12 | .072 | .050 | .093 | .186 | .082 | 1/64-1/8 | 9.75 | 8.50 | 7.90 |
| 3DS4-57 | 12 | .090 | .062 | .125 | .219 | .103 | 1/32-1/8 | 12.10 | 10.35 | 9.90 |
| 3DS8-54 | 12 | .202 | .144 | .250 | .344 | .109 | 1/32-3/16 | 25.30 | 22.00 | 20.05 |
| 3DD3-49 | 13 | .072 | .050 | .093 | .186 | .164 | 1/64-1/8 | 10.25 | 8.80 | 8.40 |
| 3DD4-48 | 13 | .090 | .062 | .125 | .219 | .187 | 1/32-1/8 | 12.75 | 10.90 | 10.40 |
| 3DD6-45 | 13 | .156 | .093 | .187 | .250 | .218 | 1/32-3/16 | 28.00 | 25.00 | 21.00 |
| 3DD8-43 | 13 | .202 | .144 | .250 | .357 | .312 | 1/32-1/4 | 28.00 | 26.00 | 24.75 |
| 4S3-78 | 14 | .061 | ........ | .093 | .156 | .043# | 1/64-1/8 | 11.00 | 9.40 | 9.00 |
| 4S5-77 | 14 | .112 | ........ | .156 | ........ | .078# | 1/32-3/16 | 15.90 | 14.40 | 13.75 |
| 4S6-74 | 14 | .112 | ........ | .187 | .345 | .078# | 1/32-3/16 | 19.95 | 17.60 | 15.70 |
| 4S5-76 | 15 | .125 | ........ | .156 | .344 | .070# | 1/32-3/16 | 19.00 | 17.00 | 16.10 |
| 5S4-86 | 16 | .090 | .090 | .125 | .219 | .032● | 1/32-1/8 | 17.60 | 15.95 | 14.30 |
| 5S6-82 | 16 | .112 | .145 | .187 | .390 | .063● | 1/32-3/16 | 17.60 | 15.95 | 14.30 |
| 52S6-83 | 17 | .113 | .140 | .187 | .328 | .070▲ | 1/32-3/16 | 22.50 | 18.00 | 15.90 |
| 52S6-84 | 18 | .112 | .130 | .187 | .315 | .060# | 1/32-3/16 | 21.00 | 19.50 | 17.10 |



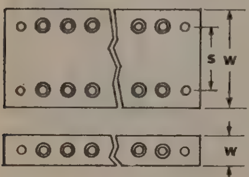
## TERMINALS

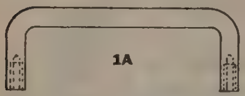
| PMP No.* | Fig. | Dia., Inches | | | Height, Inches | | Board Thickness* | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Shank (Thd.) | Turret | Shoulder | Above Board | Below Board | | 1-49 | 50-249 | 250-500 |
| 1700 | AA | .202 | .141 | .312 | .250 | .312 | 1/32" to 3/16" | $0.09 | $0.07 | $0.06 |
| 1710 | A | .220 | .125 | .312 | .250 | .170 | | .09 | .07 | .06 |

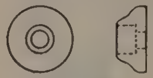
*Add suffix to PMP No. to indicate board thickness: **AA**, 1/64"; **A**, 1/32"; **B**, 1/16"; **C**, 3/32"; **D**, 1/8"; **E**, 5/32"; **F**, 3/16"; or **G**, 1/4": e.g., 1P4-26A is type 1P4-26 terminal for 1/32" board. †C-sink 45° x .020" shank ‡Hex. §Knurled. #Thru-hole dia. ●Slot width. ▲Thru-hole dia., has .046" wide slot. ■Pin dia.

## BRASS TERMINAL BOARD HARDWARE

| PMP No. | Fig. | Lgth., Inches | Thds. per Inch | Diameter, Inches | Finish | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 1-49 | 50-249 | 250-500 |
| 2000 | B | 23/32 | 6-32 | 7/16 on 1/2 head | Nickel Plate | $0.18 | $0.15 | $0.13 |
| 2000 | B | 23/32 | 8-32 | 3/8 on 7/16 head | Nickel Plate | .18 | .15 | .13 |
| 2000 | B | 23/32 | 10-32 | 5/16 on 3/8 head | Nickel Plate | .18 | .15 | .13 |
| 2010 | C | 15/16 | 6-32 | 5/16 | Nickel Plate | .22 | .19 | .16 |
| 14 | D | 9/16 | 3/8-32 | 1/2 hex | Bright Alloy | .20 | .17 | .15 |
| 77 | E | 7/16 | 1/4-32 | 3/8 hex | Bright Alloy | .20 | .18 | .16 |
| 77A | E | 5/8 | 3/8-32 | 5/8 hex | Bright Alloy | .22 | .20 | .18 |
| 79 | E | 7/16 | 1/4-32 | 3/8 hex | Bright Alloy | .20 | .18 | .16 |
| 79A | E | 17/32 | 1/4-32 | 3/8 hex | Bright Alloy | .22 | .20 | .18 |
| 2301 | F | 1/4 | 4-40 | 3/16 | Cadm. or Nickel | .07 | .06 | .05 |
| 2302-6 | F | 1/4-3/4 | 6-32 | 1/4 | Cadm. or Nickel | .10 | .08 | .06 |
| 2307-10 | F | 3/8-3/4 | 8-32 | 3/8 | Cadm. or Nickel | .12 | .10 | .08 |
| 2500 | G | 1/8-1/2 | 6-32 top | 1/4 | Cadmium Plate | .10 | .08 | .06 |
| 2510 | G | 1/8-1/2 | 6-32 top | 1/4 | Cadmium Plate | .10 | .08 | .06 |
| 2520 | G | 1/8-1/2 | 2-56 top | .156 | Cadmium Plate | .10 | .08 | .06 |







1B

## HANDLE AND FERRULES

Brass types are nickel-plated; aluminum is black anodized.

| PMP No. | Fig. | Lgth., In. | H., In. | Material | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|
| | | | | | 1-49 | 50-249 | 250-500 |
| 2101 | 1A | 3 | 15/16 | Brass | $0.95 | $0.80 | $0.69 |
| 2102 | 1A | 4½ | 1½ | Brass | 1.00 | .85 | .74 |
| 2103 | 1A | 6½ | 1¾ | Brass | 1.15 | .95 | .84 |
| 2121 | 1A | 3 | 15/16 | Stainless Steel | .95 | .80 | .70 |
| 2122 | 1A | 4½ | 1½ | Stainless Steel | 1.00 | .85 | .75 |
| 2123 | 1A | 6½ | 1¾ | Stainless Steel | 1.10 | .90 | .80 |
| 2130 | 1A | 4 | 1⅞ | Aluminum | 1.15 | .94 | .82 |
| 2141 | 1A | 3 | 15/16 | Brass | .95 | .80 | .69 |
| 2142 | 1A | 4 9/16 | 1½ | Brass | 1.00 | .85 | .74 |
| 2143 | 1A | 6 7/16 | 1¾ | Brass | 1.15 | .95 | .84 |
| 2160 | 1A | 4¼ | 2⅛ | Brass | 1.20 | 1.00 | .95 |
| 2171 | 1A | 3 | 1 9/32 | Brass | 1.70 | 1.25 | 1.18 |
| 2172 | 1A | 4 9/16 | 1½ | Brass | 1.90 | 1.45 | 1.35 |
| 2173 | 1A | 6 7/16 | 1¾ | Brass | 2.15 | 1.60 | 1.50 |
| 2174 | 1A | 9 | 1¾ | Brass | 2.40 | 1.75 | 1.65 |
| 2181 | 1A | 3 | 1 9/32 | Aluminum | 1.25 | .95 | .85 |
| 2182 | 1A | 4 9/16 | 1½ | Aluminum | 1.35 | 1.00 | .90 |
| 2183 | 1A | 6 7/16 | 1¾ | Aluminum | 1.45 | 1.05 | .95 |
| 2184 | 1A | 9 | 1¾ | Aluminum | 1.60 | 1.15 | 1.05 |
| 2105 | 1B | .320* | ¾† | Brass | .13 | .12 | .11 |
| 2107 | 1B | .320* | .562† | Brass | .12 | .11 | .10 |
| 2126 | 1B | .320* | ¾† | Stainless Steel | .16 | .15 | .14 |
| 2127 | 1B | .320* | .562† | Stainless Steel | .13 | .12 | .11 |
| 2130F | 1B | ⅜* | ¾† | Aluminum | .13 | .12 | .11 |

*Ferrule I.D. †Ferrule O.D.

## TERMINAL BOARDS (FIG. 1C)

| PMP No. | W., In. | S, In. | Material | NEMA | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|
| | | | | | 1-49 | 50-249 | 250-500 |
| 2600A* | 5/16 | ...... | Phenolic (PBE) | (XXX) | $0.83 | $0.72 | $0.66 |
| 2600B* | ¾ | ½ | Phenolic (PBE) | (XXX) | 1.80 | 1.60 | 1.49 |
| 2600C* | 1 | ¾ | Phenolic (PBE) | (XXX) | 1.87 | 1.65 | 1.54 |
| 2601 | ½ | ...... | Paper Phenolic | (XXX) | .83 | .72 | .66 |
| 2602 | 2 | 1½ | Paper Phenolic | (XXX) | 1.80 | 1.60 | 1.49 |
| 2603 | 2½ | 2 | Paper Phenolic | (XXX) | 1.87 | 1.65 | 1.54 |
| 2604 | 3 | 2½ | Paper Phenolic | (XXX) | 1.98 | 1.71 | 1.60 |
| 2611 | ½ | ...... | Linen Phenolic | (LE) | .88 | .77 | .72 |
| 2612 | 2 | 1½ | Linen Phenolic | (LE) | 1.92 | 1.71 | 1.60 |
| 2613 | 2½ | 2 | Linen Phenolic | (LE) | 2.04 | 1.76 | 1.65 |
| 2614 | 3 | 2½ | Linen Phenolic | (LE) | 2.09 | 1.80 | 1.71 |
| 2621 | ½ | ...... | Glass Epoxy | (GEE) | .99 | .88 | .83 |
| 2622 | 2 | 1½ | Glass Epoxy | (GEE) | 2.26 | 2.04 | 1.93 |
| 2623 | 2½ | 2 | Glass Epoxy | (GEE) | 2.42 | 2.20 | 2.08 |
| 2624 | 3 | 2½ | Glass Epoxy | (GEE) | 2.53 | 2.31 | 2.20 |

*Board thickness, 1/16"; terminal No. 2S4-38B; all others are 3/32" thick; terminal No. 1D6-1C.

MP
METAL PRODUCTS

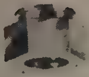
# PRESSERT STAINLESS STEEL CAPTIVE HARDWARE

## EXTENSION NUTS AND STUDS

FL
-away

EXR

ST


EXH

EXRR

### TYPE FL FLUSH NUTS

h on both surfaces of panel, replacing tapped holes; provide ength and wear resistance of a nut. For installations where s limited, loads are light, and panel thickness permits an te number of threads in nut.

| MP mber | Hex Size | Thd. Size | Mtg. Hole | "D" Dia. | Net per 100, Lots of 1-99 | 100-499 | 500-999* |
|---|---|---|---|---|---|---|---|
| FL | 3/16" | 2-56 | .161" | .157" | $14.00 | $10.50 | $ 8.60 |
| FL | 3/16" | 4-40 | .161" | .157" | 14.00 | 10.50 | 8.60 |
| FL | 1/4" | 2-56 | .203" | .199" | 14.00 | 10.75 | 8.60 |
| FL | 1/4" | 4-40 | .203" | .199" | 14.00 | 10.75 | 8.60 |
| FL | 1/4" | 6-32 | .203" | .199" | 14.00 | 10.75 | 8.60 |
| FL | 5/16" | 6-32 | .265" | .261" | 14.50 | 11.00 | 8.60 |
| FL | 5/16" | 8-32 | .265" | .261" | 14.50 | 11.00 | 8.60 |
| )FL | 5/16" | 10-32 | .265" | .261" | 14.50 | 11.00 | 8.60 |
| )FL | 7/16" | 1/4-20 | .386" | .382" | 18.00 | 16.00 | 13.90 |
| )FL | 7/16" | 1/4-28 | .386" | .382" | 18.00 | 16.00 | 13.90 |
| )FL | 1/2" | 5/16-18 | .453" | .449" | 19.00 | 16.50 | 14.00 |
| )FL | 9/16" | 3/8-16 | .516" | .512" | 20.00 | 17.00 | 15.00 |

### TYPE EXH, EXR AND EXRR EXTENSION NUTS

**EXH:** Same as Type FL, but with 1/32" to 1/4" extension l panel surface on the hex side. Recommended for thin , as extension provides additional threads. Extension may d as a spacer or standoff for mounting parts or brackets to . **Type EXR:** Similar to EXH, but nut opposite the hex nded beyond the panel surface. Provides additional threads n panels; may be used as standoff mounting. To order, tute EXR for EXH in PMP No. **Type EXRR:** Round ion nut for standoff applications. Has round extension on de to provide extra threads beyond the panel surface. nsions same as EXH. To order, substitute EXRR for EXH P No.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| )EXH- | 3/16" | 2-56 | .161" | .157" | $15.00 | $12.50 | $ 9.20 |
| )EXH- | 3/16" | 4-40 | .161" | .157" | 15.00 | 12.50 | 9.20 |
| )EXH- | 1/4" | 2-56 | .203" | .199" | 15.00 | 12.50 | 9.20 |
| )EXH- | 1/4" | 4-40 | .203" | .199" | 15.00 | 12.50 | 9.20 |
| )EXH- | 1/4" | 6-32 | .203" | .199" | 15.00 | 12.50 | 9.20 |
| )EXH- | 5/16" | 6-32 | .265" | .261" | 15.00 | 12.50 | 9.20 |
| )EXH- | 5/16" | 8-32 | .265" | .261" | 15.00 | 12.50 | 9.20 |
| *)EXH- | 5/16" | 10-32 | .265" | .261" | 15.00 | 12.50 | 9.20 |
| *)EXH- | 7/16" | 1/4-20 | .386" | .382" | 20.00 | 17.00 | 15.00 |
| *)EXH- | 7/16" | 1/4-28 | .386" | .382" | 20.00 | 17.00 | 15.00 |
| *)EXH- | 1/2" | 5/16-18 | .453" | .449" | 20.00 | 18.00 | 16.00 |
| *)EXH- | 9/16" | 3/8-16 | .516" | .512" | 21.00 | 19.00 | 17.00 |

t panel thickness from Table I; for EXH, EXR and EXRR, ffix **1** to **8** to indicate extension, in 32nds.

## SELF-LOCKING AND FLOATING NUTS

### TYPE LN SELF-LOCKING EXTENSION NUTS

le all the wear-resistant benefits of Pressert fasteners, plus cking feature. Oval shaped self-locking extension adds in- d holding power. Threads treated with Vydax (DuPont) ure compliance with MIL-N-25027 for insertion and removal. **Thickness:** Each type is available in any of five panel nesses; .062", .093", .125", .187", or .250".

| IP nber | Hex Size | Thread Size | Mtg. Hole | Net per 100, Lots of 1-99 | 100-499 | 500-999* |
|---|---|---|---|---|---|---|
| (*) | 1/4" | (4-40)-2B | .203" | $21.00 | $17.00 | $13.00 |
| (*) | 1/4" | (6-32)-2B | .203" | 21.00 | 17.00 | 13.00 |
| (*) | 5/16" | (8-32)-2B | .265" | 23.00 | 18.00 | 14.00 |
| N(*) | 5/16" | (10-32)-2B | .265" | 23.00 | 18.00 | 14.00 |

rt panel thickness; see above.

### TYPE FN FLOATING NUTS

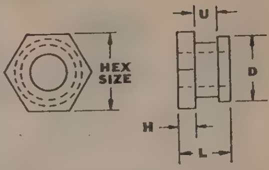
lt correcting up to .015" misalignment in mating holes. ts by lateral movement through 360° of a threaded insert, is trapped in the Pressert-type body. Projects less than bove panel surface. Both threaded insert and body are ined from stainless steel. Threads are Class 2B.

| PMP umber | Thd. Size | Hex Size | Panel Thick- ness | Mtg. Hole, In. | Net per 100, Lots of 1-99 | 100-499 | 500-999* |
|---|---|---|---|---|---|---|---|
| N(.062) | 4-40 | 11/32" | 1/16" | .292 | $33.00 | $31.00 | $29.00 |
| N(.093) | 4-40 | 11/32" | 3/32" | .292 | 33.00 | 31.00 | 29.00 |
| (.062) | 6-32 | 3/8" | 1/16" | .330 | 33.00 | 31.00 | 29.00 |
| (.093) | 6-32 | 3/8" | 3/32" | .330 | 33.00 | 31.00 | 29.00 |
| (.125) | 6-32 | 3/8" | 1/8" | .330 | 33.00 | 31.00 | 29.00 |
| (.062) | 8-32 | 7/16" | 1/16" | .386 | 36.00 | 34.00 | 30.50 |
| (.093) | 8-32 | 7/16" | 3/32" | .386 | 36.00 | 34.00 | 30.50 |
| (.125) | 8-32 | 7/16" | 1/8" | .386 | 36.00 | 34.00 | 30.50 |
| N(.062) | 10-32 | 7/16" | 1/16" | .386 | 36.00 | 34.00 | 30.50 |
| N(.093) | 10-32 | 7/16" | 3/32" | .386 | 36.00 | 34.00 | 30.50 |
| N(.125) | 10-32 | 7/16" | 1/8" | .386 | 36.00 | 34.00 | 30.50 |

Pressert stainless steel captive hardware is designed for fast, sure installation. Simply drill a hole and press for perfect fit.

### HOW TO ORDER

Add decimal figure to PMP No. to indicate panel thickness, as shown in table below. For types EXH, EXR, EXRR, and ST, add suffix to indicate extension length.



### TABLE I (PANEL THICKNESSES)

| For Types 32N or S through 510N or S: Panel Thickness* | L ±.004" | H ±.003" | U ±.003" | For Types 720N or S through 916N or S†: Panel Thickness* | L ±.004" |
|---|---|---|---|---|---|
| (.040") | .038" | .012" | .018" | 1/8" (.125") | .117" |
| 1/16" (.062") | .058" | .019" | .029" | 5/32" (.156") | .147" |
| 3/32" (.093") | .085" | .029" | .043" | 3/16" (.187") | .177" |
| 1/8" (.125") | .117" | .029" | .043" | 1/4" (.250") | .236" |
| 5/32" (.156") | .147" | .029" | .043" | 5/16" (.312") | .296" |
| 3/16" (.187") | .177" | .029" | .043" | | |

*Add decimal size to PMP Numbers in tables where required.
†H dimension is .029"; U dimension is .043" (±.003").

### TYPE ST STUDS

Mounting studs for soft materials, with no projection beyond the outside surface.

| PMP Number | Hex Size | Thd. Size | "D" Dia.† | Thread Lengths in 32nds | Net per 100, Lots of 1-99 | 100-499 | 500-999* |
|---|---|---|---|---|---|---|---|
| 32S(*)L- | 3/16" | 2-56 | .157" | ST6–ST14 | $16.00 | $13.00 | $11.00 |
| | | | | ST15–ST22 | 18.00 | 15.00 | 13.00 |
| | | | | ST23–ST32 | 20.00 | 17.00 | 14.50 |
| 34S(*)L- | 3/16" | 4-40 | .157" | ST6–ST14 | 16.00 | 13.00 | 11.00 |
| | | | | ST15–ST22 | 18.00 | 15.00 | 13.00 |
| | | | | ST23–ST32 | 20.00 | 17.00 | 14.50 |
| 42S(*)L- | 1/4" | 2-56 | .199" | ST6–ST14 | 17.00 | 14.00 | 13.00 |
| | | | | ST15–ST22 | 19.00 | 16.00 | 14.00 |
| | | | | ST23–ST32 | 22.00 | 19.00 | 16.50 |
| 44S(*)L- | 1/4" | 4-40 | .199" | ST6–ST14 | 17.00 | 14.00 | 13.00 |
| | | | | ST15–ST22 | 19.00 | 16.00 | 14.00 |
| | | | | ST23–ST32 | 22.00 | 19.00 | 16.50 |
| 46S(*)L- | 1/4" | 6-32 | .199" | ST6–ST14 | 17.00 | 14.00 | 13.00 |
| | | | | ST15–ST22 | 19.00 | 16.00 | 14.00 |
| | | | | ST23–ST32 | 22.00 | 19.00 | 16.50 |
| 56S(*)L- | 5/16" | 6-32 | .261" | ST6–ST14 | 18.00 | 15.00 | 14.00 |
| | | | | ST15–ST22 | 21.00 | 18.00 | 16.00 |
| | | | | ST23–ST32 | 25.00 | 21.00 | 18.50 |
| 58S(*)L- | 5/16" | 8-32 | .261" | ST6–ST14 | 18.00 | 15.00 | 14.00 |
| | | | | ST15–ST22 | 21.00 | 18.00 | 16.00 |
| | | | | ST23–ST32 | 25.00 | 21.00 | 18.50 |
| 510S(*)L- | 5/16" | 10-32 | .261" | ST6–ST14 | 18.00 | 15.00 | 14.00 |
| | | | | ST15–ST22 | 21.00 | 18.00 | 16.00 |
| | | | | ST23–ST32 | 25.00 | 21.00 | 18.50 |
| 720S(*)L- | 7/16" | 1/4-20 | .382" | ST6–ST14 | 29.00 | 27.00 | 20.50 |
| | | | | ST15–ST22 | 35.00 | 31.50 | 28.00 |
| | | | | ST23–ST32 | 40.00 | 35.50 | 31.00 |
| 728S(*)L- | 7/16" | 1/4-28 | .382" | ST6–ST14 | 29.00 | 27.00 | 20.50 |
| | | | | ST15–ST22 | 35.00 | 31.50 | 28.00 |
| | | | | ST23–ST32 | 40.00 | 35.50 | 31.00 |
| 818S(*)L- | 1/2" | 5/16-18 | .449" | ST6–ST14 | 37.00 | 33.50 | 28.00 |
| | | | | ST15–ST22 | 39.00 | 37.00 | 29.50 |
| | | | | ST23–ST32 | 45.00 | 39.50 | 34.00 |
| 916S(*)L- | 9/16" | 3/8-16 | .512" | ST6–ST14 | 40.00 | 33.95 | 30.90 |
| | | | | ST15–ST22 | 44.00 | 42.00 | 32.00 |
| | | | | ST23–ST32 | 48.00 | 44.00 | 39.50 |

*Insert panel thickness from Table I; add suffix **1** to **32** to indicate extension, in 32nds. †Add .004" for mtg. hole size.

LN

FN

FLN

### TYPE FLN FLOATING NUTS

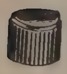
Construction similar to Type FN, except the floating insert extends above the Pressert retaining base and has a self-locking thread. Dry Teflon-type lubricant (DuPont) Vydax is applied to the thread for easier insertion and removal of the screw. Height above panel, .219" approx.

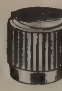
| PMP Number | Thd. Size | Hex Size | Panel Thick- ness | Mtg. Hole, In. | Net per 100, Lots of 1-99 | 100-499 | 500-999* |
|---|---|---|---|---|---|---|---|
| 114FLN(.062) | 4-40 | 11/32" | 1/16" | .292 | $36.00 | $34.00 | $30.50 |
| 114FLN(.093) | 4-40 | 11/32" | 3/32" | .292 | 36.00 | 34.00 | 30.50 |
| 66FLN(.062) | 6-32 | 3/8" | 1/16" | .330 | 36.00 | 34.00 | 30.50 |
| 66FLN(.093) | 6-32 | 3/8" | 3/32" | .330 | 36.00 | 34.00 | 30.50 |
| 66FLN(.125) | 6-32 | 3/8" | 1/8" | .330 | 36.00 | 34.00 | 30.50 |
| 78FLN(.062) | 8-32 | 7/16" | 1/16" | .386 | 40.00 | 36.00 | 33.00 |
| 78FLN(.093) | 8-32 | 7/16" | 3/32" | .386 | 40.00 | 36.00 | 33.00 |
| 78FLN(.125) | 8-32 | 7/16" | 1/8" | .386 | 40.00 | 36.00 | 33.00 |
| 710FLN(.062) | 10-32 | 7/16" | 1/16" | .386 | 40.00 | 36.00 | 33.00 |
| 710FLN(.093) | 10-32 | 7/16" | 3/32" | .386 | 40.00 | 36.00 | 33.00 |
| 710FLN(.125) | 10-32 | 7/16" | 1/8" | .386 | 40.00 | 36.00 | 33.00 |

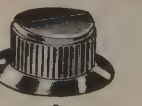
★LARGER QUANTITY PRICES ON REQUEST

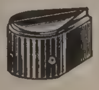
# Raytheon Control Knobs

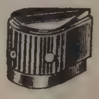
## MS91528 (STANDARD) AND DESIGNER SERIES CONTROL KNOBS

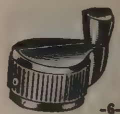

-1-

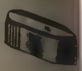

-2-


-3-


-4-


-5-


-6-


-7-

Approved types per MS91528, Rev. C; cross reference (MIL No. to Raytheon No.) available on request. Eight standard knob types in six basic sizes to meet your every requirement. **Order by complete Catalog Number:** E.g., G 70-3BL-2G indicates **G**ray color knob; approx. diameter of knob in hundredths of inches is **70** (.70"); description of knob is **-3** (see table below); knob is back lighted (**BL**); shaft size is **-2** (see table below); finish is **G** (matte).

| Prefix (Color) | | 1st Number (Size) | | 2nd Number (Description) | 3rd Number (Shaft Size) | | Suffix (Finish) |
|---|---|---|---|---|---|---|---|
| **No prefix** | Black | 50 | ½" | * | -1 | ⅛" | † |
| **DS** | Alum. cap | 70 | 7/10" | * | -2 | ¼" | † |
| **G‡** | Gray | 90 | 9/10" | * | -3 | 5/16" | |
| **R‡** | Red | 125 | 1¼" | * | -4 | .267" | |
| | | 175 | 1¾" | * | | | |
| | | 225 | 2¼" | * | | | |

***Description: -1,** round no skirt; **-2,** round plain skirt; **-3,** round dial skirt; **-4,** pointer no skirt; **-5,** pointer plain skirt; **-6,** crank (spinner); **-7,** bar pointer, no skirt; **-8,** bar pointer, dial skirt with pointer mark. **BD,** black dot; **BL,** back lighted dial skirt; **CB,** concentric base for outer shaft has no cap, shaft hole drilled through; **LK,** knob lock pointer used with knob lock; **NP,** no pointer; **WD,** ⅛" white dot on cap; **WL,** white line. †**Finish:** No suffix, mirror finish; suffix G, matte (dull) finish. ‡Not applicable to all types listed, write for complete information on colored knobs.

### DESIGNER SERIES CONTROL KNOBS

| Raytheon Cat. No. | List* Each | Raytheon Cat. No. | List* Each | Raytheon Cat. No. | List* Each |
|---|---|---|---|---|---|
| DS 70-1-1* | $0.78 | DS 70-3-2† | $0.96 | DS 90-2-2 | $1.08 |
| DS 70-1-1G* | .80 | DS 70-3-2G† | .98 | DS 90-2-2G | 1.10 |
| DS 70-1BD-1 | .94 | DS 70-4-1 | .92 | DS 90-2BD-2 | 1.10 |
| DS 70-1BD-1G | .96 | DS 70-4-1G | .95 | DS 90-2BD-2G | 1.20 |
| DS 70-1BD-2 | .88 | DS 70-4-2 | .85 | DS 90-3-2† | 1.05 |
| DS 70-1BD-2G | .90 | DS 70-4-2G | .88 | DS 90-3-2G† | 1.07 |
| DS 70-1-2 | .78 | DS 70-5-1 | 1.03 | DS 90-4-2 | 1.03 |
| DS 70-1-2G | .80 | DS 70-5-1G | 1.05 | DS 90-4-2G | 1.05 |
| DS 70-1-3* | .88 | DS 70-5-2 | .95 | DS 90-5-2 | 1.12 |
| DS 70-1-3G* | .90 | DS 70-5-2G | .99 | DS 90-5-2G | 1.15 |
| DS 70-2-1 | 1.03 | DS 90-1-1* | 1.08 | DS 125-1-2 | 1.08 |
| DS 70-2-1G | 1.05 | DS 90-1-1G | 1.10 | DS 125-1-2G | 1.10 |
| DS 70-2BD-1 | 1.14 | DS 90-1-2 | .88 | DS 125-2-2 | 1.18 |
| DS 70-2BD-1G | 1.18 | DS 90-1-2G | .90 | DS 125-2-2G | 1.21 |
| DS 70-2-2 | .91 | DS 90-1-3* | 1.08 | DS 125-3-2† | 1.25 |
| DS 70-2-2G | .95 | DS 90-1-3G* | 1.10 | DS 125-3-2G† | 1.28 |
| DS 70-2BD-2 | 1.08 | DS 90-1BD-1 | 1.04 | DS 125-6-2 | 2.10 |
| DS 70-2BD-2G | 1.10 | DS 90-1BD-1G | 1.16 | DS 125-6-2G | 2.12 |
| DS 70-3-1† | 1.02 | DS 90-1BD-2 | 1.05 | DS 175-6-2 | 2.50 |
| DS 70-3-1G† | 1.04 | DS 90-1BD-2G | 1.10 | DS 175-6-2G | 2.50 |

### COLOR KNOBS PER MS91528

| Raytheon Cat. No. | List* Each | Raytheon Cat. No. | List* Each | Raytheon Cat. No. | List* Each |
|---|---|---|---|---|---|
| G50-1-1* | $0.65 | G70-5-2 | $0.89 | R90-2-2 | $0.93 |
| G50-1-1G* | .71 | G70-5-2G | .95 | R90-2-2G | .99 |
| G50-2-1 | .74 | G70-7WL-2 | .96 | R90-3-2 | 1.15 |
| G50-2-1G | .80 | G70-7WL-2G | 1.03 | R90-3-2G | 1.20 |
| G50-3-1† | .91 | G70-8WL-2 | 1.16 | G125-1-2 | .89 |
| G50-3-1G† | .88 | G70-8WL-2G | 1.23 | G125-1-2G | .95 |
| G50-4-1 | .65 | R70-1WD-1 | 1.01 | G125-2-2 | 1.04 |
| G50-4-1G | .71 | R70-1WD-1G | 1.07 | G125-2-2G | 1.04 |
| G50-5-1 | .81 | R70-2-2 | .89 | G125-3-2† | 1.16 |
| G50-5-1G | .80 | R70-2-2G | .95 | G125-3-2G† | 1.17 |
| G50-3NP-1 | .86 | R70-3-2 | 1.09 | G125-3NP-2 | 1.15 |
| G50-3NP-1G | .85 | R70-3-2G | 1.04 | G125-3NP-2G | 1.14 |
| R50-1WD-1 | .80 | G90-1-1 | 1.01 | G125-6-2 | 2.39 |
| R50-1WD-1G | .86 | G90-1-1G | .98 | G125-6-2G | 2.46 |
| R50-2-1 | .79 | G90-1-2 | .84 | G125-7-2 | 1.36 |
| R50-2-1G | .80 | G90-1-2G | .90 | G125-7-2G | 1.42 |
| R50-3-1† | .90 | G90-1CB-2 | .84 | G175-1-2 | 1.26 |
| R50-3-1G† | .89 | G90-1CB-2G | .90 | G175-1-2G | 1.31 |
| G70-1-1* | .86 | G90-2-2 | .93 | G175-2-2 | 1.30 |
| G70-1-1G* | .92 | G90-2-2G | .99 | G175-2-2G | 1.35 |
| G70-1-2 | .80 | G90-2CB-2 | 1.04 | G175-3-2† | 1.46 |
| G70-1-2G | .86 | G90-2CB-2G | 1.09 | G175-3-2G† | 1.56 |
| G70-1CB-2 | .80 | G90-3-2 | 1.02 | G175-3NP-2 | 1.41 |
| G70-1CB-2G | .86 | G90-3-2G | 1.08 | G175-3NP-2G | 1.50 |
| G70-2-2 | .89 | G90-3CB-2 | 1.17 | G175-6-2 | 2.66 |
| G70-2-2G | .95 | G90-3CB-2G | 1.21 | G175-6-2G | 2.72 |
| G70-2CB-2 | .95 | G90-3NP-2 | .99 | G225-1-2 | 1.39 |
| G70-2CB-2G | 1.05 | G90-3NP-2G | 1.05 | G225-1-2G | 1.42 |
| G70-3-2† | .98 | G90-4-2 | .89 | G225-2-2 | 1.46 |
| G70-3-2G† | 1.04 | G90-4-2G | .95 | G225-2-2G | 1.54 |
| G70-3CB-2 | .98 | G90-5-2 | .98 | G225-3-2† | 1.61 |
| G70-3CB-2G | 1.04 | G90-5-2G | 1.04 | G225-3-2G† | 1.67 |
| G70-3NP-2 | .95 | G90-7WL-2 | .96 | G225-3NP-2 | 1.60 |
| G70-3NP-2G | 1.01 | G90-7WL-2G | 1.03 | G225-3NP-2G | 1.64 |
| G70-4-2 | .80 | G90-8WL-2 | 1.21 | G225-6-2 | 2.69 |
| G70-4-2G | .86 | G90-8WL-2G | 1.29 | G225-6-2G | 2.73 |

### • ★O.E.M. DISCOUNT SCHEDULES

Discounts are applied per item—NOT total units per order.

| Quantity | Deduct from List | | Quantity | Deduct from List | |
|---|---|---|---|---|---|
| | *Designer | *Others | | *Designer | *Others |
| 1–99 | None | None | 200–499 | 13% | 20% |
| 100–199 | 8% | 15% | 500–999 | 24% | 30% |

### STANDARD BLACK KNOBS PER MS91528

| Raytheon Cat. No. | List* Each | Raytheon Cat. No. | List* Each | Raytheon Cat. No. | List* Each |
|---|---|---|---|---|---|
| 50-1-1* | $0.55 | 70-3BL-2G | $2.75 | 90-7WL-2 | $0.90 |
| 50-1-1G* | .61 | 70-3NP-2 | .85 | 90-7WL-2G | .92 |
| 50-2-1 | .64 | 70-3NP-2G | .91 | 90-8WL-2 | 1.11 |
| 50-2-1G | .70 | 70-4-1 | .76 | 90-8WL-2G | 1.18 |
| 50-3-1† | .72 | 70-4-1G | .82 | 125-1-2 | .79 |
| 50-3-1G† | .78 | 70-4-2 | .70 | 125-1-2G | .85 |
| 50-3BL-1G | 2.29 | 70-4-2G | .76 | 125-2-2 | .88 |
| 50-3NP-1 | .69 | 70-5-1 | .85 | 125-2-2G | .94 |
| 50-3NP-1G | .75 | 70-5-1G | .91 | 125-3-2† | .96 |
| 50-4-1 | .57 | 70-5-2 | .79 | 125-3-2G† | 1.02 |
| 50-4-1G | .61 | 70-5-2G | .85 | 125-3BL-2G | 3.29 |
| 50-5-1 | .64 | 70-7WL-2 | .85 | 125-3NP-2 | .93 |
| 50-5-1G | .70 | 70-7WL-2G | .92 | 125-3NP-2G | .99 |
| 70-1-1* | .76 | 70-8WL-2 | 1.05 | 125-6-2 | 2.32 |
| 70-1-1G* | .82 | 70-8WL-2G | 1.12 | 125-6-2G | 2.35 |
| 70B-1-1‡ | .83 | 90-1-1* | .89 | 125-7-2 | 1.31 |
| 70B-1-1G‡ | .89 | 90-1-1G* | .91 | 125-7-2G | 1.32 |
| 70-1-2 | .70 | 90-1-2 | .74 | 175-1-2 | 1.12 |
| 70-1-2G | .76 | 90-1-2G | .80 | 175-1-2G | 1.17 |
| 70B-1-2‡ | .77 | 90-2-1 | .96 | 175-2-2 | 1.21 |
| 70B-1-2G‡ | .83 | 90-2-1G | .95 | 175-2-2G | 1.27 |
| 70-2-1 | .85 | 90-2-2 | .83 | 175-3-2† | 1.34 |
| 70-2-1G | .91 | 90-2-2G | .89 | 175-3-2G† | 1.41 |
| 70B-2-1‡ | .93 | 90-3-1† | 1.07 | 175-3BL-2G | 3.89 |
| 70B-2-1G‡ | 1.01 | 90-3-1G† | 1.12 | 175-3NP-2 | 1.29 |
| 70-2-2 | .79 | 90-3-2† | .92 | 175-3NP-2G | 1.35 |
| 70-2-2G | .85 | 90-3-2G† | .98 | 175-6-2 | 2.51 |
| 70B-2-2‡ | .87 | 90-3BL-2G | 3.28 | 175-6-2G | 2.58 |
| 70B-2-2G‡ | .93 | 90-3NP-2 | .89 | 225-1-2 | 1.29 |
| 70-3-1† | .94 | 90-3NP-2G | .95 | 225-1-2G | 1.36 |
| 70-3-1G† | 1.00 | 90-4-1 | .93 | 225-2-2 | 1.31 |
| 70B-3-1‡ | 1.03 | 90-4-1G | .93 | 225-2-2G | 1.37 |
| 70B-3-1G‡ | 1.04 | 90-4-2 | .79 | 225-3-2† | 1.49 |
| 70-3-2† | .88 | 90-4-2G | .85 | 225-3-2G† | 1.57 |
| 70-3-2G† | .94 | 90-5-1 | .98 | 225-3NP-2 | 1.47 |
| 70B-3-2‡ | 1.03 | 90-5-1G | 1.00 | 225-3NP-2G | 1.54 |
| 70B-3-2G‡ | 1.04 | 90-5-2 | .88 | 225-6-2 | 2.61 |
| 70-3BL-1G | 2.81 | 90-5-2G | .94 | 225-6-2G | 2.67 |

### SPECIAL BLACK KNOBS PER MS91528

| Raytheon Cat. No. | List* Each | Raytheon Cat. No. | List* Each | Raytheon Cat. No. | List* Each |
|---|---|---|---|---|---|
| 50-1WD-1 | $0.70 | 70-2WD-1 | $1.00 | 90-2CB-4§ | $1.03 |
| 50-1WD-1G | .76 | 70-2WD-1G | 1.06 | 90-2CB-4G§ | 1.08 |
| 50-2WD-1 | .79 | 70-2WD-2 | .94 | 90-2WD-1 | 1.04 |
| 50-2WD-1G | .85 | 70-2WD-2G | 1.00 | 90-2WD-1G | 1.10 |
| 70-1-3* | .86 | 70-3CB-2 | .88 | 90-2WD-2 | .98 |
| 70-1-3G* | .92 | 70-3CB-2G | .94 | 90-2WD-2G | 1.14 |
| 70-1CB-2 | .70 | 70B-3CB-2‡ | .88 | 90-3CB-2§ | .92 |
| 70-1CB-2G | .76 | 70B-3CB-2G‡ | .94 | 90-3CB-2G§ | .98 |
| 70B-1CB-2‡ | .70 | 90-1-3* | .93 | 90-3CB-4§ | 1.02 |
| 70B-1CB-2G‡ | .76 | 90-1-3G* | .96 | 90-3CB-4G§ | 1.08 |
| 70-1LK-1 | 1.13 | 90-1CB-2§ | .74 | 125-1CB-2§ | .79 |
| 70-1LK-1G | 1.17 | 90-1CB-2G§ | .80 | 125-1CB-2G§ | .85 |
| 70-1LK-2 | .93 | 90-1CB-4§ | .84 | 125-1LK-2 | 1.17 |
| 70-1LK-2G | .99 | 90-1CB-4G§ | .90 | 125-1LK-2G | 1.24 |
| 70-1WD-1 | .91 | 90-1LK-2 | 1.03 | 125-1WD-2 | .94 |
| 70-1WD-1G | .97 | 90-1LK-2G | 1.05 | 125-1WD-2G | 1.08 |
| 70-1-WD-2 | .85 | 90-1WD-1 | .95 | 125-2CB-2§ | .98 |
| 70-1-WD-2G | .91 | 90-1WD-1G | 1.01 | 125-2CB-2G§ | 1.03 |
| 70-2CB-2 | .85 | 90-1WD-2 | .89 | 125-3CB-2§ | .99 |
| 70-2CB-2G | .92 | 90-1WD-2G | .95 | 125-3CB-2G§ | 1.04 |
| 70B-2CB-2‡ | .83 | 90-2CB-2§ | .93 | | |
| 70B-2CB-2G‡ | .93 | 90-2CB-2G§ | .98 | | |

### TACTILE SHAPE KNOBS PER MS91528

Final figure in number indicates tactile symbol and color cap: 1—Intensity, Blue; 2—Tune, Orange; 3—Dimmer, White; 4—Gain, Red: 5—Focus, Violet; 6—Range, Yellow; 7—Bearing, Green; 8—Marker, Gray.

| Raytheon Cat. No. | List* Each | Raytheon Cat. No. | List* Each | Raytheon Cat. No. | List* Each |
|---|---|---|---|---|---|
| 70-1-2G-1 | $1.16 | 70-3-2G-4 | $1.33 | 90-2-2G-5 | $1.49 |
| 70-1-2G-2 | 1.16 | 70-3-2G-5 | 1.33 | 90-2-2G-6 | 1.49 |
| 70-1-2G-3 | 1.16 | 70-3-2G-6 | 1.33 | 90-3-2G-1 | 1.55 |
| 70-1-2G-4 | 1.16 | 70-4-2G-6 | 1.21 | 90-3-2G-2 | 1.55 |
| 70-1-2G-5 | 1.16 | 70-5-2G-6 | 1.35 | 90-3-2G-3 | 1.55 |
| 70-1-2G-6 | 1.16 | 90-1-2G-1 | 1.33 | 90-3-2G-4 | 1.55 |
| 70-2-2G-1 | 1.35 | 90-1-2G-2 | 1.33 | 90-3-2G-5 | 1.55 |
| 70-2-2G-2 | 1.35 | 90-1-2G-3 | 1.33 | 90-3-2G-6 | 1.55 |
| 70-2-2G-3 | 1.35 | 90-1-2G-4 | 1.33 | 90-4-2G-6 | 1.40 |
| 70-2-2G-4 | 1.35 | 90-1-2G-5 | 1.33 | 90-5-2G-6 | 1.49 |
| 70-2-2G-5 | 1.35 | 90-1-2G-6 | 1.33 | 125-6-2G-7 | 3.40 |
| 70-2-2G-6 | 1.35 | 90-2-2G-1 | 1.49 | 125-6-2G-8 | 3.40 |
| 70-3-2G-1 | 1.33 | 90-2-2G-2 | 1.49 | 175-6-2G-7 | 3.65 |
| 70-3-2G-2 | 1.33 | 90-2-2G-3 | 1.49 | 175-6-2G-8 | 3.65 |
| 70-3-2G-3 | 1.33 | 90-2-2G-4 | 1.49 | | |

*Standard or concentric, inner shaft. †With pointer. ‡Round bar. §Used also with Designer Series as concentric base.

KNOBS AND ACCESSORIES CONTINUED ON NEXT PAGE

# Raytheon Knobs, Hardware

## NOB CROSS REFERENCE TO MS91528

| | Raytheon Cat. No. | MS-91258B | Raytheon Cat. No. | MS-91258B | Raytheon Cat. No. |
|---|---|---|---|---|---|
| | 50-1WD-1G | -1N2B | 70-1-2G | -2P1B | 90-4-1G |
| | 50-2-1G | -1N2BC | 70-1CB-2G | -2P2B | 90-4-2G |
| | G50-2-1G | -1N2G | G70-1-2G | -2P2G | G90-4-2G |
| | 50-2WD-1G | -1N2GC | G70-1CB -2G | -3C2B | 125-1WD -2G |
| | 50-3-1G | | | | |
| | G50-3-1G | -1O1B | 70-3BL-1G | -3D2B | 125-2-2G |
| | 50-3NP-1G | -1O2B | 70-3BL-2G | -3D2BC | 125-2CB-2G |
| | G50-3NP -1G | -1P1B | 70-4-1G | -3D2G | G125-2-2G |
| | | -1P2B | 70-4-2G | -3F2B | 125-3-2G |
| | 50-5-1G | -1P2G | G70-4-2G | -3F2BC | 125-3CB-2G |
| | G50-5-1G | -2C1B | 90-1WD-1G | -3F2G | G125-3-2G |
| | 50-1-1G | -2C2B | 90-1WD-2G | -3G2B | 125-3NP-2G |
| | G50-1-1G | -2D1B | 90-2-1G | -3G2G | G125-3NP -2G |
| | 50-3BL-1G | -2D2B | 90-2-2G | | |
| | 50-4-1G | -2D2BC | 90-2CB-2G | -3N2B | 125-1-2G |
| | G50-4-1G | -2D2G | G90-2-2G | -3N2BC | 125-1CB-2G |
| | 70-7WL-2G | -2D2GC | G90-1CB -2G | -3N2G | G125-1-2G |
| | G70-7WL -2G | | | -3O2B | 125-3BL-2G |
| | | -2E1B | 90-2WD-1G | -3R2B | 125-7-2G |
| | 70-8WL-2G | -2E2B | 90-2WD-2G | -3R2G | G125-7-2G |
| | G70-8WL -2G | -2F1B | 90-3-1G | -3S2B | 125-6-2G |
| | | -2F2B | 90-3-2G | -3S2G | G125-6-2G |
| | 70-1WD-1G | -2F2BC | 90-3CD-2G | -4D2B | 175-2-2G |
| | 70-1WD-2G | -2F2G | G90-3-2G | -4D2G | G175-2-2G |
| | 70-2-1G | -2F2GC | G90-3CD -2G | -4F2B | 175-3-2G |
| | 70-2-2G | | | -4F2G | G175-3-2G |
| C | 70-2CB-2G | -2G2B | 90-3NP-2G | -4G2B | 175-3NP -2G |
| | G70-2-2G | -2G2G | G90-3NP -2G | | |
| C | G70-2CB -2G | | | -4G2G | G175-3NP -2G |
| | | -2K1B | 90-5-1G | | |
| | 70-2WD-1G | -2K2B | 90-5-2G | -4N2B | 175-1-2G |
| | 70-2WD-2G | -2K2G | G90-5-2G | -4N2G | G175-1-2G |
| | 70-3-1G | -2L2B | 90-7WL-2G | -4O2B | 175-3BL-2G |
| | 70-3-2G | -2L2G | G90-7WL -2G | -4S2B | 175-6-2G |
| C | 70-3CB-2G | | | -4S2G | G175-6-2G |
| | G70-3-2G | -2M2B | 90-8WL-2G | -5D2B | 225-2-2G |
| C | G70-3CB -2G | -2M2G | G90-8WL -2G | -5D2G | G225-2-2G |
| | | | | -5F2B | 225-3-2G |
| B | 70-3NP-2G | -2N1B | 90-1-1G | -5F2G | G225-3-2G |
| G | G70-3NP -2G | -2N1G | G90-1-1G | -5G2B | 225-3NP-2G |
| | | -2N2B | 90-1-2G | -5G2G | G225-3NP -2G |
| B | 70-5-1G | -2N2BC | 90-1CB-2G | | |
| B | 70-5-2G | -2N2G | G90-1-2G | -5N2B | 225-1-2G |
| G | G70-5-2G | -2N2GC | G90-1CB -2G | -5N2G | G225-1-2G |
| B | 70-1-1G | | | -5S2B | 225-6-2G |
| G | G70-1-1G | -2O2B | 90-3BL-2G | -5S2G | G225-6-2G |

## SELF-LOCKING PUSH-TO-TURN KNOBS

-2- -3-

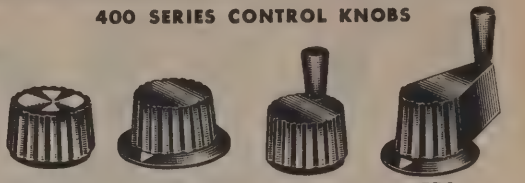
Designed for maintaining control settings under shock and vibration. Knobs have zero backlash allowing for infinite resolution. Sturdy polycarbonate plastic construction conforms with MS91528C and MIL-K-3926B. Custom variations available, complete information on
est. **Model Number Description: PT**, push-to-turn; **G**, gray
t for black) color; **70**, ¾" dia. or **90**, 1" dia.; **2**, skirted round
dial skirted round; **NP**, no pointer mark (omit for mark);
" shaft hole, **2**, ¼" or **3**, 3/16"; **G**, matte finish (omit for
or finish).

| theon . PT- | Net Each, Lots of | | | Raytheon No. PT- | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|
| | 1-24 | 25-49 | 50-249 | | 1-24 | 25-49 | 50-249 |
| -1 | $12.10 | $10.90 | $ 9.70 | 90-2-1 | $12.60 | $11.35 | $10.10 |
| -1G | 12.00 | 10.80 | 9.60 | 90-2-1G | 12.50 | 11.25 | 10.00 |
| -2 | 12.20 | 11.00 | 9.75 | 90-2-2 | 12.70 | 11.45 | 10.15 |
| -2G | 12.10 | 10.90 | 9.70 | 90-2-2G | 12.60 | 11.35 | 10.10 |
| -3 | 12.25 | 11.00 | 9.80 | 90-2-3 | 12.75 | 11.45 | 10.20 |
| -3G | 12.15 | 10.95 | 9.75 | 90-2-3G | 12.65 | 11.40 | 10.15 |
| -1 | 12.25 | 11.00 | 9.80 | 90-3-1 | 12.75 | 11.45 | 10.20 |
| -1G | 12.15 | 10.95 | 9.70 | 90-3-1G | 12.65 | 11.40 | 10.15 |
| -2 | 12.35 | 11.10 | 9.90 | 90-3-2 | 12.85 | 11.55 | 10.25 |
| -2G | 12.25 | 11.00 | 9.80 | 90-3-2G | 12.75 | 11.45 | 10.20 |
| -3 | 12.45 | 11.20 | 9.95 | 90-3-3 | 12.95 | 11.65 | 10.35 |
| -3G | 12.35 | 11.10 | 9.90 | 90-3-3G | 12.85 | 11.55 | 10.25 |
| NP-1 | 12.20 | 11.00 | 9.75 | 90-3NP-1 | 12.70 | 11.45 | 10.15 |
| NP-1G | 12.10 | 10.90 | 9.70 | 90-3NP-1G | 12.60 | 11.35 | 10.10 |
| NP-2 | 12.30 | 11.05 | 9.85 | 90-3NP-2 | 12.80 | 11.50 | 10.25 |
| NP-2G | 12.20 | 11.00 | 9.75 | 90-3NP-2G | 12.70 | 11.45 | 10.15 |
| NP-3 | 12.40 | 11.15 | 9.90 | 90-3NP-3 | 12.90 | 11.60 | 10.30 |
| NP-3G | 12.30 | 11.05 | 9.85 | 90-3NP-3G | 12.80 | 11.50 | 10.25 |
| -2-1 | 12.20 | 11.00 | 9.75 | G90-2-1 | 12.70 | 11.45 | 10.15 |
| -2-1G | 12.10 | 10.90 | 9.70 | G90-2-1G | 12.60 | 11.35 | 10.10 |
| -2-2 | 12.30 | 11.10 | 9.85 | G90-2-2 | 12.80 | 11.50 | 10.25 |
| -2-2G | 12.20 | 11.00 | 9.75 | G90-2-2G | 12.70 | 11.45 | 10.15 |
| -2-3 | 12.25 | 11.00 | 9.80 | G90-2-3 | 12.85 | 11.55 | 10.25 |
| -2-3G | 12.15 | 10.95 | 9.70 | G90-2-3G | 12.75 | 11.45 | 10.20 |
| -3-1 | 12.35 | 11.10 | 9.90 | G90-3-1 | 12.85 | 11.55 | 10.25 |
| -3-1G | 12.25 | 11.00 | 9.80 | G90-3-1G | 12.75 | 11.45 | 10.20 |
| -3-2 | 12.40 | 11.15 | 9.95 | G90-3-2 | 12.95 | 11.65 | 10.35 |
| -3-2G | 12.35 | 11.10 | 9.90 | G90-3-2G | 12.85 | 11.55 | 10.25 |
| -3-3 | 12.55 | 11.30 | 10.05 | G90-3-3 | 13.05 | 11.75 | 10.45 |
| -3-3G | 12.45 | 11.20 | 9.95 | G90-3-3G | 12.95 | 11.65 | 10.35 |
| -3NP-1 | 12.25 | 11.00 | 9.80 | G90-3NP-1 | 12.80 | 11.50 | 10.25 |
| -3NP-1G | 12.20 | 11.00 | 9.75 | G90-3NP-1G | 12.70 | 11.45 | 10.15 |
| -3NP-2 | 12.40 | 11.15 | 9.90 | G90-3NP-2 | 12.90 | 11.60 | 10.30 |
| -3NP-2G | 12.30 | 11.05 | 9.85 | G90-3NP-2G | 12.80 | 11.50 | 10.25 |
| -3NP-3 | 12.50 | 11.25 | 10.00 | G90-3NP-3 | 13.00 | 11.70 | 10.40 |
| -3NP-3G | 12.40 | 11.15 | 9.90 | G90-3NP-3G | 12.90 | 11.60 | 10.30 |

### .E.M. DISCOUNT SCHEDULE FOR KNOBS & ACCESSORIES

ounts are applied on units per item—NOT total units per order.
**ntity:** 1-99, none; 100-199, –15%; 200-499, –20%; 500-999, –30%.

## 400 SERIES CONTROL KNOBS



-R- (Panelrama) -D- -RC- -PDC-

Modern styling for commercial or industrial use in a choice of solid colors or new Panelrama design (black with colored aluminum, push-on disk in top); choice of four shades of gray, two shades of green, and beige, black or blue for solid-color knobs or panelrama push-on disks. Durable construction of high-impact acrylonitrite-butadiene-styrene (ABS) with lusterless finish. Metal bushing with two set screws. **Prefix Indicates Size: 406**, .625" dia.; **407**, .725" dia.; **409**, .875" dia.; **412**, 1.255" dia. **Letter(s) Defines Style: R**, round; **D**, round, dial skirt; **C**, crank; **P**, bar pointer; **B**, base for concentric use, and combinations (e.g., **PDC** = bar pointer with dial skirt and crank). **Last Number:** Indicates shaft size and solid color or insert color style: **1**, ⅛" shaft size, solid-color knob; **2**, ¼" shaft size, solid-color knob; **3**, ¼" shaft size, black knob with color insert disk; **4**, ⅛" shaft size, black knob with color insert disk.

### SOLID COLOR KNOBS

| Raytheon Cat. No.† | List Each* | Raytheon Cat. No.† | List Each* | Raytheon Cat. No.† | List Each* |
|---|---|---|---|---|---|
| 406D1 | $0.50 | 407R1 | $0.42 | 409RB2 | $0.45 |
| 406D2 | .46 | 407R2 | .39 | 412D2 | .53 |
| 406P2 | .41 | 407RB2 | .43 | 412DB2 | .54 |
| 406PD2 | .51 | 409D2 | .51 | 412DC2 | .69 |
| 406R1 | .40 | 409DB2 | .52 | 412P2 | .54 |
| 406R2 | .37 | 409P2 | .48 | 412PC2 | .70 |
| 407D1 | .52 | 409PC2 | .65 | 412PD2 | .64 |
| 407D2 | .48 | 409PD2 | .58 | 412PDC2 | .80 |
| 407DB2 | .50 | 409PDC2 | .75 | 412R2 | .43 |
| 407P2 | .43 | 409R1 | .44 | 412RB2 | .47 |
| 407PD2 | .53 | 409R2 | .41 | 412RC2 | .60 |

### PANELRAMA COLOR-INSERT KNOBS

Black body with colored aluminum, push-on disk.

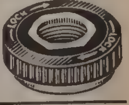
| | | | | | |
|---|---|---|---|---|---|
| 406D3 | $0.39 | 407P3 | $0.36 | 412D3 | $0.46 |
| 406D4 | .41 | 407PD3 | .46 | 412DC3 | .62 |
| 406P3 | .34 | 407R3 | .32 | 412P3 | .47 |
| 406P4 | .36 | 409D3 | .44 | 412PC3 | .63 |
| 406PD3 | .44 | 409P3 | .41 | 412PD3 | .57 |
| 406PD4 | .46 | 409PC3 | .58 | 412PDC3 | .73 |
| 406R3 | .30 | 409PD3 | .51 | 412R3 | .36 |
| 406R4 | .32 | 409PDC3 | .75 | 412RC3 | .53 |
| 407D3 | .41 | 409R3 | .34 | | |

**†Add Final Suffix for Color**

To specify color of solid-color knobs or disk color for Panelrama knobs, specify: **K1**, black; **K2**, beige; **K3**, light gray; **K4**, light green; **K5**, darker green; **K6**, blue; **K7**, medium-light gray; **K8**, medium gray; **K9**, darker gray.

**Ask for Raytheon Catalog No. SP-1171 for color pictures and further information.**

### KNOB LOCKS



Use with standard control knobs for a dependable means of holding precise or critical control settings under shock or vibration conditions. Very little larger than the knob itself. An eighth-turn locks the knob firmly. Mounts directly on threaded bushing of the control.

| Raytheon Cat. No. | For Knob Series | Finish | O.D. | Thread | List Each* |
|---|---|---|---|---|---|
| KL701 | 70 | Mirror | 1" | ⅜"-32 | $0.87 |
| KL701G | 70 | Matte | 1" | ⅜"-32 | .93 |
| KL702† | 70 | Mirror | 1" | ¼"-32 | .95 |
| KL702G† | 70 | Matte | 1" | ¼"-32 | 1.02 |
| KL703* | 70 | Mirror | 1" | ⅜"-32 | 1.79 |
| KL703G* | 70 | Matte | 1" | ⅜"-32 | 1.85 |
| KL901 | 90 | Mirror | 1 5/16" | ⅜"-32 | 1.02 |
| KL901G | 90 | Matte | 1 5/16" | ⅜"-32 | 1.07 |
| KL902* | 90 | Mirror | 1 5/16" | ⅜"-32 | 1.89 |
| KL902G* | 90 | Matte | 1 5/16" | ⅜"-32 | 1.95 |
| KL1251 | 125 | Mirror | 1⅝" | ⅜"-32 | 1.02 |
| KL1251G | 125 | Matte | 1⅝" | ⅜"-32 | 1.09 |
| KL1252* | 125 | Mirror | 1⅝" | ⅜"-32 | 1.99 |
| KL1252G* | 125 | Matte | 1⅝" | ⅜"-32 | 2.05 |

*Splash proof. †⅛" shaft.

### KNOB REDUCING BUSHINGS

Converts knobs to fit smaller shafts by reducing knob hole size.

| Raytheon Cat. No. | Description | Net Each |
|---|---|---|
| RB100 | Converts ¼" shaft to ⅛" | 12c |
| RB200 | Converts ¼" shaft to 3/16" | 12c |

### SHAFT LOCKS

| Raytheon Cat. No. | Color | For Shaft | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|
| | | | 1-99 | 100-199 | 200-499 | 500-999 |
| SL-100B | Black | ¼" | $0.33 | $0.28 | $0.26 | $0.24 |
| SL-101R | Red | ¼" | .35 | .30 | .28 | .26 |
| SL-110B* | Black | ¼" | .22 | .19 | .18 | .16 |
| SL-105B | Black | ⅛" | .25 | .22 | .20 | .18 |

*Short style for use under knobs.

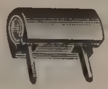
# RAYTHEON Mechanical Components

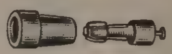
A

B

C

D


E


F

G

## TEST JACKS

Extra reliability assured through use of finest materials: Nylon insulators; beryllium copper spring pin contacts; gold over silver-plated contact sleeves; convenient color-coding.

### STANDARD TYPES PER MS16108F (FIG. A)

Meets MS-16108 requirements. Units have nickel-plated brass sleeve for mounting; beryllium copper spring pin contact. With nickel-plated brass and lockwasher; nylon or white Teflon® insulators. **Terminal Type:** TJ-100 thru TJ111WT turret; all others spade.

| MS16108F No. | Raytheon Cat. No. | Color | Net Each, Lots of* | | | |
|---|---|---|---|---|---|---|
| | | | 1-99 | 100-499 | 500-999 | 1000-4999 |
| MS16108-1A | TJ108W | White | $0.29 | $0.25 | $0.23 | $0.20 |
| MS16108-2A | TJ103R | Red | .29 | .25 | .23 | .20 |
| MS16108-3A | TJ105BL | Black | .29 | .25 | .23 | .20 |
| MS16108-4A | TJ102B | Brown | .29 | .25 | .23 | .20 |
| MS16108-5A | TJ106GN | Green | .29 | .25 | .23 | .20 |
| MS16108-6A | TJ104OR | Orange | .29 | .25 | .23 | .20 |
| MS16108-7A | TJ107MB | Blue | .29 | .25 | .23 | .20 |
| MS16108-8A | TJ101Y | Yellow | .29 | .25 | .23 | .20 |
| MS16108-9A | TJ109GY | Gray | .29 | .25 | .23 | .20 |
| MS16108-10A | TJ110V | Violet | .29 | .25 | .23 | .20 |
| MS16108-11A | TJ100N | Natural | .29 | .25 | .23 | .20 |
| MS16108-12A | TJ111WT | White | .53 | .45 | .42 | .37 |
| MS16108-1B | TJ158W | White | .34 | .29 | .27 | .24 |
| MS16108-2B | TJ153R | Red | .34 | .29 | .27 | .24 |
| MS16108-3B | TJ155BL | Black | .34 | .29 | .27 | .24 |
| MS16108-4B | TJ152B | Brown | .34 | .29 | .27 | .24 |
| MS16108-5B | TJ156GN | Green | .34 | .29 | .27 | .24 |
| MS16108-6B | TJ154OR | Orange | .34 | .29 | .27 | .24 |
| MS16108-7B | TJ157MB | Blue | .34 | .29 | .27 | .24 |
| MS16108-8B | TJ151Y | Yellow | .34 | .29 | .27 | .24 |
| MS16108-9B | TJ159GY | Gray | .34 | .29 | .27 | .24 |
| MS16108-10B | TJ160V | Violet | .34 | .29 | .27 | .24 |
| MS16108-11B | TJ150N | Natural | .34 | .29 | .27 | .24 |
| MS16108-12B | TJ161WT | White | .56 | .48 | .45 | .40 |

*Colors may be mixed for max. discount; order 25 per color.
®Registered DuPont trademark.

### SUBMINIATURE, FIXED-CONTACT TYPE (FIG. B)

Less than 11/32" long for extra ease and speed in mounting. Press-in fit; insulator behind panel expands slightly for firm hold. No threaded hardware required.

| Raytheon Cat. No. | Color | Net Each, Lots of* | | | | |
|---|---|---|---|---|---|---|
| | | 1-49 | 50-249 | 250-499 | 500-999 | 1000-2499 |
| TJ-400N | Natural | $0.21 | $0.18 | $0.17 | $0.16 | $0.15 |
| TJ-401Y | Yellow | .21 | .18 | .17 | .16 | .15 |
| TJ-402B | Brown | .21 | .18 | .17 | .16 | .15 |
| TJ-403R | Red | .21 | .18 | .17 | .16 | .15 |
| TJ-404OR | Orange | .21 | .18 | .17 | .16 | .15 |
| TJ-405BL | Black | .21 | .18 | .17 | .16 | .15 |
| TJ-406GN | Green | .21 | .18 | .17 | .16 | .15 |
| TJ-407MB | Blue | .21 | .18 | .17 | .16 | .15 |
| TJ-408W | White | .21 | .18 | .17 | .16 | .15 |

### SUBMINIATURE, SNAP-IN CONTACT TYPE (FIG. F)

Contact can be removed if required. No mounting hardware required.

| Raytheon Cat. No. | Color | Net Each, Lots of* | | | | |
|---|---|---|---|---|---|---|
| | | 1-49 | 50-249 | 250-499 | 500-999 | 1000-2499 |
| TJ-500N | Natural | $0.66 | $0.56 | $0.53 | $0.50 | $0.46 |
| TJ-501Y | Yellow | .66 | .56 | .53 | .50 | .46 |
| TJ-502B | Brown | .66 | .56 | .53 | .50 | .46 |
| TJ-503R | Red | .66 | .56 | .53 | .50 | .46 |
| TJ-504OR | Orange | .66 | .56 | .53 | .50 | .46 |
| TJ-505BL | Black | .66 | .56 | .53 | .50 | .46 |
| TJ-506GN | Green | .66 | .56 | .53 | .50 | .46 |
| TJ-507MB | Blue | .66 | .56 | .53 | .50 | .46 |
| TJ-508W | White | .66 | .56 | .53 | .50 | .46 |

*Colors per style may be mixed for max. discount; min. order, 25 per style.

### STANDARD PRINTED CIRCUIT TYPE (FIG. C)

Miniature unit for printed circuit uses; no mtg. hardware required. Inserts through panel on panels to ¼" thick. When dip-soldered, gold-plated contact sleeve is firmly bonded electrically and mechanically to the panel. Packaged 50 per color per style.

| Raytheon Cat. No. | Color | Net Each, Lots of* | | | |
|---|---|---|---|---|---|
| | | 1-249 | 250-499 | 500-999 | 1000-2499 |
| TJ-300N | Natural | $0.19 | $0.16 | $0.15 | $0.13 |
| TJ-301Y | Yellow | .19 | .16 | .15 | .13 |
| TJ-302B | Brown | .19 | .16 | .15 | .13 |
| TJ-303R | Red | .19 | .16 | .15 | .13 |
| TJ-304OR | Orange | .19 | .16 | .15 | .13 |
| TJ-305BL | Black | .19 | .16 | .15 | .13 |
| TJ-306GN | Green | .19 | .16 | .15 | .13 |
| TJ-307MB | Blue | .19 | .16 | .15 | .13 |
| TJ-308W | White | .19 | .16 | .15 | .13 |
| TJ-309GY | Gray | .19 | .16 | .15 | .13 |
| TJ-310V | Violet | .19 | .16 | .15 | .13 |

### SHORT PRINTED CIRCUIT TYPE (FIG. D)

| | | | | | |
|---|---|---|---|---|---|
| TJ-350N | Natural | $0.19 | $0.16 | $0.15 | $0.13 |
| TJ-351Y | Yellow | .19 | .16 | .15 | .13 |
| TJ-352B | Brown | .19 | .16 | .15 | .13 |
| TJ-353R | Red | .19 | .16 | .15 | .13 |
| TJ-354OR | Orange | .19 | .16 | .15 | .13 |
| TJ-355BL | Black | .19 | .16 | .15 | .13 |
| TJ-356GN | Green | .19 | .16 | .15 | .13 |
| TJ-357MB | Blue | .19 | .16 | .15 | .13 |
| TJ-358W | White | .19 | .16 | .15 | .13 |
| TJ-359GY | Gray | .19 | .16 | .15 | .13 |
| TJ-380V | Violet | .19 | .16 | .15 | .13 |

### SHORT PRINTED CIRCUIT TYPE

Similar to above units but with shorter soldering body. Recommended for flow-soldered applications.

| | | | | | |
|---|---|---|---|---|---|
| TJ-360N | Natural | $0.19 | $0.16 | $0.15 | $0.13 |
| TJ-361Y | Yellow | .19 | .16 | .15 | .13 |
| TJ-362B | Brown | .19 | .16 | .15 | .13 |
| TJ-363R | Red | .19 | .16 | .15 | .13 |
| TJ-364OR | Orange | .19 | .16 | .15 | .13 |
| TJ-365BL | Black | .19 | .16 | .15 | .13 |
| TJ-366GN | Green | .19 | .16 | .15 | .13 |
| TJ-367MB | Blue | .19 | .16 | .15 | .13 |
| TJ-368W | White | .19 | .16 | .15 | .13 |
| TJ-369GY | Gray | .19 | .16 | .15 | .13 |
| TJ-370V | Violet | .19 | .16 | .15 | .13 |

### RIGHT-ANGLE PRINTED CIRCUIT TYPE (FIG. E)

| | | | | | |
|---|---|---|---|---|---|
| TJ-201Y | Yellow | $0.19 | $0.16 | $0.15 | $0.13 |
| TJ-202BR | Brown | .19 | .16 | .15 | .13 |
| TJ-203R | Red | .19 | .16 | .15 | .13 |
| TJ-204OR | Orange | .19 | .16 | .15 | .13 |
| TJ-205BL | Black | .19 | .16 | .15 | .13 |
| TJ-206GN | Green | .19 | .16 | .15 | .13 |
| TJ-207MB | Blue | .19 | .16 | .15 | .13 |
| TJ-208W | White | .19 | .16 | .15 | .13 |
| TJ-209GY | Gray | .19 | .16 | .15 | .13 |
| TJ-210V | Violet | .19 | .16 | .15 | .13 |

### SHORT RIGHT-ANGLE PRINTED CIRCUIT TYPE

| | | | | | |
|---|---|---|---|---|---|
| TJ-251Y | Yellow | $0.19 | $0.16 | $0.15 | $0.13 |
| TJ-252BR | Brown | .19 | .16 | .15 | .13 |
| TJ-253R | Red | .19 | .16 | .15 | .13 |
| TJ-254OR | Orange | .19 | .16 | .15 | .13 |
| TJ-255BL | Black | .19 | .16 | .15 | .13 |
| TJ-256GN | Green | .19 | .16 | .15 | .13 |
| TJ-257MB | Blue | .19 | .16 | .15 | .13 |
| TJ-258W | White | .19 | .16 | .15 | .13 |
| TJ-259GY | Gray | .19 | .16 | .15 | .13 |
| TJ-260V | Violet | .19 | .16 | .15 | .13 |

*Colors per style may be mixed for max. discount; min. order, 25 per style.

## FIVE-WAY BINDING POSTS (FIG. G)

Available in two models: Accepting standard banana plug; or, standard .080 test prod. Four other connections include: Wire through center hole; prod through center hole; wire coiled around post and clamped; turret terminal for solder connection. Nylon body with tin-plated metal parts to withstand 50-hour salt spray test; 250-hour 95% humidity test. Rated 30 amps.

| Raytheon Cat. No. | Color | Type | Net Each, Lots of* | | | |
|---|---|---|---|---|---|---|
| | | | 1-99 | 100-199 | 200-499 | 500-999 |
| BP-100B | Black | Prod | $0.60 | $0.51 | $0.48 | $0.45 |
| BP-101R | Red | Prod | .60 | .51 | .48 | .45 |
| BP-105B | Black | Banana | .55 | .47 | .44 | .41 |
| BP-106R | Red | Banana | .55 | .47 | .44 | .41 |

*Colors per style may be mixed for max. discount; minimum order 10 per style.

YTHEON

# Mechanical Components

## NEW KEYBOARD SWITCHES (FIG. A)

easy mounting designed to plug into .125" PC board; ; pins snap in and lock for soldering. Ideal for flow- ng. Polycarbonate body meets Fed. Spec. SP-393 and Std. OS-12531. Mechanical contacts are beryllium per 533, Cond. A; sliding contact, stainless steel per QQ-S-763. ings stainless steel. Reed switch contacts are noble metal. range, −55° C to +65° C. Size, .625" dia. x 1¾" h.

### SINGLE SWITCHES*

| gular Caps | | Truncated Caps | | Lev-els | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|
| t | Slanted | Flat | Slanted | | 1-99 | 100-499 | 500-999 |
| 1-R | KBSR1-R | KBFR1-T | KBSR1-T | 1 | $2.00 | $1.64 | $1.53 |
| 2-R | KBSR2-R | KBFR2-T | KBSR2-T | 2 | 3.75 | 3.04 | 2.85 |
| 4-R | KBSR4-R | KBFR4-T | KBSR4-T | 4 | 4.20 | 3.36 | 3.15 |
| ... | ......... | KBFR6-T | KBSR6-T | 6 | 5.75 | 4.50 | 4.25 |

fy letter or number on cap by suffix **A-Z** or **0-9**; or blank, **BK.**

### ALPHABET SET OF 26 SWITCHES†

| gular Caps | | Truncated Caps | | Lev-els | Net/Set, Lots of | | |
|---|---|---|---|---|---|---|---|
| t | Slanted | Flat | Slanted | | 1-3 | 4-19 | 20-38 |
| 1-R | KBSR1-R | KBFR1-T | KBSR1-T | 1 | $52.00 | $42.60 | $39.75 |
| 2-R | KBSR2-R | KBFR2-T | KBSR2-T | 2 | 97.50 | 79.00 | 74.10 |
| 4-R | KBSR4-R | KBFR4-T | KBSR4-T | 4 | 109.50 | 87.35 | 81.90 |
| .... | .......... | KBFR6-T | KBSR6-T | 6 | 149.50 | 117.00 | 110.50 |

suffix **AZ** to number shown, when ordering.

### NUMERICAL SET OF 10 SWITCHES‡

| gular Caps | | Truncated Caps | | Lev-els | Net/Set, Lots of | | |
|---|---|---|---|---|---|---|---|
| t | Slanted | Flat | Slanted | | 1-9 | 10-49 | 50-99 |
| 1-R | KBSR1-R | KBFR1-T | KBSR1-T | 1 | $20.00 | $16.40 | $15.30 |
| 2-R | KBSR2-R | KBFR2-T | KBSR2-T | 2 | 37.50 | 30.40 | 28.50 |
| 4-R | KBSR4-R | KBFR4-T | KBSR4-T | 4 | 42.00 | 33.60 | 31.50 |
| ..... | .......... | KBFR6-T | KBSR6-T | 6 | 57.50 | 45.00 | 42.50 |

suffix **09** to number shown, when ordering.

### EXTRA KEYBOARD SWITCH CAPS

| ap ype | Blank, Mirror Finish Net Each, Lots of | | | | Hot-Stamped*, Matte Finish Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|---|
| | 1-99 | 100-199 | 200-499 | 500-999 | 1-99 | 100-199 | 200-499 | 500-999 |
| | $0.10 | $0.085 | $0.08 | $0.07 | $0.20 | $0.17 | $0.16 | $0.14 |
| | .16 | .135 | .13 | .11 | .32 | .27 | .26 | .22 |
| tion | .20 | .17 | .16 | .14 | .36 | .31 | .29 | .25 |
| e bar | .40 | .34 | .32 | .28 | .48 | .41 | .38 | .34 |

e includes white cap with any single black letter (**A** to **Z**), ber (**0** to **9**) or usual punctuation marks; specify when ordering.

## SE AND RESISTOR LOCKING CLIPS (FIG. B)

r improvement over standard fuse and resistor clips as fied in Buships Spec. 16E4 (SHIPS). Meet requirements of (SHIPS) and MIL-E-16400 (SHIPS); each clip is so stamp- Suffix **E** indicates ejector; **NE**, non-ejector.

| theon . No. | Hook Lgth.* | Fer-rule Dia. | Navy No. CRP- | Net Each, Lots of* | | | |
|---|---|---|---|---|---|---|---|
| | | | | 1-99 | 100-199 | 200-499 | 500-999 |
| 00E | 5/8" | 9/16" | 28017A† | $1.45 | $1.23 | $1.16 | $1.05 |
| 01NE | 5/8" | 9/16" | 28017† | 1.45 | 1.23 | 1.16 | 1.05 |
| 02E | 3/8" | 9/16" | 28017A† | 1.45 | 1.23 | 1.16 | 1.05 |
| 03NE | 3/8" | 9/16" | 28017† | 1.45 | 1.23 | 1.16 | 1.05 |
| 04E | ....... | 9/16" | 28017A† | 1.45 | 1.23 | 1.16 | 1.05 |
| 05NE | ....... | 9/16" | 28017† | 1.45 | 1.23 | 1.16 | 1.05 |
| 110E | 5/8" | 13/16" | 28018A‡ | 1.55 | 1.32 | 1.24 | 1.12 |
| 111NE | 5/8" | 13/16" | 28018‡ | 1.55 | 1.32 | 1.24 | 1.12 |
| 112E | 3/8" | 13/16" | 28018A‡ | 1.55 | 1.32 | 1.24 | 1.12 |
| 113NE | 3/8" | 13/16" | 28018‡ | 1.55 | 1.32 | 1.24 | 1.12 |
| 114E | ....... | 13/16" | 28018A‡ | 1.55 | 1.32 | 1.24 | 1.12 |
| 115NE | ....... | 13/16" | 28018‡ | 1.55 | 1.32 | 1.24 | 1.12 |
| 120E | 5/8" | 1 1/8" | 28019A§ | 1.65 | 1.40 | 1.32 | 1.20 |
| 121NE | 5/8" | 1 1/8" | 28019§ | 1.65 | 1.40 | 1.32 | 1.20 |
| 122E | 3/8" | 1 1/8" | 28019A§ | 1.65 | 1.40 | 1.32 | 1.20 |
| 123NE | 3/8" | 1 1/8" | 28019§ | 1.65 | 1.40 | 1.32 | 1.20 |
| 124E | ....... | 1 1/8" | 28019A§ | 1.65 | 1.40 | 1.32 | 1.20 |
| 125NE | ....... | 1 1/8" | 28019§ | 1.65 | 1.40 | 1.32 | 1.20 |

ngth of hook at bottom. †30 amps, 250 volts. ‡60 amps, 250 s. §60 amps, 600 volts. •Styles per size may be mixed for imum discount. Suffix **E**, ejector. Suffix **NE**, non-ejector.

## CIRCUIT BOARD MOUNTING BRACKETS

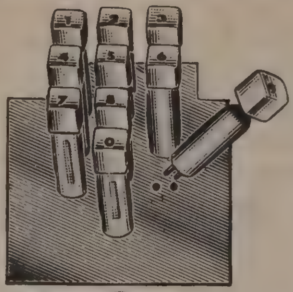
### CADMIUM-PLATED STEEL

| ytheon Cat. No. | Panel Size, In. | | Ht., In. | Net Each, Lots of• | | | |
|---|---|---|---|---|---|---|---|
| | Width | Mtg. Ctrs. | | 1-99 | 100-199 | 200-499 | 500-999 |
| -125 | 1 3/8–1 15/16 | 1 | 2 1/16 | $0.26 | $0.22 | $0.21 | $0.20 |
| -126 | 2 –2 7/16 | 1½ | 2 9/16 | .27 | .23 | .22 | .20 |
| -127 | 2½–2 15/16 | 2 | 3 1/16 | .28 | .24 | .22 | .21 |
| -128 | 3 –3 7/16 | 2½ | 3 9/16 | .30 | .26 | .24 | .23 |
| -133* | 1 3/8–1 15/16 | ...... | 2 5/16 | .27 | .23 | .22 | .20 |
| -134* | 2 –2 7/16 | ...... | 2 13/16 | .31 | .26 | .25 | .23 |
| -135* | 2½–2 15/16 | ...... | 3 5/16 | .29 | .25 | .23 | .22 |
| -136* | 3 –3 7/16 | ...... | 3 13/16 | .35 | .30 | .28 | .26 |

### ALUMINUM

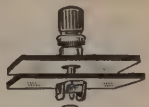
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| -129 | 1 3/8–1 15/16 | ...... | 2 1/16 | $0.33 | $0.28 | $0.26 | $0.25 |
| -130 | 2 –2 7/16 | ...... | 2 9/16 | .34 | .29 | .27 | .26 |
| -131 | 2½–2 15/16 | ...... | 3 1/16 | .44 | .37 | .35 | .33 |
| -132 | 3 –3 7/16 | ...... | 3 9/16 | .42 | .36 | .34 | .32 |
| -137* | 1 3/8–1 15/16 | ...... | 2 5/16 | .35 | .30 | .28 | .26 |
| -138* | 2 –2 7/16 | ...... | 2 13/16 | .38 | .32 | .30 | .29 |
| -139* | 2½–2 15/16 | ...... | 3 5/16 | .39 | .33 | .31 | .29 |
| -140* | 3 –3 7/16 | ...... | 3 13/16 | .41 | .35 | .33 | .31 |

as top lug for stacking panels. •Pkg. of 24 per style.



A

B



C

## CAPTIVE HARDWARE (FIG. C)

Standard line of stainless steel fastening hardware meets MIL-E-16400 (SHIPS) requirements; will meet MIL-E-5400 and MIL-P-11268 (Sig. C) when painted or dulled in accordance to those specifications. Slotted-head thumb screw, insert bushings, floating nut assembly, gasket and retainer make complete assembly. All exposed parts are stainless steel. Nut is cadmium-plated brass; nut bracket cadmium-plated steel. Nut is entirely captivated by the bracket. Gasket is neoprene rubber. **Write for full data.**

### THUMB SCREWS

| Raytheon Cat. No. | Thread | Lgth., In. | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|
| | | | 1-499* | 500-999 | 1000-2499 | 2500-4999 |
| CS-100 | 8–32 | 5/8 | $0.55 | $0.47 | $0.44 | $0.40 |
| CS-101 | 8–32 | 3/4 | .55 | .47 | .44 | .40 |
| CS-102 | 8–32 | 7/8 | .55 | .47 | .44 | .40 |
| CS-103 | 8–32 | 1 | .55 | .47 | .44 | .40 |
| CS-110 | 10–24 | 3/4 | .60 | .52 | .49 | .45 |
| CS-111 | 10–24 | 7/8 | .60 | .52 | .49 | .45 |
| CS-112 | 10–24 | 1 | .60 | .52 | .49 | .45 |
| CS-120 | 10–32 | 3/4 | .60 | .52 | .49 | .45 |
| CS-121 | 10–32 | 7/8 | .60 | .52 | .49 | .45 |
| CS-122 | 10–32 | 1 | .60 | .52 | .49 | .45 |
| CS-130 | 1/4–20 | 7/8 | .76 | .65 | .61 | .55 |
| CS-131 | 1/4–20 | 1 | .76 | .65 | .61 | .55 |
| CS-132 | 1/4–20 | 1 1/8 | .76 | .65 | .61 | .55 |
| CS-133 | 1/4–20 | 1 1/4 | .76 | .65 | .61 | .55 |
| CS-134 | 1/4–20 | 1 3/8 | .76 | .65 | .61 | .55 |
| CS-135 | 1/4–20 | 1 1/2 | .76 | .65 | .61 | .55 |
| CS-136 | 1/4–20 | 1 3/4 | .76 | .65 | .61 | .55 |
| CS-140 | 5/16–18 | 1 1/8 | 1.10 | .94 | .88 | .81 |
| CS-141 | 5/16–18 | 1 1/4 | 1.10 | .94 | .88 | .81 |
| CS-142 | 5/16–18 | 1 1/2 | 1.10 | .94 | .88 | .81 |
| CS-143 | 5/16–18 | 1 3/4 | 1.10 | .94 | .88 | .81 |
| CS-144 | 5/16–18 | 2 | 1.10 | .94 | .88 | .81 |

### PANEL INSERTS

| Raytheon Cat. No. | Thread | Dia., In. | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|
| | | | 1-499* | 500-999 | 1000-2499 | 2500-4999 |
| PIN-100 | 8–32 | .262 | $0.22 | $0.19 | $0.18 | $0.16 |
| PIN-101 | 8–32 | .232 | .22 | .19 | .18 | .16 |
| PIN-102 | 8–32 | .187 | .22 | .19 | .18 | .16 |
| PIN-103 | 8–32 | .124 | .22 | .19 | .18 | .16 |
| PIN-110 | 10–24 | .325 | .23 | .20 | .19 | .17 |
| PIN-111 | 10–24 | .295 | .23 | .20 | .19 | .17 |
| PIN-112 | 10–24 | .250 | .23 | .20 | .19 | .17 |
| PIN-113 | 10–24 | .187 | .23 | .20 | .19 | .17 |
| PIN-114 | 10–24 | .125 | .23 | .20 | .19 | .17 |
| PIN-120 | 10–32 | .325 | .25 | .21 | .20 | .19 |
| PIN-121 | 10–32 | .295 | .25 | .21 | .20 | .19 |
| PIN-122 | 10–32 | .250 | .25 | .21 | .20 | .19 |
| PIN-123 | 10–32 | .187 | .25 | .21 | .20 | .19 |
| PIN-124 | 10–32 | .125 | .25 | .21 | .20 | .19 |
| PIN-130 | 1/4–20 | .387 | .28 | .24 | .22 | .21 |
| PIN-131 | 1/4–20 | .357 | .28 | .24 | .22 | .21 |
| PIN-132 | 1/4–20 | .312 | .28 | .24 | .22 | .21 |
| PIN-133 | 1/4–20 | .249 | .28 | .24 | .22 | .21 |
| PIN-134 | 1/4–20 | .187 | .28 | .24 | .22 | .21 |
| PIN-140 | 5/16–18 | .450 | .39 | .33 | .31 | .29 |
| PIN-141 | 5/16–18 | .420 | .39 | .33 | .31 | .29 |
| PIN-142 | 5/16–18 | .375 | .39 | .33 | .31 | .29 |
| PIN-143 | 5/16–18 | .312 | .39 | .33 | .31 | .29 |
| PIN-144 | 5/16–18 | .250 | .39 | .33 | .31 | .29 |

### NUT BRACKET ASSEMBLIES

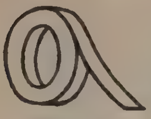
| | | | | | | |
|---|---|---|---|---|---|---|
| NB-100 | 8–32 | ........ | $0.10 | $0.09 | $0.08 | $0.07 |
| NB-101 | 10–24 | ........ | .11 | .10 | .09 | .08 |
| NB-102 | 10–32 | ........ | .12 | .11 | .10 | .09 |
| NB-103 | 1/4–20 | ........ | .18 | .16 | .15 | .13 |
| NB-104 | 5/16–18 | ........ | .22 | .19 | .18 | .16 |

### GASKETS AND GASKET RETAINERS

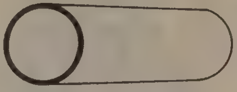
| Raytheon Cat. No. | Thread | Description | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-499* | 500-999 | 1000-2499 |
| GS-100 | 10–24/32 | Gasket | $0.02 | $0.017 | $0.016 |
| GS-101 | 1/4–20 | Gasket | .02 | .017 | .016 |
| GS-102 | 5/16–18 | Gasket | .02 | .017 | .016 |
| GS-103 | 8–32 | Gasket | .02 | .017 | .016 |
| GSR-115 | 10–24/32 | Retainer | .07 | .06 | .05 |
| GSR-116 | 1/4–20 | Retainer | .07 | .06 | .05 |
| GSR-117 | 5/16–18 | Retainer | .07 | .06 | .05 |
| GSR-118 | 8–32 | Retainer | .07 | .06 | .05 |

•Sizes per type may be mixed for maximum discount.

# RUSSELL INDUSTRIES/MAGNETIC METALS
# ELECTROMAGNETIC SHIELDING



Shieldmu Tape & Foil



Shield Tubing

## SHIELDMU® TAPE AND FOIL

| M. M. Type | Alloys | Other Trade Designations | Max. Flux, Gausses | Typ. Permeability, Initial/Max. |
|---|---|---|---|---|
| **Shieldmu 30 (M 30)** | 80% Nickel-Iron | Hymu 80, Mu-metal, Hipernom | 7,000–8,000 | 20,000/150,000 |
| **Shieldmu 10 (M 10)** | 50% Nickel-Iron | 49 Alloy, 4750, Hipernik, Nicaloi | 14,000–15,000 | 5,000/100,000 |
| **Shieldmu 3 (M 3)** | Silicon-Iron | ............... | 18,000 | 1,000/15,000 |
| **Shieldmu 1 (M 1)** | Low carbon steel | ............... | 17,000 | 300/3,000 |

## SHIELDMU 30 (M 30)

For maximum attenuation, even at low inductions.

### THICKNESS .001″

| M. M. Part No. | Strip Width, In. | Feet per Lb. | Net per Linear Foot, Wound on Spools | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
| M30-1-OQ | ¼ | 1053 | $0.17 | $0.16 | $0.15 | $0.14 | $0.13 | $0.12 | $0.11 |
| M30-1-TE | ⅜ | 702 | .24 | .23 | .22 | .21 | .20 | .19 | .18 |
| M30-1-OH | ½ | 527 | .30 | .29 | .28 | .27 | .26 | .25 | .24 |
| M30-1-TQ | ¾ | 351 | .48 | .43 | .41 | .39 | .38 | .37 | .36 |
| M30-1-1 | 1 | 263 | .63 | .57 | .54 | .51 | .49 | .48 | .47 |
| M30-1-2 | 2 | 132 | .99 | .89 | .85 | .82 | .79 | .76 | .73 |

### THICKNESS .002″

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| M30-2-OQ | ¼ | 527 | $0.24 | $0.23 | $0.22 | $0.21 | $0.20 | $0.19 | $0.18 |
| M30-2-TE | ⅜ | 351 | .30 | .29 | .28 | .27 | .26 | .25 | .24 |
| M30-2-OH | ½ | 263 | .42 | .38 | .37 | .36 | .34 | .32 | .31 |
| M30-2-TQ | ¾ | 175 | .60 | .54 | .52 | .50 | .48 | .46 | .44 |
| M30-2-1 | 1 | 132 | .75 | .68 | .66 | .63 | .61 | .59 | .55 |
| M30-2-2 | 2 | 65.8 | 1.14 | 1.03 | .97 | .94 | .90 | .88 | .84 |

### THICKNESS .004″

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| M30-4-OQ | ¼ | 263 | $0.33 | $0.31 | $0.30 | $0.29 | $0.27 | $0.26 | $0.25 |
| M30-4-TC | ⅜ | 176 | .39 | .35 | .33 | .32 | .30 | .29 | .28 |
| M30-4-OH | ½ | 132 | .54 | .49 | .48 | .46 | .44 | .42 | .40 |
| M30-4-TQ | ¾ | 87.7 | .72 | .65 | .62 | .59 | .57 | .55 | .53 |
| M30-4-1 | 1 | 65.8 | 1.05 | .94 | .90 | .86 | .83 | .80 | .77 |
| M30-4-2 | 2 | 32.9 | 1.56 | 1.40 | 1.34 | 1.25 | 1.21 | 1.18 | 1.15 |
| M30-4-4 | 4 | 16.5 | 2.58 | 2.32 | 2.19 | 2.06 | 1.94 | 1.90 | ..... |
| M30-4-8 | 8 | 8.3 | 5.25 | 4.72 | 4.50 | 4.20 | 4.05 | ..... | ..... |
| M30-4-12 | 12 | 5.5 | 6.75 | 6.05 | 5.70 | 5.40 | 5.25 | ..... | ..... |

### THICKNESS .006″

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| M30-6-OQ | ¼ | 176 | $0.36 | $0.35 | $0.34 | $0.33 | $0.31 | $0.29 | $0.27 |
| M30-6-TE | ⅜ | 117 | .42 | .38 | .36 | .35 | .34 | .33 | .31 |
| M30-6-OH | ½ | 87.7 | .57 | .51 | .49 | .47 | .46 | .44 | .42 |
| M30-6-TQ | ¾ | 58.5 | .78 | .70 | .66 | .64 | .62 | .60 | .58 |
| M30-6-1 | 1 | 43.9 | 1.14 | 1.02 | .96 | .90 | .87 | .86 | .84 |
| M30-6-2 | 2 | 21.9 | 1.74 | 1.56 | 1.50 | 1.39 | 1.35 | 1.31 | 1.28 |
| M30-6-4 | 4 | 11.0 | 3.15 | 2.83 | 2.67 | 2.51 | 2.44 | ..... | ..... |
| M30-6-8 | 8 | 5.5 | 5.85 | 4.95 | 4.68 | 4.55 | 4.42 | ..... | ..... |
| M30-6-12 | 12 | 3.7 | 6.60 | 5.94 | 5.61 | 5.28 | 4.95 | ..... | ..... |
| M30-6-15TE | 15⅝ | 2.8 | 8.65 | 7.80 | 7.35 | 6.90 | 6.50 | ..... | ..... |

## SHIELDMU 10 (M 10)

For good attenuation, even at high inductions.

### THICKNESS .001″

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| M10-1-OQ | ¼ | 1119 | $0.15 | $0.14 | $0.13 | $0.12 | $0.11 | $0.10 | $0.09 |
| M10-1-TE | ⅜ | 746 | .22 | .21 | .20 | .19 | .18 | .17 | .16 |
| M10-1-OH | ½ | 560 | .27 | .26 | .25 | .24 | .23 | .22 | .20 |
| M10-1-TQ | ¾ | 373 | .42 | .38 | .37 | .36 | .34 | .32 | .31 |
| M10-1-1 | 1 | 280 | .54 | .49 | .47 | .45 | .43 | .41 | .40 |
| M10-1-2 | 2 | 140 | .87 | .78 | .74 | .70 | .66 | .65 | .64 |

### THICKNESS .002″

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| M10-2-OQ | ¼ | 560 | $0.22 | $0.21 | $0.20 | $0.19 | $0.18 | $0.17 | $0.16 |
| M10-2-TE | ⅜ | 373 | .27 | .26 | .25 | .24 | .23 | .22 | .20 |
| M10-2-OH | ½ | 280 | .39 | .37 | .35 | .32 | .31 | .30 | .29 |
| M10-2-TQ | ¾ | 186 | .51 | .46 | .43 | .41 | .40 | .39 | .38 |
| M10-2-1 | 1 | 140 | .75 | .68 | .65 | .63 | .61 | .59 | .55 |
| M10-2-2 | 2 | 70 | 1.11 | 1.01 | .95 | .89 | .86 | .84 | .82 |

### THICKNESS .004″

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| M10-4-OQ | ¼ | 280 | $0.30 | $0.27 | $0.26 | $0.25 | $0.24 | $0.23 | $0.22 |
| M10-4-TE | ⅜ | 187 | .36 | .35 | .34 | .33 | .31 | .29 | .27 |
| M10-4-OH | ½ | 140 | .48 | .43 | .41 | .39 | .38 | .37 | .36 |
| M10-4-TQ | ¾ | 93.2 | .63 | .57 | .54 | .51 | .49 | .48 | .47 |
| M10-4-1 | 1 | 70.0 | .93 | .84 | .80 | .76 | .72 | .70 | .69 |
| M10-4-2 | 2 | 35.0 | 1.35 | 1.21 | 1.15 | 1.08 | 1.03 | 1.01 | .99 |
| M10-4-4 | 4 | 17.5 | 2.16 | 1.99 | 1.84 | 1.71 | 1.62 | 1.60 | ..... |
| M10-4-8 | 8 | 8.8 | 4.29 | 3.86 | 3.56 | 3.44 | 3.34 | ..... | ..... |
| M10-4-12 | 12 | 5.9 | 5.28 | 4.75 | 4.50 | 4.24 | 4.00 | ..... | ..... |

### THICKNESS .006″

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| M10-6-OQ | ¼ | 187 | $0.33 | $0.31 | $0.30 | $0.29 | $0.27 | $0.26 | $0.25 |
| M10-6-TE | ⅜ | 124 | .36 | .35 | .34 | .33 | .31 | .29 | .27 |
| M10-6-OH | ½ | 93 | .51 | .46 | .43 | .41 | .40 | .39 | .38 |
| M10-6-TQ | ¾ | 62 | .66 | .59 | .57 | .55 | .53 | .51 | .49 |
| M10-6-1 | 1 | 46.7 | .99 | .89 | .85 | .82 | .79 | .76 | .73 |
| M10-6-2 | 2 | 23.3 | 1.47 | 1.32 | 1.18 | 1.15 | 1.12 | 1.10 | 1.08 |
| M10-6-4 | 4 | 11.7 | 2.82 | 2.53 | 2.40 | 2.26 | 2.16 | 2.07 | ..... |
| M10-6-8 | 8 | 5.9 | 4.74 | 4.26 | 4.03 | 3.80 | 3.56 | ..... | ..... |
| M10-6-12 | 12 | 4.0 | 5.10 | 4.59 | 4.33 | 4.08 | 3.82 | ..... | ..... |

## SHIELDMU 3 (M 3)

For economical shielding with high induction capability.

### THICKNESS .001″

| M. M. Part No. | Strip Width, In. | Feet per Lb. | Net per Linear Foot, Wound on Spools | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
| M3-1-OQ | ¼ | 1207 | $0.13 | $0.12 | $0.11 | $0.10 | $0.09 | $0.08 | $0.07 |
| M3-1-TE | ⅜ | 804 | .19 | .18 | .17 | .16 | .15 | .14 | .13 |
| M3-1-OH | ½ | 604 | .24 | .23 | .22 | .21 | .20 | .19 | .18 |
| M3-1-TQ | ¾ | 402 | .36 | .35 | .34 | .33 | .31 | .29 | .27 |
| M3-1-1 | 1 | 301 | .48 | .43 | .41 | .39 | .38 | .37 | .36 |
| M3-1-2 | 2 | 151 | .72 | .65 | .62 | .59 | .57 | .55 | .53 |

### THICKNESS .002″

| M. M. Part No. | Strip Width, In. | Feet per Lb. | Net per Linear Foot, Wound on Spools | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
| M3-2-OQ | ¼ | 604 | $0.19 | $0.18 | $0.17 | $0.16 | $0.15 | $0.14 | $0.13 |
| M3-2-TE | ⅜ | 402 | .24 | .23 | .22 | .21 | .20 | .19 | .18 |
| M3-2-OH | ½ | 301 | .33 | .31 | .30 | .29 | .27 | .26 | .25 |
| M3-2-TQ | ¾ | 201 | .45 | .40 | .38 | .37 | .36 | .35 | .33 |
| M3-2-1 | 1 | 151 | .60 | .54 | .52 | .50 | .48 | .46 | .44 |
| M3-2-2 | 2 | 75.4 | .87 | .79 | .76 | .73 | .70 | .67 | .64 |

### THICKNESS .004″

| M. M. Part No. | Strip Width, In. | Feet per Lb. | Net per Linear Foot, Wound on Spools | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
| M3-4-OQ | ¼ | 301 | $0.24 | $0.23 | $0.22 | $0.21 | $0.20 | $0.19 | $0.18 |
| M3-4-TE | ⅜ | 202 | .30 | .29 | .28 | .27 | .26 | .25 | .24 |
| M3-4-OH | ½ | 151 | .39 | .35 | .33 | .32 | .31 | .30 | .29 |
| M3-4-TQ | ¾ | 100 | .54 | .49 | .48 | .46 | .44 | .42 | .40 |
| M3-4-1 | 1 | 75.4 | .75 | .67 | .65 | .62 | .59 | .57 | .55 |
| M3-4-2 | 2 | 37.7 | 1.08 | .97 | .92 | .89 | .86 | .83 | .80 |
| M3-4-4 | 4 | 18.9 | 1.50 | 1.35 | 1.27 | 1.20 | 1.18 | 1.15 | 1.10 |
| M3-4-8 | 8 | 9.5 | 2.79 | 2.51 | 2.37 | 2.23 | 2.17 | 2.11 | ..... |
| M3-4-12 | 12 | 6.3 | 4.02 | 3.62 | 3.42 | 3.22 | 3.13 | ..... | ..... |

### THICKNESS .006″

| M. M. Part No. | Strip Width, In. | Feet per Lb. | Net per Linear Foot, Wound on Spools | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
| M3-6-OQ | ¼ | 202 | $0.27 | $0.26 | $0.25 | $0.24 | $0.23 | $0.22 | $0.20 |
| M3-6-TE | ⅜ | 134 | .33 | .31 | .30 | .29 | .27 | .26 | .25 |
| M3-6-OH | ½ | 100 | .42 | .38 | .36 | .35 | .34 | .33 | .31 |
| M3-6-TQ | ¾ | 67 | .57 | .51 | .49 | .47 | .46 | .44 | .42 |
| M3-6-1 | 1 | 50.3 | .84 | .75 | .72 | .70 | .68 | .66 | .62 |
| M3-6-2 | 2 | 25.1 | 1.26 | 1.13 | 1.01 | .99 | .97 | .95 | .93 |
| M3-6-4 | 4 | 12.6 | 2.34 | 2.10 | 1.92 | 1.87 | 1.82 | 1.77 | ..... |
| M3-6-8 | 8 | 6.3 | 4.02 | 3.62 | 3.42 | 3.22 | 3.13 | 2.95 | ..... |
| M3-6-12 | 12 | 4.2 | 4.23 | 3.81 | 3.60 | 3.38 | 3.17 | ..... | ..... |

## SHIELDMU 1 (M 1)

For economical shielding at high inductions.

### THICKNESS .006″ ONLY

| M. M. Part No. | Strip Width, In. | Feet per Lb. | Net per Linear Foot, Wound on Spools | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1-9 | 10-29 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
| M1-6-1 | 1 | 50.3 | $0.33 | $0.31 | $0.30 | $0.29 | $0.27 | $0.26 | $0.25 |
| M1-6-4 | 4 | 12.6 | .96 | .86 | .82 | .78 | .76 | .74 | .71 |
| M1-6-12 | 12 | 4.2 | 2.70 | 2.43 | 2.30 | 2.16 | 2.12 | 2.05 | ..... |

## SHIELDMU ALBUMS (A)

Individually packaged pieces, 12″ x 12″.

| M. M. Part No. | Material Thickness, In. | Net Each, Lots of | | | |
|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50 Up |
| A30-6-12 | .006 | $7.35 | $6.61 | $6.35 | $5.88 |
| A10-4-12 | .004 | 5.28 | 4.75 | 4.49 | 4.22 |
| A3-4-12 | .004 | 4.02 | 3.62 | 3.42 | 3.22 |
| A1-6-12 | .006 | 3.00 | 2.70 | 2.55 | 2.40 |

## SHIELD TUBING

Seamless welded tubing of high permeability 80% nickel/iron alloy. For use wherever rigid tubing with optimum low frequency shielding efficiency is required. Provides typical shielding effect of 39 dB attenuation in a 1 oersted, 60 Hz field; equivalent to high permeability shielding structures. Annealed tubing is available in lengths up to 10 feet, priced per linear foot. Can be supplied in short lengths for use as shielding enclosures. Adhesive-backed Shieldmu® Type ABM (see another page) can be used to close ends of cylinders. Specify tubing lengths desired.

| M. M. Part No. | O.D. Inches | Wall Thickness, Inches | Net per Linear Foot | | | |
|---|---|---|---|---|---|---|
| | | | 1-9 | 10-24 | 25-49 | 50-99 |
| ST-418 | .418 | .014 | $ 5.46 | $ 4.91 | $ 4.53 | $ 4.36 |
| ST-500 | .500 | .014 | 6.00 | 5.40 | 5.10 | 4.80 |
| ST-590 | .590 | .014 | 7.38 | 6.64 | 6.21 | 5.90 |
| ST-750 | .750 | .020 | 10.56 | 9.50 | 8.97 | 8.44 |
| ST-1092 | 1.092 | .025 | 14.04 | 13.36 | 11.94 | 11.24 |
| ST-1355 | 1.355 | .025 | 16.89 | 15.20 | 14.35 | 13.51 |
| ST-1500 | 1.500 | .030 | 24.00 | 21.60 | 20.40 | 19.20 |
| ST-2014 | 2.014 | .030 | 29.82 | 26.82 | 25.32 | 23.82 |
| ST-2500 | 2.500 | .040 | 48.48 | 43.63 | 41.21 | 38.78 |
| ST-2595 | 2.595 | .040 | 49.86 | 44.86 | 42.35 | 39.84 |
| ST-3000 | 3.000 | .040 | 59.22 | 53.22 | 50.27 | 47.23 |
| ST-3500 | 3.500 | .040 | 70.83 | 63.75 | 60.18 | 56.63 |
| ST-4000 | 4.000 | .040 | 90.60 | 81.50 | 77.10 | 72.45 |
| ST-4500 | 4.500 | .040 | 95.94 | 86.35 | 81.53 | 76.74 |

# RUSSELL INDUSTRIES/MAGNETIC METALS
# ELECTROMAGNETIC SHIELDING

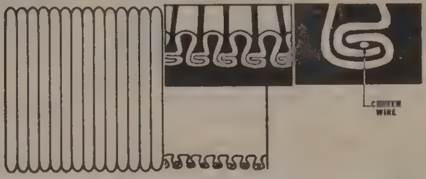
## SHIELDFLEX® FLEXIBLE TUBING

run the cable through spirally wound Shieldflex for both -magnetic and electrostatic shielding without time con- wrapping. Close routing of conductors around components r conductors permits maximum space economy. Typical g effect is 39 dB attenuation in 1 oersted, 60 Hz field. s of attenuation even after as many as 18,000 stretch and exing cycles.

| M. No. | I.D. Inches | O.D. Inches | Material Thickness, Inches | Nom. Bend, Inside Dia., Inches | Weight per 100 Ft., Lbs. |
|---|---|---|---|---|---|
| -FT | 5/32 | 15/64 | .010 | 1 1/8 | 4.7 |
| -TS | 3/16 | 17/64 | .010 | 1 1/8 | 4.8 |
| -ST | 7/32 | 19/64 | .010 | 1 3/16 | 6.0 |
| -OQ | 1/4 | 11/32 | .010 | 1 1/4 | 6.5 |
| -NT | 9/32 | 3/8 | .010 | 1 7/16 | 7.5 |
| -FS | 5/16 | 13/32 | .010 | 1 9/16 | 7.7 |
| -ET | 11/32 | 7/16 | .010 | 1 3/4 | 8.0 |
| -TE | 3/8 | 1/2 | .010 | 1 1/2 | 8.2 |
| -SS | 7/16 | 9/16 | .010 | 1 3/4 | 8.7 |
| -OH | 1/2 | 5/8 | .014 | 2 | 13.4 |
| -NS | 9/16 | 11/16 | .014 | 2 1/4 | 14.8 |
| -FE | 5/8 | 3/4 | .014 | 2 1/2 | 16.5 |
| -TQ | 3/4 | 7/8 | .014 | 6 | 23.0 |
| -1 | 1 | 1 1/8 | .014 | 7 | 31.3 |
| -2 | 2 | 2 19/64 | .020 | 10 | 70.0 |

| M. Part No. | I.D. Inches | Net/Linear Foot Extended (Pulled Taut) 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|
| -FT | 5/32 | $2.22 | $2.02 | $1.89 | $1.78 | $1.75 | $1.70 |
| -TS | 3/16 | 2.31 | 2.08 | 1.97 | 1.84 | 1.78 | 1.75 |
| -ST | 7/32 | 2.64 | 2.37 | 2.24 | 2.12 | 2.06 | 2.00 |
| -OQ | 1/4 | 2.82 | 2.53 | 2.40 | 2.26 | 2.20 | 2.14 |
| -NT | 9/32 | 3.09 | 2.78 | 2.63 | 2.47 | 2.41 | 2.34 |
| -FS | 5/16 | 3.21 | 2.89 | 2.73 | 2.57 | 2.51 | 2.44 |
| 0-ET | 11/32 | 3.33 | 3.00 | 2.82 | 2.67 | 2.60 | 2.53 |
| 0-TE | 3/8 | 3.45 | 3.10 | 2.92 | 2.76 | 2.69 | 2.62 |
| 0-SS | 7/16 | 3.69 | 3.32 | 3.15 | 2.95 | 2.88 | 2.79 |
| 4-OH | 1/2 | 4.50 | 4.05 | 3.82 | 3.60 | 3.55 | ...... |
| 4-NS | 9/16 | 4.98 | 4.48 | 4.23 | 3.98 | 3.88 | ...... |
| 4-FE | 5/8 | 5.46 | 4.91 | 4.65 | 4.37 | 4.25 | ...... |
| 4-TQ | 3/4 | 6.93 | 6.23 | 5.88 | 5.53 | 5.41 | ...... |
| 4-1 | 1 | 9.27 | 8.34 | 7.88 | 7.42 | 7.05 | ...... |
| 0-2 | 1 | 27.00 | 24.70 | 22.95 | 21.60 | 20.90 | 19.00 |

## SHIELDFLEX® 30CU FULL SPECTRUM SOLID CONVOLUTED FLEXIBLE TUBING



Specially designed to provide full spectrum shielding: electromagnetic/electrostatic and R.F.I. Typical shielding efficiency of 39 dB attenuation in audio frequency range, tested in a 1 oersted, 60 Hz field. At frequencies above 50 kHz, eddy current shielding is predominant. The E field attenuation in 0.1 to 10 MHz range is over 90 dB, typical of tubing less than 1" in diameter. Formed from high permeability electromagnetic alloys, spirally wound and brazed. The copper brazing wire is introduced during the forming operation and metallurgically fused to the high nickel/iron alloy during annealing.

| M. M. Part No. | I.D. Inches | O.D. Inches | Material Thickness, Inches | Min. Bend Radius, Inches | Weight per 100 Ft., Lbs. |
|---|---|---|---|---|---|
| F30-3-TS | 3/16 | 5/16 | .003 | 1 1/8 | 4.0 |
| F30-3-OQ | 1/4 | 25/64 | .003 | 1 3/8 | 6.0 |
| F30-3-FS | 5/16 | 15/32 | .003 | 1 3/4 | 7.0 |
| F30-3-TE | 3/8 | 33/64 | .003 | 2 | 9.0 |
| F30-3-SS | 7/16 | 9/16 | .003 | 2 1/8 | 10.0 |
| F30-3-OH | 1/2 | 41/64 | .003 | 2 1/4 | 12.3 |
| F30-3-FE | 5/8 | 25/32 | .003 | 2 3/8 | 15.0 |
| F30-3-TQ | 3/4 | 29/32 | .003 | 2 1/2 | 18.0 |
| F30-5-1 | 1 | 1 7/32 | .005 | 3 3/4 | 38.0 |
| F30-5-1OE | 1 1/8 | 1 3/8 | .005 | 4 1/2 | 45.0 |
| F30-5-1TE | 1 3/8 | 1 5/8 | .005 | 5 | 50.0 |

| M. M. Part No. | I.D. In. | Net per Linear Foot 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|
| F30-3-TS | 3/16 | $ 5.10 | $ 4.59 | $ 4.44 | $ 4.08 | $ 3.82 | $ 3.78 | $ 3.74 |
| F30-3-OQ | 1/4 | 5.70 | 5.13 | 4.85 | 4.56 | 4.25 | 4.22 | 4.18 |
| F30-3-FS | 5/16 | 6.30 | 5.67 | 5.36 | 5.04 | 4.70 | 4.67 | 4.64 |
| F30-3-TE | 3/8 | 7.50 | 6.75 | 6.37 | 6.00 | 5.60 | 5.55 | 5.50 |
| F30-3-SS | 7/16 | 8.40 | 7.56 | 7.14 | 6.72 | 6.30 | 6.23 | 6.16 |
| F30-3-OH | 1/2 | 9.45 | 8.50 | 8.03 | 7.55 | 7.09 | 7.01 | 6.93 |
| F30-3-FE | 5/8 | 11.40 | 10.26 | 9.69 | 9.16 | 8.55 | 8.46 | 8.37 |
| F30-3-TQ | 3/4 | 13.95 | 12.55 | 11.85 | 11.15 | 10.45 | 10.34 | 10.23 |
| F30-5-1 | 1 | 22.20 | 19.98 | 18.87 | 17.76 | 16.55 | 16.47 | 16.28 |
| F30-5-1OE | 1 1/8 | 26.85 | 24.16 | 22.80 | 21.84 | 20.14 | 19.92 | 19.69 |
| F30-5-1TE | 1 3/8 | 31.95 | 28.75 | 27.15 | 25.55 | 24.00 | 23.72 | 23.42 |

## BULKHEAD FITTINGS FOR SHIELDFLEX® TUBING

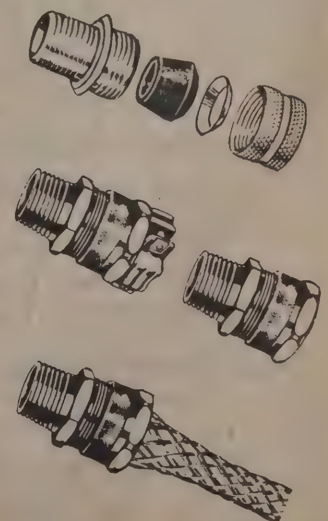
use with Shieldflex and Shieldflex 30CU flexible tubing. sion machined aluminum nut and body insure continuous sion-free protection, maximum mechanical strength, and lustre finish. Tapped conduit threads guarantee a strong, rigid joint. Tapered rubber grommet with anti-friction washer provides a permanent, tight sealing grip on outer jacket of cable. Grommet is specially compounded and molded, will not harden with age. Male and female fittings available.

### MALE BULKHEAD FITTINGS

| M. M. Part No. | Fits Shieldflex Number | Fits Shieldflex CU Number | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100 Up |
|---|---|---|---|---|---|---|---|
| -MFT | F30-10-FT | ............ | $ 3.60 | $ 3.24 | $ 3.06 | $ 2.88 | $ 2.70 |
| -MTS | F30-10-TS | F30-3-TS | 3.60 | 3.24 | 3.06 | 2.88 | 2.70 |
| -MST | F30-10-ST | ............ | 3.60 | 3.24 | 3.06 | 2.88 | 2.70 |
| -MOQ | F30-10-OQ | F30-3-OQ | 3.60 | 3.24 | 3.06 | 2.88 | 2.70 |
| -MNT | F30-10-NT | ............ | 3.60 | 3.24 | 3.06 | 2.88 | 2.70 |
| -MFS | F30-10-FS | F30-3-FS | 3.60 | 3.24 | 3.06 | 2.88 | 2.70 |
| -MET | F30-10-ET | ............ | 4.50 | 4.05 | 3.82 | 3.60 | 3.37 |
| -MTE | F30-10-TE | F30-3-TE | 4.50 | 4.05 | 3.82 | 3.60 | 3.37 |
| -MSS | F30-10-SS | F30-3-SS | 4.50 | 4.05 | 3.82 | 3.60 | 3.37 |
| -MOH | F30-14-OH | F30-3-OH | 9.00 | 8.10 | 7.64 | 7.20 | 6.75 |
| -MNS | F30-14-NS | ............ | 9.00 | 8.10 | 7.64 | 7.20 | 6.75 |
| -MFE | F30-14-FE | F30-3-FE | 9.00 | 8.10 | 7.64 | 7.20 | 6.75 |
| -MTQ | F30-14-TQ | F30-3-TQ | 11.40 | 10.26 | 9.69 | 9.12 | 8.55 |
| L-M1 | F30-14-1 | F30-5-1 | 14.40 | 12.96 | 12.24 | 11.52 | 10.80 |

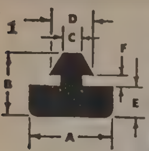
### FEMALE BULKHEAD FITTINGS

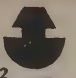
| M. M. Part No. | Fits Shieldflex Number | Fits Shieldflex CU Number | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100 Up |
|---|---|---|---|---|---|---|---|
| L-FFT | F30-10-FT | ............ | $ 3.60 | $ 3.24 | $ 3.06 | $2.88 | $2.70 |
| L-FTS | F30-10-SS | F30-3-TS | 3.60 | 3.24 | 3.06 | 2.88 | 2.70 |
| L-FST | F30-10-ST | ............ | 3.60 | 3.24 | 3.06 | 2.88 | 2.70 |
| L-FOQ | F30-10-OQ | F30-3-OQ | 3.60 | 3.24 | 3.06 | 2.88 | 2.70 |
| L-FNT | F30-10-NT | ............ | 3.60 | 3.24 | 3.06 | 2.88 | 2.70 |
| L-FFS | F30-10-FS | F30-3-FS | 3.60 | 3.24 | 3.06 | 2.88 | 2.70 |
| L-FET | F30-10-ET | ............ | 5.85 | 5.26 | 4.95 | 4.68 | 4.39 |
| L-FTE | F30-10-TE | F30-3-TE | 5.85 | 5.26 | 4.95 | 4.68 | 4.39 |
| L-FSS | F30-10-SS | F30-3-SS | 5.85 | 5.26 | 4.95 | 4.68 | 4.39 |
| L-FOH | F30-14-OH | F30-3-OH | 7.50 | 6.75 | 6.38 | 6.00 | 5.63 |
| L-FNS | F30-14-NS | ............ | 7.50 | 6.75 | 6.38 | 6.00 | 5.63 |
| L-FFE | F30-14-FE | F30-3-FE | 12.30 | 11.07 | 10.45 | 9.84 | 9.22 |
| L-FTQ | F30-14-TQ | F30-3-TQ | 12.30 | 11.07 | 10.45 | 9.84 | 9.22 |
| L-F1 | F30-14-1 | F30-5-1 | Special Order, Prices on Request | | | | |

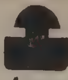


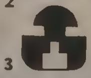
# RUSSELL INDUSTRIES

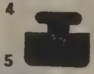
# RUBBER BUMPERS, GROMMETS

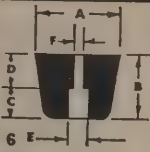


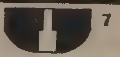


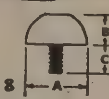


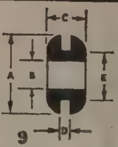


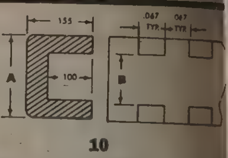












## BUTTON BUMPERS (BLACK)

| R. I. Part No. | Fig. | Dimensions, Inches A | B | C | D | E | F | Net per 100 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|---|---|---|
| BUT-3062 | 1 | 3/8 | 1/4 | 1/4 | 5/16 | 3/32 | 3/64 | $1.26 | $1.01 |
| BUT-3061 | 1 | 3/8 | 9/32 | 3/16 | 1/4 | 1/8 | 3/64 | 1.26 | 1.01 |
| BUT-4061 | 1 | 3/8 | 5/16 | 3/16 | 1/4 | 1/8 | 1/16 | 1.26 | 1.01 |
| BUT-4161 | 1 | 3/8 | 11/32 | 3/16 | 1/4 | 1/8 | 3/32 | 1.26 | 1.01 |
| BUT-4162 | 1 | 3/8 | 11/32 | 1/4 | 5/16 | 5/32 | 1/16 | 1.44 | 1.15 |
| BUT-3068 | 1 | 3/8 | 7/16 | 5/32 | 7/32 | 1/4 | 1/32 | 1.62 | 1.30 |
| BUT-3072 | 1 | 1/2 | 21/64 | 9/32 | 3/8 | 1/8 | 3/64 | 1.80 | 1.44 |
| BUT-4071 | 1 | 1/2 | 3/8 | 3/16 | 1/4 | 1/8 | 1/16 | 1.98 | 1.59 |
| BUT-4167 | 1 | 1/2 | 37/64 | 9/32 | 13/32 | 1/4 | 3/64 | 1.98 | 1.59 |
| BUT-4171 | 1 | 1/2 | 7/16 | 3/16 | 1/4 | 3/16 | 1/16 | 1.98 | 1.59 |
| BUT-4165 | 1 | 1/2 | 7/16 | 1/4 | 5/16 | 19/64 | 1/16 | 2.16 | 1.74 |
| BUT-4075 | 1 | 1/2 | 9/16 | 13/64 | 1/4 | 5/16 | 1/16 | 2.34 | 1.87 |
| BUT-4081 | 1 | 9/16 | 1/4 | 9/32 | 3/8 | 1/16 | 1/16 | 2.16 | 1.74 |
| BUT-1160 | 1 | 3/4 | 1/2 | .480 | 9/16 | 1/8 | .050 | 3.24 | 2.59 |
| BUT-611 | 1 | 7/8 | 1/2 | 5/16 | 13/32 | 1/4 | 5/64 | 4.50 | 3.60 |
| BUT-4076 | 2 | 1/2 | 7/16 | 1/4 | 5/16 | 3/16 | 1/16 | 1.80 | 1.44 |
| BUT-3064 | 2 | 7/16 | 19/64 | 15/64 | 19/64 | 3/32 | 3/64 | 1.62 | 1.30 |
| BUT-3065 | 2 | 7/16 | 11/32 | 1/4 | 5/16 | 1/8 | 1/16 | 1.62 | 1.30 |
| BUT-6112 | 2 | 13/16 | 11/32 | 1/4 | 5/16 | 5/32 | 1/16 | 3.78 | 3.02 |
| BUT-306 | 3 | 3/8 | 3/8 | 3/16 | 17/64 | 3/16 | .040 | 1.80 | 1.44 |
| BUT-417 | 3 | 3/8 | 7/16 | 3/16 | 17/64 | 3/16 | 1/8 | 1.80 | 1.44 |
| BUT-307 | 3 | 1/2 | 7/16 | 1/4 | 11/32 | 1/4 | .040 | 2.16 | 1.74 |
| BUT-407 | 3 | 1/2 | 7/16 | 1/4 | 11/32 | 1/4 | 1/16 | 1.98 | 1.59 |
| BUT-317 | 3 | 1/2 | 1/2 | 1/4 | 11/32 | 1/4 | 1/8 | 2.16 | 1.74 |
| BUT-4068 | 4 | 7/16 | 17/64 | 3/16 | 1/4 | 3/32 | 5/64 | 1.44 | 1.15 |
| BUT-3263 | 4 | 7/16 | 7/16 | 1/4 | 5/16 | 3/16 | 1/8 | 1.80 | 1.44 |
| BUT-4083 | 5 | 5/8 | 9/32 | 13/32 | 17/32 | 1/8 | 3/32 | 3.06 | 2.51 |

## RECESSED BUMPERS

**SUFFIX X**—Steel washer insert.

| R. I. Part No. | Fig. | Dimensions, Inches A | B | C | D | E | F | Net per 100 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|---|---|---|
| REC-2062 | 6 | 3/8 | 1/4 | 3/16 | 1/16 | 1/4 | 5/32 | $ 2.16 | $ 1.74 |
| REC-2082 | 6 | 5/8 | 1/2 | 1/4 | 1/4 | 5/16 | 5/32 | 2.52 | 2.02 |
| REC-2082S | 6 | 5/8 | 1/2 | 1/4 | 1/4 | 5/16 | 5/32 | 4.32 | 3.48 |
| REC-2090 | 6 | 5/8 | 5/8 | 7/16 | 3/16 | 5/16 | .147 | 3.96 | 3.17 |
| REC-2090S | 6 | 5/8 | 5/8 | 7/16 | 3/16 | 5/16 | .147 | 5.94 | 4.75 |
| REC-2084S | 6 | 3/4 | 3/8 | 3/16 | 3/16 | 7/16 | 3/16 | 7.38 | 5.87 |
| REC-2096 | 6 | 15/16 | 5/8 | 7/16 | 3/16 | 7/16 | 7/32 | 8.10 | 6.48 |
| REC-2096S | 6 | 15/16 | 5/8 | 7/16 | 3/16 | 7/16 | 7/32 | 11.52 | 9.22 |
| REC-206 | 7 | 3/8 | 3/16 | 3/32 | 3/32 | 3/16 | 5/64 | 1.08 | .87 |
| REC-207 | 7 | 1/2 | 1/4 | 1/8 | 1/8 | 1/4 | 1/8 | 1.80 | 1.44 |
| REC-207S | 7 | 1/2 | 1/4 | 1/8 | 1/8 | 1/4 | 1/8 | 3.06 | 2.45 |
| REC-2081S | 7 | 5/8 | 5/16 | 3/16 | 1/8 | 1/4 | 3/16 | 4.14 | 3.29 |
| REC-2088 | 7 | 5/8 | 5/16 | 3/16 | 1/8 | 1/4 | 1/8 | 2.34 | 1.87 |
| REC-2085 | 7 | 3/4 | 3/8 | 3/16 | 3/16 | 5/16 | 5/32 | 3.60 | 2.88 |
| REC-2085S | 7 | 3/4 | 3/8 | 3/16 | 3/16 | 5/16 | 5/32 | 5.76 | 4.61 |
| REC-209S | 7 | 1 3/16 | 1/2 | 1/4 | 1/4 | 5/16 | 5/32 | 7.38 | 5.91 |
| REC-2097 | 7 | 1 | 1 | 5/8 | 3/8 | 5/16 | 5/32 | 9.18 | 7.33 |
| REC-2097S | 7 | 1 | 1 | 5/8 | 3/8 | 5/16 | 5/32 | 11.88 | 9.51 |
| REC-2099 | 7 | 1 | 1 1/2 | 5/8 | 7/8 | 5/16 | 5/32 | 12.60 | 10.08 |
| REC-2099S | 7 | 1 | 1 1/2 | 5/8 | 7/8 | 5/16 | 5/32 | 17.70 | 14.11 |

## MACHINE BUMPERS (BLACK)

| R. I. Part No. | Fig. | Dimensions, Inches A | B | C | Screw Size | Net per 100 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|---|
| MAC-51 | 8 | 1/2 | 1/4 | 1/4 | 8-32 | $ 3.96 | $ 3.17 |
| MAC-62 | 8 | 5/8 | 5/16 | 1/4 | 8-32 | 5.04 | 4.03 |
| MAC-75 | 8 | 3/4 | 3/8 | 1/4 | 8-32 | 6.30 | 5.04 |
| MAC-87 | 8 | 7/8 | 1/2 | 1/2 | 10-32 | 9.00 | 7.20 |
| MAC-100 | 8 | 1 | 1/2 | 1/2 | 10-32 | 9.36 | 7.50 |
| MAC-112 | 8 | 1 1/8 | 1/2 | 1/2 | 10-32 | 14.04 | 11.23 |

## GROMMETS (FIG. 9)

Molded of natural and synthetic rubber compounds or reclaimed rubber in combination or blends thereof. A full range of AN and MS-35489 grommets (to MIL-G-3036) for military use are available; special commercial grommets also available; prices on request.

| R. I. Part No. | Dimensions, Inches A O.D. | B I.D. | C Ht. | D Groove Width | E Groove Dia. | Net per 100 100-999 | 1000-4999 |
|---|---|---|---|---|---|---|---|
| GOB-2104 | 11/32 | 7/64 | 3/16 | 1/16 | 13/64 | $ 1.62 | $ 1.30 |
| GOB-2105 | 11/32 | 1/8 | 3/16 | 1/16 | 3/16 | 1.80 | 1.44 |
| GOB-210 | 11/32 | 1/8 | 3/16 | 1/16 | 1/4 | 3.24 | 2.59 |
| GOB-215 | 7/16 | 3/16 | 7/32 | 1/16 | 5/16 | 2.16 | 1.73 |
| GOB-415 | 7/16 | 3/16 | 1/4 | 3/32 | 5/16 | 2.34 | 1.87 |
| GOB-2173 | 1/2 | 3/16 | 7/32 | 1/16 | 5/16 | 2.70 | 2.16 |
| GOB-2172 | 1/2 | 1/4 | 5/32 | 1/32 | 5/16 | 2.70 | 2.16 |
| GOB-220 | 9/16 | 1/4 | 1/4 | 1/16 | 3/8 | 2.88 | 2.31 |
| GOB-2211 | 9/16 | 9/32 | 1/4 | 1/16 | 13/32 | 3.42 | 2.74 |
| GOB-2252 | 5/8 | 5/16 | 1/4 | 1/16 | 7/16 | 4.32 | 3.46 |
| GOB-225 | 5/8 | 3/8 | 1/4 | 1/16 | 3/8 | 3.42 | 2.74 |
| GOB-2258 | 5/8 | 3/8 | 11/32 | 1/16 | 17/32 | 3.42 | 2.74 |
| GOB-2261 | 3/4 | 1/4 | 11/64 | 1/16 | 9/16 | 4.68 | 3.75 |
| GOB-1101-1 | 3/4 | 3/8 | 1/2 | 1/8 | 17/32 | 5.94 | 4.75 |
| GOB-1101 | 3/4 | 7/16 | 1/4 | 1/16 | 9/16 | 4.86 | 3.89 |
| GOB-230 | 13/16 | 1/2 | 9/32 | 1/16 | 5/8 | 5.76 | 4.61 |
| GOB-1102-5 | 1 1/16 | 5/16 | 1/2 | 5/32 | 3/4 | 10.44 | 8.35 |
| GOB-1102 | 1 1/16 | 1/2 | 5/16 | 1/16 | 13/16 | 8,46 | 6.73 |
| GOB-1102-2 | 1 1/16 | 1/2 | 11/32 | 1/8 | 13/16 | 8.46 | 6.73 |
| GOB-1103 | 1 1/8 | 5/8 | 5/16 | 1/16 | 7/8 | 12.60 | 10.08 |
| GOB-1105 | 1 1/8 | 13/16 | 1/4 | 3/64 | 15/16 | 12.60 | 10.08 |
| GOB-1104 | 2 1/8 | 1 1/2 | 7/16 | 1/16 | 1 3/4 | 26.28 | 21.03 |

## CATERPILLAR GROMMETS

Conforms to irregular holes of any size; requires no cementing. Available in standard 12¾″ lengths for a variety of metal thicknesses; can easily be cut to any desired length. Grommets conform to MIL specification MS21266; molded of nylon that conforms to MIL-P-20693A Type 1 requirements.

| R. I. Part No. | Fig. | Dimensions, Inches A | B | Metal Thickness, Inches Min. | Max. | Net per Pkg. of 10* | 25† |
|---|---|---|---|---|---|---|---|
| CAT-1 | 10 | .150 | .056 | .015 | .052 | $5.20 | $10.50 |
| CAT-2 | 10 | .175 | .090 | .052 | .085 | 5.80 | 12.00 |
| CAT-3 | 10 | .220 | .131 | .085 | .128 | 6.50 | 13.50 |

Add suffix to Part No.: ***A** (e.g., CAT-1**A**) or †**B** (e.g., CAT-1**B**).

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# Electronic Hardware

## STEEL NICKEL-PLATED ROUND HEAD MACHINE SCREWS

| PAK | | | M-PAK | |
|---|---|---|---|---|
| o. | Net* | Description | G-C No. | Net* |
| | $0.63 | 2-56 x 1/4" machine screw | 7130-M | $ 5.00 |
| | .63 | 2-56 x 1/2" machine screw | 7131-M | 5.11 |
| | .80 | 2-56 x 3/4" machine screw | 7132-M | 6.43 |
| ..... | ..... | 3-48 x 3/4" machine screw | 7124-M | 6.02 |
| | .63 | 4-36 x 1/4" machine screw | 6005-M | 5.11 |
| | .70 | 4-36 x 1/2" machine screw | 6006-M | 5.60 |
| C | .67 | 4-40 x 1/4" machine screw | 6005-AM | 5.28 |
| C | .70 | 4-40 x 1/2" machine screw | 6005-BM | 5.60 |
| C | .83 | 4-40 x 3/4" machine screw | 6005-CM | 6.57 |
| | .68 | 6-32 x 1/4" machine screw | 6008-M | 5.46 |
| | .79 | 6-32 x 1/2" machine screw | 6009-M | 6.30 |
| | .92 | 6-32 x 3/4" machine screw | 6010-M | 7.41 |
| | 1.07 | 6-32 x 1" machine screw | 6011-M | 8.54 |
| | 1.30 | 6-32 x 1 1/4" machine screw | 7141-M | 10.35 |
| | 1.93 | 6-32 x 2" machine screw | 7148-M | 15.39 |
| | .91 | 8-32 x 1/4" machine screw | 6013-M | 7.28 |
| | 1.00 | 8-32 x 3/8" machine screw | 6014-M | 7.98 |
| | 1.07 | 8-32 x 1/2" machine screw | 6015-M | 8.54 |
| | 1.19 | 8-32 x 3/4" machine screw | 6016-M | 9.51 |
| | 1.37 | 8-32 x 1" machine screw | 6017-M | 10.92 |
| | 1.58 | 8-32 x 1 1/4" machine screw | 7142-M | 12.60 |
| | 1.21 | 10-32 x 1/2" machine screw | 6020-M | 9.66 |
| | 1.46 | 10-32 x 3/4" machine screw | 6021-M | 11.61 |
| | 1.60 | 10-32 x 1" machine screw | 6022-M | 12.74 |
| | 2.12 | 10-32 x 1 1/2" machine screw | 7143-M | 16.94 |

## PHILLIPS TYPE ROUND HEAD MACHINE SCREWS

| -PAK | | | M-PAK | |
|---|---|---|---|---|
| No. | Net* | Description | G-C No. | Net* |
| | $1.52 | 6-32 x 1/4" Phillips head | .......... | ..... |
| | 1.37 | 6-32 x 1/2" Phillips head | 8512-M | $10.92 |

## STEEL BINDING HEAD MACHINE SCREWS

| -PAK | | | M-PAK | |
|---|---|---|---|---|
| No. | Net* | Description | G-C No. | Net* |
| C | $0.71 | 6-32 x 3/16" binding head | 7151-M | $5.73 |
| C | .68 | 6-32 x 1/4" binding head | 7152-M | 5.46 |
| C | .74 | 6-32 x 3/8" binding head | 7153-M | 5.88 |
| C | 1.00 | 8-32 x 5/16" binding head | 7158-M | 7.98 |

## OVAL HEAD RACK AND CABINET SCREWS

| -PAK | | | M-PAK | |
|---|---|---|---|---|
| No. | Net* | Description | G-C No. | Net* |
| C | $0.79 | 6-32 x 1/2" rack screw | 6540-M | $ 6.30 |
| C | 1.31 | 10-32 x 5/8" rack screw | 5693-M | 10.50 |
| C | 1.42 | 10-32 x 3/4" rack screw | 6543-M | 11.34 |

## MOUNTING SCREWS

| C-PAK | | | M-PAK | |
|---|---|---|---|---|
| No. | Net* | Description | G-C No. | Net* |
| -C | $3.62 | 6-32 x 9/32" with No. 6 hole | 6081-M | $28.97 |
| -C | 3.77 | 6-32 x 13/32" with No. 6 hole | 6082-M | 30.12 |
| -C | 8.80 | 8-32 x 7/16" with No. 8 hole | 6084-M | 70.36 |

## SELF-TAPPING SHEET METAL SCREWS

| C-PAK | | | M-PAK | |
|---|---|---|---|---|
| No. | Net* | Description | G-C No. | Net* |
| -C | $1.07 | No. 4 x 1/2" metal screw | 6090-M | $ 8.54 |
| -C | 1.12 | No. 6 x 1/4" metal screw | 6091-M | 8.96 |
| -C | 1.14 | No. 6 x 3/8" metal screw | 6092-M | 9.09 |
| -C | 1.21 | No. 6 x 1/2" metal screw | 6093-M | 9.66 |
| -C | 1.30 | No. 6 x 3/4" metal screw | .......... | ..... |
| -C | 1.30 | No. 8 x 1/4" metal screw | 8102-M | 10.35 |
| -C | 1.34 | No. 8 x 3/8" metal screw | 6095-M | 10.77 |
| -C | 1.39 | No. 8 x 1/2" metal screw | 6096-M | 11.06 |
| -C | 1.40 | No. 8 x 5/8" metal screw | 5696-M | 11.19 |
| -C | 1.77 | No. 8 x 1" metal screw | 6097-M | 14.13 |
| -C | 1.65 | No. 10 x 1/2" metal screw | 6099-M | 13.16 |
| -C | 1.80 | No. 10 x 3/4" metal screw | 6100-M | 14.41 |

## QUANTITY DISCOUNT SCHEDULE

t each package (100 pieces per package), in lots of 1–49 pack-. For 50–99 packages, deduct 20% from prices shown. *Net package (1000 pieces) in lots of 1–5 packages. For 5–9 packages, uct 20% from prices shown. **Note:** When C-PAK and M-PAK atities are assorted, quantities of 4999–9999 pieces (not pack-), 20% discount also applies.

## MISCELLANEOUS SET AND MOUNTING SCREWS

| C-PAK | | | M-PAK | |
|---|---|---|---|---|
| G-C No. | Net* | Description | G-C No. | Net* |
| 7202-C | $6.27 | 8-32 x 3/16" Allen hex set screw | 7202-M | $50.10 |
| 6005-C | .63 | 4-36 x 1/4" cartridge screw | 6005-M | 5.11 |
| 6005-AC | .67 | 4-40 x 1/4" cartridge screw | 6005-AM | 5.28 |

## MISCELLANEOUS NICKEL-PLATED NUTS

| C-PAK | | | M-PAK | |
|---|---|---|---|---|
| G-C No. | Net* | Description | G-C No. | Net* |
| 7225-C | $0.87 | 2-56 x 3/16" wide hex nut | 7225-M | $ 6.99 |
| 7226-C | .87 | 3-48 x 3/16" wide hex nut | 7226-M | 6.99 |
| 6041-C | .87 | 4-36 x 1/4" wide hex nut | 6041-M | 6.99 |
| 6041-AC | .87 | 4-40 x 1/4" wide hex nut | 6041-AM | 6.99 |
| 6042-C | .87 | 6-32 x 1/4" wide hex nut | 6042-M | 6.99 |
| 7230-C | .95 | 6-32 x 5/16" wide hex nut | 7230-M | 7.56 |
| 6043-C | .87 | 8-32 x 1/4" wide hex nut | 6043-M | 6.99 |
| 7233-C | .92 | 8-32 x 11/32" wide hex nut | 7233-M | 7.41 |
| 7235-C | 1.55 | 1/4-20 x 7/16" wide hex nut | 7235-M | 12.45 |
| 6050-AC | 1.87 | 3/8-32 vol. control mtg. nut | 6050-AM | 14.97 |
| 6050-BC | 2.29 | 15/32-32 toggle switch nut | 6050-BM | 18.33 |
| 6050-CC | 4.41 | 15/32-32 round ring nut | 6050-CM | 35.27 |
| 6051-C | .92 | No. 4 Tinnerman speed nut | 6051-M | 7.41 |
| 6052-C | 1.00 | No. 6 Tinnerman speed nut | 6052-M | 7.98 |
| 6053-C | 1.00 | No. 8 Tinnerman speed nut | 6053-M | 7.98 |
| 6031-C | 3.52 | 6-32 acorn nut | 6031-M | 28.13 |
| 6032-C | 3.73 | 8-32 acorn nut | 6032-M | 29.81 |
| 6033-C | 4.76 | 10-32 acorn nut | 6033-M | 38.05 |
| 6655-C | 2.89 | 6-32 knurled thumb nut | 6655-M | 23.09 |
| 6656-C | 2.89 | 8-32 knurled thumb nut | 6656-M | 23.09 |
| 6657-C | 6.33 | 10-32 knurled thumb nut | 6657-M | 40.23 |
| 6658-C | 3.38 | 6-32 wing nut | 6658-M | 27.01 |

## WASHERS FOR EVERY PURPOSE

| C-PAK | | | M-PAK | |
|---|---|---|---|---|
| G-C No. | Net* | Description | G-C No. | Net* |
| 7322-C | $0.91 | No. 2 internal lock washer | 7322-M | $ 7.28 |
| 7324-C | .58 | No. 4 internal lock washer | 7324-M | 4.62 |
| 7326-C | .56 | No. 6 internal lock washer | 7326-M | 4.47 |
| 7328-C | .61 | No. 8 internal lock washer | 7328-M | 4.89 |
| 7330-C | .61 | No. 10 internal lock washer | 7330-M | 4.89 |
| 7335-C | 1.60 | No. 3/8" internal lock washer | 7335-M | 12.74 |
| 7354-C | .56 | No. 4 external lock washer | 7354-M | 4.47 |
| 7356-C | .56 | No. 6 external lock washer | 7356-M | 4.47 |
| 7358-C | .61 | No. 8 external lock washer | 7358-M | 4.89 |
| 6503-C | .74 | No. 4 split type lock washer | 6503-M | 5.88 |
| 6504-C | .60 | No. 6 split type lock washer | 6504-M | 4.76 |
| 6505-C | .97 | No. 8 split type lock washer | 6505-M | 9.01 |
| 7385-C | 2.49 | 5/32" ID x 5/16" OD spring wshr. | 7385-M | 19.88 |
| 7386-C | 2.10 | 3/16" ID x 3/8" OD spring wshr. | 7386-M | 16.79 |
| 7387-C | 2.07 | 3/16" ID x 7/16" OD spring wshr. | 7387-M | 16.52 |
| 7389-C | 2.38 | 17/64" ID x 9/16" OD spring wshr. | 7389-M | 19.04 |
| 6161-C | .60 | No. 6 cup washer | 6161-M | 4.76 |
| 6162-C | .63 | No. 8 cup washer | 6162-M | 5.04 |
| 6163-C | .71 | No. 10 cup washer | 6163-M | 5.73 |
| 6513-C | .63 | No. 6 flat fiber washer | 6513-M | 5.04 |
| 6514-C | .63 | No. 8 flat fiber washer | 6514-M | 5.04 |
| 6515-C | .63 | No. 10 flat fiber washer | 6515-M | 5.04 |
| 6516-C | .68 | No. 1/4" flat fiber washer | 6516-M | 5.46 |
| 6517-C | .99 | No. 3/8" flat fiber washer | 6517-M | 7.83 |
| 6525-C | 1.12 | No. 6 extruded fiber washer | 6525-M | 8.96 |
| 6526-C | 1.12 | No. 8 extruded fiber washer | 6526-M | 8.96 |
| 6527-C | 1.21 | No. 10 extruded fiber washer | 6527-M | 9.66 |
| 6528-C | 1.21 | No. 1/4" extruded fiber washer | 6528-M | 9.66 |
| 6529-C | 1.26 | No. 3/8" extruded fiber washer | 6529-M | 10.08 |
| 6154-C | .58 | No. 4 metal washer | 6154-M | 4.62 |
| 6155-C | .58 | No. 6 metal washer | 6155-M | 4.62 |
| 6156-C | .63 | No. 8 metal washer | 6156-M | 5.04 |
| 7306-C | .60 | No. 10 metal wshr., 3/8" O.D. | 7306-M | 4.76 |
| 7307-C | .60 | No. 10 metal wshr., 7/16" O.D. | 7307-M | 4.76 |
| 6157-C | .63 | No. 10 metal wshr., 1/2" O.D. | 6157-M | 5.04 |
| .......... | ..... | No. 12 metal wshr., 7/16" O.D. | 7308-M | 4.76 |
| 6158-C | .87 | No. 1/4" metal washer | 6158-M | 6.99 |

## NICKEL-PLATED BRASS BINDING HEAD MACHINE SCREWS

| C-PAK | | | M-PAK | |
|---|---|---|---|---|
| G-C No. | Net* | Description | G-C No. | Net* |
| 7170-1C | $1.38 | 4-40 x 1/4" binding head | 7170-1M | $10.55 |
| 7171-1C | 1.45 | 4-40 x 1/2" binding head | .......... | ..... |
| 7151-1C | 1.79 | 6-32 x 3/16" binding head | .......... | ..... |
| 7152-1C | 1.42 | 6-32 x 1/4" binding head | 7152-1M | 11.28 |
| 7153-1C | 1.55 | 6-32 x 3/8" binding head | 7153-1M | 12.38 |
| 7118-1C | 1.68 | 6-32 x 1/2" binding head | 7118-1M | 13.43 |
| 7173-1C | 2.03 | 6-32 x 3/4" binding head | 7173-1M | 16.23 |
| 7174-1C | 2.15 | 8-32 x 1/4" binding head | 7174-1M | 17.18 |
| 7119-1C | 2.15 | 8-32 x 3/8" binding head | 7119-1M | 17.21 |
| 7120-1C | 2.47 | 8-32 x 1/2" binding head | 7120-1M | 19.73 |
| 7175-1C | 3.03 | 8-32 x 3/4" binding head | .......... | ..... |
| 7176-1C | 3.39 | 10-32 x 1/2" binding head | 7176-1M | 27.15 |
| 7177-1C | 4.59 | 10-32 x 3/4" binding head | 7177-1M | 36.67 |

# H. H. Smith Hardware

## ROUND HEAD MACHINE SCREWS

### CADMIUM-PLATED STEEL

| C-PAK H.H.S. No. | C-PAK Net | Size | M-PAK H.H.S. No. | M-PAK Net |
|---|---|---|---|---|
| 1173C | $1.00 | 2-56 x ¼″ | 1173M | $ 7.80 |
| 1174C | 1.05 | 2-56 x ½″ | 1174M | 8.40 |
| 1175C | 1.25 | 2-56 x ¾″ | 1175M | 9.00 |
| 1176C | 1.15 | 3-48 x ¾″ | 1176M | 9.30 |
| 1177C | 1.05 | 4-36 x ¼″ | 1177M | 8.50 |
| 1178C | 1.10 | 4-36 x ⅜″ | 1178M | 8.70 |
| 1183C | 1.15 | 4-36 x ½″ | 1183M | 9.10 |
| 1184C | 1.20 | 4-36 x ⅝″ | 1184M | 9.60 |
| 1185C | 1.25 | 4-36 x ¾″ | 1185M | 10.00 |
| 1350C | 1.05 | 4-40 x ¼″ | 1350M | 8.50 |
| 1351C | 1.10 | 4-40 x ⅜″ | 1351M | 8.70 |
| 1352C | 1.15 | 4-40 x ½″ | 1352M | 9.10 |
| 1353C | 1.20 | 4-40 x ⅝″ | 1353M | 9.60 |
| 1354C | 1.25 | 4-40 x ¾″ | 1354M | 10.00 |
| 1000C | .95 | 6-32 x ¼″ | 1000M | 7.50 |

| C-PAK H.H.S. No. | C-PAK Net | Size | M-PAK H.H.S. No. | M-PAK Net |
|---|---|---|---|---|
| 1001C | $1.00 | 6-32 x ⅜″ | 1001M | $ 7.80 |
| 1002C | 1.05 | 6-32 x ½″ | 1002M | 8.20 |
| 1355C | 1.10 | 6-32 x ⅝″ | 1355M | 8.80 |
| 1356C | 1.15 | 6-32 x ¾″ | 1356M | 9.30 |
| 1357C | 1.35 | 6-32 x 1″ | 1357M | 10.80 |
| 1358C | 2.85 | 6-32 x 2″ | 1358M | 22.80 |
| 1006C | 1.20 | 8-32 x ¼″ | 1006M | 9.80 |
| 1007C | 1.15 | 8-32 x ⅜″ | 1007M | 9.30 |
| 1008C | 1.30 | 8-32 x ½″ | 1008M | 10.20 |
| 1010C | 1.35 | 8-32 x ⅝″ | 1010M | 10.80 |
| 1359C | 1.50 | 8-32 x ¾″ | 1359M | 12.20 |
| 1360C | 1.55 | 10-32 x ½″ | 1360M | 12.50 |
| 1361C | 1.60 | 10-32 x ¾″ | 1361M | 12.80 |
| 1362C | 2.15 | 10-32 x 1″ | 1362M | 17.20 |

### NICKEL-PLATED BRASS

| | | | | |
|---|---|---|---|---|
| 1044C | $1.60 | 4-36 x ¼″ | 1044M | $12.80 |
| 1045C | 1.65 | 4-36 x ⅜″ | 1045M | 13.20 |
| 1046C | 2.00 | 4-36 x ½″ | 1046M | 16.10 |
| 1047C | 1.60 | 4-40 x ¼″ | 1047M | 12.80 |
| 1048C | 1.65 | 4-40 x ⅜″ | 1048M | 13.20 |
| 1049C | 2.00 | 4-40 x ½″ | 1049M | 16.10 |

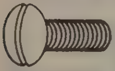
| | | | | |
|---|---|---|---|---|
| 1050C | $2.00 | 6-32 x ¼″ | 1050M | $16.10 |
| 1051C | 2.10 | 6-32 x ⅜″ | 1051M | 17.10 |
| 1052C | 2.40 | 6-32 x ½″ | 1052M | 19.40 |
| 1056C | 3.00 | 8-32 x ¼″ | 1056M | 24.00 |
| 1057C | 3.20 | 8-32 x ⅜″ | 1057M | 25.40 |
| 1058C | 3.60 | 8-32 x ½″ | 1058M | 29.00 |

## BINDING HEAD MACHINE SCREWS

### CADMIUM-PLATED STEEL

| | | | | |
|---|---|---|---|---|
| 1369C | $1.00 | 2-56 x ¼″ | 1369M | $ 7.80 |
| 1370C | 1.05 | 2-56 x ½″ | 1370M | 8.40 |
| 1371C | 1.10 | 2-56 x ⅝″ | 1371M | 8.80 |
| 1372C | 1.05 | 4-40 x ¼″ | 1372M | 8.50 |
| 1373C | 1.15 | 4-40 x ½″ | 1373M | 9.10 |
| 1374C | 1.25 | 4-40 x ¾″ | 1374M | 10.00 |
| 1375C | 1.00 | 6-32 x 3⁄16″ | 1375M | 7.90 |
| 1425C | .95 | 6-32 x ¼″ | 1425M | 7.50 |
| 1426C | 1.00 | 6-32 x ⅜″ | 1426M | 7.80 |
| 1427C | 1.05 | 6-32 x ½″ | 1427M | 8.20 |

| | | | | |
|---|---|---|---|---|
| 1376C | $1.10 | 6-32 x ⅝″ | 1376M | $ 8.80 |
| 1377C | 1.15 | 6-32 x ¾″ | 1377M | 9.30 |
| 1428C | 1.20 | 8-32 x ¼″ | 1428M | 9.80 |
| 1378C | 1.15 | 8-32 x 5⁄16″ | 1378M | 9.10 |
| 1429C | 1.15 | 8-32 x ⅜″ | 1429M | 9.30 |
| 1430C | 1.30 | 8-32 x ½″ | 1430M | 10.20 |
| 1379C | 1.50 | 8-32 x ¾″ | 1379M | 12.20 |
| 1380C | 1.55 | 10-32 x ½″ | 1380M | 12.50 |
| 1381C | 1.60 | 10-32 x ¾″ | 1381M | 12.80 |

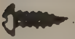


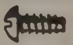
## OVAL HEAD RACK SCREWS

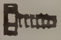
### NICKEL-PLATED STEEL

| | | | | |
|---|---|---|---|---|
| 1382C | $1.15 | 6-32 x ¾″ | 1382M | $ 9.30 |
| 1383C | 1.50 | 8-32 x ¾″ | 1383M | 12.20 |

| | | | | |
|---|---|---|---|---|
| 1111C | $1.55 | 10-32 x ½″ | 1111M | $12.50 |
| 1112C | 1.85 | 10-32 x ¾″ | 1112M | 14.80 |


A


B


C

## SELF-TAPPING CADMIUM-PLATED STEEL SCREWS

### ROUND HEAD—TYPE A—SHARP POINT (FIG. A)

| C-PAK H.H.S. No. | C-PAK Net | Size, In. | M-PAK H.H.S. No. | M-PAK Net |
|---|---|---|---|---|
| 1801C | $1.05 | 4 x ½ | 1801M | $8.60 |
| 1802C | 1.10 | 6 x ¼ | 1802M | 8.70 |
| 1803C | 1.20 | 6 x ⅜ | 1803M | 9.40 |

| C-PAK H.H.S. No. | C-PAK Net | Size, In. | M-PAK H.H.S. No. | M-PAK Net |
|---|---|---|---|---|
| 1804C | $1.25 | 6 x ½ | 1804M | $ 9.90 |
| 1805C | 1.40 | 8 x ⅜ | 1805M | 11.00 |
| 1806C | 1.50 | 8 x ½ | 1806M | 11.90 |

### ROUND HEAD—TYPE Z—BLUNT POINT (FIG. B)

| | | | | |
|---|---|---|---|---|
| 1807C | $1.05 | 4 x ½ | 1807M | $8.60 |
| 1808C | 1.10 | 6 x ¼ | 1808M | 8.70 |
| 1809C | 1.20 | 6 x ⅜ | 1809M | 9.40 |

| | | | | |
|---|---|---|---|---|
| 1810C | $1.25 | 6 x ½ | 1810M | $ 9.90 |
| 1811C | 1.40 | 8 x ⅜ | 1811M | 11.00 |
| 1812C | 1.50 | 8 x ½ | 1812M | 11.90 |

### SLOTTED HEX HEAD—TYPE Z—BLUNT POINT (FIG. C)

| | | | | |
|---|---|---|---|---|
| 1830C | $1.20 | 6 x ¼ | 1830M | $ 9.70 |
| 1831C | 1.30 | 6 x ⅜ | 1831M | 10.50 |
| 1832C | 1.40 | 6 x ½ | 1832M | 11.10 |

| | | | | |
|---|---|---|---|---|
| 1833C | $1.55 | 8 x ⅜ | 1833M | $12.30 |
| 1834C | 1.65 | 8 x ½ | 1834M | 13.30 |

## PAN HEAD METAL SCREWS

### CADMIUM-PLATED STEEL

| | | | | |
|---|---|---|---|---|
| 1389C | $1.05 | 4 x ½ | 1389M | $ 8.60 |
| 1390C | 1.10 | 6 x ¼ | 1390M | 8.70 |
| 1391C | 1.20 | 6 x ⅜ | 1391M | 9.40 |
| 1392C | 1.25 | 6 x ½ | 1392M | 9.90 |
| 1393C | 1.35 | 6 x ¾ | 1393M | 10.90 |

| | | | | |
|---|---|---|---|---|
| 1394C | $1.40 | 8 x ¼ | 1394M | $11.00 |
| 1395C | 1.45 | 8 x ⅜ | 1395M | 11.40 |
| 1396C | 1.50 | 8 x ½ | 1396M | 11.90 |
| 1397C | 1.80 | 8 x 1 | 1397M | 14.90 |

## NYLON SCREWS

Natural color; per MIL-P-20693A. Standard package, 100.

| Size | Binding Head No. | Round Head No. | Fillister Head No. | Flat Head No. | Washer Head No. | Headless Set Screw No. | Net per 100 |
|---|---|---|---|---|---|---|---|
| 4-40 x ¼″ | 2500 | 2520 | 2540 | 2560 | 2580 | 2480 | $3.50 |
| 4-40 x ⅜″ | 2501 | 2521 | 2541 | 2561 | 2581 | 2481 | 3.50 |
| 4-40 x ½″ | 2502 | 2522 | 2542 | 2562 | 2582 | 2482 | 3.50 |
| 6-32 x ¼″ | 2503 | 2523 | 2543 | 2563 | 2583 | 2483 | 3.50 |
| 6-32 x ⅜″ | 2504 | 2524 | 2544 | 2564 | 2584 | 2484 | 3.50 |
| 6-32 x ½″ | 2505 | 2525 | 2545 | 2565 | 2585 | 2485 | 3.50 |
| 6-32 x ⅝″ | 2506 | 2526 | 2546 | 2566 | 2586 | 2486 | 3.50 |
| 6-32 x ¾″ | 2507 | 2527 | 2547 | 2567 | 2587 | 2487 | 3.50 |
| 8-32 x ¼″ | 2509 | 2529 | 2549 | 2569 | 2589 | 2489 | 3.50 |
| 8-32 x ⅜″ | 2510 | 2530 | 2550 | 2570 | 2590 | 2490 | 3.50 |
| 8-32 x ½″ | 2511 | 2531 | 2551 | 2571 | 2591 | 2491 | 3.50 |
| 8-32 x ⅝″ | 2512 | 2532 | 2552 | 2572 | 2592 | 2492 | 3.50 |

## NYLON HEX NUTS

Natural color; per MIL-P-20693A. Std. package, 100.

| H.H.S. No. | Size | Net per 100 |
|---|---|---|
| 2554 | 4-40 x ¼″ | $7.00 |
| 2555 | 6-32 x 5⁄16″ | 7.00 |
| 2556 | 8-32 x 11⁄32″ | 7.00 |
| 2557 | 10-32 x ⅜″ | 7.00 |

## HEXAGON NUTS

Standard package, 100.

### NICKEL-PLATED BRASS

| C-PAK H.H.S. No. | C-PAK Net | Size | M-PAK H.H.S. No. | M-PAK Net |
|---|---|---|---|---|
| 1188C | $1.10 | 4-36 x ¼″ | 1188M | $ 8.90 |
| 1168C | 1.10 | 4-40 x ¼″ | 1168M | 8.90 |
| 1189C | 1.10 | 6-32 x ¼″ | 1189M | 8.90 |
| 1190C | 1.55 | 6-32 x 5⁄16″ | 1190M | 12.30 |
| 1192C | 1.55 | 8-32 x 5⁄16″ | 1192M | 12.30 |
| 1193C | 1.55 | 10-32 x 5⁄16″ | 1193M | 12.30 |
| 1187C | 1.90 | ¼-32 x 7⁄16″ | 1187M | 15.00 |

### CADMIUM-PLATED STEEL

| | | | | |
|---|---|---|---|---|
| 1363C | $1.10 | 2-56 x 3⁄16″ | 1363M | $ 8.90 |
| 1364C | 1.10 | 3-48 x 3⁄16″ | 1364M | 8.90 |
| 1398C | .95 | 4-36 x ¼″ | 1398M | 7.40 |
| 1365C | .95 | 4-40 x ¼″ | 1365M | 7.40 |
| 1179C | .95 | 6-32 x ¼″ | 1179M | 7.40 |
| 1180C | 1.00 | 6-32 x 5⁄16″ | 1180M | 8.10 |
| 1366C | .95 | 8-32 x ¼″ | 1366M | 7.40 |
| 1181C | 1.00 | 8-32 x 5⁄16″ | 1181M | 8.10 |
| 1367C | 1.27 | 10-32 x ⅜″ | 1367M | 10.00 |
| 1368C | 1.45 | ¼-20 x 7⁄16″ | 1368M | 11.50 |
| 1186C* | 1.60 | ¼-32 x 7⁄16″ | 1186M* | 13.00 |

*Nickel-plated.

## VOLUME CONTROL NUTS

### NICKEL-PLATED BRASS

| | | | | |
|---|---|---|---|---|
| 1195C | $4.00 | ⅜-32 x ½″ x 3⁄32″ | 1195M | $35.00 |

### NICKEL-PLATED STEEL

| | | | | |
|---|---|---|---|---|
| 1199C | $2.50 | ⅜-32 x ½″ x 3⁄32″ | 1199M | $22.00 |

## TOGGLE SWITCH NUTS

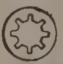
### NICKEL-PLATED HEX

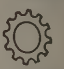
| | | | | |
|---|---|---|---|---|
| 1196C | $2.00 | 15⁄32″ x 9⁄16″ x 5⁄64″ | 1196M | $18.00 |

### NICKEL-PLATED RING

| | | | | |
|---|---|---|---|---|
| 1197C | $3.50 | 15⁄32″ x ⅝″ x 1⁄16″ | 1197M | $30.00 |

## CADMIUM-PLATED TOOTH LOCKWASHERS


Internal


External

### INTERNAL TYPE STEEL

| | | | | |
|---|---|---|---|---|
| 1127C | $0.55 | #4 | 1127M | $ 4.50 |
| 1128C | .55 | #6 | 1128M | 4.50 |
| 1129C | .60 | #8 | 1129M | 4.90 |
| 1130C | .60 | #10 | 1130M | 4.90 |
| 1132C | .80 | ¼″ | 1132M | 6.50 |
| 1131C | 1.50 | ⅜″ | 1131M | 12.20 |
| 1145C† | 1.90 | ⅜″ | 1145M† | 15.00 |
| 1146C† | 2.00 | 15⁄32″ | 1146M† | 16.00 |

†Narrow rim.

### EXTERNAL TYPE—STEEL

| | | | | |
|---|---|---|---|---|
| 1139C | $0.55 | #4 | 1139M | $ 4.50 |
| 1140C | .55 | #6 | 1140M | 4.50 |
| 1141C | .60 | #8 | 1141M | 4.90 |
| 1142C | .60 | #10 | 1142M | 4.90 |
| 1144C | .80 | ¼″ | 1144M | 6.50 |
| 1143C | 1.50 | ⅜″ | 1143M | 12.20 |

## NICKEL-PLATED WASHERS

Flat

Counter-sunk

### FLAT TYPE STEEL

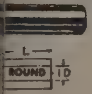
| | | | | |
|---|---|---|---|---|
| 1138C | $0.70 | #2 screw | 1138M | $5.80 |
| 1149C | .65 | #4 screw | 1149M | 5.50 |
| 1150C | .60 | #6 screw | 1150M | 5.00 |
| 1151C | .70 | #8 screw | 1151M | 5.80 |
| 1152C | .75 | #10 screw | 1152M | 6.00 |
| 1147C | .85 | ¼″ screw | 1147M | 6.80 |
| 1148C | .95 | ⅜″ screw | 1148M | 7.50 |

### COUNTER-SUNK TYPE BRASS

| | | | | |
|---|---|---|---|---|
| 1115C | $1.00 | #6 | 1115M | $ 7.80 |
| 1116C | 1.25 | #8 | 1116M | 9.90 |
| 1117C | 1.40 | #10 | 1117M | 11.20 |

# H. H. Smith Spacers, Standoffs

## CADMIUM-PLATED BRASS SPACERS



Brass bushings are ideal for use in raising sub-panels, chassis, variable capacitors, transformers, etc. Hole in bushing accommodates #4, #6 or #8 screw.

### ¼″ O.D. SPACERS

| , | H. H. Smith No. | | | Net per C |
|---|---|---|---|---|
| | For #4 Screw | For #6 Screw | For #8 Screw | |
| 5 | 8700 | 8701 | 8702 | $3.70 |
| 7 | 8703 | 8704 | 8705 | 3.90 |
| 0 | 2340 | 2100 | 2105 | 4.20 |
| 2 | 8706 | 8707 | 8708 | 4.70 |
| 5 | 2341 | 2101 | 2106 | 4.90 |
| 7 | 8709 | 8710 | 8711 | 5.30 |
| 0 | 2342 | 2102 | 2107 | 5.70 |
| 2 | 8712 | 8713 | 8714 | 6.20 |
| 5 | 8715 | 8716 | 8717 | 6.60 |
| 7 | 8718 | 8719 | 8720 | 8.10 |
| 0 | 2343 | 2103 | 2108 | 8.20 |
| 2 | 8721 | 8722 | 8723 | 8.40 |
| 5 | 8724 | 8725 | 8726 | 9.10 |
| 7 | 8727 | 8728 | 8729 | 9.30 |
| 0 | 2344 | 2104 | 2109 | 9.70 |

### ⅜″ O.D. SPACERS

| | | | | |
|---|---|---|---|---|
| 5 | 8730 | 8731 | 8732 | $ 6.00 |
| 7 | 8733 | 8734 | 8735 | 6.60 |
| 0 | 2345 | 2110 | 2115 | 7.30 |
| 2 | 8736 | 8737 | 8738 | 7.80 |
| 5 | 2346 | 2111 | 2116 | 8.70 |
| 7 | 8739 | 8740 | 8741 | 9.40 |
| 0 | 2347 | 2112 | 2117 | 9.60 |
| 2 | 8742 | 8743 | 8744 | 11.00 |
| 5 | 8745 | 8746 | 8747 | 11.90 |
| 7 | 8748 | 8749 | 8750 | 12.10 |
| 0 | 2348 | 2113 | 2118 | 12.20 |
| 2 | 8751 | 8752 | 8753 | 13.50 |
| 5 | 8754 | 8755 | 8756 | 14.80 |
| 7 | 8757 | 8758 | 8759 | 15.30 |
| 0 | 2349 | 2114 | 2119 | 16.70 |

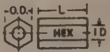
### ¼″ O.D. THREADED SPACERS

e as above, but threaded for 4-40, or 8-32 screw.

| ., | H. H. Smith No. | | | Net per C |
|---|---|---|---|---|
| | 4-40 Thd. | 6-32 Thd. | 8-32 Thd. | |
| 5 | 8760 | 8761 | 8762 | $ 4.30 |
| 7 | 8763 | 8764 | 8765 | 4.60 |
| 0 | 2370 | 2120 | 2125 | 4.80 |
| 2 | 8766 | 8767 | 8768 | 5.30 |
| 5 | 2371 | 2121 | 2126 | 5.60 |
| 7 | 8769 | 8770 | 8771 | 5.90 |
| 0 | 2372 | 2122 | 2127 | 6.70 |
| 2 | 8772 | 8773 | 8774 | 7.20 |
| 5 | 8775 | 8776 | 8777 | 7.90 |
| 7 | 8778 | 8779 | 8780 | 10.10 |
| 0* | 2373 | 2123 | 2128 | 10.20 |
| 2* | 8781 | 8782 | 8783 | 10.50 |
| 5* | 8784 | 8785 | 8786 | 10.80 |
| 7* | 8787 | 8788 | 8789 | 11.00 |
| 0* | 2374 | 2124 | 2129 | 11.40 |

ead is tapped in ⅜″ from each end, ontinuous through.

## CADMIUM-PLATED BRASS HEX SPACERS



### ¼″ HEX

| Lgth., In. | H. H. Smith No. | | | Net per C |
|---|---|---|---|---|
| | For #4 Screw | For #6 Screw | For #8 Screw | |
| .125 | 8790 | 8791 | 8792 | $3.80 |
| .187 | 8793 | 8794 | 8795 | 4.00 |
| .250 | 2380 | 2300 | 2305 | 4.30 |
| .312 | 8796 | 8797 | 8798 | 5.20 |
| .375 | 2381 | 2301 | 2306 | 5.40 |
| .437 | 8799 | 8800 | 8801 | 5.60 |
| .500 | 2382 | 2302 | 2307 | 5.80 |
| .562 | 8802 | 8803 | 8804 | 6.40 |
| .625 | 8805 | 8806 | 8807 | 6.70 |
| .687 | 8808 | 8809 | 8810 | 8.20 |
| .750 | 2383 | 2303 | 2308 | 8.50 |
| .812 | 8811 | 8812 | 8813 | 8.80 |
| .875 | 8814 | 8815 | 8816 | 9.20 |
| .937 | 8817 | 8818 | 8819 | 9.60 |
| 1.000 | 2384 | 2304 | 2309 | 9.90 |

### ⅜″ HEX

| Lgth., In. | H. H. Smith No. | | | Net per C |
|---|---|---|---|---|
| | For #4 Screw | For #6 Screw | For #8 Screw | |
| .125 | 8850 | 8851 | 8852 | $ 6.20 |
| .187 | 8853 | 8854 | 8855 | 6.80 |
| .250 | 2385 | 2310 | 2315 | 7.40 |
| .312 | 8856 | 8857 | 8858 | 8.10 |
| .375 | 2386 | 2311 | 2316 | 9.00 |
| .437 | 8859 | 8860 | 8861 | 10.10 |
| .500 | 2387 | 2312 | 2317 | 11.00 |
| .562 | 8862 | 8863 | 8864 | 12.10 |
| .625 | 8865 | 8866 | 8867 | 13.50 |
| .687 | 8868 | 8869 | 8870 | 13.60 |
| .750 | 2388 | 2313 | 2318 | 14.40 |
| .812 | 8871 | 8872 | 8873 | 15.20 |
| .875 | 8874 | 8875 | 8876 | 16.70 |
| .937 | 8877 | 8878 | 8879 | 17.00 |
| 1.000 | 2389 | 2314 | 2319 | 18.60 |

### ¼″ HEX THREADED SPACERS

| Lgth., In. | H. H. Smith No. | | | Net per C |
|---|---|---|---|---|
| | 4-40 Thd. | 6-32 Thd. | 8-32 Thd. | |
| .125 | 8820 | 8821 | 8822 | $ 4.50 |
| .187 | 8823 | 8824 | 8825 | 4.80 |
| .250 | 2330 | 2320 | 2325 | 5.30 |
| .312 | 8826 | 8827 | 8828 | 5.60 |
| .375 | 2331 | 2321 | 2326 | 6.50 |
| .437 | 8829 | 8830 | 8831 | 6.70 |
| .500 | 2332 | 2322 | 2327 | 7.40 |
| .562 | 8832 | 8833 | 8834 | 8.10 |
| .625 | 8835 | 8836 | 8837 | 8.50 |
| .687 | 8838 | 8839 | 8840 | 11.00 |
| .750* | 2333 | 2323 | 2328 | 11.20 |
| .812* | 8841 | 8842 | 8843 | 11.30 |
| .875* | 8844 | 8845 | 8846 | 11.60 |
| .937* | 8847 | 8848 | 8849 | 11.70 |
| 1.000* | 2334 | 2324 | 2329 | 12.10 |

*Thread is tapped in ⅜″ from each end, not continuous through.

## ¼″ O.D. FIBRE SPACERS

Fibre bushings per MIL-F-1148A, Grade CH. Ideal for raising sub-panels, chassis, etc. ¼″ O.D.

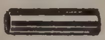
| Lgth., In. | H. H. Smith No. | | | Net per C |
|---|---|---|---|---|
| | For #4 Screw | For #6 Screw | For #8 Screw | |
| .125 | 8880 | 8881 | 8882 | $ 3.30 |
| .187 | 8883 | 8884 | 8885 | 3.80 |
| .250 | 2335 | 2130 | 2140 | 4.30 |
| .312 | 8886 | 8887 | 8888 | 4.90 |
| .375 | 2336 | 2131 | 2141 | 5.50 |
| .437 | 8889 | 8890 | 8891 | 6.00 |
| .500 | 2337 | 2132 | 2142 | 6.50 |
| .562 | 8892 | 8893 | 8894 | 7.00 |
| .625 | 8895 | 8896 | 8897 | 7.50 |
| .687 | 8898 | 8899 | 8900 | 8.00 |
| .750 | 2338 | 2133 | 2143 | 8.50 |
| .812 | 8901 | 8902 | 8903 | 8.80 |
| .875 | 8904 | 8905 | 8906 | 9.30 |
| .937 | 8907 | 8908 | 8909 | 9.70 |
| 1.000 | 2339 | 2134 | 2144 | 10.00 |

## ¼″ O.D. NYLON SPACERS

Non-conductive and molded of corrosion-resistant nylon. Useful as bushings, bearings, rollers and glides. Natural finish.

| | | | | |
|---|---|---|---|---|
| .125 | 4000 | 4001 | 4002 | $ 3.30 |
| .187 | 4003 | 4004 | 4005 | 3.80 |
| .250 | 4006 | 4007 | 4008 | 4.30 |
| .312 | 4009 | 4010 | 4011 | 4.90 |
| .375 | 4012 | 4013 | 4014 | 5.50 |
| .437 | 4015 | 4016 | 4017 | 6.00 |
| .500 | 4018 | 4019 | 4020 | 6.50 |
| .562 | 4021 | 4022 | 4023 | 7.00 |
| .625 | 4024 | 4025 | 4026 | 7.50 |
| .687 | 4027 | 4028 | 4029 | 8.00 |
| .750 | 4030 | 4031 | 4032 | 8.50 |
| .812 | 4033 | 4034 | 4035 | 8.80 |
| .875 | 4036 | 4037 | 4038 | 9.30 |
| .937 | 4039 | 4040 | 4041 | 9.70 |
| 1.000 | 4042 | 4043 | 4044 | 10.00 |

## PHENOLIC THREADED SPACERS

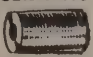


Natural color PBE Grade MIL-P-79A phenolic. Good mechanical strength; resists abrasion and chemicals. Excellent dielectric; low moisture absorption. ¼″ O.D.

| Lgth., In. | H. H. Smith No. | | | Net per C |
|---|---|---|---|---|
| | 4-40 Thd. | 6-32 Thd. | 8-32 Thd. | |
| .250 | 8660 | 8661 | 8662 | $ 8.00 |
| .312 | 8663 | 8664 | 8665 | 9.00 |
| .375 | 8666 | 8667 | 8668 | 9.50 |
| .437 | 8669 | 8670 | 8671 | 10.00 |
| .500 | 8672 | 8673 | 8674 | 11.00 |
| .562 | 8675 | 8676 | 8677 | 12.00 |
| .625 | 8678 | 8679 | 8680 | 13.00 |
| .687 | 8681 | 8682 | 8683 | 14.00 |
| .750* | 8684 | 8685 | 8686 | 15.00 |
| .812* | 8687 | 8688 | 8689 | 15.50 |
| .875* | 8690 | 8691 | 8692 | 16.50 |
| .937* | 8693 | 8694 | 8695 | 17.00 |
| 1.000* | 8696 | 8697 | 8698 | 18.00 |

*Thread is tapped in ⅜″ from each end, not continuous through.

## JAN AND COMMERCIAL CERAMIC STANDOFFS



Grade L-5 ceramic with glazed outside. JAN types are made to JAN 1-8 and JAN 1-10 specifications. Threaded at each end.

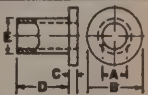
### JAN STANDOFFS

| I.S. o. | JAN Type | Dimensions | | | Thd. | Net per C |
|---|---|---|---|---|---|---|
| | | A | B | C | | |
| 00 | NL523W01-004 | ½″ | ⅜″ | 5/32″ | 6-32 | $ 18.00 |
| 01 | NL523W01-005 | ⅝″ | ⅜″ | ¼″ | 6-32 | 20.00 |
| 02 | NL523W01-006 | ¾″ | ⅜″ | ¼″ | 6-32 | 21.00 |
| 03 | NL523W01-008 | 1″ | ⅜″ | ⅜″ | 6-32 | 22.00 |
| 04 | NL523W01-010 | 1¼″ | ⅜″ | ⅜″ | 6-32 | 24.00 |
| 05 | NL523W01-012 | 1½″ | ⅜″ | ⅜″ | 6-32 | 25.00 |
| 06 | NL523W01-016 | 2″ | ⅜″ | ⅜″ | 6-32 | 26.00 |
| 07 | NL523W02-005 | ⅝″ | ½″ | 3/16″ | 8-32 | 20.00 |
| 08 | NL523W02-006 | ¾″ | ½″ | ¼″ | 8-32 | 21.00 |
| 09 | NL523W02-008 | 1″ | ½″ | ⅜″ | 8-32 | 22.00 |
| 10 | NL523W02-010 | 1¼″ | ½″ | ⅜″ | 8-32 | 24.00 |
| 11 | NL523W02-012 | 1½″ | ½″ | ⅜″ | 8-32 | 27.00 |
| 12 | NL523W02-016 | 2″ | ½″ | ⅜″ | 8-32 | 33.00 |
| 13 | NL523W02-020 | 2½″ | ½″ | ⅜″ | 8-32 | 34.00 |
| 14 | NL523W02-024 | 3″ | ½″ | ⅜″ | 8-32 | 35.00 |
| 15 | NL523W03-008 | 1″ | ¾″ | ⅜″ | 10-32 | 30.00 |
| 16 | NL523W03-010 | 1¼″ | ¾″ | ⅜″ | 10-32 | 31.00 |
| 17 | NL523W03-012 | 1½″ | ¾″ | ⅜″ | 10-32 | 39.00 |
| 18 | NL523W03-016 | 2″ | ¾″ | ⅜″ | 10-32 | 40.00 |
| 19 | NL523W03-020 | 2½″ | ¾″ | ⅜″ | 10-32 | 45.00 |
| 20 | NL523W03-024 | 3″ | ¾″ | ⅜″ | 10-32 | 50.00 |
| 21 | NL523W03-032 | 4″ | ¾″ | ⅜″ | 10-32 | 60.00 |
| 22 | NL523W04-010 | 1¼″ | 1″ | 7/16″ | ¼-20 | 42.00 |
| 23 | NL523W04-012 | 1½″ | 1″ | ½″ | ¼-20 | 53.00 |
| 24 | NL523W04-016 | 2″ | 1″ | ⅝″ | ¼-20 | 58.00 |
| 25 | NL523W04-020 | 2½″ | 1″ | ⅝″ | ¼-20 | 60.00 |
| 26 | NL523W04-024 | 3″ | 1″ | ⅝″ | ¼-20 | 70.00 |
| 27 | NL523W04-032 | 4″ | 1″ | ⅝″ | ¼-20 | 85.00 |
| 28 | NL523W04-040 | 5″ | 1″ | ⅝″ | ¼-20 | 105.00 |
| 29 | NL523W04-048 | 6″ | 1″ | ⅝″ | ¼-20 | 115.00 |

### COMMERCIAL STANDOFFS

| H.H.S. No. | Dimensions | | | Thread | Net per C |
|---|---|---|---|---|---|
| | A | B | C | | |
| 2640 | ¼″ | ¼″ | Thru | 6-32 | $15.00 |
| 2641 | ½″ | ¼″ | 5/32″ | 6-32 | 16.00 |
| 2642 | ⅜″ | ⅜″ | 5/32″ | 6-32 | 17.00 |
| 2643 | ½″ | ⅜″ | 3/16″ | 6-32 | 18.00 |
| 2644 | ½″ | ½″ | 9/64″ | 6-32 | 20.00 |
| 2645 | ¾″ | ½″ | ¼″ | 6-32 | 21.00 |
| 2646 | 1″ | ½″ | ⅜″ | 6-32 | 23.00 |
| 2647 | 1½″ | ½″ | 9/16″ | 6-32 | 27.00 |
| 2648 | 2½″ | ½″ | ½″ | 6-32 | 30.00 |
| 2649 | 2½″ | ¾″ | ¾″ | ¼-20 | 45.00 |
| 2650 | 4″ | ¾″ | ¾″ | ¼-20 | 60.00 |

## NYLON SPACER BUSHINGS



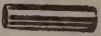
Natural color. MIL-P-20693A.

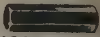
| H.H.S. No. | Size, Inches | | | | | Net per C |
|---|---|---|---|---|---|---|
| | I.D.(A) | B | C | D | E | |
| 2534 | #4 (.115) | .235 | 3/64 | ¼ | .147 | $2.30 |
| 2535 | #6 (.140) | .290 | 3/64 | ¼ | .170 | 2.40 |
| 2536 | #8 (.170) | .344 | 1/16 | ⅜ | .205 | 2.50 |
| 2537 | #10 (.200) | .399 | 1/16 | ⅜ | .260 | 2.70 |
| 2538 | ¼″ (.260) | .513 | 1/16 | ⅜ | .312 | 3.00 |

# H. H. Smith Spacers, Washers

## ALUMINUM SPACERS

Iridite 14-2 per MIL-C-5541. Round or hex; with clear or tapped hole. .250" or .312" O.D. (or hex).


Round


Hex

### ROUND—CLEAR HOLE

| Lgth., In. | .250" O.D. H. H. Smith No. For #4 Screw | For #6 Screw | For #8 Screw | Net per C | .312" O.D. H.H.S. No. For #10 Screw | Net per C |
|---|---|---|---|---|---|---|
| .125 | 8480 | 8500 | 8520 | $ 9.75 | 8540 | $ 8.50 |
| .250 | 8481 | 8501 | 8521 | 10.50 | 8541 | 10.75 |
| .375 | 8482 | 8502 | 8522 | 11.00 | 8542 | 11.50 |
| .500 | 8483 | 8503 | 8523 | 11.75 | 8543 | 12.25 |
| .625 | 8484 | 8504 | 8524 | 12.50 | 8544 | 13.00 |
| .750 | 8485 | 8505 | 8525 | 14.25 | 8545 | 14.50 |
| .875 | 8486 | 8506 | 8526 | 14.50 | 8546 | 14.75 |
| 1.000 | 8487 | 8507 | 8527 | 15.00 | 8547 | 15.25 |
| 1.250 | 8488 | 8508 | 8528 | 20.00 | 8548 | 21.50 |
| 1.500 | 8489 | 8509 | 8529 | 21.50 | 8549 | 22.50 |
| 1.750 | 8490 | 8510 | 8530 | 21.75 | 8550 | 23.50 |
| 2.000 | 8491 | 8511 | 8531 | 22.25 | 8551 | 25.50 |
| 2.50 | 8492 | 8512 | 8532 | 24.00 | 8552 | 28.00 |
| 3.00 | 8493 | 8513 | 8533 | 28.00 | 8553 | 28.75 |
| 3.50 | 8494 | 8514 | 8534 | 30.00 | 8554 | 46.00 |
| 4.00 | 8495 | 8515 | 8535 | 32.00 | 8555 | 48.00 |
| 5.00 | 8496 | 8516 | 8536 | 40.00 | 8556 | 54.00 |
| 6.00 | 8497 | 8517 | 8537 | 44.00 | 8557 | 62.00 |

### HEX—CLEAR HOLE

| Lgth., In. | .250" O.D. H. H. Smith No. For #4 Screw | For #6 Screw | For #8 Screw | Net per C | .312" O.D. H.H.S. No. For #10 Screw | Net per C |
|---|---|---|---|---|---|---|
| .125 | 8560 | 8580 | 8600 | $ 9.25 | 8620 | $11.50 |
| .250 | 8561 | 8581 | 8601 | 11.00 | 8621 | 13.50 |
| .375 | 8562 | 8582 | 8602 | 12.00 | 8622 | 14.25 |
| .500 | 8563 | 8583 | 8603 | 12.25 | 8623 | 15.00 |
| .625 | 8564 | 8584 | 8604 | 13.50 | 8624 | 16.00 |
| .750 | 8565 | 8585 | 8605 | 15.00 | 8625 | 16.50 |
| .875 | 8566 | 8586 | 8606 | 15.50 | 8626 | 17.00 |
| 1.000 | 8567 | 8587 | 8607 | 20.00 | 8627 | 17.50 |
| 1.250 | 8568 | 8588 | 8608 | 21.00 | 8628 | 22.00 |
| 1.500 | 8569 | 8589 | 8609 | 22.00 | 8629 | 23.75 |
| 1.750 | 8570 | 8590 | 8610 | 22.50 | 8630 | 25.50 |
| 2.00 | 8571 | 8591 | 8611 | 23.00 | 8631 | 26.00 |

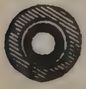
### ROUND—TAPPED HOLE

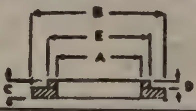
| Lgth., In. | .250" O.D. H. H. Smith No. 4-40 Thd. | 6-32 Thd. | 8-32 Thd. | Net per C | .312" O.D. H.H.S. No. 10-32 Thd. | Net per C |
|---|---|---|---|---|---|---|
| .125 | 8320 | 8340 | 8360 | $ 8.75 | 8380 | $ 9.00 |
| .250 | 8321 | 8341 | 8361 | 12.00 | 8381 | 12.75 |
| .375 | 8322 | 8342 | 8362 | 12.50 | 8382 | 13.00 |
| .500 | 8323 | 8343 | 8363 | 13.00 | 8383 | 14.00 |
| .625 | 8324 | 8344 | 8364 | 14.75 | 8384 | 15.25 |
| .750 | 8325 | 8345 | 8365 | 15.50 | 8385 | 17.75 |
| .875 | 8326 | 8346 | 8366 | 17.00 | 8386 | 18.75 |
| 1.000 | 8327 | 8347 | 8367 | 18.00 | 8387 | 19.75 |
| 1.250 | 8328 | 8348 | 8368 | 19.50 | 8388 | 20.50 |
| 1.500 | 8329 | 8349 | 8369 | 20.25 | 8389 | 21.50 |
| 1.750 | 8330 | 8350 | 8370 | 21.50 | 8390 | 22.50 |
| 2.00 | 8331 | 8351 | 8371 | 21.75 | 8391 | 24.00 |
| 2.50 | 8332 | 8352 | 8372 | 24.00 | 8392 | 26.00 |
| 3.00 | 8333 | 8353 | 8373 | 25.50 | 8393 | 28.00 |
| 3.50 | 8334 | 8354 | 8374 | 29.00 | 8394 | 31.00 |
| 4.00 | 8335 | 8355 | 8375 | 32.00 | 8395 | 34.00 |

### HEX—TAPPED HOLE

| Lgth., In. | .250" O.D. H. H. Smith No. 4-40 Thd. | 6-32 Thd. | 8-32 Thd. | Net per C | .312" O.D. H.H.S. No. 10-32 Thd. | Net per C |
|---|---|---|---|---|---|---|
| .125 | 8400 | 8420 | 8440 | $11.00 | 8460 | $12.25 |
| .250 | 8401 | 8421 | 8441 | 12.00 | 8461 | 15.00 |
| .375 | 8402 | 8422 | 8442 | 13.50 | 8462 | 16.00 |
| .500 | 8403 | 8423 | 8443 | 14.00 | 8463 | 16.75 |
| .625 | 8404 | 8424 | 8444 | 15.25 | 8464 | 17.50 |
| .750 | 8405 | 8425 | 8445 | 16.00 | 8465 | 20.00 |
| .875 | 8406 | 8426 | 8446 | 18.00 | 8466 | 20.50 |
| 1.000 | 8407 | 8427 | 8447 | 18.50 | 8467 | 21.00 |
| 1.250 | 8408 | 8428 | 8448 | 20.25 | 8468 | 21.75 |
| 1.500 | 8409 | 8429 | 8449 | 22.00 | 8469 | 22.75 |
| 1.750 | 8410 | 8430 | 8450 | 21.50 | 8470 | 26.00 |
| 2.00 | 8411 | 8431 | 8451 | 22.50 | 8471 | 28.00 |
| 2.50 | 8412 | 8432 | 8452 | 25.00 | 8472 | 30.00 |
| 3.00 | 8413 | 8433 | 8453 | 26.50 | 8473 | 32.00 |
| 3.50 | 8414 | 8434 | 8454 | 30.00 | 8474 | 33.00 |
| 4.00 | 8415 | 8435 | 8455 | 31.00 | 8475 | 38.00 |

## FIBRE SHOULDER WASHERS





Commercial black vulcanized fibre per MIL-F-1148A, Grade CH. **Dimensions:** A, inside dia.; B, outside dia.: C, overall thickness; D, height of shoulder: E, diameter of shoulder.

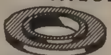
| H.H.S. No. | Screw Clear. | Dimensions, Inches A | B | C | D | E | Net per C | Net per M |
|---|---|---|---|---|---|---|---|---|
| 2171 | No. 2 | .093 | .250 | .055 | .025 | .154 | $0.90 | $ 6.00 |
| 2151 | No. 4 | .115 | .250 | .062 | .031 | .187 | .90 | 6.00 |
| 2152 | No. 6 | .141 | .250 | .093 | .031 | .187 | .95 | 6.50 |
| 2153 | No. 6 | .141 | .312 | .093 | .031 | .187 | 1.05 | 7.30 |
| 2150 | No. 6 | .141 | .375 | .093 | .031 | .240 | 1.00 | 7.00 |
| 2155 | No. 8 | .167 | .375 | .093 | .031 | .246 | 1.05 | 7.30 |
| 2156 | No. 10 | .194 | .375 | .093 | .031 | .308 | 1.05 | 7.30 |
| 2154 | ¼" | .253 | .500 | .093 | .031 | .308 | 1.10 | 7.80 |
| 2159 | 17/64" | .265 | .500 | .093 | .031 | .365 | 1.10 | 8.00 |
| 2158 | ⅜" | .385 | .625 | .093 | .031 | .498 | 1.35 | 10.20 |
| 2157 | ⅜" | .378 | .750 | .093 | .031 | .498 | 1.40 | 11.00 |

## FIBRE FLAT WASHERS

Commercial vulcanized black fibre per MIL-F-1148A, Grade CH.

| H.H.S. No. | Screw Clearance | I.D. | O.D. | Thickness | Net per C | Net per M |
|---|---|---|---|---|---|---|
| 2191 | No. 2 | .093" | .250" | 1/32" | $0.95 | $6.30 |
| 2161 | No. 4 | .115" | .250" | 1/16" | .95 | 6.30 |
| 2160 | No. 6 | .141" | .250" | 1/16" | .95 | 6.30 |
| 2162 | No. 6 | .141" | .375" | 1/16" | .90 | 6.00 |
| 2163 | No. 8 | .169 | .375" | 1/16" | .90 | 6.00 |
| 2164 | No. 10 | .196" | .375" | 1/16" | .90 | 6.00 |
| 2165 | ¼" | .253" | .500" | 1/16" | .90 | 6.00 |
| 2166 | ¼" | .253" | .500" | 3/32" | .95 | 6.30 |
| 2167 | 5/16" | .315" | .500" | 1/16" | .95 | 6.30 |
| 2168 | ⅜" | .385" | .625" | 1/16" | 1.05 | 7.20 |
| 2169 | ⅜" | .378" | .750" | 1/16" | 1.25 | 9.20 |

## NYLON SHOULDER WASHERS



Natural nylon (Zytel 101) per MIL-P-20693A. **Dimensions:** A, inside dia.; B, outside dia.; C, overall thickness; D, height at shoulder; E, shoulder dia.

| H.H.S. No. | Screw Clear. | Dimensions, Inches A | B | C | D | E | Net per C | Net per M |
|---|---|---|---|---|---|---|---|---|
| 2651 | No. 2 | .093 | .250 | .055 | .025 | .154 | $2.20 | $17.00 |
| 2661 | No. 4 | .115 | .250 | .062 | .031 | .187 | 2.20 | 17.00 |
| 2662 | No. 6 | .141 | .250 | .093 | .031 | .187 | 2.20 | 17.00 |
| 2663 | No. 6 | .141 | .312 | .093 | .031 | .187 | 2.30 | 18.00 |
| 2660 | No. 6 | .141 | .375 | .093 | .031 | .240 | 2.50 | 20.00 |
| 2665 | No. 8 | .167 | .375 | .093 | .031 | .246 | 2.50 | 20.00 |
| 2666 | No. 10 | .194 | .375 | .093 | .031 | .308 | 2.50 | 20.00 |
| 2664 | ¼" | .253 | .500 | .093 | .031 | .308 | 2.40 | 19.00 |
| 2669 | 17/64" | .265 | .500 | .093 | .031 | .365 | 3.30 | 26.00 |
| 2668 | ⅜" | .385 | .625 | .093 | .031 | .498 | 4.00 | 33.00 |
| 2667 | ⅜" | .378 | .750 | .093 | .031 | .498 | 6.50 | 50.00 |

## NYLON FLAT WASHERS

Natural nylon (Zytel 101) per MIL-P-20693A.

| H.H.S. No. | Screw Clearance | I.D. | O.D. | Thickness | Net per C | Net per M |
|---|---|---|---|---|---|---|
| 2652 | No. 2 | .093" | .250" | 1/32" | $1.90 | $15.00 |
| 2671 | No. 4 | .115" | .250" | 1/16" | 1.90 | 15.00 |
| 2514 | No. 4 | .115" | .281" | 3/64" | 1.90 | 19.00 |
| 2670 | No. 6 | .141" | .250" | 1/16" | 1.90 | 15.00 |
| 2515 | No. 6 | .141" | .312" | 3/64" | 2.00 | 20.00 |
| 2672 | No. 6 | .141" | .375" | 1/16" | 2.30 | 18.00 |
| 2673 | No. 8 | .170" | .375" | 1/16" | 2.50 | 20.00 |
| 2516 | No. 8 | .170" | .375" | 1/16" | 2.20 | 22.00 |
| 2674 | No. 10 | .196" | .375" | 1/16" | 2.50 | 20.00 |
| 2517 | No. 10 | .196" | .437" | 1/16" | 2.30 | 23.00 |
| 2675 | ¼" | .253" | .500" | 1/16" | 2.50 | 20.00 |
| 2676 | ¼" | .253" | .500" | 3/32" | 3.10 | 25.00 |
| 2518 | ¼" | .253" | .562" | 1/16" | 2.50 | 25.00 |
| 2677 | 5/16" | .315" | .500" | 1/16" | 2.50 | 20.00 |
| 2678 | ⅜" | .385" | .625" | 1/16" | 2.80 | 22.00 |
| 267[illegible] | ⅜" | .378" | .750" | 1/16" | 3.40 | 27.00 |

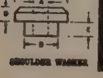
## FIBRE WASHER KIT

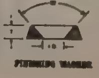
Contains about 1000 flat and shoulder washers, packed in 18-compartment plastic box, in the following approximate quantities: 100 each #2151, 2161, 2160; 75 each #2150 and 2162; 60 each #2155, 2163; 50 each #2156, 2164, 2154, 2165; 35 each #2159, 2167; 25 each #2158, 2168; 10 each #2157 and 2169.

**H. H. Smith No. 2173**—Net Each........................**$8.00**

## MOLDED NYLON WASHERS

Non-conductive and corrosion resistant; ideal for insulation, cushioning or spacing protection. Meets MIL-P-20693, Type 1. Natural.





### SHOULDER WASHERS

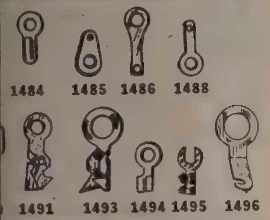
| H.H.S. No. | Dimensions, Inches I.D. | O.D. | A | B | C | Net per C |
|---|---|---|---|---|---|---|
| 2681 | .122 | .187 | .281 | .040 | .040 | $2.25 |
| 2682 | .146 | .281 | .328 | .040 | .040 | 2.40 |
| 2683 | .174 | .250 | .375 | .060 | .050 | 2.50 |
| 2684 | .201 | .281 | .437 | .050 | .050 | 2.75 |
| 2685 | .260 | .375 | .562 | .060 | .060 | 3.00 |
| 2686 | .385 | .500 | .750 | .060 | .060 | 4.75 |

### FINISHING WASHERS

| H.H.S. No. | O.D. | I.D. | Thickness | Net per C |
|---|---|---|---|---|
| 2687 | .437" | .143" | .100" | $5.00 |
| 2688 | .515" | .171" | .115" | 5.25 |
| 2689 | .580" | .191" | .152" | 5.50 |
| 2690 | .609" | .225" | .160" | 6.00 |
| 2691 | .683" | .251" | .183" | 6.50 |

# H. H. Smith LUGS, TERMINAL STRIPS AND BOARDS, PC CARD RACK

## T TINNED SOLDER LUGS



### PHOSPHOR BRONZE

| S. | Lgth. | Thick-ness | Hole | Net per M |
|---|---|---|---|---|
| | 5/8″ | .020″ | No. 6 | $12.00 |
| -4 | 17/32″ | .012″ | No. 4 | 10.00 |
| -6 | 17/32″ | .012″ | No. 6 | 10.00 |
| -8 | 17/32″ | .012″ | No. 8 | 10.00 |
| -10 | 17/32″ | .012″ | No. 10 | 10.00 |
| -4 | 13/16″ | .012″ | No. 4 | 10.00 |
| -6 | 13/16″ | .012″ | No. 6 | 10.00 |
| -8 | 13/16″ | .012″ | No. 8 | 10.00 |
| -10 | 13/16″ | .012″ | No. 10 | 10.00 |
| -4 | 9/16″ | .012″ | No. 4 | 10.00 |
| -6 | 9/16″ | .012″ | No. 6 | 10.00 |
| -8 | 9/16″ | .012″ | No. 8 | 10.00 |

### BRASS

| | | | | |
|---|---|---|---|---|
| | 3/4″ | .020″ | No. 10 | $12.00 |
| * | 15/16″ | .020″ | No. 10 | 20.00 |
| | 1 1/8″ | .027″ | 1/4″ | 25.00 |
| -6 | 5/8″ | .020″ | No. 6 | 11.00 |
| -8 | 5/8″ | .020″ | No. 8 | 11.00 |
| | 5/8″ | .020″ | No. 8 | 12.00 |
| | 3/4″ | .020″ | 1/4″ | 12.00 |
| | 7/8″ | .017″ | 3/8″ | 15.00 |

per.

### SOLDER LUG ASSORTMENT

plete assortment of the most widely
solder lug styles, with hole sizes from
u #10. Packed in re-usable clear plas-
mpartmented box. Includes 1400 sol-
gs.

**Smith No. 1546**—Net.....**$13.00**

## OCKING TERMINAL LUGS

### HOT TINNED BRASS

| H.S. lo. | Lgth. | Thick-ness | Hole | Net per M |
|---|---|---|---|---|
| -4* | 7/8″ | .018″ | No. 4 | $11.00 |
| -6* | 7/8″ | .018″ | No. 6 | 11.00 |
| -8* | 7/8″ | .018″ | No. 8 | 11.00 |
| -10* | 57/64″ | .018″ | No. 10 | 12.00 |
| -14* | 13/16″ | .018″ | 1/4″ | 12.00 |
| -4† | 47/64″ | .020″ | No. 4 | 11.00 |
| -6† | 47/64″ | .020″ | No. 6 | 11.00 |
| -8† | 47/64″ | .020″ | No. 8 | 11.00 |
| -4‡ | 5/8″ | .018″ | No. 4 | 10.00 |
| -6‡ | 5/8″ | .018″ | No. 6 | 10.00 |
| -8‡ | 5/8″ | .018″ | No. 8 | 10.00 |
| -4§ | 23/32″ | .018″ | No. 4 | 11.00 |
| -6§ | 23/32″ | .018″ | No. 6 | 11.00 |
| -8§ | 23/32″ | .018″ | No. 8 | 11.00 |
| -4# | 13/16″ | .018″ | No. 4 | 11.00 |
| -6# | 13/16″ | .018″ | No. 6 | 11.00 |
| -8# | 13/16″ | .018″ | No. 8 | 11.00 |
| -10# | 53/64″ | .018″ | No. 10 | 12.00 |
| 5-4• | 41/64″ | .018″ | No. 4 | 11.00 |
| 5-6• | 41/64″ | .018″ | No. 6 | 11.00 |
| 5-8• | 41/64″ | .018″ | No. 8 | 11.00 |
| 6-4▲ | 11/16″ | .020″ | No. 4 | 11.00 |
| 6-6▲ | 11/16″ | .020″ | No. 6 | 11.00 |
| 6-8▲ | 11/16″ | .020″ | No. 8 | 11.00 |

### ELECTRO PLATED BRASS

| | | | | |
|---|---|---|---|---|
| 5* | 47/64″ | .020″ | No. 4 | $12.00 |
| 6* | 47/64 | .020″ | No. 6 | 12.00 |
| 7* | 7/8″ | .020″ | No. 8 | 12.00 |
| 8* | 13/16″ | .020″ | 1/4″ | 12.00 |

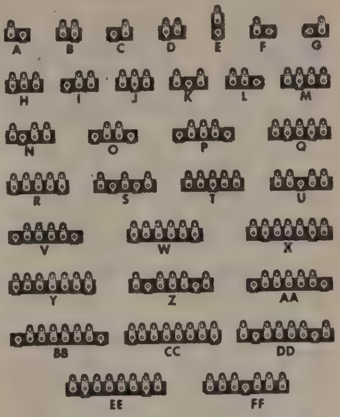
g. A. †Fig. B. ‡Fig. C. §Fig. D. #Fig. E.
g. F. ▲Fig. G.

### LOCKING TERMINAL LUG ASSORTMENT

nplete assortment of most widely used
ing terminal lug styles, with hole sizes
n #4 thru #10. Includes approx. 900
, packed in re-usable clear plastic com-
tmented box.

**H. Smith No. 1547**—Net.....**$13.00**

## TIE DOWN TERMINAL STRIPS

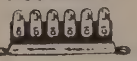


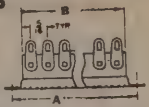
**Standard Type:** XP phenolic strip, 5/16″ wide x .062″ thick. Cadmium-plated steel lugs, spaced on 1/4″ centers. Mounting, .096″ I.D. for #3 screw of 3/32″ rivet.

**Miniature Type:** XP phenolic strip, 3/8″ wide x .062″ thick. Cadmium-plated steel lugs, spaced on 3/8″ centers. Mounting, .140″ I.D. for #6 screw.

| Fig. | Standard Type | | Miniature Type | |
|---|---|---|---|---|
| | H.H.S. No. | Net per C | H.H.S. No. | Net per C |
| A | 861 | $3.00 | 1061 | $ 4.00 |
| B | 862 | 3.10 | 1062 | 4.10 |
| C | 813 | 3.00 | 1003 | 4.00 |
| D | 820 | 3.10 | 1004 | 4.10 |
| E | 849 | 3.00 | 1039 | 4.00 |
| F | 828 | 3.00 | 1005 | 4.00 |
| G | 821 | 3.00 | 1009 | 4.00 |
| H | 830 | 3.30 | 1055 | 5.50 |
| I | 829 | 3.20 | 1043 | 4.50 |
| J | 864 | 3.30 | 1064 | 5.50 |
| K | 863 | 3.20 | 1063 | 4.50 |
| L | 846 | 3.20 | 1059 | 4.50 |
| M | 850 | 4.20 | 1074 | 5.50 |
| N | 857 | 4.10 | 1072 | 5.50 |
| O | 867 | 4.60 | 1067 | 6.00 |
| P | 853 | 5.00 | 1073 | 6.10 |
| Q | 868 | 5.60 | 1068 | 6.50 |
| R | 847 | 5.60 | 1071 | 6.50 |
| S | 865 | 5.00 | 1065 | 6.10 |
| T | 866 | 4.60 | 1066 | 6.00 |
| U | 855 | 4.50 | 1084 | 6.00 |
| V | 869 | 6.00 | 1069 | 7.00 |
| W | 854 | 6.20 | 1076 | 7.50 |
| X | 879 | 6.80 | 1158 | 9.00 |
| Y | 859 | 6.80 | 1156 | 9.00 |
| Z | 871 | 6.50 | 1157 | 8.80 |
| AA | 860 | 6.50 | 1060 | 8.80 |
| BB | 848 | 7.00 | 1078 | 9.50 |
| CC | 900 | 7.50 | 1075 | 10.00 |
| DD | 858 | 7.00 | 1096 | 9.50 |
| EE | 870 | 7.50 | 1070 | 10.00 |
| FF | 901 | 6.50 | | |

## TERMINAL STRIP ASSEMBLY





Cadmium-plated steel lugs and base. Mounting holes for #6 screw. XP phenolic strip.

| H.H.S. No. | Ter-minals | Dimensions | | Net per C |
|---|---|---|---|---|
| | | A | B | |
| 3002 | 2 | 1.000″ | 5/8″ | $ 7.50 |
| 3003 | 3 | 1.312″ | 15/16″ | 8.50 |
| 3004 | 4 | 1.625″ | 1 1/4″ | 9.00 |
| 3005 | 5 | 1.937″ | 1 9/16″ | 10.50 |
| 3006 | 6 | 2.250″ | 1 7/8″ | 11.00 |
| 3007 | 7 | 2.562″ | 2 3/16″ | 12.50 |
| 3008 | 8 | 2.875″ | 2 1/2″ | 14.00 |
| 3009 | 9 | 3.187″ | 2 13/16″ | 15.00 |
| 3010 | 10 | 3.500″ | 3 1/8″ | 16.00 |
| 3011 | 11 | 3.812″ | 3 7/16″ | 17.00 |
| 3012 | 12 | 4.125″ | 3 3/4″ | 19.00 |
| 3013 | 13 | 4.937″ | 4 3/32″ | 22.00 |

## HEAVY DUTY TERMINAL BOARD

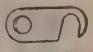
XP phenolic strip, 7/8″ wide x 3/32″ thick, numbered. Cadmium-plated brass lug, .042″ thick, spaced on 1/2″ centers; terminals numbered. Nickel-plated brass screw, 8-32 x 5/16″.

| H.H.S. No. | Ter-minals | Mtg. Centers | Net per C |
|---|---|---|---|
| 902 | 2 | 1 1/2″ | $20.00 |
| 903 | 3 | 2″ | 25.00 |
| 904 | 4 | 2 1/2″ | 30.00 |
| 905 | 5 | 3″ | 36.00 |
| 906 | 6 | 3 1/2″ | 41.00 |
| 907 | 7 | 4″ | 46.00 |
| 908 | 8 | 4 1/2″ | 52.00 |
| 909 | 9 | 5″ | 60.00 |
| 910 | 10 | 5 1/2″ | 63.00 |
| 911 | 11 | 6″ | 74.00 |
| 912 | 12 | 6 1/2″ | 80.00 |

## SCREW TYPE TERMINAL BOARD

XP phenolic strip, 5/8″ wide x .062″ thick. Hot tinned brass lugs, spaced on 7/16″ centers. Cadmium-plated steel screw, 6-32 x 3/8″.

**Terminal Board**



**Shorting Link**

| H.H.S. No. | Ter-minals | Mtg. Centers | Net per C |
|---|---|---|---|
| 914 | 1 | 7/8″ | $ 8.00 |
| 872 | 2 | 1 7/16″ | 9.00 |
| 873 | 3 | 1 3/4″ | 12.50 |
| 874 | 4 | 2 3/16″ | 15.50 |
| 875 | 5 | 2 5/8″ | 18.50 |
| 876 | 6 | 3 1/16″ | 22.00 |
| 877 | 7 | 3 1/2″ | 25.50 |
| 928 | 8 | 3 15/16″ | 29.00 |
| 929 | 9 | 4 3/8″ | 33.00 |
| 930 | 10 | 4 13/16″ | 37.00 |

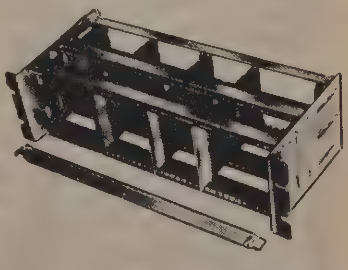
**H. H. Smith No. 878 Shorting Link**—
Net per 100........................**$1.80**

## ADJUSTABLE PRINTED CIRCUIT CARD RACK

Universally adjustable, economical support system for printed circuit cards. Adjusts up-and-down for card widths from 2 3/8″ to 4 3/4″; adjusts front-to-back for card lengths from 3 1/2″ to 7 1/4″. Card spacing is adjustable in .400″ increments. Adjustable, calibrated slide racks for fast, precise adjustment to any card size. Adjustable locking bar holds cards securely against rear connectors; adjustable for various PC connector sizes. Fits standard 19″ racks.

### SPECIFICATIONS

**Card Capacity:** Up to 39 cards (.400″ minimum centers). **Card Sizes:** With locking bar: 4 3/4″ maximum width, 6 1/2″ maximum length, 2 3/8″ minimum width, 4 3/8″ minimum length. Without front card lock: 7 1/4″ maximum length, 3 1/2″ minimum length. **Card Guides:** Precision molded plastic. Four guides provided for each card to insure location accuracy. **Connector Spacing:** Accommodates card-edge connectors with mounting centers from 0.936″ to 4.437″. **Locking Bar:** Held in place with captive screws for rapid card change. Card identification marking available on front of locking bar.

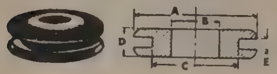


**H. H. Smith No. 3050 Card Rack**—
Net Each, Lots of 1–9.........**$27.95**
Lots of 10–24 .**$25.95**; 25–99. **23.95**
Lots of 100 Up.................. **21.95**

**H. H. Smith No. 3051 Board Guides**—
Net per 100..........................**$5.00**

# H. H. Smith GROMMETS, BUMPERS AND LACING CORDS

## RUBBER GROMMETS

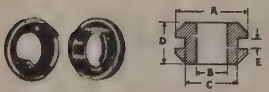


| H.H.S. No. | Dimensions, Inches O.D. A | I.D. B | P.H. C | W. D | P.T. E | Net per C |
|---|---|---|---|---|---|---|
| 91114 | 11/32. | 1/8 | 1/4 | 3/16 | 1/16 | $ 2.50 |
| 91118 | 7/16 | 3/16 | 5/16 | 7/32 | 1/16 | 2.50 |
| 91103 | 9/16 | 3/16 | 15/32 | 3/8 | 1/8 | 3.30 |
| 91122 | 1/2 | 1/4 | 11/32 | 5/32 | 1/32 | 3.10 |
| 91102 | 5/8 | 9/32 | 13/32 | 3/8 | 5/32 | 3.50 |
| 91117 | 19/32 | 5/16 | 7/16 | 3/8 | 1/8 | 3.50 |
| 91116 | 3/4 | 5/16 | 1/2 | 3/8 | 1/8 | 5.00 |
| 91106 | 5/8 | 5/16 | 1/2 | 1/2 | 3/16 | 7.20 |
| 91119 | 9/16 | 1/4 | 13/32 | 1/4 | 1/16 | 2.70 |
| 91123 | 11/16 | 9/32 | 1/2 | 7/16 | 1/4 | 5.50 |
| 91120 | 5/8 | 19/64 | 7/16 | 1/4 | 1/16 | 3.10 |
| 91113 | 5/8 | 21/64 | 13/32 | 1/4 | 1/16 | 3.10 |
| 91107 | 5/8 | 3/8 | 7/16 | 5/16 | 3/32 | 5.00 |
| 91121 | 21/32 | 3/8 | 1/2 | 1/4 | 1/16 | 3.00 |
| 91100 | 13/16 | 3/8 | 1/2 | 13/32 | 9/64 | 8.00 |
| 91124 | 3/4 | 7/16 | 9/16 | 1/4 | 1/16 | 3.50 |
| 91111 | 7/8–1 | 3/8 | 11/16 | 13/32 | 9/64 | 9.00 |
| 91109 | 1 1/16 | 3/8 | 7/8 | 3/8 | 1/4 | 15.00 |
| 91112 | 1 5/8 | 49/64 | 1 3/32 | 5/16 | 1/16 | 12.00 |

## RUBBER GROMMETS

| H.H.S. No. | Dimensions, Inches O.D. A | I.D. B | P.H. C | W. D | P.T. E | Net per C |
|---|---|---|---|---|---|---|
| 2185 | 5/16 | 1/8 | 3/16 | 3/16 | 1/16 | $2.40 |
| 2172 | 7/16 | 3/16 | 5/16 | 3/16 | 1/16 | 2.20 |
| 2170 | 5/8 | 1/4 | 3/8 | 1/4 | 1/16 | 2.50 |
| 2174 | 5/8 | 5/16 | 7/16 | 1/4 | 1/16 | 2.40 |
| 2175 | 21/32 | 3/8 | 1/2 | 1/4 | 1/16 | 2.50 |
| 2177 | 3/4 | 7/16 | 9/16 | 1/4 | 1/16 | 2.50 |
| 2186 | 1 1/16 | 1/2 | 3/4 | 5/16 | 1/16 | 5.30 |
| 2188 | 1 1/16 | 9/16 | 13/16 | 5/16 | 1/16 | 5.30 |
| 2187 | 1 1/8 | 5/8 | 7/8 | 5/16 | 1/16 | 5.40 |
| 2189 | 1 | 3/4 | 7/8 | 5/32 | 1/32 | 5.20 |

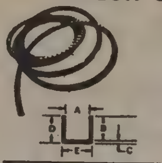
## SNAP-LOCK PLASTIC GROMMETS



Two identical halves snap tight, lock in place. Provides a rigid bearing surface, greater dielectric, extreme chemical and wear resistance. Identical halves form complete grommet. Black color.

| H.H.S. No. | Dimensions, Inches O.D. A | I.D. B | P.H. C | W. D | P.T. E | Net per C |
|---|---|---|---|---|---|---|
| 2178 | 7/16 | 3/16 | 5/16 | 1/4 | 1/16 | $3.30 |
| 2179 | 1/2 | 1/4 | 3/8 | 1/4 | 1/16 | 3.50 |
| 2180 | 5/8 | 3/8 | 1/2 | 1/4 | 1/16 | 3.65 |

## EXTRUDED "CATERPILLAR" NYLON GROMMETS



Shape your own grommets to fit any size or shape opening. Made of non-conductive black nylon, Type 6/6, fungus resistant to conform to MIL-M-20693a, Type 1. For panel thickness from .052" to .125". 25-foot rolls.

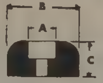
| H.H.S. No. | Dimensions, Inches A | B | C | D | E | Net/ Roll |
|---|---|---|---|---|---|---|
| 2692 | .052 | .150 | .040 | .190 | .125 | $10.00 |
| 2693 | .085 | .155 | .045 | .200 | .162 | 11.50 |
| 2694 | .125 | .175 | .045 | .220 | .206 | 12.00 |

## VINYL GROMMETS

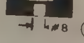
Exceptional aging qualities, high dielectric properties. Oil resistant. Durameter hardness, 45 to 85.

| H.H.S. No. | Dimensions, Inches O.D. A | I.D. B | P.H. C | W. D | P.T. E | Net per C |
|---|---|---|---|---|---|---|
| 2145 | 11/32 | 1/8 | 1/4 | 3/16 | 1/16 | $1.10 |
| 2146 | 7/16 | 3/16 | 5/16 | 7/32 | 1/16 | 1.35 |
| 2147 | 9/16 | 1/4 | 3/8 | 1/4 | 1/16 | 1.65 |
| 2148 | 5/8 | 3/8 | 1/2 | 1/4 | 1/16 | 1.75 |
| 2149 | 13/16 | 1/2 | 5/8 | 9/32 | 1/16 | 2.65 |

## RECESS RUBBER BUMPERS



①

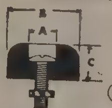


②

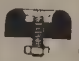
| H.H.S. No. | Fig. | Dimensions, In. A | B | C | Net per C |
|---|---|---|---|---|---|
| 2192 | 1 | 7/32 | 17/32 | 1/4 | $1.70 |
| 2193 | 1 | 1/4 | 5/8 | 5/16 | 2.20 |
| 2194 | 1 | 9/32 | 3/4 | 3/8 | 3.30 |
| 2184 | 1 | 9/32 | 5/8 | 9/32 | 3.30 |
| 2135* | 2 | 3/8 | 31/32 | 3/8 | 5.00 |

*With molded-in metal washer.

## BUMPERS WITH SCREW



③



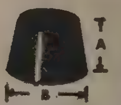
④

Supplied complete with 1/2" mounting screw and hex nut for panels up to 1/4" thick. Specify longer screw for thicker panels.

| H.H.S. No. | Fig. | Dim., Inches A | B | C | Screw | Net per C |
|---|---|---|---|---|---|---|
| 2196 | 3 | 7/32 | 17/32 | 1/4 | 6-32 | $ 6.70 |
| 2197 | 3 | 1/4 | 5/8 | 5/16 | 6-32 | 7.20 |
| 2198 | 3 | 9/32 | 3/4 | 3/8 | 6-32 | 8.30 |
| 2199 | 3 | 1/4 | 5/8 | 9/32 | 6-32 | 8.30 |
| 2195* | 4 | 3/8 | 31/32 | 3/8 | 8-32 | 10.00 |

*With molded-in metal washer.

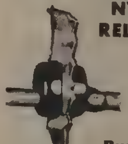
## VINYL CABINET BUMPERS



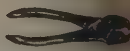
All molded cabine bumpers with brass i sert to absorb screw loa Molded of ethylene viny Black.

| H.H.S. No. | For Screw | Dimensions A | B | Net per C |
|---|---|---|---|---|
| 2181 | No. 4 | 3/8" | 9/16" | $5.50 |
| 2182 | No. 6 | 7/16" | 3/4" | 6.50 |
| 2183 | No. 8 | 7/8" | 15/16" | 7.50 |

## NYLON STRAIN RELIEF BUSHINGS



**Bushing**



**Pliers**

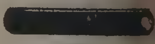
Eliminates grommets, wire knots and costly labor. Completely insulates wire from cha sis and prevents cord pull, push and twist One-piece construction. No. 937 is ideal fo small mike cables; No. 938 for line cords No. 939 for coaxial cable. Dimension A i chassis hole; B, head dia.; C, length. Fo panel thickness to 1/16" except No. 939 to 3/32".

| H.H.S. No. | Wire Size | Dim., Inches A | B | C | Net per C |
|---|---|---|---|---|---|
| 937 | 1/8"–3/16" | .375 | .440 | .415 | $4.00 |
| 938 | SP-1 and SPT-1 | .437 | .468 | .406 | 4.00 |
| 939 | .235"–.265" | .500 | .560 | .438 | 4.50 |

**H. H. Smith No. 940 Setting Pliers**—Fo above. Net Each.................**$25.00**

## BLIND HOLE MOUNTING ACCESSORIES

**Grommet**



**Strap**

Molded of polyethylene. Just snaps into hole; requires no mounting hardware o special tools. Temperature rating, 100° to 205° F. Gray color.

### GROMMETS

Maximum panel thickness, .095".

| H.H.S. No. | Mtg. Hole | Cable Dia. | Net per C |
|---|---|---|---|
| 8974 | 1/4" | 1/8" | $2.00 |
| 8975 | 3/8" | 1/4" | 2.25 |
| 8976 | 1/2" | 3/8" | 2.50 |
| 8977 | 5/8" | 1/2" | 3.50 |
| 8978 | 3/4" | 5/8" | 4.00 |

### CABLE STRAPS

Width, 5/16". For panel thickness, 1/16".

| | | | |
|---|---|---|---|
| 8971 | 1/4" | 1/4" | $2.00 |
| 8972 | 1/4" | 7/16" | 2.50 |
| 8973 | 1/4" | 5/8" | 3.00 |

## NYLON LACING CORD

Meets MIL-T-713D, Type P, classes 3, 2 and 1. Supplied in 1-lb. tubes, in natural or black color.

| H.H.S. No. | Color | Class | Test | Yardage | Net Each |
|---|---|---|---|---|---|
| 734 | Natural | 1 | 70 lb. | 600 | $ 9.00 |
| 735 | Natural | 2 | 48 lb. | 800 | 9.30 |
| 736 | Natural | 3 | 32 lb. | 1140 | 9.60 |
| 791 | Black | 1 | 70 lb. | 600 | 10.80 |
| 792 | Black | 2 | 48 lb. | 800 | 11.10 |
| 793 | Black | 3 | 32 lb. | 1140 | 11.40 |

## NYLON LACING TAPE

Braided; MGD finish. Size #18 meets MIL-T-43435, Size 3, Finish B. In 500-yard spools; black or natural color.

| H.H.S. No. | Color | Size | Width | Thickness | Test | Net Each |
|---|---|---|---|---|---|---|
| 766 | Natural | 18 | .090" | .0125" | 50 lb. | $10.50 |
| 767 | Natural | 21 | .0625" | .009" | 25 lb. | 8.00 |
| 769 | Black | 18 | .090" | .0125" | 50 lb. | 11.00 |
| 770 | Black | 21 | .0625" | .009" | 25 lb. | 8.50 |

**H. H. Smith No. 743 Commercial Lacing Tape**—Same applications as above, but at much lower cost. 1-lb. tube (620 yards); natural color. Width, 1/8". Net Each.........................**$5.70**

## LINEN LACING CORD

Mildew proofed. Meets MIL-T-713-A, Type N.

| H.H.S. No. | Color | Tube Size | Ply | Class | Yardage | Net Each |
|---|---|---|---|---|---|---|
| 727 | Natural | 1 lb. | 4 | ....... | 850 | $6.00 |
| 730 | Natural | 1 lb. | 6 | 3 | 600 | 6.00 |
| 739 | Natural | 1 lb. | 8 | 2 | 470 | 6.00 |
| 733 | Natural | 1 lb. | 9 | ....... | 400 | 6.00 |
| 742 | Natural | 1 lb. | 12 | 1 | 300 | 6.00 |
| 794 | Black | 1 lb. | 4 | ....... | 850 | 6.60 |
| 795 | Black | 1 lb. | 6 | 3 | 600 | 6.60 |
| 796 | Black | 1 lb. | 8 | 2 | 470 | 6.60 |
| 797 | Black | 1 lb. | 9 | ....... | 400 | 6.60 |
| 798 | Black | 1 lb. | 12 | 1 | 300 | 6.60 |

## DACRON* LACING CORD

Conforms to physical requirements of MIL-T-713A. Offers greater tensile strength with minimal stretch than nylon. Fungus, acid and abrasion resistant. Natural color. Supplied in 1-lb. tubes.

*Reg. DuPont trademark.

| H.H.S. No. | Class | Test | Yardage | Net Each |
|---|---|---|---|---|
| 722 | 1 | 78 lb. | 750 | $10.50 |
| 723 | 2 | 57 lb. | 1000 | 11.00 |
| 724 | 3 | 37 lb. | 1500 | 11.50 |

# H. H. Smith HANDLES, CABLE CLAMPS AND SHAFT ACCESSORIES

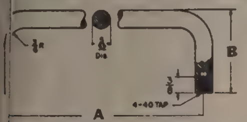
## MATERIAL AND FINISH

l and finish specifications are met by all panel handles, ferrules and hardware pplicable.

ls: Brass—in accordance with Federal Spec. QQ-B-626, Composition 22, ½ hard. m—in accordance with Federal Spec. QQ-A-365, Composition A, Type 3. old-rolled, in accordance with QQ-S-633b, Grade FS-1010.

s: Nickel plate—polished, in accordance with Federal Spec. QQ-N-290, Class I. I. Black oxide—in accordance with MIL-F-495A. Satin etch—commercial finish. nodize—in accordance with MIL-A-8625A. Optical black—color in accordance d. Std. 595, type 37038; paint complies with Fed. Spec. TT-E-527.

## ″ DIA. PANEL HANDLES



with internal 4-40 thread, ⅜″ rass or aluminum.

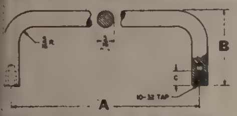
### BRASS

| Dimensions A | Dimensions B | Finish | Net Each |
|---|---|---|---|
| 1¼″ | 1″ | Nickel plate | $0.85 |
| 1¼″ | 1″ | Black oxide | .85 |
| 2″ | 1″ | Nickel plate | .95 |
| 2″ | 1″ | Black oxide | .95 |
| 3″ | 1″ | Nickel plate | 1.00 |
| 3″ | 1″ | Black oxide | 1.00 |

### ALUMINUM

| Dimensions A | Dimensions B | Finish | Net Each |
|---|---|---|---|
| 1¼″ | 1″ | Satin | $0.75 |
| 1¼″ | 1″ | Blk. anodize | .80 |
| 2″ | 1″ | Satin | .80 |
| 2″ | 1″ | Blk. anodize | .85 |
| 3″ | 1″ | Satin | .90 |
| 3″ | 1″ | Blk. anodize | .95 |

## 6″ DIA. PANEL HANDLES



ded 10-32; 7/16″ or 9/16″ deep.

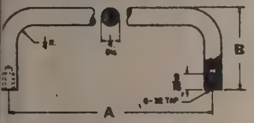
### NICKEL-PLATED BRASS

| S. | Dimensions A | Dimensions B | Dimensions C | Net Each |
|---|---|---|---|---|
| 0 | 3″ | 1 5/16″ | 7/16″ | $1.15 |
| 7 | 3″ | 1½″ | 9/16″ | 1.20 |
| 6 | 4¼″ | 1½″ | 9/16″ | 1.30 |
| 1 | 4 9/16″ | 1½″ | 9/16″ | 1.35 |
| 2 | 6 7/16″ | 1¾″ | 9/16″ | 1.70 |

### BLACK OXIDE BRASS

| S. | Dimensions A | Dimensions B | Dimensions C | Net Each |
|---|---|---|---|---|
| 1 | 3″ | 1 5/16″ | 7/16″ | $1.15 |
| 2 | 3″ | 1½″ | 9/16″ | 1.20 |
| 4 | 4¼″ | 1½″ | 9/16″ | 1.30 |
| 5 | 4 9/16″ | 1½″ | 9/16″ | 1.35 |
| 6 | 6 7/16″ | 1¾″ | 9/16″ | 1.70 |

## 4″ DIA. PANEL HANDLES



aded 8-32; 9/16″ deep.

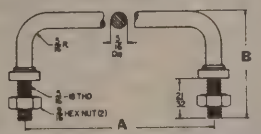
### BRASS

| S. | Dimensions A | Dimensions B | Finish | Net Each |
|---|---|---|---|---|
| 6 | 2″ | 1½″ | Nickel plate | $1.00 |
| 7 | 2″ | 1½″ | Black oxide | 1.00 |
| 0 | 3″ | 1½″ | Nickel plate | 1.05 |
| 1 | 3″ | 1½″ | Black oxide | 1.05 |
| 4 | 4″ | 1½″ | Nickel plate | 1.10 |
| 5 | 4″ | 1½″ | Black oxide | 1.10 |
| 8 | 6″ | 1½″ | Nickel plate | 1.20 |
| 9 | 6″ | 1½″ | Black oxide | 1.20 |

### ALUMINUM

| S. | Dimensions A | Dimensions B | Finish | Net Each |
|---|---|---|---|---|
| 18 | 2″ | 1½″ | Satin | $0.65 |
| 19 | 2″ | 1½″ | Blk. anodize | .75 |
| 22 | 3″ | 1½″ | Satin | .75 |
| 23 | 3″ | 1½″ | Blk. anodize | .80 |
| 26 | 4″ | 1½″ | Satin | .80 |
| 27 | 4″ | 1½″ | Blk. anodize | .85 |
| 30 | 6″ | 1½″ | Satin | .85 |
| 31 | 6″ | 1½″ | Blk. anodize | .90 |

## PANEL HANDLES WITH STUD

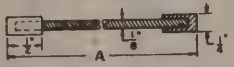


Brass panel handles, 5/16″ dia., with male threaded stud (5/16-18 thread). With matching ferrules and 9/16″ nickel-plated brass hex nuts.

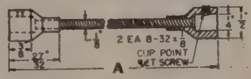
| H.H.S. No. | Dimensions A | Dimensions B | Brass Finish | Net Each |
|---|---|---|---|---|
| 1607 | 2″ | 2⅛″ | Nickel plate | $1.55 |
| 1609 | 3″ | 2⅛″ | Nickel plate | 1.60 |
| 1611 | 4″ | 2⅛ | Nickel plate | 1.70 |
| 2053 | 4¼″ | 2⅛″ | Nickel plate | 1.75 |
| 1614 | 6″ | 2 11/16″ | Nickel plate | 1.90 |
| 1608 | 2″ | 2⅛″ | Black oxide | 1.55 |
| 1610 | 3″ | 2⅛″ | Black oxide | 1.60 |
| 1612 | 4 | 2⅛″ | Black oxide | 1.70 |
| 1613 | 4¼″ | 2⅛″ | Black oxide | 1.75 |
| 1615 | 6″ | 2 11/16″ | Black oxide | 1.90 |

## FLEXIBLE SHAFTS

151, 152



153, 154



High quality phosphor bronze non-magnetic, non-rusting flexible shafts. Remote control when necessary to mount variable capacitors and potentiometers away from panel at unusual angles. Turns at any angle up to 90°; free from backlash. With ¼″ hub or ¼″ coupler.

| H.H.S. No. | Lgth. (A) | Description | Net per C |
|---|---|---|---|
| 151 | 3″ | With ¼″ hub | $ 75.00 |
| 152 | 6″ | With ¼″ hub | 85.00 |
| 153 | 3⅝″ | ¼″ coupler | 120.00 |
| 154 | 6⅝″ | ¼″ coupler | 125.00 |

## PANEL BEARINGS

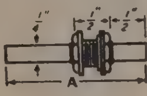
119

184

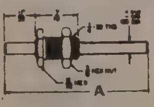
Nickel-plated brass, supplied with hex nuts. Standard type (No. 119) is for ¼″ shafts; miniature type (No. 184) is for ⅛″ shafts.

| H.H.S. No. | I.D. | Hex | L. | Thread | Net per C |
|---|---|---|---|---|---|
| 119 | .253″ | 7/16″ | ½″ | ⅜″-32 | $15.00 |
| 184 | .128″ | 11/32″ | 7/16″ | ¼″-32 | 15.00 |

## PANEL BEARING ASSEMBLIES



148

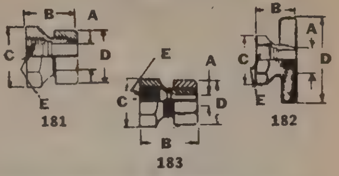


1448

Standard types use H. H. Smith No. 119 panel bearing; miniature types for ⅛″ shafts use No. 184 panel bearing. Nickel-plated brass.

| H.H.S. No. | Type | Dimension A | Net per C |
|---|---|---|---|
| 148 | Standard | 3″ | $40.00 |
| 149 | Standard | 6″ | 60.00 |
| 1448 | Miniature | 2″ | 40.00 |
| 1449 | Miniature | 4″ | 60.00 |

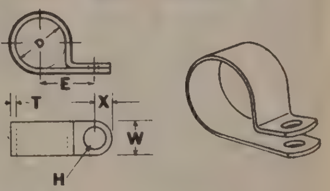
## SHAFT LOCKS



Nickel plated brass; with lock nut. Standard types (No. 181 and 182) for ¼″ shafts; miniature (No. 183) for ⅛″ shaft. Length (dimension B) is ½″.

| H.H.S. No. | Dimensions A | Dimensions C | Dimensions D | Dimensions E | Net per C |
|---|---|---|---|---|---|
| 181 | .253″ | ½″ | 7/16″ | ⅜″-32 | $30.00 |
| 182 | .253″ | ½″ | 1″ | ⅜″-32 | 50.00 |
| 183 | .128″ | 11/32″ | 5/16″ | ¼″-32 | 20.00 |

## PLASTIC CABLE CLAMPS



Dimension "X" is 7/32″; "H" is 13/64″ for all.

### ALL-MOLDED POLYPROPYLENE

| H.H.S. No. | Hole (D) | Dimensions E | Dimensions T | Dimensions W | Net per C |
|---|---|---|---|---|---|
| 8910 | ⅛″ | .460″ | .060″ | ½″ | $1.60 |
| 8911 | 3/16″ | .423″ | .060″ | ½″ | 1.80 |
| 8912 | ¼″ | .457″ | .060″ | ½″ | 1.90 |
| 8913 | 5/16″ | .498″ | .060″ | ½″ | 2.00 |
| 8914 | ⅜″ | .529″ | .060″ | ½″ | 2.10 |
| 8915 | 7/16″ | .560″ | .060″ | ½″ | 2.20 |
| 8916 | ½″ | .592″ | .060″ | ½″ | 2.30 |
| 8917 | 9/16″ | .623″ | .060″ | ½″ | 2.40 |
| 8918 | ⅝″ | .654″ | .060″ | ½″ | 2.50 |
| 8919 | 11/16″ | .752″ | .060″ | ½″ | 2.60 |
| 8920 | ¾″ | .783″ | .060″ | ½″ | 2.70 |
| 8921 | ⅞″ | .845″ | .060″ | ½″ | 2.90 |
| 8922 | 1″ | .908″ | .060″ | ½″ | 3.00 |

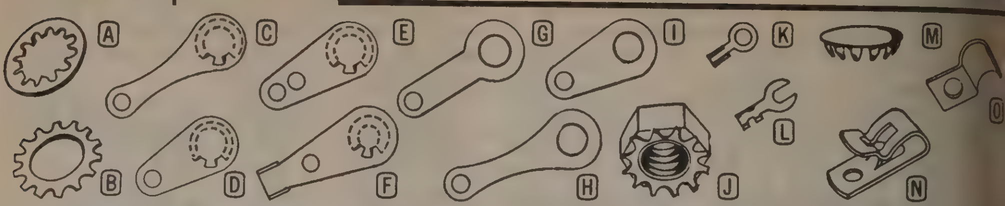
### CELLULOSE

| H.H.S. No. | Hole (D) | Dimensions E | Dimensions T | Dimensions W | Net per C |
|---|---|---|---|---|---|
| 8925 | ⅛″ | .360″ | .060″ | ½″ | $2.10 |
| 8926 | 3/16″ | .423″ | .060″ | ½″ | 2.20 |
| 8927 | ¼″ | .457″ | .060″ | ½″ | 2.30 |
| 8928 | 5/16″ | .498″ | .060″ | ½″ | 2.40 |
| 8929 | ⅜″ | .529″ | .060″ | ½″ | 2.50 |
| 8930 | 7/16″ | .560″ | .060″ | ½″ | 2.60 |
| 8931 | ½″ | .592″ | .060″ | ½″ | 2.70 |
| 8932 | 9/16″ | .623″ | .060″ | ½″ | 2.90 |
| 8933 | ⅝″ | .654″ | .060″ | ½″ | 3.00 |
| 8934 | 11/16″ | .752″ | .060″ | ½″ | 3.30 |
| 8935 | ¾″ | .783″ | .060″ | ½″ | 3.50 |
| 8936 | ⅞″ | .845″ | .060″ | ½″ | 3.70 |
| 8937 | 1″ | .908″ | .060″ | ½″ | 3.90 |

### NYLON

| H.H.S. No. | Hole (D) | Dimensions E | Dimensions T | Dimensions W | Net per C |
|---|---|---|---|---|---|
| 8940 | ⅛″ | .360″ | .060″ | ½″ | $2.30 |
| 8941 | 3/16″ | .423″ | .060″ | ½″ | 2.40 |
| 8942 | ¼″ | .457″ | .060″ | ½″ | 2.50 |
| 8943 | 5/16″ | .498″ | .060″ | ½″ | 2.60 |
| 8944 | ⅜″ | .529″ | .060″ | ½″ | 2.70 |
| 8945 | 7/16″ | .560″ | .060″ | ½″ | 2.80 |
| 8946 | ½″ | .592″ | .060″ | ½″ | 2.90 |
| 8947 | 9/16″ | .623″ | .060″ | ½″ | 3.00 |
| 8948 | ⅝″ | .654″ | .060″ | ½″ | 3.20 |
| 8949 | 11/16″ | .752″ | .060″ | ½″ | 3.30 |
| 8950 | ¾″ | .783″ | .060″ | ½″ | 3.50 |
| 8951 | ⅞″ | .845″ | .060″ | ½″ | 3.70 |
| 8952 | 1″ | .908 | .060″ | ½″ | 3.90 |
| 8955 | ⅛″ | .325″ | .050″ | ⅜″ | 1.90 |
| 8956 | 3/16″ | .378″ | .050″ | ⅜″ | 2.00 |
| 8957 | ¼″ | .409″ | .050″ | ⅜″ | 2.10 |
| 8958 | 5/16″ | .441″ | .050″ | ⅜″ | 2.20 |
| 8959 | ⅜″ | .471″ | .050″ | ⅜″ | 2.30 |
| 8960 | 7/16″ | .519″ | .050″ | ⅜″ | 2.40 |
| 8961 | ½″ | .550″ | .050″ | ⅜″ | 2.50 |

# waldom ELECTRONIC HARDWARE



## SHAKEPROOF® HARDWARE PRODUCTS

### INTERNAL TOOTH LOCK WASHERS (FIG. A)

| Waldom No. | Shakeproof No. | Screw Size | Pkg. of 100 | Per 1000 | |
|---|---|---|---|---|---|
| | | | | 1000-4999 | 5000 Up |
| MW-428 | 1202 | #2 | $0.95 | $5.70 | $3.95 |
| MW-416 | 1204 | #4 | .60 | 3.65 | 2.55 |
| MW-417 | 1206 | #6 | .60 | 3.65 | 2.55 |
| MW-418 | 1208 | #8 | .65 | 3.80 | 2.65 |
| MW-419 | 1210 | #10 | .65 | 3.80 | 2.65 |
| MW-420 | 1214 | 1/4 | .80 | 5.10 | 3.60 |
| MW-421 | 1220 | 3/8 | 1.20 | 9.00 | 6.20 |

### EXTERNAL TOOTH LOCK WASHERS (FIG. B)

| | | | | | |
|---|---|---|---|---|---|
| MW-422 | 1104 | #4 | $0.60 | $3.65 | $2.55 |
| MW-423 | 1106 | #6 | .60 | 3.65 | 2.55 |
| MW-424 | 1108 | #8 | .65 | 3.80 | 2.65 |
| MW-425 | 1110 | #10 | .65 | 3.80 | 2.65 |
| MW-426 | 1114 | 1/4 | .80 | 5.10 | 3.60 |
| MW-427 | 1120 | 3/8 | 1.20 | 9.00 | 6.20 |

### LOCKING TYPE TERMINALS

Provide economy and efficiency of combination wire terminal and lock washer. All are bronze hot tin-dipped. Thickness, .018". Center digits of Shakeproof No. indicate screw size (i.e., 2101-**04**-00 is for #4 screw). Straight terminals unless otherwise noted.

| Waldom No. | Shakeproof No. | Fig. | Lgth., In. | Pkg. of 100 | Per 1000 | |
|---|---|---|---|---|---|---|
| | | | | | 1000-4999 | 5000 Up |
| T-196 | 2101-04-00 | C | 7/8 | $1.60 | $10.75 | $8.65 |
| T-197 | 2101-06-00 | C | 7/8 | 1.60 | 10.75 | 8.65 |
| T-198 | 2101-08-00 | C | 7/8 | 1.60 | 10.75 | 8.65 |
| T-223 | 2101-10-00 | C | 57/64 | 1.60 | 10.85 | 8.80 |
| T-247 | 2103-04-00 | C† | 13/16 | 1.60 | 10.75 | 8.65 |
| T-248 | 2103-06-00 | C† | 13/16 | 1.60 | 10.75 | 8.65 |
| T-249 | 2103-08-00 | C† | 13/16 | 1.60 | 10.75 | 8.65 |
| T-250 | 2103-10-00 | C† | 53/64 | 1.75 | 11.40 | 9.20 |
| T-229 | 2106-04-00 | D | 5/8 | 1.50 | 10.50 | 8.55 |
| T-194 | 2106-06-00 | D | 5/8 | 1.50 | 10.50 | 8.55 |
| T-195 | 2106-08-00 | D | 5/8 | 1.50 | 10.50 | 8.55 |
| T-230 | 2102-04-00 | E | 23/32 | 1.50 | 10.50 | 8.55 |
| T-231 | 2102-06-00 | E | 23/32 | 1.50 | 10.50 | 8.55 |
| T-232 | 2102-08-00 | E | 23/32 | 1.50 | 10.50 | 8.55 |
| T-233 | 2104-04-00 | E† | 5/8 | 1.50 | 10.50 | 8.55 |
| T-234 | 2104-06-00 | E† | 5/8 | 1.50 | 10.50 | 8.55 |
| T-235 | 2104-08-00 | E† | 5/8 | 1.50 | 10.50 | 8.55 |
| T-236 | 2104-10-00 | E† | 41/64 | 1.50 | 10.85 | 8.80 |
| T-237 | 2108-06-00 | F | 25/32 | 1.75 | 11.35 | 9.20 |
| T-238 | 2108-10-00 | F | 51/64 | 1.80 | 11.55 | 9.40 |

†Terminals bent 30° in middle.

### PLAIN TERMINALS

Similar to above, but non-locking and brass hot tin-dipped.

| | | | | | | |
|---|---|---|---|---|---|---|
| T-239 | 2522-04-00 | G | 21/32 | $0.95 | $6.75 | $5.50 |
| T-240 | 2522-06-00 | G | 21/32 | .95 | 6.75 | 5.50 |
| T-241 | 2501-06-00 | H | 7/8 | 1.00 | 7.20 | 5.90 |
| T-242 | 2501-08-00 | H | 7/8 | 1.00 | 7.20 | 5.90 |
| T-243 | 2501-10-00 | H | 57/64 | 1.00 | 7.20 | 5.90 |
| T-244 | 2506-06-00 | I | 5/8 | 1.00 | 7.20 | 5.90 |
| T-245 | 2506-08-00 | I | 5/8 | 1.00 | 7.20 | 5.90 |
| T-246 | 2506-10-00 | I | 5/8 | 1.00 | 7.20 | 5.90 |

### EXTERNAL LOCK WASHER KEPS* (FIG. J)

SAE20 steel nut with spring-steel, cadmium-plated washer. Lock washer and nut are preassembled. Reusable and free-spinning, they drive easily, cut assembly time and lock securely.

| Shakeproof No. | Dimensions (Inches) | Pkg. of 100 | Per 1000 | |
|---|---|---|---|---|
| | | | 1000-4999 | 5000 Up |
| 511-041800-00 | 4-40 x 1/4 x 3/32 | $3.20 | $23.25 | $18.85 |
| 511-061800-00 | 6-32 x 5/16 x 7/64 | 2.55 | 18.45 | 14.90 |
| 511-081800-00 | 8-32 x 11/32 x 1/8 | 2.60 | 18.85 | 15.40 |
| 511-101800-50 | 10-32 x 3/8 x 1/8 | 2.75 | 19.80 | 16.15 |
| 511-251800-00 | 1/4-20 x 7/16 x 3/16 | 3.45 | 24.95 | 20.35 |

*Registered trademark of Illinois Tool Works.

### SOLDER LUGS

Brass hot tin-dipped unless otherwise noted.

| Waldom No. | Fig. | Thick, In. | Hole Size | Lgth., In. | Pkg. of 100 | Per 1000 | |
|---|---|---|---|---|---|---|---|
| | | | | | | 1000-4999 | 5000 Up |
| T-226† | K | .020 | #4 | 9/16 | $1.25 | $10.30 | $7.80 |
| T-156† | K | .032 | #6 | 1/2 | 1.25 | 10.30 | 7.80 |
| T-227 | K | .020 | #8 | 21/32 | 1.25 | 10.30 | 7.80 |
| T-228 | K | .020 | #10 | 21/32 | 1.25 | 10.30 | 7.80 |
| T-158 | L | .020 | #6 | 21/32 | 1.20 | 9.65 | 7.30 |
| T-159 | L | .020 | #8 | 21/32 | 1.20 | 9.65 | 7.30 |
| T-225 | L | .020 | #10 | 47/64 | 1.55 | 12.15 | 9.25 |

†Copper hot tin-dipped.

**THERE ARE OVER 4000 ITEMS IN THE WALDOM LINE.
ASK FOR CATALOG #7G7.**

### SNAP BUTTON HOLE PLUGS (FIG. M)

Nickel-plated snap button hole plugs.

| Waldom No. | Size | Pkg. of 100 | Per 1000 | |
|---|---|---|---|---|
| | | | 1000-4999 | 5000 Up |
| HP-1 | 1/4" hole | $2.70 | $21.85 | $16.65 |
| HP-2 | 3/8" hole | 3.05 | 24.80 | 18.90 |
| HP-3 | 1/2" hole | 2.95 | 23.80 | 18.15 |
| HP-4 | 3/4" hole | 4.20 | 32.75 | 24.95 |
| HP-5 | 1" hole | 5.80 | 43.65 | 33.30 |

### SPRING CLIPS (FIG. N)

Brass, nickel-plated spring clips.

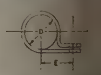
| Waldom No. | Thickness, In. | Ht., In. | W., In. | Mtg. Hole, In. | Pkg. of 100 | Per 1000 | |
|---|---|---|---|---|---|---|---|
| | | | | | | 1000-4999 | 5000 Up |
| C-101 | .016 | 45/64 | 7/32 | .130 | $1.66 | $13.15 | $10.00 |
| C-102 | .020 | 25/32 | 5/16 | .144 | 2.20 | 17.40 | 13.25 |
| C-103 | .022 | 1 | 3/8 | .144 | 3.23 | 26.90 | 20.50 |

### METAL CABLE CLAMPS (FIG. O)

Mounting hole, .144". Material (Mtl.) abbreviations: B, brass, hot tin-dipped; S, steel, cadmium plated.

| Waldom No. | Mtl., In. | Ht., In. | W., In. | Wire Held Area | Pkg. of 100 | Per 1000 | |
|---|---|---|---|---|---|---|---|
| | | | | | | 1000-4999 | 5000 Up |
| C-201 | .020B | 7/16 | 1/4 | 3/32" | $1.00 | $ 8.05 | $6.15 |
| C-202 | .032S | 5/8 | 3/8 | 10/64" | 1.12 | 9.20 | 7.00 |
| C-203 | .032S | 11/16 | 3/8 | 1/4" | 1.29 | 10.55 | 8.05 |
| C-204 | .032S | 15/16 | 3/8 | 10/32" | 1.43 | 11.70 | 8.95 |

### NYLON AND BUTYRATE CABLE CLAMPS



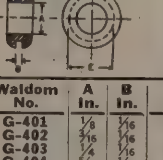
**Nylon Clamps:** Ideal for temperatures below 300° F (150° C). Meet MIL-P-17091A, Amend. 2, MIL-P-17091B/MIL-P-20693, Type 1, MIL-STD-242A and B (Ships)/MS-39014 (Ord). Mtg. hole .167" dia. for 3/8" wide types; 13/64", others.
**Butyrate Clamps:** For indoor or ethyl cellulose replacement. Material approved per MIL Spec. L-P-349a, Type III, Class MH. Ultra-violet stabilized for weather extremes. Mtg. hole 13/64" dia.

### NY-GRIP® NYLON CABLE CLAMPS

| Waldom No. | D In. | W., In. | E In. | Std. Pkg. | Net/Std. Pkg. | Per 1000 | |
|---|---|---|---|---|---|---|---|
| | | | | | | 1000-4999 | 5000 Up |
| CCN-31 | 1/8 | 3/8 | .310 | 100 | $3.14 | $26.75 | $21.15 |
| CCN-32 | 3/16 | 3/8 | .373 | 100 | 3.30 | 28.30 | 22.40 |
| CCN-33 | 1/4 | 3/8 | .407 | 100 | 3.63 | 30.95 | 24.50 |
| CCN-34 | 5/16 | 3/8 | .448 | 50 | 2.15 | 34.15 | 27.05 |
| CCN-35 | 3/8 | 3/8 | .479 | 50 | 2.23 | 35.90 | 28.45 |
| CCN-36 | 7/16 | 3/8 | .510 | 50 | 2.32 | 38.00 | 30.05 |
| CCN-37 | 1/2 | 3/8 | .542 | 25 | 1.50 | 40.45 | 32.00 |
| CCN-38 | 9/16 | 1/2 | .623 | 25 | 1.87 | 49.90 | 39.50 |
| CCN-39 | 5/8 | 1/2 | .654 | 25 | 1.98 | 58.50 | 46.30 |
| CCN-40 | 11/16 | 1/2 | .752 | 20 | 1.78 | 63.45 | 50.25 |
| CCN-41 | 3/4 | 1/2 | .783 | 20 | 1.90 | 69.40 | 54.95 |
| CCN-42 | 7/8 | 1/2 | .845 | 20 | 2.02 | 75.20 | 59.50 |
| CCN-43 | 1 | 1/2 | .908 | 15 | 1.79 | 84.70 | 67.05 |

### BUTYRATE CABLE CLAMPS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CCB-1 | 1/8 | 1/2 | .360 | 100 | $2.20 | $18.55 | $14.65 |
| CCB-2 | 3/16 | 1/2 | .423 | 100 | 2.20 | 18.65 | 14.75 |
| CCB-3 | 1/4 | 1/2 | .457 | 100 | 2.45 | 20.55 | 16.30 |
| CCB-4 | 5/16 | 1/2 | .498 | 50 | 1.45 | 22.70 | 17.90 |
| CCB-5 | 3/8 | 1/2 | .529 | 50 | 1.50 | 25.05 | 18.90 |
| CCB-6 | 7/16 | 1/2 | .560 | 40 | 1.30 | 26.05 | 20.65 |
| CCB-7 | 1/2 | 1/2 | .592 | 40 | 1.45 | 27.70 | 21.95 |
| CCB-8 | 9/16 | 1/2 | .623 | 30 | 1.45 | 32.45 | 25.65 |
| CCB-9 | 5/8 | 1/2 | .654 | 25 | 1.40 | 36.75 | 29.50 |
| CCB-10 | 11/16 | 1/2 | .752 | 20 | 1.35 | 39.95 | 31.60 |
| CCB-11 | 3/4 | 1/2 | .783 | 20 | 1.40 | 41.90 | 33.15 |
| CCB-12 | 7/8 | 1/2 | .845 | 20 | 1.45 | 45.45 | 35.95 |
| CCB-13 | 1 | 1/2 | .908 | 15 | 1.30 | 48.25 | 38.20 |
| CCB-14 | 1 1/8 | 1/2 | .970 | 15 | 1.30 | 48.40 | 40.80 |
| CCB-15 | 1 1/4 | 1/2 | 1.062 | 10 | 1.50 | 54.45 | 43.10 |



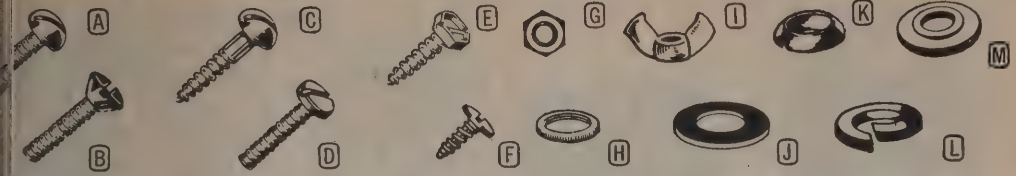
### VINYL GROMMETS

- Exceptional aging qualities
- High dielectric properties
- Oil resistant • Cost less than rubber
- Durometer hardness 45 to 85
- Will not stain most surfaces

| Waldom No. | A In. | B In. | C In. | D In. | E In. | Pkg. of 100 | Per 1000 | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1M-4999 | 5000 Up |
| G-401 | 1/8 | 1/16 | 11/32 | 3/16 | 1/4 | $1.10 | $ 8.95 | $ 6.80 |
| G-402 | 3/16 | 1/16 | 7/16 | 7/32 | 5/16 | 1.25 | 10.00 | 7.60 |
| G-403 | 1/4 | 1/16 | 9/16 | 1/4 | 3/8 | 1.65 | 11.50 | 8.80 |
| G-404 | 5/16 | 1/16 | 5/8 | 1/4 | 7/16 | 1.75 | 12.30 | 9.40 |
| G-405 | 3/8 | 1/16 | 5/8 | 1/4 | 1/2 | 1.75 | 12.30 | 9.40 |
| G-406 | 1/2 | 1/16 | 13/16 | 9/32 | 5/8 | 2.90* | 21.45 | 16.35 |
| G-407 | 5/8 | 1/16 | 1 1/8 | 9/32 | 7/8 | 5.80† | 36.80 | 28.45 |

*Pkg. of 50. †Pkg. of 25.

# waldom ELECTRONIC HARDWARE



Steel and brass hardware is nickel- unless otherwise noted. **Specify C for pkg. of 100 (i.e., F-579-C); M for bag of 1000 (i.e., F-579-M).**

## OUND HEAD MACHINE SCREWS (FIG. A)

### STEEL TYPE

| Size Thd. x Lgth. (Inches) | Pkg. of 100 | Per 1000 1000-4999 | Per 1000 5000 Up |
|---|---|---|---|
| 2-56 x ⅛ | $0.85 | $ 5.95 | $ 4.55 |
| 2-56 x ¼ | .65 | 4.50 | 3.40 |
| 2-56 x ½ | .65 | 4.90 | 3.75 |
| 2-56 x ¾ | .75 | 5.65 | 4.35 |
| 3-48 x ¾ | .75 | 5.65 | 4.35 |
| 4-36 x ¼ | .65 | 4.90 | 3.75 |
| 4-36 x ⅜ | .70 | 5.10 | 3.90 |
| 4-36 x ½ | .70 | 5.35 | 4.05 |
| 4-36 x ⅝ | .75 | 5.70 | 4.40 |
| 4-36 x ¾ | .85 | 6.40 | 4.85 |
| 4-40 x ¼ | .65 | 4.90 | 3.75 |
| 4-40 x ⅜ | .70 | 5.10 | 3.90 |
| 4-40 x ½ | .70 | 5.35 | 4.05 |
| 4-40 x ⅝ | .75 | 5.80 | 4.40 |
| 4-40 x ¾ | .85 | 5.85 | 4.85 |
| 6-32 x ¼ | .70 | 5.45 | 4.15 |
| 6-32 x ⅜ | .75 | 5.70 | 4.35 |
| 6-32 x ½ | .80 | 6.20 | 4.80 |
| 6-32 x ⅝ | .90 | 6.90 | 5.30 |
| 6-32 x ¾ | .95 | 7.45 | 5.70 |
| 6-32 x 1 | 1.10 | 8.40 | 6.50 |
| 6-32 x 1¼ | 1.30 | 10.25 | 7.80 |
| 6-32 x 2 | 1.95 | 15.30 | 11.65 |
| 8-32 x ⅜ | 1.00 | 7.80 | 5.95 |
| 8-32 x ½ | 1.10 | 8.30 | 6.40 |
| 8-32 x ¾ | 1.20 | 9.35 | 7.15 |
| 8-32 x 1 | 1.40 | 10.80 | 8.25 |
| 8-32 x 1¼ | 1.60 | 12.65 | 9.65 |
| 10-32 x ½ | 1.25 | 9.55 | 7.30 |
| 10-32 x ⅝ | 1.35 | 10.40 | 8.00 |
| 10-32 x ¾ | 1.45 | 11.45 | 8.75 |
| 10-32 x 1 | 1.65 | 12.60 | 9.65 |
| ¼-20 x 1 | 2.00 | 24.50 | 18.65 |

### BRASS TYPE

| | | | | |
|---|---|---|---|---|
| B | 2-56 x ¼ | $0.90 | $ 7.00 | $ 5·35 |
| B | 2-56 x ½ | 1.05 | 8.20 | 6.20 |
| B | 3-48 x ¾ | 1.35 | 10.90 | 8.35 |
| B | 4-36 x ¼ | 1.05 | 8.20 | 6.20 |
| B | 4-36 x ⅜ | 1.30 | 10.30 | 7.85 |
| B | 4-36 x ½ | 1.45 | 10.60 | 8.10 |
| B | 4-40 x ¼ | 1.05 | 8.20 | 6.20 |
| B | 4-40 x ½ | 1.35 | 10.30 | 7.85 |
| 2B | 4-40 x ⅝ | 1.55 | 11.45 | 8.75 |
| 1B | 4-40 x ¾ | 1.65 | 12.50 | 9.50 |
| 2B | 6-32 x ¼ | 1.40 | 11.00 | 8.35 |
| 3B | 6-32 x ⅜ | 1.50 | 11.70 | 8.95 |
| 3B | 6-32 x ½ | 1.70 | 13.15 | 10.05 |
| 4B | 6-32 x ⅝ | 1.95 | 14.60 | 11.15 |
| 4B | 6-32 x ¾ | 2.05 | 16.25 | 12.30 |
| 5B | 6-32 x 1 | 2.40 | 19.10 | 14.60 |
| 6B | 6-32 x 1¼ | 2.80 | 22.65 | 16.80 |
| 7B | 6-32 x 2 | 4.70 | 37.35 | 28.50 |
| 9B | 8-32 x ⅜ | 2.15 | 17.05 | 13.05 |
| 0B | 8-32 x ½ | 2.45 | 19.55 | 14.90 |
| 1B | 8-32 x ¾ | 3.00 | 23.85 | 18.20 |
| 2B | 8-32 x 1 | 3.60 | 28.45 | 21.65 |
| 3B | 8-32 x 1¼ | 4.15 | 33.40 | 25.45 |
| 4B | 10-32 x ½ | 3.10 | 24.75 | 18.85 |
| 6B | 10-32 x ⅝ | 3.45 | 27.55 | 21.00 |
| 5B | 10-32 x ¾ | 3.80 | 29.90 | 22.85 |
| 6B | 10-32 x 1 | 4.50 | 35.70 | 27.25 |

## VAL HEAD STEEL MACHINE SCREWS (FIG. B)

| | | | | |
|---|---|---|---|---|
| 6 | 6-32 x ½ | $0.80 | $ 6.20 | $4.80 |
| 7 | 6-32 x ¾ | .95 | 7.45 | 5.70 |
| 8 | 8-32 x ¾ | 1.20 | 9.35 | 7.15 |
| 9 | 10-32 x ½ | 1.25 | 9.55 | 7.30 |
| .0 | 10-32 x ¾ | 1.40 | 11.45 | 8.75 |

## ROUND HEAD STEEL WOOD SCREWS (FIG. C)

| | | | | |
|---|---|---|---|---|
| .4 | 4 x ½ | $1.00 | $ 8.00 | $ 6.05 |
| .5 | 4 x ¾ | 1.15 | 9.20 | 7.00 |
| .6 | 6 x ¾ | 1.25 | 9.90 | 7.55 |
| .7 | 6 x 1 | 1.55 | 12.20 | 9.30 |
| 8 | 8 x ¾ | 1.50 | 11.65 | 8.90 |
| 7 | 8 x 1 | 1.70 | 14.10 | 10.75 |
| .9 | 8 x 1¼ | 2.05 | 16.15 | 12.30 |

## BINDER HEAD STEEL MACHINE SCREWS (FIG. D)

| Waldom No. | Size Thd. x Lgth. (Inches) | Pkg. of 100 | Per 1000 1000-4999 | Per 1000 5000 Up |
|---|---|---|---|---|
| F-591 | 2-56 x ⅛ | $0.85 | $ 5.95 | $4.55 |
| F-592 | 2-56 x ¼ | .65 | 4.50 | 3.40 |
| F-593 | 2-56 x ½ | .65 | 4.90 | 3.75 |
| F-594 | 2-56 x ⅝ | .75 | 5.60 | 4.30 |
| F-020 | 4-40 x ¼ | .65 | 4.90 | 3.75 |
| F-021 | 4-40 x ½ | .70 | 5.35 | 4.05 |
| F-022 | 4-40 x ¾ | .85 | 6.40 | 4.85 |
| F-502 | 6-32 x 3/16 | .75 | 5.45 | 4.20 |
| F-503 | 6-32 x ¼ | .70 | 5.45 | 4.15 |
| F-504 | 6-32 x ⅜ | .75 | 5.70 | 4.35 |
| F-014 | 6-32 x ½ | .80 | 6.20 | 4.80 |
| F-621 | 6-32 x ⅝ | .90 | 6.90 | 5.30 |
| F-015 | 6-32 x ¾ | .95 | 7.45 | 5.70 |
| F-023 | 8-32 x ¼ | .90 | 7.05 | 5.40 |
| F-505 | 8-32 x 5/16 | 1.00 | 7.80 | 5.95 |
| F-024 | 8-32 x ⅜ | 1.00 | 7.80 | 5.95 |
| F-025 | 8-32 x ½ | 1.10 | 8.30 | 6.40 |
| F-026 | 8-32 x ¾ | 1.20 | 9.35 | 7.15 |
| F-577 | 10-32 x ½ | 1.25 | 9.55 | 7.30 |
| F-578 | 10-32 x ¾ | 1.45 | 11.45 | 8.75 |

## BINDER HEAD BRASS MACHINE SCREWS (FIG. D)

| | | | | |
|---|---|---|---|---|
| F-020B | 4-40 x ¼ | $1.05 | $ 8.20 | $ 6.20 |
| F-021B | 4-40 x ½ | 1.35 | 10.30 | 7.85 |
| F-022B | 4-40 x ¾ | 1.65 | 12.50 | 9.50 |
| F-503B | 6-32 x ¼ | 1.40 | 11.00 | 8.35 |
| F-504B | 6-32 x ⅜ | 1.50 | 11.70 | 8.95 |
| F-014B | 6-32 x ½ | 1.70 | 13.15 | 10.05 |
| F-015B | 6-32 x ¾ | 2.05 | 16.10 | 12.30 |
| F-023B | 8-32 x ¼ | 2.05 | 16.65 | 12.70 |
| F-024B | 8-32 x ⅜ | 2.15 | 17.05 | 13.05 |
| F-025B | 8-32 x ½ | 2.45 | 19.55 | 14.90 |
| F-026B | 8-32 x ¾ | 3.00 | 23.85 | 18.20 |

## SLOTTED HEX HEAD SHEET METAL SCREWS TYPE A (FIG. E)

| | | | | |
|---|---|---|---|---|
| F-016 | 4 x ⅜ | $1.00 | $ 8.00 | $ 6.05 |
| F-523 | 4 x ½ | 1.10 | 8.55 | 6.55 |
| F-524 | 6 x ¼ | 1.15 | 9.25 | 7.05 |
| F-525 | 6 x ⅜ | 1.15 | 9.30 | 7.10 |
| F-526 | 6 x ½ | 1.20 | 9.90 | 7.55 |
| F-527 | 6 x ¾ | 1.30 | 10.10 | 7.70 |
| F-528 | 8 x ¼ | 1.30 | 10.10 | 7.70 |
| F-529 | 8 x ⅜ | 1.35 | 10.60 | 8.10 |
| F-530 | 8 x ½ | 1.40 | 10.90 | 8.35 |
| F-017 | 8 x ⅝ | 1.40 | 11.15 | 8.45 |
| F-531 | 8 x 1 | 1.80 | 14.15 | 10.80 |
| F-533 | 10 x ½ | 1.65 | 12.80 | 9.75 |

## PAN HEAD SHEET METAL SCREWS TYPE A (FIG. F)

| | | | | |
|---|---|---|---|---|
| F-596 | 4 x ½ | $1.00 | $ 8.00 | $ 6.05 |
| F-033 | 6 x ¼ | 1.10 | 8.55 | 6.55 |
| F-597 | 6 x ⅜ | 1.10 | 8.80 | 6.70 |
| F-034 | 6 x ½ | 1.15 | 9.30 | 7.10 |
| F-035 | 6 x ¾ | 1.25 | 10.00 | 7.65 |
| F-036 | 8 x ¼ | 1.25 | 10.00 | 7.65 |
| F-598 | 8 x ⅜ | 1.35 | 10.50 | 8.00 |
| F-037 | 8 x ½ | 1.35 | 10.60 | 8.10 |
| F-038 | 8 x 1 | 1.70 | 13.95 | 10.60 |

## HEX STEEL NUTS (FIG. G)

| | | | | |
|---|---|---|---|---|
| F-554 | 2-56 x 3/16 x 1/16 | $0.90 | $ 6.90 | $5.30 |
| F-555 | 3-48 x 3/16 x 1/16 | .90 | 6.90 | 5.30 |
| F-556 | 4-36 x ¼ x 3/32 | .90 | 6.75 | 5.25 |
| F-557 | 4-40 x ¼ x 3/32 | .90 | 6.75 | 5.25 |
| F-559 | 6-32 x ¼ x 3/32 | .90 | 6.75 | 5.25 |
| F-560 | 6-32 x 5/16 x 7/64 | .95 | 7.35 | 5.65 |
| F-561 | 8-32 x ¼ x 3/32 | .90 | 6.75 | 5.25 |
| F-562 | 8-32 x 5/16 x 7/64 | .95 | 7.35 | 5.65 |
| F-563 | 10-32 x ⅜ x ⅛ | 1.10 | 8.70 | 6.60 |
| F-619 | 12-24 x 7/16 x 5/32 | 1.45 | 11.75 | 9.00 |
| F-564 | ¼-20 x 7/16 x 3/16 | 1.60 | 12.45 | 9.45 |

## HEX BRASS NUTS (FIG. G)

| | | | | |
|---|---|---|---|---|
| F-554B | 2-56 x 3/16 x 1/16 | $1.25 | $10.00 | $ 7.65 |
| F-555B | 3-48 x 3/16 x 1/18 | 1.15 | 9.15 | 7.00 |
| F-556B | 4-36 x ¼ x 3/32 | 1.55 | 12.00 | 9.20 |
| F-557B | 4-40 x ¼ x 3/32 | 1.50 | 11.90 | 9.10 |
| F-559B | 6-32 x ¼ x 3/32 | 1.50 | 11.85 | 9.10 |
| F-560B | 6-32 x 5/16 x 7/64 | 1.80 | 14.30 | 10.90 |
| F-561B | 8-32 x ¼ x 3/32 | 1.50 | 11.85 | 9.10 |
| F-562B | 8-32 x 5/16 x 7/64 | 1.80 | 14.30 | 10.90 |
| F-563B | 10-32 x ⅜ x ⅛ | 1.95 | 15.70 | 11.95 |

## VOLUME CONTROL AND TOGGLE SWITCH MOUNTING HEX NUTS (FIG. G)

| Waldom No. | Size Thd. x Lgth. (Inches) | Pkg. of 100 | Per 1000 1000-4999 | Per 1000 5000 Up |
|---|---|---|---|---|
| F-565 | ⅜-32x ½x3/32 | $1.90 | $15.30 | $11.65 |
| F-566 | 15/32-32x 9/16x5/64 | 2.30 | 18.75 | 14.30 |
| F-567* | .475-32x19/32x1/16 | 4.35 | 34.60 | 26.40 |

*Knurled ring nut (Fig. H).

## WING NUTS, NICKEL-PLATED (FIG. I)

| | | | | |
|---|---|---|---|---|
| F-571 | 6-32 | $3.35 | $27.80 | $21.20 |
| F-572 | 8-32 | 3.35 | 27.80 | 21.20 |
| F-573 | 10-32 | 3.35 | 27.80 | 21.20 |

## WASHERS

Steel and brass washers are nickel-plated unless otherwise noted. Fiber washers, both flat and extruded, are for insulation of components and controls from chassis or from each other.

### FLAT STEEL WASHERS (FIG. J)

| Waldom No. | Screw Size | O.D., In. | Pkg. of 100 | Per 1000 1000-4999 | Per 1000 5000 Up |
|---|---|---|---|---|---|
| MW-400 | #2 | 7/32 | $0.55 | $4.50 | $3.45 |
| MW-401 | #4 | 9/32 | .45 | 3.50 | 2.65 |
| MW-402 | #6 | ⅜ | .45 | 3.50 | 2.65 |
| MW-403 | #8 | ⅜ | .45 | 3.50 | 2.65 |
| MW-404 | #10 | 7/16 | .50 | 3.95 | 3.05 |
| MW-408 | ¼ | ⅝ | .90 | 6.75 | 5.25 |
| MW-410 | ⅜ | 1 1/16 | .90 | 7.15 | 5.50 |

### FLAT BRASS WASHERS (FIG. J)

| | | | | | |
|---|---|---|---|---|---|
| MW-400B | #2 | 7/32 | $0.60 | $4.70 | $3.60 |
| MW-401B | #4 | 9/32 | .65 | 4.90 | 3.75 |
| MW-402B | #6 | ⅜ | .80 | 6.20 | 4.80 |
| MW-403B | #8 | ⅜ | .80 | 6.20 | 4.80 |
| MW-404B | #10 | 7/16 | .90 | 6.75 | 5.25 |

### STEEL CUP WASHERS (FIG. K)

| | | | | | |
|---|---|---|---|---|---|
| CW-6 | #6 | ..... | $0.65 | $5.25 | $3.95 |
| CW-8 | #8 | ..... | .70 | 5.65 | 4.30 |
| CW-10 | #10 | ..... | .75 | 5.85 | 4.40 |

### STEEL SPLIT LOCK WASHERS (FIG. L)

| | | | | | |
|---|---|---|---|---|---|
| MW-411* | #4 | ..... | $0.75 | $5.70 | $4.40 |
| MW-412* | #6 | ..... | .65 | 4.90 | 3.75 |
| MW-413* | #8 | ..... | .60 | 4.80 | 3.65 |
| MW-414* | #10 | ..... | .70 | 5.45 | 4.15 |
| MW-415* | ¼ | ..... | 1.05 | 8.10 | 5.15 |

*Zinc plated.

### FLAT FIBER WASHERS (FIG. J)

| | | | | | |
|---|---|---|---|---|---|
| FW-374 | #4 | ¼ | $0.55 | $4.35 | $3.35 |
| FW-375 | #6 | ¼ | .55 | 4.35 | 3.35 |
| FW-376 | #8 | ⅜ | .60 | 4.70 | 3.60 |
| FW-377 | #10 | ⅜ | .60 | 4.70 | 3.60 |
| FW-378 | ¼ | ½ | .65 | 4.90 | 3.75 |
| FW-379 | ⅜ | ⅝ | .95 | 7.45 | 5.65 |

### EXTRUDED FIBER WASHERS (FIG. M)

| | | | | | |
|---|---|---|---|---|---|
| FW-384 | #4 | 9/32 | $1.10 | $8.35 | $6.40 |
| FW-385 | #6 | 5/16 | 1.10 | 8.35 | 6.40 |
| FW-386 | #8 | ⅜ | 1.10 | 8.35 | 6.40 |
| FW-387 | #10 | 7/16 | 1.20 | 9.15 | 7.00 |
| FW-388 | ¼ | ½ | 1.20 | 9.15 | 7.00 |
| FW-389 | ⅜ | ⅝ | 1.20 | 9.40 | 7.20 |

## HARDWARE ASSORTMENTS

Choice of assortments containing stock nickel-plated steel hardware. Supplied in compartmented clear plastic box with hinged cover and positive clasp.

**Assortment No. HD-4013**—265 pieces in all. Includes: round head machine screws 4-40 x ½″, 6-32 x ¼″, 6-32 x ¾″, 8-32 x ½″; hex nuts 4-40, 6-32, 8-32; and 6 x ½″ slotted hex head sheet metal screws.

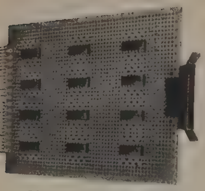
**Assortment No. HD-4018**—Identical to Assortment No. HD-4013 but machine screws have binder heads.

**Assortment No. HD-4014**—165 slotted hex head sheet metal screws. Includes 6 x ¼″, 4 x ⅜″, 6 x ½″, 6 x ¾″, 8 x ¼″, 8 x ⅜″, 8 x ½″, 8 x ⅝″.

**Net Each, Any Assortment....... $1.79**

**THERE ARE OVER 4000 ITEMS IN THE WALDOM LINE. ASK FOR CATALOG #7G7.**

# vero Wiring Boards, Circuit Modules



Vero Finger Board and Handle 10037

Vero D.I.P. Boards

## VEROBOARDS AND KITS

### UNIVERSAL WIRING BOARD KITS

Build any circuit in two easy steps; no etching, wiring or terminals needed. Simply lay-out components on back side of Veroboard, across copper strips, inserting leads into desired holes. Leads are then soldered directly to the strips lightly; easily removable. Finally, break the circuit where required by breaking the copper strips with Vero spot-face cutter provided in kit. The cutter, a hardened steel tool, has a pilot pin to fit any hole and two cutting edges; a couple of turns and the copper strip will be removed around the chosen hole.

**Vero Model BK-6 Kit**—With 6 assorted Veroboards, Vero spot-face cutter and instructions. List Price.................. **$5.95**

**Vero Model VBK-7 Kit**—With 8 assorted Veroboards up to 18″ lg., plain Veroboard with staggered grid, spot-face cutter, terminal pin insertion tool, 500 terminal pins, reproducible design sheet and instructions. List Price........................... **$29.95**

**Vero Model MC-10 Kit**—Integrated circuit breading kit designed for dual in line integrated circuits. Contains single sided 18″ long board, plug in single and double sided Veroboard, plain glass board all pierced on .1″ x .1″ centers. Also includes connector, pins, tools and design sheet. List Price................. **$29.95**

### FULLY-PIERCED COPPER CLAD VEROBOARDS XXXP

Single sided, .062″ thick; .1″ x .1″ matrix.

| Vero No. | Size, Inches | No. of Copper Strips | Hole Dia. | Net Each, Lots of | |
|---|---|---|---|---|---|
| | | | | 1-5 | 6-25 |
| 126 | 4.7 x 17.0 | 38 | .040″ | $6.60 | $5.94 |
| 122* | 3.75 x 17.0 | 34 | .040″ | 4.75 | 4.27 |
| 124 | 7.05 x 17.0 | 60 | .040″ | 8.65 | 7.78 |

### PLUG-IN SINGLE-SIDED .062″ VEROBOARD XXXP

| Vero No. | Size, Inches | Matrix, In. | Hole Dia. | No. of Contacts | Net Ea., Lots of | |
|---|---|---|---|---|---|---|
| | | | | | 1-5 | 6-25 |
| 322* | 4.5 x 6.5 | .1 x .1 | .040″ | 32 gold | $4.35 | $3.91 |
| 323* | 4.5 x 6.5 | .1 x .1 | .040″ | 40 gold | 4.70 | 4.23 |
| 308 | 3.75 x 5.1 | .1 x .1 | .040″ | 32 gold | 4.15 | 3.73 |
| 11246 | 4.5 x 6.5 | .156 x .1 | .052″ | 22 gold | 4.05 | 3.64 |
| 304 | 2.55 x 3.7 | .1 x .1 | .040″ | 16 gold | 2.50 | 2.15 |

*For G10 FR4 epoxy glass boards, add suffix FG to Vero No.

### DOUBLE-SIDED .062″ PLUG-IN VEROBOARD XXXP

| Vero No. | Size, In. | Matrix, In. | Hole Dia. | No. of Contacts | Net Ea., Lots of | |
|---|---|---|---|---|---|---|
| | | | | | 1-5 | 6-25 |
| 1911 | 5 x 7.85 | .1 x .1 | .040″ | 32 gold | $8.05 | $7.00 |
| 1912 | 4.5 x 6.5 | .1 x .1 | .040″ | 32 gold | 7.35 | 6.45 |
| 1913 | 5 x 7.85 | .1 x .1 | .040″ | 40 gold | 9.50 | 8.40 |
| 1914 | 4.43 x 8 | .1 x .1 | .040″ | 40 gold | 9.25 | 8.10 |
| 1915 | 2.495 x 4.75 | .1 x .1 | .040″ | 24 gold | 4.10 | 3.75 |

## VERO FINGER BOARDS

Epoxy glass base, .1″ x .1″ hole matrix, .052″ dia. hole.

| Vero No. | Size, Inches | No. of Contacts | Contact Spacing | Net Each, Lots | |
|---|---|---|---|---|---|
| | | | | 1-5 | 6-25 |
| 10238 | 5 x 8 | 22 gold | .156″ | $7.50 | $6.7 |
| 10236 | 4.5 x 6.5 | 22 gold | .156″ | 7.00 | 6.3 |
| 10237 | 4.5 x 6.5 | 32 gold | .1″ | 6.60 | 5.8 |
| 10239 | 5 x 8.0 | 32 gold | .1″ | 7.30 | 6.5 |
| 10250 | 2.438 x 5.0 | 18 gold | .125″ | 4.75 | 4.3 |
| 10295 | 4.5 x 6.5 | 40 gold | .1″ | 7.50 | 6.7 |
| 11253 | 5 x 8 | 40 gold | .1″ | 8.30 | 7.4 |
| 10290 | 4.5 x 6.5 | 44 (22 x 22) | .156″ | 7.15 | 6.4 |
| 12846 | 4.5 x 6.5 | 80 gold | .1″ | 8.40 | 7.6 |

## D.I.P. BOARDS

| Vero No. | Size, Inches | No. of Contacts | Spacing | Net Each, Lots | |
|---|---|---|---|---|---|
| | | | | 1-5 | 6-25 |
| 11821 | 4.5 x 6.5 | 40 gold | .1″ | $ 7.35 | $ 6.6 |
| 11823 | 4.5 x 6.5 | 43 gold | .1″ | 7.65 | 6.8 |
| 11825 | 4.5 x 6.5 | 44 (22 x 22) | .156″ | 8.85 | 7.9 |
| 12490 | 6.5 x 4.5 | 80 (40 x 40) | .1″ | 9.90 | 8.9 |
| 12761 | 6.5 x 8.0 | 75 gold | .1″ | 15.33 | 13.80 |
| 11820* | 4.5 x 6.5 | 40 gold | .1″ | 5.80 | 5.2 |
| 11822* | 4.5 x 6.5 | 43 gold | .1″ | 6.15 | 5.5 |
| 11824* | 4.5 x 6.5 | 44 (22 x 22) | .156″ | 7.25 | 6.5 |
| 12757 | 6.5 x 6.25 | 57 gold | .1″ | 13.12 | 11.8 |
| 12925 | 6.35 x 8.0 | 60 gold | .1″ | 18.95 | 17.0 |

*Paper; all others epoxy glass.

## EXTEND CARDS

| Vero No. | Size, In. | No. of Contacts | Contacts Spacing | Net Each, Lots | |
|---|---|---|---|---|---|
| | | | | 1-5 | 6-25 |
| EX 293/1 | 5.0 x 8.0 | 22 | .156″ | $6.25 | $5.50 |
| EX 293/2 | 4.5 x 8.0 | 22 | .156″ | 5.25 | 4.40 |
| EX 293/3 | 5.0 x 8.0 | 44 | .156″ | 6.50 | 5.75 |
| EX 293/4 | 4.5 x 8.0 | 44 | .156″ | 5.50 | 4.75 |

## CARD EJECTOR

Circuit board has a hole drilled in each corner at front edge which the Card Ejector is assembled, using spring pin (supplied No chamfering required.

**Vero No. P/N 13301 Card Ejector**—Net per pkg. of 20...**$2.8**

## PLAIN BOARDS

| Vero Number | Length, In. | Width, In. | Net Each, Lots of | |
|---|---|---|---|---|
| | | | 1-5 | 6-25 |
| 409* | 6.4 | 4.7 | $2.25 | $2.02 |
| 410* | 9.4 | 7.05 | 2.90 | 2.61 |
| 522* | 17.9 | 3.75 | 2.90 | 2.61 |
| 523* | 17.9 | 4.5 | 3.70 | 3.33 |

*For epoxy glass boards, add suffix FG to Vero No.

## TOOLS AND TERMINALS

| Vero No. | Description | Net Each |
|---|---|---|
| 2022 | Spot face cutter for .2″, .156″ & .1″ Veroboard | $ 1.70 |
| 2140 | Double-end terminal pin for .052″ hole Veroboard | 12.65 |
| 2141 | Single-end terminal pin for .052″ hole Veroboard | 12.10 |
| 2142 | Double-end terminal pin for .040″ hole Veroboard | 12.1 |
| 2143 | Double-end terminal pin for .052″ hole finger board | 12.35 |
| 2144 | Double-end .469″ pin for .040″ hole Veroboard | 12.35 |
| 2150 | Insertion tool for 2140 & 2143 pins | 2.20 |
| 2151 | Insertion tool for 2142 pins | 2.20 |
| 2152 | Insertion tool for 2147 pins | 2.20 |

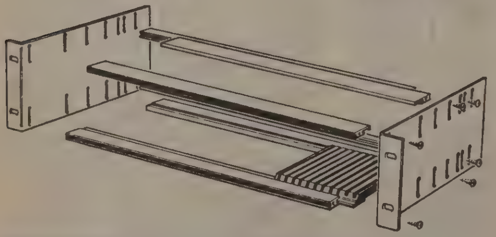
*Per package of 1000.

## PC CARD HANDLES

Specify Color: Black, white, red, green, blue. Made of Noryl.

| Vero Number | Net per Pkg. of 10 | |
|---|---|---|
| | 1-5 Pkgs. | 6-15 Pkgs. |
| 10035 | $1.60 | $1.32 |
| 10036 | 2.90 | 2.39 |
| 10037 | 2.90 | 2.39 |

## VERORACK 3 CARD FRAME KIT



Provides maximum versatility with minimum cost. Slotted end plates accommodate a range of card widths within each standard height. Standard card spacing is 0.5″. Unique universal connector rail extrusion allows mounting of connectors at any point along the 17.0″ length and with the use of connector locating strip, connectors are automatically positioned on 0.5″ centers. Includes hardware, two identification strips and two plain strips. A 17 hinged front panel can be supplied on special order.

### ORDERING INFORMATION

**VR3A/3U/L/HP**—VR3A designates Vero Rack 3A system. 3U shows end plate height; **2U**, 3.5″; **3U**, 5.25″; **4U**, 7.0″; **5U**, 8.75″ **L** shows guide length; **S**, small 2⅝″; **M**, medium 5⅜″; **L**, large 6⅜″. **HP** designates optional hinged front panel.

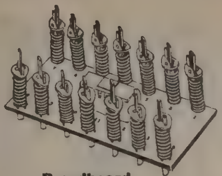
| Vero No. | Card Height | | Net Each, Lots of | |
|---|---|---|---|---|
| | Max. In. | Min. In. | 1-9 | 10-24 |
| VR3A/2U/S | 2.75 | 1.0 | $26.25 | $24.94 |
| VR3A/2U/M | 2.75 | 1.0 | 27.60 | 26.22 |
| VR3A/2U/L | 2.75 | 1.0 | 28.60 | 27.17 |
| VR3A/3U/S | 4.5 | 2.75 | 26.65 | 25.32 |
| VR3A/3U/M | 4.5 | 2.75 | 28.00 | 26.60 |
| VR3A/3U/L | 4.5 | 2.75 | 29.00 | 27.55 |
| VR3A/4U/S | 6.25 | 4.5 | 27.95 | 26.55 |
| VR3A/4U/M | 6.25 | 4.5 | 29.30 | 27.83 |
| VR3A/4U/L | 6.25 | 4.5 | 30.30 | 28.78 |
| VR3A/5U/S | 8.0 | 6.25 | 29.15 | 27.69 |
| VR3A/5U/M | 8.0 | 6.25 | 30.50 | 28.97 |
| VR3A/5U/L | 8.0 | 6.25 | 31.50 | 29.92 |

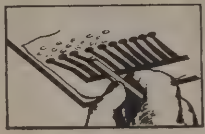
# Vector Socket Turrets, Adapters

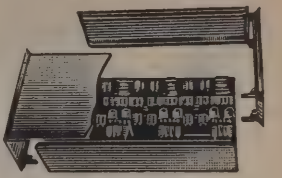
12T

8-12

T-9-N-C


Breadboard Sockets


Vectoresist


Frame-Loc

## SOCKET TURRETS

t, efficient mount for circuit components. Grade XXXP posts ½" O.D., 1/16" wall; mica filled sockets; fused tin erminals; hot tin dipped steel saddles. Turret has six ls at far end; three, six or nine near socket. Terminal without sockets used for many mountings. Military types le with MIL sockets, silver-plated beryllium copper con- nickel-plated tin-dipped brass saddles and glass silicone post with fused tin brass terminals. Longer or shorter types her terminal configurations available on special order. sion tolerance, ± 1/16".

| or m. | MIL No. | Type | Hgt., In. | No. of Term. | No. of Rings | Space Between Rings, Inches | Net Each Com. Type |
|---|---|---|---|---|---|---|---|
| | 680 | Octal | 1½ | 6 | 1 | .......... | 61c |
| | 681 | Octal | 2 | 9 | 2 | 1 | 68c |
| T | 683 | Octal | 2½ | 9 | 2 | 1⅜ | 72c |
| 2T | 684 | Octal | 2½ | 12 | 2 | 1⅜ | 76c |
| T | 687 | 7-pin | 1½ | 6 | 1 | .......... | 72c |
| T | 688 | 7-pin | 2 | 9 | 2 | 1 | 79c |
| 2T | 689 | 7-pin | 2 | 12 | 2 | 1 | 82c |
| -12T | 690 | 7-pin | 2½ | 12 | 2 | 1⅜ | 93c |
| | 693 | 9-pin | 1½ | 6 | 1 | .......... | 72c |
| | 694 | 9-pin | 2 | 9 | 2 | 1 | 79c |
| T | 695 | 9-pin | 2 | 12 | 2 | 1 | 82c |
| -12T | 696 | 9-pin | 2½ | 12 | 2 | 1⅜ | 93c |
| | 676 | Term.* | 1 19/64 | 12 | 2 | ⅝ | 63c |
| | 677 | Term.* | 1 51/64 | 12 | 2 | 1 | 66c |
| | 678 | Term.* | 2 19/64 | 12 | 2 | 1⅜ | 70c |
| | 679 | Term.* | 2 51/64 | 12 | 2 | 1⅞ | 77c |
| | ..... | Term.† | 2.0 | 12 | 2 | 1.00 | 75c |
| C | ..... | Term.† | 2.5 | 12 | 2 | 1⅜ | 78c |
| | ..... | Term.‡ | 1.5 | 12 | 2 | ⅞ | 59c |

nal types: *No socket; †Bolted, no washers; ‡Hollow tube with threaded 6-32 knurled nut in one end.

## TRANSISTOR TURRETS

stor turrets permit mounting of transistors and other al circuit components on one structure. Socket type ac- odates three in-line or "top-hat" transistors. Wafer turret four transistors on wafer punched for JEDEC or in-line Type 6- or 9-A-12T-440 is supplied with knurl nut.

| ctor o. | Hgt., In. | Space Between Rings, In. | Space Between Wafers, In. | Saddle | Net Each |
|---|---|---|---|---|---|
| 2T | 1½ | ⅞ | ............. | Yes | $1.22 |
| 2T-440 | 1½ | ⅝ | ............. | No | 1.18 |
| 2T | 2 | 1⅜ | ............. | Yes | 1.23 |
| 2T-440 | 2¼ | 1⅜ | ............. | No | 1.23 |
| | 2½ | 1⅜ | 2 5/16 | No | 1.00 |

r type.

## TUBE SOCKETS

ture and noval tube socket types permit passing of ⅛" or #5 screws on .875" centers, 7-pin; 1.125" centers, 9-pin; octal types with .136" holes on 1.312" centers. No center s. With hot tin dipped saddles; available with counter- for turret applications (Types R71 and R91). Mica filled lic with cadmium plated brass terminals; suffix J indicates lum copper contacts, silver-plated and hot tin dipped.

| r | Min. Type | Ctr. Bore | Net Each | Vector No. | Octal Type | Ctr. Bore | Net Each |
|---|---|---|---|---|---|---|---|
| | 7-pin | No | $0.11 | R8 | 8-pin | No | $0.16 |
| | 7-pin | Yes | .17 | R8.5 | 8-pin | No* | .42 |
| | 7-pin | No | .35 | R8J‡ | 8-pin | No* | .55 |
| | 9-pin† | No | .13 | R9J | 9-pin† | No | .23 |
| | 9-pin† | Yes | .17 | | | | |

holes on ½" centers. †Noval type. ‡Military type TS10P01 nickel plated brass flash.

## TUBE SOCKET TEST ADAPTERS

adapter has straight through plug to socket connections ded to radial test tabs on adapter skirt surrounding the t. Tabs are recessed into skirt. Contacts of highest quality lum copper. Molded phenolic bodies.

| r No. | Tube Type | Body Dia. | Skirt Dia. | Length* | Net Ea. |
|---|---|---|---|---|---|
| M | 7-Pin Min. | 0.75" | 1.03" | 1.50" | $1.85 |
| | 8-Pin Octal | 1.25" | 1.56" | 1.50" | 1.95 |
| | 9-Pin Noval | 0.87" | 1.16" | 1.50" | 1.95 |
| | Probe for above adapters | | | | .52 |
| | Set of above 4 items in plastic case | | | | 6.27 |

prongs.

## TUBE BASE SHIELDS

t above socket as a base for bayonet type tube shields. ium plated steel.

r No. S-7—7-pin type. Net Each......................10c
r No. S-9—9-pin type. Net Each......................5c

## BREADBOARD SOCKETS

Breadboarding of tube and IC circuitry. Reliable solderless springclip terminals are soldered to socket contacts on underside of wafer to make connection to any socket. Simply place wire (up to six) in springclip terminal.

| Vector No. | Description | Net Each |
|---|---|---|
| 567-1C | 8-pin octal solderless socket w/mtg. hardware | $1.50 |
| 568-1C | 9-pin noval solderless socket w/mtg. hardware | 1.65 |
| 569-1C | 7-pin min. socket w/mtg. hardware | 1.35 |
| 570B | Transistor socket (4 lead) press fits in "A" pattern Vectorbord® | 2.49 |
| 570G | 14-pin dual-in-line solderless skt for IC devices | 3.95 |
| 570F | 12-pin IC socket | 3.95 |

## CURRENT TEST ADAPTERS

Make tube circuit current or voltage measurements without cutting leads or making computations; made from tube side of equipment. Special dual-sided probe "breaks" circuit to read current. Adapter placed between tube and socket; tabs provide test points. Adapters fit into shield bases for miniature and noval types; or, standard tube clamps.

| Vector No. | Description | Net Each |
|---|---|---|
| T-7-M-C | Miniature 7-pin socket adapter | $3.04 |
| T-8-O-C | Octal socket adapter | 3.83 |
| T-9-N-C | Noval socket adapter | 3.24 |
| T-9-R-C | 9-pin Novar socket adapter | 3.65 |
| T-12-C | Compactron 12-pin socket adapter | 3.95 |
| P-2 | Dual sided plug-in probe for above | 1.09 |
| T-789-C | Set of first 3 adapters, P-2 and case | 11.69 |
| T-912-C | Set of last 2 adapters, P-2 and case | 9.89 |

## TUBE TESTER SOCKET EXTENDERS

Similar to T-8-O, except do not have test points. Also have long screw through center to secure to original socket. Saves wear on tester sockets; easily replaced when worn.

| Vector No. | Tube Type | Body Dia. | Length* | Net Ea. |
|---|---|---|---|---|
| 1262 | 8-pin octal | 1¼" | 1" | $1.95 |
| 1263 | 9-pin noval | 13/16" | ⅞" | 1.75 |
| 1264 | 7-pin min. | ¾" | ⅞" | 1.75 |

*Less prongs.

## VECTORESIST

Rub-on resist used for making etched circuits in place of tapes. Big 10" x 15" semi-transparent sheets of resist printed with resist ink which transfers when back is rubbed with ball point pen. Transfer to copper clad board and etch in ferric chloride or ammonium persulfate. R322 sheet is universal type with various width lines, circles, pads, dots and 3 connector patterns with contacts spaced on .156 centers. R405 is assorted straight lines from 1/64" to ⅛" wide. R406 is sheet of transistor pad patterns and 3/32" and ⅛" pads.

| Vector No. | Description | Net Each |
|---|---|---|
| R322 | Rub-on Resist 10" x 15" sheet all purpose | $2.12 |
| R405 | Rub-on Resist—lines | 2.00 |
| R406 | Rub-on Resist Transistor pads | 2.00 |

## GRID LAYOUT PAPER (NOT ILLUS.)

Pads of tracing paper with dots corresponding to Vectorbord patterns "A" with .093 holes on .265 centers and "G" with .062 holes on alternate 0.1 centers. Use for laying out wiring patterns before installing terminals in pre-punched Vectorbord.

| Vector No. | Description | Net Each |
|---|---|---|
| R173A-1 | Pads of 50 sheets 8½" x 17" | $2.50 |
| R173A | Pads of 50 sheets 8½" x 11" | 1.45 |
| R173G | Pads of 50 sheets 8½" x 11" | 2.00 |

## FRAME-LOC RAILS

Handsome extruded aluminum rails of varying widths with 1/16" or 3/32" grooves running lengthwise for holding printed circuit boards. Rails are supplied with 45° mitred ends and corner brackets and screws which permit making good looking cases in minutes. Use aluminum panels listed below for covers or supply your own. Can be cut for making card guides.

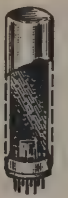
| Vector No. | Description | Net Each* |
|---|---|---|
| SR1-31-062 | Pair 1" wide x 3.11" long | $1.07 |
| SR1-46-062 | Pair 1" wide x 4.61" long | 1.18 |
| SR2-31-062 | Pair 2" wide x 3.11" long | 1.23 |
| SR2-46-062 | Pair 2" wide x 4.61" long | 1.44 |
| SR2-66-062 | Pair 2" wide x 6.61" long | 1.72 |
| SR2-48-093 | Pair 2" wide x 4.91" long | 1.46 |
| SR2-85-093 | Pair 2" wide x 8.61" long | 1.92 |
| SR2-170-093 | Pair 2" wide x 17.1" long | 3.20 |
| PL48-85 | 4.8" wide x 8.5" long panel | 2.74 |
| PL48-170 | 4.8" wide x 17" long panel | 4.14 |
| PL85-170 | 8.5" wide x 17" long panel | 6.29 |

*Package of 2.

**QUANTITY PRICES AVAILABLE ON REQUEST**

# Vector Socket Turrets, Boards

G2-10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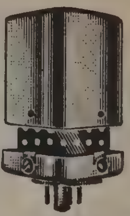
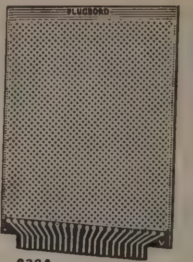

C12K1.02

P7

P9D

837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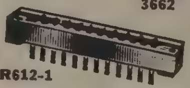
3677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R644

## PLUG-IN UNITS

Small round and square plug-ins are ideal for packaging hand-wired, printed or solid state plug-in modules. Aluminum case provides shielding and strength. Wide variety of internal structures for easy circuit wiring. Plugs are standard tube base style. Plug key in octal-based units points toward case corner.

| Vector Number | Plug Type | Case Size, Shape x Ht. ɪ | Internal Structure | Net Each |
|---|---|---|---|---|
| B-8 | Octal | 1.42″ sq. x 2″ | None | $1.56 |
| B-10 | Octal | 1.42″ sq. x 2.5″ | None | 1.57 |
| B-10-N* | Octal | 1.42″ sq. x 2.5″ | Turret | 2.52 |
| B-10-T | Octal | 1.42″ sq. x 2.5″ | Turret | 1.95 |
| B-10-4† | Octal | 1.42″ sq. x 2.5″ | Card w/terms. | 2.76 |
| C-10 | Octal | 2″ sq. x 2.5″ | None | 1.50 |
| C-12 | Octal | 2″ sq. x 3″ | None | 1.44 |
| C-12K1.02 | Octal | 2″ sq. x 3″ | None | 1.10 |
| C-12-T | Octal | 2″ sq. x 3″ | Turret with 12 lugs | 2.16 |
| G2-10 | Octal | 1¼″ dia. x 2½″ | None | 1.16 |
| G2-10T-1 | Octal | 1¼″ dia. x 2½″ | Term. turret and wafer | 2.21 |
| G2-10-4§ | Octal | 1¼″ dia. x 2½″ | Card w/terms. | 2.46 |
| G2.1-8 | Min. 9-pin | ¾″ dia. x 2″ | Spacer | 1.45 |
| G2.1-8F | Min. 9-pin | ¾″ dia. x 2″ | None | 1.49 |
| G2.1-8-4♯ | Min. 9-pin | ¾″ dia. x 2″ | Card w/terms. | 2.30 |
| G2.2-8F | Min. 7-pin | .625″ dia. x 2″ | None | 1.49 |
| G2.2-8-4• | Min. 7-pin | .625″ dia. x 2″ | Card w/terms. | 2.28 |
| 511 | Terminal card 1.9″ x 2.7″; .093″ holes▲ | | | .85 |
| 514 | Terminal card 1.9″ x 2.7″; .062″ holes■ | | | 1.07 |

*Has 9-pin noval socket mounted in top. †Has wall 1.37″ w. x 1.87″ lg. with .093″ holes on .265″ centers and terminals. §Has wall 1.08″ w. x 1.78″ lg. with .093″ holes on .250″ centers and terminals. ♯Has wall .60″ w. x 1.62″ lg. with .062″ holes on .141″ centers and terminals. •Has wall .46″ w. x 2″ lg. with .062″ holes on .141″ centers and terminals. ▲Holes on .265″ centers. ■Holes spaced alt. 0.1″. ɪLess prongs.

## TUBE BASE PLUGS

Mica-filled castings with phosphor bronze cadmium plated pins. Mount with 5-40 or 4-40 screw thru center hole (except K1.14).

| Vector Number | Tube Type | Dia., Inches | Pin Size, Inches | Net Each |
|---|---|---|---|---|
| P7 | 7-pin Min. | .620 | 17/32 | $0.47 |
| P9 | 9-pin Noval | .750 | 17/32 | .56 |
| P7A | 7-pin Min. | .620 | 3/16 | .47 |
| P9A | 9-pin Noval | .750 | 3/16 | .56 |
| K1.302 | 7-pin Min.* | .620 | 17/32 | .47 |
| K1.402 | 9-pin Noval* | .750 | 17/32 | .56 |
| K1.334 | 7-pin Hooked | .620 | 3/16 | .53 |
| K1.434 | 9-pin Hooked* | .750 | 3/16 | .60 |
| K1.313 | 7-pin Min.*† | .620 | 3/16 | .47 |
| K1.321 | 7-pin Min.† | .620 | 1 | .51 |
| K1.413 | 9-pin Noval*† | .750 | 3/16 | .56 |
| K1.421 | 9-pin Noval† | .750 | 1 | .56 |
| P8L | 8-pin Loctal* | 1.156 | 13/32 | 1.29 |
| K1.14 | 14-pin | .750 | 17/32 | 1.35 |

*No center post. †No keyway.

## CABLE CONNECTOR PLUGS

Permit connecting cables to miniature and noval tube sockets. Aluminum shells fitted to 7-pin and 9-pin plugs. In Type D, Heyco strain relief grommet mounted in the end of the shell; base screws hold the shell on the plug. In type C, a rubber grommet with ¼″ hole is mounted in side wall and center screw holds assembly together. Approx. length, 2⅛″, less pins.

**Vector No. P7D**—7-pin, ⅝″ O.D. end outlet. Net Each... $1.37
**Vector No. P9D**—9-pin, ¾″ O.D. end outlet. Net Each.. $1.84
**Vector No. P7C**—7-pin, ⅝″ O.D., side outlet. Net Each.... 1.24
**Vector No. P9C**—9-pin, ¾″ O.D., side outlet. Net Each.... 1.39

## EXPERIMENTERS' TEST ADAPTERS

Less shells and tabs; connections can be cross-connected by user; must be soldered.

| Vector No. | Socket Type | Lgth., less prongs | Net Each |
|---|---|---|---|
| TX-8-O | Octal | 1.45″ | $2.47 |
| TX-7-M | Min. 7-pin | 1.41″ | .88 |
| TX-9-N | Noval | 1.41″ | .94 |
| T-7-M-S | Min. 7-pin* | 3.25″ | 5.91 |
| T-8-O-S | Octal* | 4.00″ | 6.60 |
| T-9-N-S | Noval* | 3.25″ | 6.60 |

*Extended socket adapters with outer shells.

## PLUGBORDS

Pre-punched plugbords speed production of printed circuit prototypes or serve as ready-to-wire structures for card mounted circuitry in any equipment using plug-in circuit cards. Plugbords are 1/16″ thick epoxy paper per MIL-P-22323 Type PEE or G-10 epoxy glass per MIL-P-18177 with pre-punched .062 holes located on alternate 0.1 centers. Contacts attached at bottom are Elco Varicon on .2 centers or 2 oz. copper etched on .156 centers with "lands" terminating around holes near bottom edge of board. Precision punched holes accept Vector T-28 MiniKlips, standard turned terminals, or eyelets. Plugbord 838PWE (not illustrated) has transistor pad on one side of board so transistor wiring can be speeded.

| Vector No. | Type | Contacts | Size, In. | Net Each |
|---|---|---|---|---|
| 812 | Epoxy paper | 16 Varicon | 4½ x 6½ | $2.98 |
| 812WE | Epoxy glass | 16 Varicon | 4½ x 6½ | 3.53 |
| R616-1 | Recept. for above | 16 | ......... | 2.60 |
| 837 | Epoxy paper | 12 Varicon | 3 x 4½ | 2.33 |
| 837WE | Epoxy glass | 12 Varicon | 3 x 4½ | 2.58 |
| R612-1 | Recept. for above | 12 | ......... | 2.08 |
| 848WE | Epoxy glass | 35 Varicon | 4½ x 6½ | 6.08 |
| R635 | Recept. for above | 35 | ......... | 5.35 |
| 838 | Epoxy paper, 2 sides | 43 etched | 4½ x 6½ | 3.89 |
| 838A | Epoxy paper, 1 side | 22 etched | 4½ x 6½ | 2.81 |
| 838PWE | Epoxy glass, 1 side | 22 etched | 4½ x 6½ | 3.65 |
| R644 | Recept. for above | 43 | ......... | 2.97 |

*Epoxy paper; no etched contacts.

## DIP PLUGBORDS

**3677 Series:** Mount up to 24 14-lead IC sockets (21 16-lead) and components. Punched grid has .042″ holes spaced 0.1″; etched buses one side for Vcc and ground are tinned. FR-4 epoxy glass per MIL-P-13949, Type FL-GF. Gold plated contacts (two sides). **3682 Series:** Same as 3677 but mounts up to 54 14-lead sockets (48 16-lead). For Wire-Wrap* sockets, T44 Miniwrap terminals. Type 3682-4 has ground plane on back with etched clearance around each hole. **Universal Types 3662 and 848PWE:** Punched boards without etched circuit pattern. **X-Y Series 3474-3477:** Copper etched tinned lines run vertically on one side and horizontally on reverse, or vertically one side only (Y type). Type PX epoxy paper. **Type 3690 Extender:** Permits operation of wired plugbords outside or card enclosures. Epoxy glass.

| Vector No. | Contacts | Description | Size, Inches | Receptacle | Net Each |
|---|---|---|---|---|---|
| 3677 | 44 | Epoxy glass | 4.5 x 9.6 | R644 | $ 9.89 |
| 3677-2 | 44 | Epoxy glass | 4.5 x 6.5 | R644 | 8.84 |
| 3682 | 44 | Epoxy glass | 4.5 x 9.6 | R644 | 9.50 |
| 3682-2 | 44 | Epoxy glass | 4.5 x 6.5 | R644 | 8.49 |
| 3682-4 | 44 | Epoxy glass | 4.5 x 6.5 | R644 | 9.25 |
| 3662 | 44 | Universal; glass | 4.5 x 6.5 | R644 | 6.95 |
| 848PWE | 35* | Universal; glass | 4.5 x 6.5 | R635 | 6.29 |
| 3474 | 44 | X-Y matrix; paper | 4.5 x 6.5 | R644 | 10.50 |
| 3474-3 | 22 | Y matrix; paper | 4.5 x 6.5 | R644 | 8.08 |
| 3476 | 35* | X-Y matrix; paper | 4.5 x 6.5. | R635 | 11.40 |
| 3476-3 | 35* | Y matrix; paper | 4.5 x 6.5 | R635 | 8.98 |
| 3477 | 44 | X-Y; no notches | 4.5 x 6.5 | R636 | 9.94 |
| R635 | 35* | Receptacle | .......... | ....... | 5.35 |
| R636 | 72 | Receptacle | .......... | ....... | 4.70 |
| R644 | 44 | Receptacle | .......... | ....... | 2.97 |
| 3690 | 44 | Extender | 4.5 x 8 | † | 8.59 |

*Elco Varicon contacts. †Permanently mounted receptacle. *Reg. Gardner-Denver TM.

## VECTOR-PAK DISCRETE CARD GUIDE CAGES

Cages with plugbords installed are 19″ w. x 9″ d. x 5¼″ h., slotted for rack mounting. Six heavy extruded aluminum cross members, aluminum side walls. Will accommodate cards 3″ to 4½″ wide and up to 7⅞″ long. Infinitely variable connector mounting without drilling holes. Partially assembled.

**Vector No. CCK-13**—Cage with discrete aluminum card guides to accommodate 20 cards at ¾″ intervals. Can be adjusted for other spacing in multiples of ¼″. Net Each.........$29.50

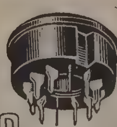
**Vector No. CCK-3**—Has extruded aluminum guide plates rather than individual card guides, with slots every .150″ over entire width of cage. Net Each..........................$24.95

**QUANTITY PRICES AVAILABLE ON REQUEST**

# AMPHENOL Tube Sockets

B

C



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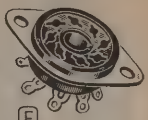


F

## IP MOLDED-IN-PLATE SOCKETS (FIG. A)

ounting plate molded in black phenolic body; can't come
Mounts in 1³⁄₁₆" hole with two ⁵⁄₃₂" holes on 1½" centers.

| enol 77- | Contacts | Net Each, Lots of* 1-49 | 50-99 | 100-249 | 250-999 | 1M-2499 |
|---|---|---|---|---|---|---|
|  | 4 | $0.242 | $0.203 | $0.181 | $0.14 | $0.125 |
| T* | 4 | .267 | .223 | .20 | .155 | [illegible] |
| TM§ | 4 | .363 | .303 | .271 | .21 | .19 |
|  | 5 | .265 | .222 | .20 | .154 | .137 |
| TM§ | 5 | .412 | .344 | .308 | .239 | .216 |
|  | 6 | .29 | .243 | .218 | .169 | .151 |
| T* | 6 | .333 | .278 | .25 | .193 | .173 |
| TM§ | 6 | .445 | .373 | .333 | .257 | .23 |
|  | 7 Small | .314 | .263 | .234 | .181 | .162 |
| T* | 7 Small | .356 | .297 | .266 | .206 | .184 |
|  | 8 Octal | .262 | .22 | .196 | .152 | .136 |
| T* | 8 Octal | .281 | .235 | .211 | .165 | .145 |
| TM§ | 8 Octal | .394 | .33 | .295 | .23 | .203 |
|  | 9 | .302 | .252 | .226 | .175 | .156 |
| T* | 9 | .329 | .275 | .247 | .191 | .17 |
|  | 11 | .31 | .26 | .232 | .18 | .16 |
| T* | 11 | .373 | .312 | .28 | .216 | .192 |
| TM§ | 11 | .544 | .454 | .407 | .315 | .28 |
|  | 12 | .36 | .30 | .269 | .208 | .185 |
| T* | 12 | .378 | .317 | .284 | .218 | .195 |
| TM§ | 12 | .50 | .416 | .371 | .29 | .256 |
| ‡ | 20 | .704 | .59 | .527 | .41 | .363 |

filled. †Fits 1⁹⁄₃₂" hole. ‡Fits 1⁵⁄₁₆" hole. §Mica-filled phenolic
ilver-plated contacts and stainless steel mounting plate.

## YPE RS REPLACEMENT SOCKETS (FIG. B)

as Type "S" but with retainer rings in nickel-plated steel
ing rings. Replaces water types. Slotted holes in mounting
t 1½" to 1⁵⁵⁄₆₄" mtg. centers. Uses 6-32 screw. Black phenolic
RS8T and RS11T, mica filled phenolic.

| henol 78- | Contacts | Net Each, Lots of* 1-49 | 50-99 | 100-249 | 250-999 | 1M-2499 |
|---|---|---|---|---|---|---|
| 4 | 4 | $0.307 | $0.257 | $0.23 | $0.177 | $0.158 |
| 5 | 5 | .331 | .277 | .247 | .192 | .171 |
| 6 | 6 | .354 | .296 | .263 | .204 | .183 |
| 7S | 7 Small | .38 | .318 | .282 | .218 | .196 |
| 8 | 8 Octal | .335 | .28 | .25 | .194 | .173 |
| 8L | 8 Loktal | .481 | .401 | .36 | .278 | .248 |
| 8T | 8 Octal | .375 | .315 | .28 | .216 | .194 |
| 9 | 9 | .369 | .309 | .277 | .214 | .19 |
| 11 | 11 | .44 | .368 | .33 | .255 | .227 |
| 11T | 11 | .455 | .38 | .34 | .264 | .235 |

## TYPE S MOLDED SOCKETS (FIG. C)

ner ring mounted. Mounting hole dia., 1³⁄₁₆". Black phenolic.

| | | | | | | |
|---|---|---|---|---|---|---|
|  | 4 | $0.25 | $0.208 | $0.186 | $0.144 | $0.128 |
|  | 5 | .265 | .222 | .198 | .154 | .137 |
|  | 6 | .29 | .243 | .217 | .169 | .15 |
| T* | 6 | .32 | .274 | .245 | .19 | .169 |
|  | 7 Small | .313 | .262 | .234 | .181 | .162 |
|  | 8 Octal | .251 | .21 | .188 | .144 | .13 |
| T* | 8 Octal | .29 | .243 | .217 | .169 | .15 |
| TM*§ | 8 | .341 | .285 | .255 | .198 | .176 |
|  | 8 Loktal | .396 | .342 | .296 | .228 | .204 |
|  | 9 | .284 | .237 | .213 | .165 | .146 |
|  | 11 | .327 | .274 | .235 | .19 | .169 |
| T* | 11 | .37 | .309 | .277 | .214 | .191 |
| TM*§ | 11 | .505 | .422 | .378 | .30 | .261 |
|  | 12 | .338 | .283 | .253 | .196 | .174 |
|  | 16 | .432 | .362 | .324 | .251 | .223 |
| P | 7 Min. | .644 | .54 | .481 | .373 | .333 |
| P | 9 Min. | .45 | .377 | .335 | .26 | .232 |

a-filled. §Silver-plated contacts; stainless steel mtg. plate.

## MINIATURE TYPE S SOCKETS

low cost sockets can be used for vacuum tubes, relays, input
tput cable connections and where standard size sockets will
t. Wire-wrap termination types mount in ⅝" dia. round or D
d panel cut out; friction type retainer ring included. PC
types mount thru ¹⁄₁₆" dia. holes in PC boards arranged in
r pin circle dia. Contact shoulders prevent socket from
ming, allow clearance for air circulations and cleaning. For
-filled phenolic dielectric add **T** to no. (78-S3S**T**W-0125).

### PC TERMINATION

| | | | | | | |
|---|---|---|---|---|---|---|
| -0125 | 3 | $0.152 | $0.128 | $0.114 | $0.088 | $0.08 |
| -0125 | 4 | .227 | .19 | .17 | .132 | .117 |
| -0125 | 5 | .233 | .195 | .175 | .136 | .121 |
| -0125 | 6 | .238 | .20 | .178 | .138 | .123 |

### WIRE-WRAP TERMINATION

| | | | | | | |
|---|---|---|---|---|---|---|
| -0500* | 3 | $0.188 | $0.157 | $0.141 | $0.11 | $0.097 |
| -0500* | 4 | .263 | .22 | .196 | .152 | .135 |
| -0525† | 3 | .191 | .16 | .143 | .111 | .098 |
| -0525† | 4 | .301 | .252 | .226 | .175 | .155 |

acts: *Standard, .016" thick; †heavy duty, .025" thick.

**ARGER QUANTITY PRICES AVAILABLE ON REQUEST**

## MIP MOLDED-IN-PLATE SOCKETS

Mounting plate molded in phenolic body; mica-filled phenolic also available add **T** to no. (e.g., 77-MIP8**T**W). Contacts of copper alloy. PC contacts are ⁵⁄₃₂" lg., with .125" tapered lead-in. Wire-wrap contacts are cadmium plated, and "tuning fork" shaped for low resistance; tails ¹⁄₁₆" w. x ½" lg.

### PC TERMINATION (FIG. D)

| Amphenol No. 77- | Contacts | Net Each, Lots of* 1-49 | 50-99 | 100-249 | 250-999 | 1M-2499 |
|---|---|---|---|---|---|---|
| MIP8W-0125 | 8 | $0.327 | $0.273 | $0.245 | $0.19 | $0.169 |
| MIP9W-0125 | 9 | .367 | .307 | .274 | .212 | .19 |
| MIP11W-0125 | 11 | .393 | .33 | .294 | .228 | .203 |
| MIP12W-0125 | 12 | .41 | .343 | .307 | .237 | .212 |
| MIP20W-0125 | 20 | .704 | .59 | .527 | .408 | .363 |

### WIRE-WRAP TERMINATION (FIG. E)

| | | | | | | |
|---|---|---|---|---|---|---|
| MIP8W-0500* | 8 | $0.365 | $0.306 | $0.274 | $0.212 | $0.188 |
| MIP9W-0500* | 9 | .405 | .338 | .303 | .235 | .209 |
| MIP11W-0500* | 11 | .456 | .382 | .34 | .264 | .235 |
| MIP12W-0500* | 12 | .474 | .396 | .275 | .274 | .244 |
| MIP8W-0525† | 8 | .39 | .326 | .293 | .225 | .197 |
| MIP9W-0525† | 9 | .422 | .353 | .316 | .245 | .218 |
| MIP11W-0525† | 11 | .474 | .397 | .354 | .274 | .244 |
| MIP12W-0525† | 12 | .492 | .411 | .367 | .284 | .253 |

Contacts: *Standard, .016" thick; †heavy duty, .025" thick.

## TYPE S SOCKETS

Same as MIP but retaining ring style.

### PC TERMINATION

| Amphenol No. 78- | Contacts | Net Each, Lots of* 1-49 | 50-99 | 100-249 | 250-999 | 1M-2499 |
|---|---|---|---|---|---|---|
| S8W-0125 | 8 | $0.313 | $0.262 | $0.234 | $0.181 | $0.161 |
| S9W-0125 | 9 | .337 | .282 | .253 | .196 | .174 |
| S11W-0125 | 11 | .343 | .287 | .257 | .20 | .183 |
| S12W-0125 | 12 | .351 | .294 | .263 | .204 | .176 |
| S16W-0125 | 16 | .433 | .362 | .325 | .251 | .223 |

### WIRE-WRAP TERMINATION

| | | | | | | |
|---|---|---|---|---|---|---|
| S8W-0500* | 8 | $0.358 | $0.30 | $0.268 | $0.208 | $0.185 |
| S9W-0500* | 9 | .383 | .321 | .287 | .224 | .198 |
| S11W-0500* | 11 | .39 | .327 | .293 | .227 | .226 |
| S12W-0500* | 12 | .426 | .356 | .32 | .247 | .227 |
| S8W-0525† | 8 | .362 | .303 | .271 | .211 | .187 |
| S9W-0525† | 9 | .387 | .324 | .29 | .225 | .20 |
| S11W-0525† | 11 | .394 | .33 | .295 | .228 | .204 |
| S12W-0525† | 12 | .429 | .36 | .32 | .25 | .208 |

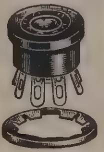
Contacts: *Standard, .016" thick; †heavy duty, .025" thick.

## SERIES 88 COMPACT TUBE SOCKETS (FIG. F)

Black phenolic body; fit 1⅛" mounting holes on 1⁵⁄₁₆" centers.

| Amphenol No. | Contacts | Net Each, Lots of* 1-49 | 50-99 | 100-249 | 250-999 | 1M-2499 |
|---|---|---|---|---|---|---|
| 88-8 | 8 Octal | $0.292 | $0.244 | $0.22 | $0.17 | $0.15 |
| 88-8T* | 8 Octal | .312 | .261 | .234 | .181 | .161 |
| 88-8TM*† | 8 Octal | .363 | .305 | .273 | .211 | .188 |
| 88-8X | 8 Loktal | .438 | .366 | .33 | .254 | .226 |

*Mica-filled. †Silver-plated contacts; stainless steel mtg. plate.



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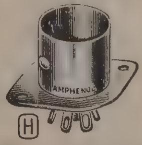

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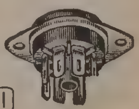


I

## MINIATURE 7- AND 9-PIN SOCKETS

**Fig. G Type:** Retainer ring style fits D-shaped or round hole ⅝" dia. **Fig. H and I Types:** Shielded types mount above chassis; unshielded, below chassis. Min. 7-pin sockets fit ⅝" hole with ⅞" mtg. centers; 9-pin sockets fit ¾" hole, 1⅛" centers.

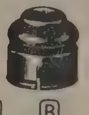
| Amph. No. | Fig. | Contacts | Net Each, Lots of* 1-49 | 50-99 | 100-249 | 250-999 | 1M-2499 |
|---|---|---|---|---|---|---|---|
| 78-7P | G | 7 | $0.422 | $0.353 | $0.316 | $0.245 | $0.217 |
| 78-7PT* | G | 7 | .357 | .297 | .266 | .206 | .184 |
| 147-500 | I | 7 | .38 | .316 | .283 | .22 | .196 |
| 147-504 | I | 7 | .337 | .282 | .252 | .195 | .174 |
| 147-505 | I | 7 | .39 | .327 | .293 | .227 | .202 |
| 59-409 | I | 9 | .444 | .371 | .333 | .257 | .23 |
| 59-410 | I | 9 | 1.03 | .855 | .766 | .593 | .53 |
| 147-905† | H | 7 | .46 | .384 | .344 | .267 | .238 |
| 147-913† | H | 7 | .458 | .383 | .343 | .266 | .237 |
| 147-916† | H | 7 | .533 | .445 | .40 | .31 | .276 |
| 59-403†‡ | H | 9 | .722 | .604 | .54 | .42 | .374 |
| 59-406† | H | 9 | .525 | .44 | .393 | .305 | .272 |
| 59-407† | H | 9 | .513 | .43 | .383 | .297 | .265 |

*Mica-filled. †With .095" rivet holes. ‡Silver contacts.

# Connectors, Sockets and Jacks

## AMPHENOL CABLE CONNECTORS, TUBE AND RELAY SOCKETS

A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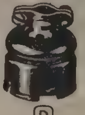
C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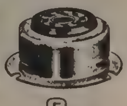

E

### SHIELDED CABLE CONNECTORS (FIG. A)

| Amphenol Number | Contacts* | Net Each, Lots of* 1-49 | 50-99 | 100-249 | 250-999 | 1M-2499 |
|---|---|---|---|---|---|---|
| 86-PM4 | 4 M | $0.545 | $0.471 | $0.416 | $0.324 | $0.288 |
| 86-PM5 | 5 M | .548 | .474 | .418 | .326 | .29 |
| 86-PM6 | 6 M | .57 | .491 | .434 | .34 | .30 |
| 86-PM7S | 7 Sml. M | .58 | .50 | .441 | .344 | .276 |
| 86-PM8 | 8 Octal M | .572 | .492 | .436 | .34 | .302 |
| 86-PM9 | 9 Octal M | .58 | .50 | .442 | .346 | .306 |
| 86-PM11 | 11 Octal M | .587 | .506 | .45 | .35 | .31 |
| 78-PF4 | 4 F | .50 | .432 | .381 | .297 | .264 |
| 78-PF5 | 5 F | .515 | .446 | .393 | .307 | .273 |
| 78-PF6 | 6 F | .54 | .467 | .412 | .322 | .286 |
| 78-PF7S | 7 Small F | .563 | .486 | .43 | .334 | .30 |
| 78-PF8 | 8 Octal F | .501 | .434 | .383 | .30 | .266 |
| 78-PF9 | 9 Octal F | .534 | .461 | .408 | .318 | .282 |
| 78-PF11 | 11 Octal F | .577 | .50 | .43 | .343 | .305 |

*F indicates female; M, male.

### CAPS

**Fig. B and C Types:** Rubber grommet types with side outlet for Fig. C style. Takes up to 7/16″ diameter cable. Japan black finish except 3-857, clear cadmium finish. **Fig. D Type:** With cable clamp outlet; takes up to 3/8″ diameter cable. Clear cadmium finish except 3-24, Japan black.

| Amph. No. | Fig. | Net Each, Lots of* 1-49 | 50-99 | 100-249 | 250-999 | 1M-2499 |
|---|---|---|---|---|---|---|
| 3-10* | ....... | $0.126 | $0.11 | $0.10 | $0.074 | $0.067 |
| 3-12† | ....... | .14 | .121 | .109 | .081 | .074 |
| 3-13 | B | .165 | .147 | .124 | .094 | .085 |
| 3-17 | C | .244 | .215 | .19 | .14 | .128 |
| 3-24 | D | .276 | .246 | .213 | .161 | .146 |
| 3-856 | D | .29 | .255 | .222 | .167 | .15 |
| 3-857 | B | .195 | .173 | .15 | .113 | .102 |

### RECESSING SHELLS

**Fig. E Type:** Aluminum shell mounts 1 3/16″ above or below chassis. Fits 1 3/4″ hole, uses three No. 6 screws. **61-61** is cadmium plated steel shell, recesses unit 1 3/16″; mounts in 1 7/16″ hole; two 5/32″ mounting holes on 1 3/4″ centers.

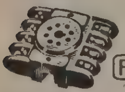
| | | | | | | |
|---|---|---|---|---|---|---|
| 23-1S | E | $0.256 | $0.217 | $0.195 | $0.155 | $0.155 |
| 61-61 | ....... | .14 | .12 | .11 | .10 | .09‡ |

*Dust cap. †Metal outlet; takes up to 5/16″ dia. cable. ‡Lots 500–999.

### CP TYPE PLUGS

Mate with std. tube sockets. Panel mt. with retainer ring, 1 3/16″ dia. hole; attach to cable with 3-13, -24 cap. Suffix **T**, mica-filled.

| Amphenol No. | Contacts | Net Each, Lots of* 1-49 | 50-99 | 100-249 | 250-999 | 1M-2499 |
|---|---|---|---|---|---|---|
| 86-CP4 | 4 | $0.295 | $0.247 | $0.221 | $0.171 | $0.152 |
| 86-CP5 | 5 | .298 | .25 | .223 | .173 | .154 |
| 86-CP6 | 6 | .319 | .267 | .239 | .185 | .164 |
| 86-CP7S | 7 | .33 | .275 | .246 | .191 | .14 |
| 86-CP8 | 8 | .322 | .27 | .241 | .187 | .166 |
| 86-CP8T | 8 | .327 | .274 | .246 | .19 | .169 |
| 86-CP9 | 9 | .33 | .276 | .247 | .193 | .17 |
| 86-CP11 | 11 | .337 | .282 | .253 | .196 | .174 |
| 86-CP11T | 11 | .312 | .261 | .234 | .181 | .175 |
| 86-CP12 | 12 | .347 | .29 | .26 | .201 | .175 |
| 86-CP16 | 16 | .348 | .291 | .261 | .202 | .173 |


F

### INDUSTRIAL TUBE SOCKETS AND RELAY SOCKETS

#### INDUSTRIAL TUBE SOCKETS

Heavy-duty octal sockets. Barrier-protected screw terminals. 1250 V rms at 5 amps.

| Amph. No. | Fig. | Contacts | Mounting | Net Each, Lots of * 1-49 | 50-99 | 100-249 | 250-999 | 1M-2499 |
|---|---|---|---|---|---|---|---|---|
| 146-103 | F | 8 | Top | $1.64 | $1.45 | $1.27 | $0.94 | $0.86 |
| 146-203 | F | 8 | Bottom | 1.64 | 1.45 | 1.27 | .94 | .86 |
| 146-104 | F | 8 | Top | 2.04 | 1.71 | 1.53 | 1.18 | 1.06 |
| 146-204 | F | 8 | Bottom | 2.04 | 1.71 | 1.53 | 1.18 | 1.06 |

With solderless reversible screw terminals. 600 V rms at 10 amps. May be gang mounted.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 146-817 | .... | 11 | ......... | $3.53 | $2.95 | $2.65 | $2.05 | $1.83 |

#### RELAY SOCKETS

| Amphenol No. | Contacts | Net Each, Lots of * 1-49 | 50-99 | 100-249 | 250-999 | 1M-2499 |
|---|---|---|---|---|---|---|
| 59-106 | 14 | $0.60 | $0.50 | $0.45 | $0.35 | $0.31 |
| 59-470 | 20 | .792 | .662 | .593 | .46 | .41 |

★PRICES ON LARGER QUANTITIES AVAILABLE ON REQUEST

## H. H. SMITH TEST JACKS AND FERRULES

### RIGHT ANGLE PRINTED CIRCUIT TEST JACKS

#### MILITARY TYPE (MEETS MIL-C-39024/11)

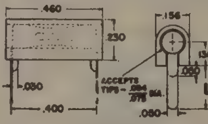
Double entry design; probes inserts from either end of jack. Closed entry construction will not accept probes larger than .084″, will contact probes down to .074″. Closed bottom design keeps jack from fouling with solder or flux. Locking ears keep jack firmly in board until soldered. Precise dimensions allow for automated assembly on boards. **Ratings:** Operating voltage, 1500 V at 60 Hz rms, sea level; 350 V, 60 Hz rms at 50,000 feet. Maximum current rating, 5 amps AC. Contact resistance, 20 mV drop max. at specified current, at 25° C. **Mechanical Data:** Thermal shock, vibration, humidity, insulation resistance, salt spray per MIL-STD-202B. All mechanical tests per applicable section of MIL-C-39024. Insertion force, 30 oz. maximum; withdrawal force, 3 oz. minimum with .080″ probe. **Body:** Molded nylon per MIL-P-17091. Available in 10 colors, as indicated below. **Spring:** Beryllium copper per QQ-C-533. **Finish:** Gold plate per MIL-G-45204, Class I, Type 2. Nickel underplate per QQ-N-290, Class I, Type 7, .0002″ thick. **Mounting:** Mounts in .052″ dia. holes on .400″ centers; board thickness as specified below. Can be spaced side-by-side .160″ on centers minimum.

**H. H. Smith No. 325**—"L" dimension, 0.156″; for boards up to 1/16″ thick. Meets MIL-C-39024/11-01 through -10. Net per 100 .......... **$11.00**

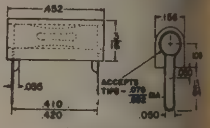
**H. H. Smith No. 321**—"L" dimension, 0.219″ for boards up to 1/8″ thick. MIL-C-39024/11-21 through -30. Net per 100 ... **$11.00**

#### ECONOMY MILITARY TYPE

| H. H. Smith No. | "L" Dim. | Spring Plating | Net per C |
|---|---|---|---|
| 306 | 0.156″ | Gold flash over .0002″ silver | $10.00 |
| 359 | 0.156″ | .0002″ silver | 9.00 |
| 328 | 0.219″ | Gold flash over .0002″ silver | 10.00 |
| 402 | 0.219″ | .0002″ silver | 9.00 |



Military



Commercial

#### COMMERCIAL TYPE

**Mechanical Data:** Thermal shock, vibration, humidtiy, insulation resistance and salt spray tests per MIL-STD-202B. Solderability per MIL-S-6872. Insertion and withdrawal force, 8 oz. min., 5 lbs. max. with .080″ (±.001″) dia. probe. **Ratings:** 5 amps AC for 10° C temp. rise, continuous duty. 1.5 kV, 60 Hz AC continuous working voltage. Contact resistance, 5 milliohms max. at rated current. Capacitance, less than 5 MHz at 1 pF. **Finish:** Silver underplate, .0002″ minimum per QQ-S-365, Type I, with .00003″ gold overplate per MIL-F-14072, M-310. **Mounting:** Mounts in .052″ dia. holes, on .400″ centers, in boards up to 3/16″ thick. Can be spaced side-by-side .160″ on centers min.

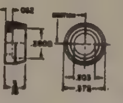
**H. H. Smith No. 430**—Net per 100 .......... **$11.00**

#### ECONOMY COMMERCIAL TYPE

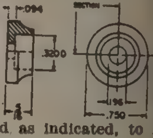
**H. H. Smith No. 499**—Spring is gold flash over .0002″ silver. Net per 100 .......... **$10.00**

**H. H. Smith No. 498**—.0002″ silver. Net per 100 ...... **9.00**

#### FERRULES



1668



2055

Brass and aluminum ferrules, finished as indicated, to match panel handles listed on another page.

##### NICKEL-PLATED BRASS

| H.H.S. No. | Dimensions A | B | C | D | E | Net per C |
|---|---|---|---|---|---|---|
| 1664 | 5/32″ | .109″ | 1/8″ | 1/4″ | 3/64″ | $18.00 |
| 1668 | 1/4″ | .203″ | 3/16″ | 3/8″ | 1/16″ | 18.00 |
| 2055 | 5/16″ | .219″ | 1/4″ | 9/16″ | 1/16″ | 18.00 |
| 2054 | 5/16″ | .196″ | 5/16″ | 3/4″ | 3/32″ | 18.00 |

##### BLACK OXIDE BRASS

| H.H.S. No. | Dimensions A | B | C | D | E | Net per C |
|---|---|---|---|---|---|---|
| 1665 | 5/32″ | .109″ | 1/8″ | 1/4″ | 3/64″ | $18.00 |
| 1669 | 1/4″ | .203″ | 3/16″ | 3/8″ | 1/16″ | 18.00 |
| 1673 | 5/16″ | .219″ | 1/4″ | 9/16″ | 1/16″ | 18.00 |
| 1672 | 5/16″ | .196″ | 5/16″ | 3/4″ | 3/32″ | 18.00 |

##### SATIN ETCH ALUMINUM

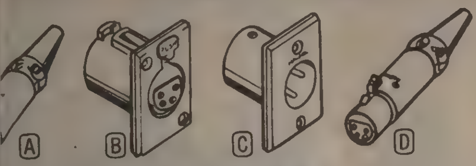
| | | | | | | |
|---|---|---|---|---|---|---|
| 1666 | 5/32″ | .109″ | 1/8″ | 1/4″ | 3/64″ | $13.00 |
| 1670 | 1/4″ | .203″ | 3/16″ | 3/8″ | 1/16″ | 13.00 |

##### BLACK ANODIZED ALUMINUM

| | | | | | | |
|---|---|---|---|---|---|---|
| 1667 | 5/32″ | .109″ | 1/8″ | 1/4″ | 3/64″ | $13.00 |
| 1671 | 1/4″ | .203″ | 3/16″ | 3/8″ | 1/16″ | 13.00 |

# NKER AMO AMPHENOL AUDIO CONNECTORS AND TIP JACKS

## SERIES 91 MICROPHONE CONNECTORS

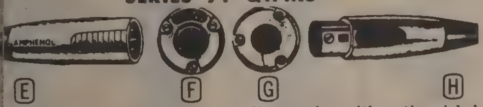


### NEW EXCELLITE® SERIES 91

-cost, dependable audio-type connectors with latchlock cou- ; fully interchangeable with Qwik Series (below) and Cannon series. Shells of tough molded ABS plastic, nickel-plated e and out for best shielding. Silver-plated brass contacts with er cup termination for quick, easy wiring.

| ph. | Fig. | No. of Cont. Description | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999* |
|---|---|---|---|---|---|---|---|
| 3 | A | 3, Male plug | $1.20 | $1.02 | $0.90 | $0.78 | $0.74 |
| 4 | D | 3, Fem. jack | 1.42 | 1.20 | 1.07 | .92 | .87 |
| 5 | C | 3, Male recpt. | 1.09 | .92 | .80 | .70 | .66 |
| 6 | B | 3, Fem. recpt. | 1.98 | 1.69 | 1.47 | 1.29 | 1.21 |
| 7 | A | 4, Male plug | 1.33 | 1.14 | .99 | .86 | .81 |
| 8 | D | 4, Fem. jack | 1.80 | 1.50 | 1.34 | 1.16 | 1.10 |
| 9 | C | 4, Male recpt. | 1.30 | 1.10 | .96 | .84 | .78 |
| 0 | B | 4, Fem. recpt. | 1.90 | 1.62 | 1.41 | 1.28 | 1.16 |
| 1 | A | 5, Male plug | 2.12 | 1.83 | 1.62 | 1.40 | 1.25 |
| 2 | D | 5, Fem. jack | 3.10 | 2.62 | 2.32 | 2.02 | 1.90 |
| 3 | C | 5, Male recpt. | 1.65 | 1.42 | 1.23 | 1.07 | 1.02 |
| 4 | B | 5, Fem. recpt. | 2.80 | 2.40 | 2.10 | 1.82 | 1.71 |

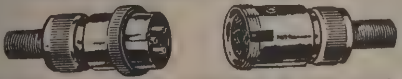
## SERIES 91 QWIKS



ilar to above except bodies are diecast zinc with satin nickel e. Bronze contacts are gold-plated over silver. Dielectric is diallyl phthalate. Easy push-button coupling.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3 | E | 3, Male plug | $1.89 | $1.62 | $1.41 | $1.24 | $1.12 |
| 4 | H | 3, Fem. jack | 2.51 | 2.16 | 1.89 | 1.65 | 1.49 |
| 55 | G | 3, Male recpt. | 1.47 | 1.26 | 1.10 | .96 | .87 |
| 6 | F | 3, Fem. recpt. | 3.48 | 2.99 | 2.61 | 2.29 | 2.07 |
| 57 | E | 4, Male plug | 2.02 | 1.74 | 1.52 | 1.33 | 1.20 |
| 8 | H | 4, Fem. jack | 2.85 | 2.45 | 2.14 | 1.87 | 1.69 |
| 59 | G | 4, Male recpt. | 1.59 | 1.37 | 1.20 | 1.05 | .95 |
| 0 | F | 4, Fem. recpt. | 3.75 | 3.22 | 2.81 | 2.46 | 2.23 |

## THREADED COUPLING SERIES 91



unting hole, 11/16" diameter; maximum 1/8" thick panel. Three tacts, except (*), 4 contacts; (†), 6 contacts. Types listed are ome plated; also available nickel plated prices on request.

| nphenol No. | Description | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999* |
|---|---|---|---|---|---|---|
| CCC3 | Cap and chain | $0.50 | $0.43 | $0.38 | $0.33 | $0.30 |
| MC3F | Female jack | 1.13 | .97 | .85 | .74 | .67 |
| MC3F1 | Female plug | 1.18 | 1.01 | .88 | .77 | .70 |
| MC3M | Male plug | 1.11 | .95 | .83 | .73 | .66 |
| MC3M1 | Male jack | 1.06 | .91 | .79 | .70 | .63 |
| MC4F | Female jack* | 1.17 | 1.00 | .88 | .77 | .69 |
| MC4F1 | Female plug* | 1.23 | 1.05 | .92 | .80 | .73 |
| MC4M | Male plug* | 1.16 | .99 | .87 | .76 | .69 |
| MC4M1 | Male jack* | 1.11 | .96 | .83 | .73 | .66 |
| MC6F | Female jack† | 1.20 | 1.04 | .90 | .79 | .72 |
| MC6F1 | Female plug† | 1.25 | 1.07 | .94 | .82 | .74 |
| MC6M | Male plug† | 1.17 | 1.01 | .88 | .77 | .69 |
| PC3F | Female recept. | .80 | .69 | .60 | .52 | .47 |
| PC6F | Female rcpt.† | .82 | .70 | .61 | .54 | .49 |
| PC3M | Male recept. | .72 | .62 | .54 | .47 | .43 |
| PC4F | Female rcpt.* | .76 | .66 | .57 | .50 | .45 |
| PC4M | Male recept.* | .73 | .62 | .54 | .48 | .43 |
| PC6M | Male recept.† | .78 | .67 | .59 | .51 | .47 |

## TIP JACKS

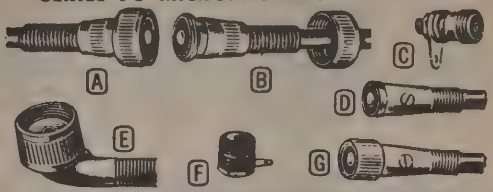
0-29175 350-50200 350-29200

lon body with recessed silver plated contact. For .080" dia. one tip. Tinned terminal. 1/4" mounting hole. Add suffix to alog number to indicate color (350-29175-1): -1, red; -2, black; brown; -4, green; -5, orange; -6, white; -7, blue.

| ph. o. O- | Terminal | Lgth. In. | Net Each, Lots of† 1-49 | 50-99 | 100-249 | 250-999 | 1M-2499 |
|---|---|---|---|---|---|---|---|
| .75 | Turret | 11/64 | $0.428 | $0.358 | $0.321 | $0.25 | $0.228 |
| 00 | Spade | 15/16 | .59 | .492 | .441 | .341 | .305 |
| 00 | Feed-thru | 1 1/8 | .85 | .71 | .635 | .492 | .439 |

acked in packages of ten of the same part number and color y. Colors may be assorted for quantity pricing.

## SERIES 75 MICROPHONE CONNECTORS

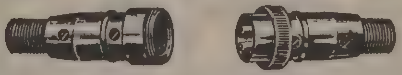


Unique button contact and threaded coupling permit plug conversion to jack by removal of coupling ring. Receptacles mount in .385" holes when grounding, .500" holes for ungrounded two circuit operation, except miniature versions 75-1, -2, -3 which mount in 19/64" chassis hole. Bright chrome finish.

| Amphenol No. | Description | Fig. | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999* |
|---|---|---|---|---|---|---|---|
| 75-CCC1† | Cap and chain | .... | $0.47 | $0.40 | $0.35 | $0.31 | $0.28 |
| 75-CL-PC1M | Chassis recept.* | .... | .68 | .58 | .51 | .44 | .40 |
| 75-MC1F | Straight plug | A | .70 | .60 | .53 | .46 | .42 |
| 75-MC1FA | Angle plug | E | 1.48 | 1.27 | 1.11 | .97 | .88 |
| 75-MC1M | Cable jack | B | .48 | .42 | .36 | .32 | .29 |
| 75-MC1P | Phone pl. adpt. | .... | .68 | .58 | .51 | .45 | .40 |
| 75-MC1S | Mike switch | .... | 2.49 | 2.14 | 1.87 | 1.63 | 1.48 |
| 75-PC1M | Chassis recept. | F | .48 | .42 | .36 | .32 | .29 |
| 75-1 | Plug | G | .76 | .65 | .57 | .50 | .45 |
| 75-2 | Jack | D | .50 | .43 | .37 | .33 | .29 |
| 75-3 | Receptacle | C | .53 | .45 | .40 | .35 | .31 |

*Closed circuit. †May also be used with Series 80 connectors.

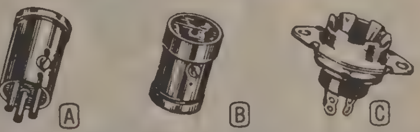
## SERIES 80 MICROPHONE CONNECTORS



All mount in 5/8" hole. Maximum panel thickness for receptacles is 11/32". Single contacts, except (*), 2 contacts. Chrome finish.

| Amphenol No. | Description | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999* |
|---|---|---|---|---|---|---|
| 80-C | Female recept. | $0.60 | $0.52 | $0.45 | $0.40 | $0.36 |
| 80-C1 | Male recept. | .61 | .53 | .46 | .40 | .37 |
| 80-F | Female jack | .77 | .67 | .58 | .51 | .46 |
| 80-F1 | Female plug | .78 | .67 | .58 | .51 | .46 |
| 80-M | Male plug | .76 | .65 | .57 | .50 | .45 |
| 80-M1 | Male jack | .76 | .65 | .57 | .50 | .45 |
| 80-MC2F | Female jack* | .85 | .73 | .64 | .56 | .50 |
| 80-MC2F1 | Female plug* | .85 | .73 | .64 | .56 | .50 |
| 80-MC2M | Male plug* | .80 | .68 | .60 | .52 | .47 |
| 80-MC2M1 | Male jack* | .80 | .68 | .60 | .52 | .47 |
| 80-PC2F | Female rcpt.* | .68 | .58 | .51 | .44 | .40 |
| 80-PC2M | Male recept.* | .66 | .56 | .49 | .43 | .39 |

## MINIATURE CABLE CONNECTORS



Black phenolic dielectrics in cadmium plated brass shell. Polarized contact spacing. Plugs and receptacles take cables up to 1/4" dia. Panel receptacle mounts in 7/8" hole with two 6-32 screw holes on 1 1/4" centers.

### SERIES 91 PLUGS (FIG. A)

| Amphenol No. | Contacts | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-499 | 500-999* |
|---|---|---|---|---|---|---|
| 91-MPM-3L | 3 | $0.42 | $0.36 | $0.32 | $0.28 | $0.25 |
| 91-MPM-4L | 4 | .47 | .41 | .35 | .31 | .28 |
| 91-MPM-5L | 5 | .49 | .42 | .36 | .32 | .29 |
| 91-MPM-6L | 6 | .48 | .41 | .36 | .31 | .28 |

### SERIES 91 RECEPTACLES (FIG. B)

| | | | | | | |
|---|---|---|---|---|---|---|
| 91-MPF-3L | 3 | $0.51 | $0.44 | $0.38 | $0.34 | $0.30 |
| 91-MPF-4L | 4 | .55 | .47 | .41 | .36 | .33 |
| 91-MPF-5L | 5 | .52 | .49 | .43 | .37 | .34 |
| 91-MPF-6L | 6 | .58 | .50 | .44 | .38 | .35 |

### PANEL RECEPTACLES (FIG. C)

| Amphenol No. | Contacts | Net Each, Lots of 1-49 | 50-99 | 100-249 | 250-999 | 1M-2499 |
|---|---|---|---|---|---|---|
| 78-PCG3 | 3 | $0.495 | $0.414 | $0.37 | $0.286 | $0.255 |
| 78-PCG4 | 4 | .594 | .497 | .444 | .344 | .306 |
| 78-PCG5 | 5 | .621 | .52 | .465 | .361 | .32 |
| 78-PCG6 | 6 | .633 | .53 | .473 | .366 | .326 |

★LARGER QUANTITY PRICES ON REQUEST

# BUNKER RAMO AMPHENOL MS/AN Insert Contacts

## MANUFACTURED IN STRICT ACCORDANCE TO MIL-C-5015D SPECIFICATIONS

Contacts are non-rotating type with solder pockets pre-tinned. Inserts are all male or female; feature dimensional stability and high insulation and arc resistance. Sizes 20 and up have thicker inserts. Coupling rings made of solid aluminum bar stock for high strength. Number, in parenthesis, (1), (2), etc., indicates service voltage rating, per table below. Following letters (W,X,Y, and/or Z) give alternate pin positioning available per diagram, right.

### SERVICE VOLTAGE RATING

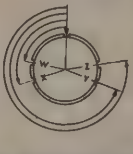
Where more than one rating is shown, (1,3) or (1-5) etc., some contacts have ratings different than other contacts; full information on request. (*) Indicates high voltage. (†) Thermocouple.

| Key | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Volts DC | 250 | 700 | 1250 | 1750 | 2450 | 4200 |
| Volts AC rms | 200 | 500 | 900 | 1250 | 1750 | 3000 |

### CURRENT RATING

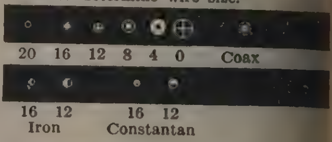
| Contact Size | 20 | 16 | 12 | 8 | 4 | 0 |
|---|---|---|---|---|---|---|
| Amperes | 10 | 22 | 41 | 73 | 135 | 245 |

### ALTERNATE POSITIONS



### WIRE SIZE CODE

Wire size indicated by contact marking in these diagrams. Compare diagrams with these codes to determine wire size.



### 1 CONTACT

8S-1
(2)

10S-2
(2)

12S-4
(3)

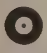
12-5
(3)

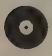
14-3
(2)

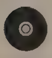
14S-4
(3)

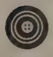
16-2
(4)

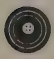
16S-3
(5)

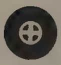

16-12
(2)


18-6
(3)

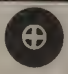

18-7
(5)

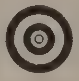

18-16
(6)


18-420
(*)


20-2
(3)

### 1 CONTACT


22-7
(4)


24-835
(*)

### 2 CONTACTS

10SL-4
(2)

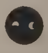
12S-3
(2)

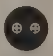
12S-6
(†)

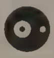
14S-9
(2) W,X,Y,Z

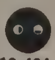
16S-4
(3) W,X,Y,Z

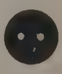
16-11
(2) W,X,Y,Z


16-13
(2,†) W,X,Y,Z

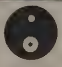

18-3
(3) W,X,Y,Z

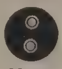

18-14
(2) W,X,Y,Z

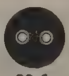

18-404
(†) W,X,Y,Z

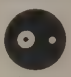

20-5
(4) W,X,Y,Z

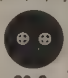
### 2 CONTACTS

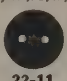

20-12
(2) W,X,Y,Z

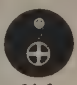

20-23
(2) W,X,Y,Z

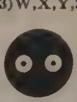

22-1
(3) W,X,Y,Z

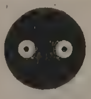

22-3
(3) W,X,Y,Z

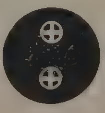

22-8
(4) W,X,Y,Z


22-11
(5) W,X,Y,Z


24-1
(3) W,X,Y,Z


24-9
(2) W,X,Y,Z


28-7
(3) W,X,Y,Z


32-5
(3) W,X,Y,Z

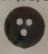
### 3 CONTACTS

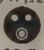
10SL-3
(2)

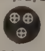
14S-1
(2)

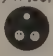
14S-7
(2) W,X,Y

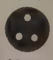
16S-5
(2) W,X,Y,Z

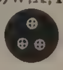

16S-6
(2) W,X,Y

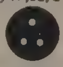

16-7
(2) W,X,Y,Z

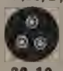

16-10
(2) W,X,Y

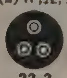

18-5
(3) W,X,Y,Z

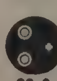

18-22
(3) W,X,Y,Z


20-3
(3) W,X,Y,Z

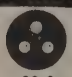

20-6
(3) W,X,Y,Z

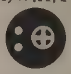

20-19
(2) W,X,Y

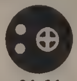

22-2
(3) W,X,Y,Z

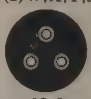

22-6
(3) W,X,Y,Z

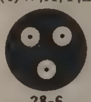
### 3 CONTACTS

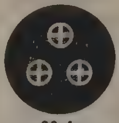

22-9
(4) W,X,Y,Z


22-21
(2) W,X,Y,Z


24-14
(2) W,X,Y,Z


28-3
(4) W,X,Y,Z

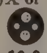

28-6
(3) W,X,Y,Z

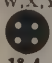

36-4
(2,3) W,X,Y,Z

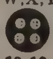
### 4 CONTACTS

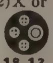
12SL-844
(1)

14S-2
(1) X or Y

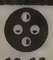

16-9
(2) W,X,Y,Z

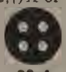

18-4
(3) W,X,Y,Z

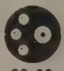

18-10
(2) X or Y

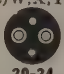

18-13
(2) W,X,Y,Z

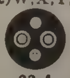
### 4 CONTACTS

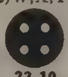

18-15
(2,†) X or Y

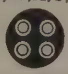

20-4
(3) W,X,Y

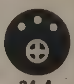

20-20
(2) W,X,Y,Z

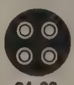

20-24
(2) W,X,Y,Z

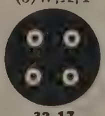

22-4
(2) W,X,Y,Z

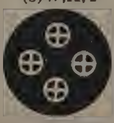

22-10
(4) W,X,Y,Z


22-22
(2) X or Y


24-4
(3) W,X,Y,Z

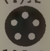

24-22
(3) W,X,Y

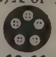

32-17
(3) W,X,Y

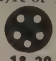

36-5
(2) X or Y

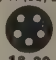
### 5 CONTACTS

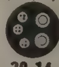
14S-5
(1) X

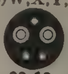

16S-8
(2) X or Y

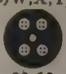

18-11
(2) X or Y

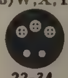

18-20
(2) W,X,Y

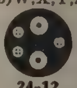

18-29
(2) W,X,Y

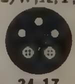

20-14
(2) W,X,Y,Z

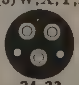

22-12
(3) W,X,Y,Z

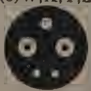

22-13
(2,3) W,X,Y,Z


22-34
(3) W,X,Y,Z

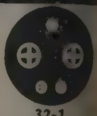

24-12
(2) W,X,Y,Z

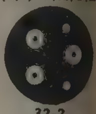

24-17
(3) W,X,Y,Z

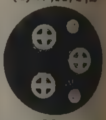

24-23
(3) W,X,Y,Z


28-5
(3) W,X,Y,Z

### 5 CONTACTS

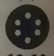

32-1
(3,4) W,X,Y,Z

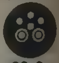

32-2
(4) W,X,Y,Z

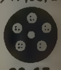

36-2
(3)

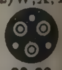
### 6 CONTACTS

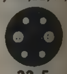
14S-6
(1)

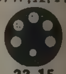

18-12
(2) W or Z

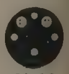

20-8
(1) W,X,Y,Z


20-17
(2) W,X,Y


20-22
(2) W,X,Y,Z

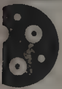

22-5
(3) W,X,Y,Z

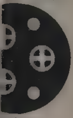

22-15
(2,4) W,X,Y,Z

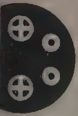

22-24
(2,3) W,X,Y,Z

# AMPHENOL MS/AN Insert Contacts

### NTACTS

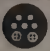

28-22
V,X,Y,Z

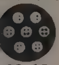

36-3
V,X,Y,Z

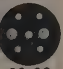

36-6
W,X,Y,Z

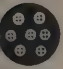
### ONTACTS

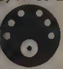
16S-1
)W or Z

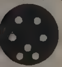

18-9
W,X,Y,Z

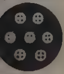

20-15
)W or Z

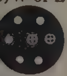

22-26
(3)

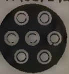

22-28
)W or Z

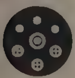

22-29
W,X,Y,Z


22-33
)W,X,Y,Z

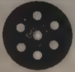

24-2
)W or Z

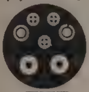

24-3
W,X,Y,Z

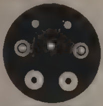

24-10
)W or Z


24-16
)W,X,Y,Z

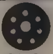
### 7 CONTACTS

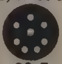

24-27
(4)W or Z

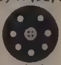

28-10
(2,3)W,X,Y,Z

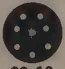

32-10
(2-5)W,X,Y,Z

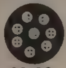
### 8 CONTACTS

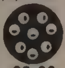

18-8
(2)W or Z

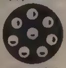

20-7
(2,3)W,X,Y,Z

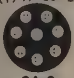

20-9
(2,3)W,X,Y,Z

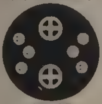

22-18
(2,3)W,X,Y,Z


22-23
(2,3)W or Y

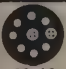

22-36
(2,3,†)W or Y

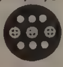

22-404
(†)W or Y


24-6
(2,3)W,X,Y,Z

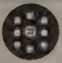

32-15
(3)W,X,Y,Z

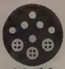
### 9 CONTACTS

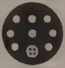

20-16
(2)W,X,Y,Z

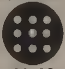

20-18
(2)W,X,Y,Z

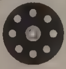
### 9 CONTACTS

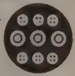

20-21
(2)W,X,Y,Z

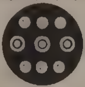

22-16
(2)W,X,Y,Z

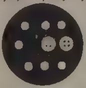

22-17
(2,3)W,X,Y,Z

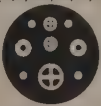

22-20
(2)W,X,Y,Z


22-27
(2,3)W,Y,Z

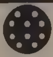

24-11
(2)W,X,Y,Z

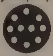

28-1
(2,3)W,X,Y,Z

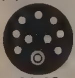

28-4
(3,4)W,X,Y,Z

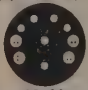

32-3
(3)W,X,Y,Z

### 10 CONTACTS

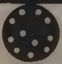

18-1
(1,2)W,X,Y,Z


18-19
(2)X or Y

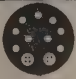

24-21
(3)W,X,Y,Z

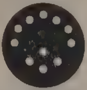

28-19
(2,3,5)W,X,Y,Z

### 11 CONTACTS

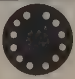

20-33
(2)

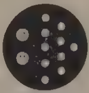
### 11 CONTACTS

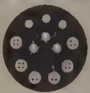

24-20
(3)W,X,Y,Z

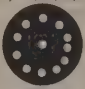

28-14
(3)W,X,Y,Z

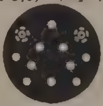
### 12 CONTACTS


24-19
(1)

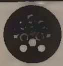

28-8
(2-4)W,X,Y,Z


28-9
(3)W,X,Y,Z

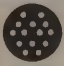

28-18
(1-3,6)W,X,Y,Z

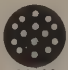

32-101
(3,6)W,X,Y,Z

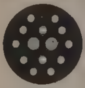
### 13 CONTACTS

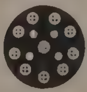

20-11
(1)

### 14 CONTACTS

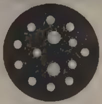

20-27
(1,2)W,X,Y,Z

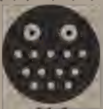

22-19
(2)W,X,Y,Z

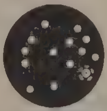

28-2
(3)W,X,Y,Z


28-20
(2)W,X,Y,Z

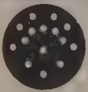
### 14 CONTACTS

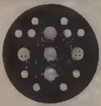

32-4
(2,3)W,X,Y,Z

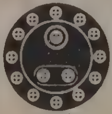

32-9
(3)W,X,Y,Z

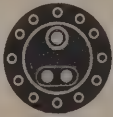

32-102
(2,3,6)W,X,Y,Z

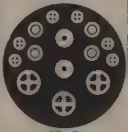
### 15 CONTACTS


28-17
(2,3,5)W,X,Y,Z

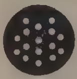

32-12
(2,3)W,X,Y,Z

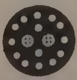

36-405
(*)


36-407
(*)

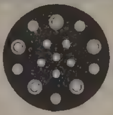

40-5
(2)W,X,Y,Z

### 16 CONTACTS

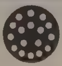

24-5
(2)W,X,Y,Z

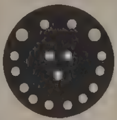

24-7
(2)W,X,Y,Z

### 16 CONTACTS

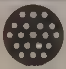

36-14
(3)W,X,Y

### 17 CONTACTS

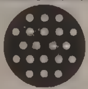

20-29
(2)W or Z


36-13
(2,4)W,X,Y,Z

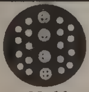
### 19 CONTACTS

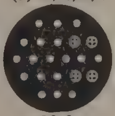

22-14
(2)W,X,Y,Z

### 20 CONTACTS

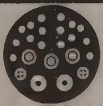

28-16
(2)W,X,Y,Z

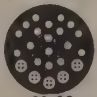
### 22 CONTACTS

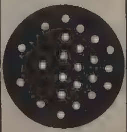

28-11
(2)W,X,Y,Z


36-1
(3)W,X,Y,Z

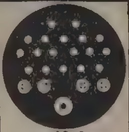
### 23 CONTACTS

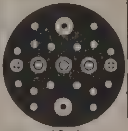

32-6
(2)W,X,Y,Z


32-13
(3)W,X,Y,Z

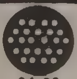

40-2
(3,5)W,X,Y,Z

### 23 CONTACTS

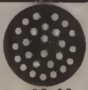

40-3
(3)W,X,Y,Z


40-4
(3)W,X,Y,Z

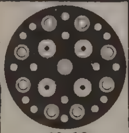
### 24 CONTACTS


24-28
(1)W,X,Y,Z

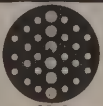
### 26 CONTACTS

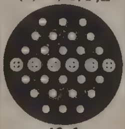

28-12
(2)W,X,Y

### 29 CONTACTS

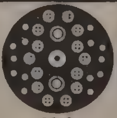

40-10
(2)W,X,Y,Z

### 30 CONTACTS

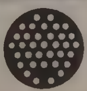

32-8
(2)W,X,Y,Z


40-1
(3)W,X,Y,Z

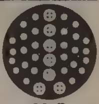
### 31 CONTACTS

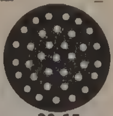

36-9
(2)W,X,Y,Z

### 35 CONTACTS

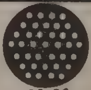

28-15
(2)W,X,Y,Z

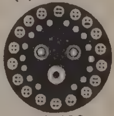
### 35 CONTACTS


32-7
(1,2)W,X,Y,Z

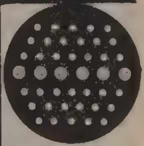

36-15
(2,3)W,X,Y,Z

### 37 CONTACTS

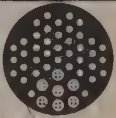

28-21
(2)W,X,Y,Z

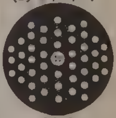

36-406
(2)

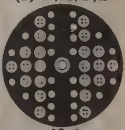
### 42 CONTACTS


44-1
(3)W,X,Y,Z

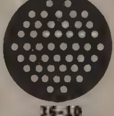
### 47 CONTACTS


36-7
(2)W,X,Y,Z


36-8
(2)W,X,Y,Z


40-9
(2)W,X,Y,Z

### 48, 52 CONT.


36-10
(2)W,X,Y,Z
Similar to above
32-414
(2)
36-403 (2)
36-404 (2)

# BUNKER RAMO AMPHENOL MS Connectors

3100A
Feed-thru

3101A
Cable Jack

3102A
Receptacle

3106A
Plug

3106B
Plug and
Split Back Shell

3108A
Angle Plug
Solid Back Shell

3108B
Angle Plug
Split Back Shell

Meet current MIL-C-5015 specifications; interchangeable with units made to meet previous specs. **Finish:** Cadmium-plated aluminum with olive drab chromate conversion coating; non-reflective, corrosion-resistant. **Inserts:** Molded diallyl phthalate; offers dimensional stability, high insulation resistance, high arc resistance. **Contacts:** Non-rotating, silver-plated; pre-tinned solder pockets. **Coupling Rings:** Made from solid aluminum bar stock. Other MS/AN connectors for potting and pressurizing are available; write for complete literature.

**Note:** For W, X, Y or Z polarization, add **5c** to price shown.

**Type 3100A:** Wall receptacle with mounting flange; with AN3057 cable clamp.

**Type 3101A:** Cable receptacle. Provides for detachable splice in cable or conduit.

**Type 3102A:** Box receptacle that mounts on chassis or panel. For open type wiring.

**Type 3106A:** Straight plug with solid back shell.

**Type 3106B:** Same but with split back shell.

**Type 3108A:** Angle plug. Solid back shell.

**Type 3108B:** Same, but with split back shell.

| Insert | Net Each, Lots of 1-9* Shell Style | | | | | | |
|---|---|---|---|---|---|---|---|
| | 3100A | 3101A | 3102A | 3106A | 3106B | 3108A | 3108B |
| 8S-01P | $2.66 | $2.46 | $1.48 | $1.70 | ....... | $2.92 | ....... |
| 8S-01S | 2.66 | 2.46 | 1.48 | 1.70 | ....... | 2.92 | ....... |
| 10S-02P | 2.72 | 2.21 | 1.02 | 2.38 | ....... | 3.72 | ....... |
| 10S-02S | 2.75 | 2.26 | 1.06 | 2.40 | ....... | 3.78 | ....... |
| 10SL-03P | 1.72 | 2.56 | 1.32 | ....... | ....... | ....... | ....... |
| 10SL-03S | ....... | ....... | ....... | 2.07 | ....... | 3.67 | $1.92 |
| 10SL-04P | 1.70 | 2.42 | 1.32 | ....... | ....... | ....... | ....... |
| 10SL-04S | ....... | ....... | ....... | 2.02 | ....... | 3.66 | 1.88 |
| 12-05P | 2.26 | 2.49 | 1.40 | 2.28 | ....... | 4.11 | 2.42 |
| 12-05S | 2.42 | 2.70 | 1.60 | 2.46 | ....... | 4.30 | 2.61 |
| 12S-01P | 2.07 | 2.38 | 1.18 | 1.92 | ....... | 4.40 | 2.46 |
| 12S-01S | 2.16 | 2.40 | 1.20 | 1.95 | ....... | 4.42 | 2.47 |
| 12S-02P | 2.07 | 2.38 | 1.18 | 1.92 | ....... | 4.40 | 2.46 |
| 12S-02S | 2.16 | 2.40 | 1.20 | 1.95 | ....... | 4.42 | 2.47 |
| 12S-03P | 1.86 | 2.18 | 1.00 | 1.72 | ....... | 4.16 | 2.26 |
| 12S-03S | 1.90 | 2.21 | 1.06 | 1.80 | ....... | 4.20 | 2.30 |
| 12S-04P | 1.92 | 2.26 | 1.08 | 1.81 | ....... | 4.21 | 2.35 |
| 12S-04S | 1.92 | 2.26 | 1.08 | 1.81 | ....... | 4.21 | 2.35 |
| 12S-06P | 5.92 | 6.25 | 5.05 | 5.80 | ....... | 8.21 | 6.32 |
| 12S-06S | 6.30 | 6.60 | 5.41 | 6.20 | ....... | 8.60 | 6.70 |
| 12SL-844P | ....... | ....... | 2.40 | ....... | ....... | ....... | ....... |
| 12SL-844S | ....... | ....... | ....... | 4.46 | ....... | 6.70 | ....... |
| 14-03P | 2.30 | 2.75 | 1.46 | 2.42 | ....... | 4.30 | 3.62 |
| 14-03S | 2.49 | 2.96 | 1.66 | 2.66 | ....... | 4.49 | 3.86 |
| 14S-01P | 1.98 | 2.42 | 1.30 | 1.98 | $2.40 | 4.09 | 2.21 |
| 14S-01S | 2.02 | 2.46 | 1.32 | 2.02 | 2.42 | 4.11 | 2.26 |
| 14S-02P | 1.95 | 2.40 | 1.27 | 1.95 | 2.38 | 4.07 | 2.20 |
| 14S-02S | 2.12 | 2.52 | 1.40 | 2.12 | 2.49 | 4.20 | 2.35 |
| 14S-04P | 1.88 | 2.30 | 1.18 | 1.88 | 2.28 | 4.00 | 2.12 |
| 14S-04S | 1.92 | 2.38 | 1.26 | 1.92 | 2.35 | 4.06 | 2.18 |
| 14S-05P | 2.18 | 2.61 | 1.48 | 2.18 | 2.56 | 4.28 | 2.40 |
| 14S-05S | 2.26 | 2.70 | 1.58 | 2.26 | 2.68 | 4.37 | 2.47 |
| 14S-06P | 2.26 | 2.70 | 1.58 | 2.26 | 2.68 | 4.37 | 2.47 |
| 14S-06S | 2.30 | 2.75 | 1.62 | 2.30 | 2.72 | 4.42 | 2.52 |
| 14S-07P | 1.98 | 2.42 | 1.30 | 1.98 | 2.40 | 4.09 | 2.21 |
| 14S-07S | 2.02 | 2.46 | 1.32 | 2.02 | 2.42 | 4.11 | 2.26 |
| 14S-09P | 1.88 | 2.30 | 1.18 | 1.88 | 2.28 | 4.00 | 2.12 |
| 14S-09S | 1.90 | 2.35 | 1.20 | 1.90 | 2.30 | 4.02 | 2.16 |
| 14S-10P | 2.18 | 2.61 | 1.48 | 2.18 | 2.56 | 4.28 | 2.40 |
| 14S-10S | 2.35 | 2.78 | 1.66 | 2.35 | 2.75 | 4.46 | 2.56 |
| 14S-11P | 2.18 | 2.61 | 1.48 | 2.18 | 2.56 | 4.28 | 2.40 |
| 14S-11S | 2.35 | 2.78 | 1.66 | 2.35 | 2.75 | 4.46 | 2.56 |
| 14S-12P | 2.18 | 2.61 | 1.48 | 2.18 | 2.56 | 4.28 | 2.40 |
| 14S-12S | 2.26 | 2.70 | 1.58 | 2.26 | 2.68 | 4.37 | 2.47 |
| 16-02P | 2.42 | 2.49 | 1.36 | 2.28 | ....... | 4.72 | 2.92 |
| 16-02S | 2.68 | 2.75 | 1.60 | 2.49 | ....... | 4.98 | 3.12 |
| 16-07P | 2.96 | 3.01 | 1.88 | 2.80 | ....... | 5.26 | 3.46 |
| 16-07S | 3.38 | 3.48 | 2.30 | 3.26 | ....... | 5.69 | 3.88 |
| 16-09P | 2.78 | 2.86 | 1.70 | 2.66 | ....... | 5.10 | 3.27 |
| 16-09S | 3.10 | 3.22 | 2.07 | 2.98 | ....... | 5.41 | 3.60 |
| 16-10P | 2.70 | 2.78 | 1.62 | 2.52 | ....... | 5.00 | 3.20 |
| 16-10S | 3.00 | 3.08 | 1.92 | 2.86 | ....... | 5.29 | 3.50 |
| 16-11P | 2.49 | 2.61 | 1.46 | 2.38 | ....... | 4.82 | 3.00 |
| 16-11S | 2.82 | 2.92 | 1.76 | 2.70 | ....... | 5.15 | 3.32 |
| 16-12P | 2.89 | 2.98 | 1.81 | 2.75 | ....... | 5.19 | 3.38 |
| 16-12S | 3.29 | 3.38 | 2.21 | 3.12 | ....... | 5.59 | 3.80 |
| 16-13P | 6.11 | 6.21 | 5.05 | 5.97 | ....... | 8.46 | 6.60 |
| 16-13S | 7.07 | 7.15 | 5.99 | 6.91 | ....... | 9.37 | 7.57 |
| 16S-01P | 2.49 | 2.72 | 1.60 | 2.26 | 2.89 | 5.26 | 2.70 |
| 16S-01S | 2.78 | 2.98 | 1.86 | 2.49 | 3.12 | 5.52 | 2.96 |
| 16S-03P | 2.16 | 2.28 | 1.16 | 1.81 | 2.46 | 4.82 | 2.26 |
| 16S-03S | 2.21 | 2.42 | 1.30 | 1.95 | 2.61 | 4.98 | 2.40 |
| 16S-04P | 2.21 | 2.42 | 1.30 | 1.95 | 2.61 | 4.98 | 2.40 |
| 16S-04S | 2.30 | 2.49 | 1.38 | 2.07 | 2.70 | 5.05 | 2.47 |
| 16S-05P | 2.38 | 2.56 | 1.46 | 2.12 | 2.75 | 5.12 | 2.52 |
| 16S-05S | 2.42 | 2.66 | 1.52 | 2.18 | 2.80 | 5.17 | 2.61 |
| 16S-06P | 2.42 | 2.66 | 1.52 | 2.18 | 2.80 | 5.17 | 2.61 |
| 16S-06S | 2.42 | 2.66 | 1.52 | 2.18 | 2.80 | 5.17 | 2.61 |
| 16S-08P | 2.46 | 2.68 | 1.56 | 2.20 | 2.82 | 5.19 | 2.66 |
| 16S-08S | 2.52 | 2.75 | 1.62 | 2.28 | 2.92 | 5.27 | 2.72 |
| 16S-15P | 2.52 | 2.75 | 1.62 | 2.28 | 2.92 | 5.27 | 2.72 |
| 16S-15S | 2.66 | 2.82 | 1.70 | 2.38 | 3.00 | 5.38 | 2.80 |
| 18-01P | 3.10 | 3.50 | 2.16 | 2.98 | 3.55 | 6.02 | 3.67 |
| 18-01S | 3.38 | 3.78 | 2.40 | 3.26 | 3.81 | 6.30 | 3.95 |
| 18-03P | 2.47 | 2.86 | 1.52 | 2.35 | 2.92 | 5.40 | 3.06 |
| 18-03S | 3.06 | 3.46 | 2.10 | 2.92 | 3.50 | 5.97 | 3.62 |

| Insert | Net Each, Lots of 1-9* Shell Style | | | | | | |
|---|---|---|---|---|---|---|---|
| | 3100A | 3101A | 3102A | 3106A | 3106B | 3108A | 3108B |
| 18-04P | $ 2.49 | $ 2.89 | $1.56 | $ 2.38 | $ 2.96 | $ 5.41 | $ 3.08 |
| 18-04S | 2.72 | 3.08 | 1.72 | 2.56 | 3.12 | 5.66 | 3.29 |
| 18-05P | 2.40 | 2.78 | 1.40 | 2.26 | 2.82 | 5.29 | 2.98 |
| 18-05S | 2.72 | 3.08 | 1.72 | 2.56 | 3.12 | 5.66 | 3.29 |
| 18-06P | 2.66 | 3.00 | 1.66 | 2.47 | 3.06 | 5.55 | 3.22 |
| 18-06S | 3.10 | 3.50 | 2.16 | 2.98 | 3.55 | 6.02 | 3.67 |
| 18-07P | 2.47 | 2.86 | 1.52 | 2.35 | 2.92 | 5.40 | 3.06 |
| 18-07S | 2.92 | 3.29 | 1.92 | 2.78 | 3.36 | 5.81 | 3.50 |
| 18-08P | 3.10 | 3.50 | 2.16 | 2.98 | 3.55 | 6.02 | 3.67 |
| 18-08S | 3.32 | 3.67 | 2.35 | 3.20 | 3.78 | 6.25 | 3.90 |
| 18-09P | 2.96 | 3.32 | 1.95 | 2.80 | 3.38 | 5.85 | 3.52 |
| 18-09S | 3.20 | 3.55 | 2.20 | 3.01 | 3.60 | 6.09 | 3.78 |
| 18-10P | 3.00 | 3.38 | 2.02 | 2.86 | 3.46 | 5.92 | 3.57 |
| 18-10S | 3.32 | 3.67 | 2.35 | 3.20 | 3.78 | 6.25 | 3.90 |
| 18-11P | 3.00 | 3.38 | 2.02 | 2.86 | 3.46 | 5.92 | 3.57 |
| 18-11S | 3.10 | 3.50 | 2.16 | 2.98 | 3.55 | 6.02 | 3.67 |
| 18-12P | 2.80 | 3.20 | 1.81 | 2.68 | 3.26 | 5.71 | 3.38 |
| 18-12S | 3.00 | 3.38 | 2.02 | 2.86 | 3.46 | 5.92 | 3.57 |
| 18-13P | 3.01 | 3.40 | 2.07 | 2.89 | 3.48 | 5.95 | 3.60 |
| 18-13S | 3.40 | 3.80 | 2.42 | 3.27 | 3.86 | 6.32 | 4.00 |
| 18-14P | 2.80 | 3.20 | 1.81 | 2.68 | 3.26 | 5.71 | 3.38 |
| 18-14S | 3.26 | 3.60 | 2.26 | 3.08 | 3.66 | 6.16 | 3.81 |
| 18-15P | 9.95 | 10.35 | 9.00 | 9.81 | 10.39 | 12.86 | 10.51 |
| 18-15S | 10.21 | 10.59 | 9.26 | 10.07 | 10.65 | 13.14 | 10.79 |
| 18-16P | 2.72 | 3.08 | 1.72 | 2.56 | 3.12 | 5.66 | 3.29 |
| 18-16S | 3.20 | 3.55 | 2.20 | 3.01 | 3.60 | 6.09 | 3.78 |
| 18-17P | 3.38 | 3.78 | 2.40 | 3.26 | 3.81 | 6.30 | 3.95 |
| 18-17S | 3.40 | 3.80 | 2.42 | 3.27 | 3.86 | 6.32 | 4.00 |
| 18-18P | 3.38 | 3.78 | 2.40 | 3.26 | 3.81 | 6.30 | 3.95 |
| 18-18S | 3.40 | 3.80 | 2.42 | 3.27 | 3.86 | 6.32 | 4.00 |
| 18-19P | 4.20 | 4.60 | 3.26 | 4.07 | 4.65 | 7.12 | 4.77 |
| 18-19S | 3.46 | 3.81 | 2.46 | 3.29 | 3.88 | 6.35 | 4.02 |
| 18-20P | 2.70 | 3.06 | 1.70 | 2.52 | 3.10 | 5.59 | 3.27 |
| 18-20S | 2.86 | 3.26 | 1.88 | 2.72 | 3.29 | 5.78 | 3.46 |
| 18-22P | 2.47 | 2.86 | 1.52 | 2.35 | 2.92 | 5.40 | 3.06 |
| 18-22S | 2.70 | 3.06 | 1.70 | 2.52 | 3.10 | 5.59 | 3.27 |
| 18-23P | 3.57 | 3.95 | 2.61 | 3.46 | 4.02 | 6.49 | 4.16 |
| 18-23S | 3.62 | 4.02 | 2.68 | 3.50 | 4.07 | 6.56 | 4.20 |
| 18-24P | 3.57 | 3.95 | 2.61 | 3.46 | 4.02 | 6.49 | 4.16 |
| 18-24S | 3.62 | 4.02 | 2.68 | 3.50 | 4.07 | 6.56 | 4.20 |
| 18-29P | 2.72 | 3.08 | 1.72 | 2.56 | 3.12 | 5.66 | 3.29 |
| 18-29S | 2.72 | 3.08 | 1.72 | 2.56 | 3.12 | 5.66 | 3.29 |
| 18-404P | 6.91 | 7.31 | 5.95 | 6.79 | 7.38 | 9.85 | 7.50 |
| 18-404S | 7.85 | 8.20 | 6.86 | 7.67 | 8.25 | 10.75 | 8.41 |
| 18-420P | 4.86 | 5.59 | 4.56 | 6.21 | 6.87 | 9.29 | 6.89 |
| 18-420S | 5.52 | 5.97 | 4.91 | 6.56 | 7.17 | 9.67 | 7.29 |
| 20-02P | 3.95 | 4.16 | 2.80 | 4.28 | 4.70 | 7.41 | 4.91 |
| 20-02S | 4.37 | 4.58 | 3.22 | 4.68 | 5.12 | 7.85 | 5.29 |
| 20-03P | 2.98 | 3.20 | 1.81 | 3.29 | 3.72 | 6.42 | 3.92 |
| 20-03S | 3.90 | 4.09 | 2.75 | 4.20 | 4.65 | 7.38 | 4.86 |
| 20-04P | 3.12 | 3.36 | 1.98 | 3.48 | 3.90 | 6.60 | 4.09 |
| 20-04S | 3.57 | 3.80 | 2.42 | 3.90 | 4.35 | 7.05 | 4.56 |
| 20-05P | 3.08 | 3.29 | 1.92 | 3.40 | 3.86 | 6.56 | 4.06 |
| 20-05S | 3.36 | 3.55 | 2.20 | 3.66 | 4.09 | 6.81 | 4.30 |
| 20-06P | 2.82 | 3.00 | 1.66 | 3.10 | 3.55 | 6.27 | 3.78 |
| 20-06S | 2.86 | 3.06 | 1.70 | 3.20 | 3.60 | 6.32 | 3.81 |
| 20-07P | 3.12 | 3.36 | 1.98 | 3.48 | 3.90 | 6.60 | 4.09 |
| 20-07S | 3.40 | 3.60 | 2.26 | 3.72 | 4.16 | 6.87 | 4.37 |
| 20-08P | 3.57 | 3.80 | 2.42 | 3.90 | 4.35 | 7.05 | 4.56 |
| 20-08S | 4.16 | 4.37 | 3.00 | 4.47 | 4.91 | 7.61 | 5.12 |
| 20-09P | 3.38 | 3.57 | 2.21 | 3.67 | 4.11 | 6.86 | 4.35 |
| 20-09S | 3.46 | 3.62 | 2.28 | 3.78 | 4.18 | 6.89 | 4.40 |
| 20-11P | 4.00 | 4.18 | 2.82 | 4.30 | 4.72 | 7.45 | 4.96 |
| 20-11S | 6.09 | 6.30 | 4.96 | 6.39 | 6.86 | 9.57 | 7.05 |
| 20-12P | 3.12 | 3.36 | 1.98 | 3.48 | 3.90 | 6.60 | 4.09 |
| 20-12S | 3.36 | 3.55 | 2.20 | 3.66 | 4.09 | 6.81 | 4.30 |
| 20-13P | 2.98 | 3.20 | 1.81 | 3.29 | 3.72 | 6.42 | 3.92 |
| 20-13S | 4.40 | 4.60 | 3.26 | 4.70 | 5.15 | 7.87 | 5.31 |
| 20-14P | 3.78 | 3.95 | 2.61 | 4.07 | 4.49 | 7.21 | 4.70 |
| 20-14S | 4.86 | 5.05 | 3.67 | 5.17 | 5.59 | 8.29 | 5.80 |
| 20-15P | 3.48 | 3.66 | 2.30 | 3.80 | 4.20 | 6.91 | 4.42 |
| 20-15S | 4.70 | 4.91 | 3.55 | 5.01 | 5.45 | 8.18 | 5.67 |
| 20-16P | 3.50 | 3.67 | 2.35 | 3.81 | 4.21 | 6.96 | 4.46 |
| 20-16S | 3.72 | 3.92 | 2.56 | 4.06 | 4.47 | 7.17 | 4.68 |
| 20-17P | 3.46 | 3.62 | 2.28 | 3.78 | 4.18 | 6.89 | 4.40 |
| 20-17S | 4.18 | 4.40 | 3.01 | 4.49 | 4.96 | 7.66 | 5.15 |

★LARGER QUANTITY DISCOUNTS SHOWN ON LAST PAGE OF THIS SERIES

# AMPHENOL MS Connectors

| rt | Net Each, Lots of 1-9* Shell Style 3100A | 3101A | 3102A | 3106A | 3106B | 3108A | 3108B |
|---|---|---|---|---|---|---|---|
| P | $ 3.62 | $ 3.86 | $ 2.47 | $ 3.95 | $ 4.40 | $ 7.10 | $ 4.60 |
| S | 4.02 | 4.20 | 2.86 | 4.35 | 4.75 | 7.47 | 4.91 |
| P | 3.86 | 4.07 | 2.70 | 4.16 | 4.60 | 7.31 | 4.77 |
| S | 4.70 | 4.91 | 3.55 | 5.01 | 5.45 | 8.18 | 5.67 |
| P | 3.90 | 4.09 | 2.75 | 4.40 | 4.65 | 7.38 | 4.86 |
| S | 4.70 | 4.91 | 3.55 | 5.01 | 5.45 | 8.18 | 5.67 |
| P | 3.38 | 3.57 | 2.21 | 3.67 | 4.11 | 6.86 | 4.35 |
| S | 3.55 | 3.78 | 2.40 | 3.88 | 4.30 | 7.01 | 4.49 |
| 2P | 4.00 | 4.18 | 2.82 | 4.28 | 4.72 | 7.45 | 4.96 |
| 2S | 4.70 | 4.91 | 3.55 | 5.01 | 5.45 | 8.18 | 5.67 |
| 3P | 3.36 | 3.55 | 2.20 | 3.66 | 4.09 | 6.81 | 4.30 |
| 3S | 3.66 | 3.88 | 2.49 | 4.00 | 4.42 | 7.12 | 4.61 |
| P | 3.46 | 3.62 | 2.28 | 3.78 | 4.18 | 6.89 | 4.40 |
| 4S | 4.28 | 4.47 | 3.10 | 4.60 | 5.01 | 7.71 | 5.22 |
| 7P | 3.57 | 3.80 | 2.42 | 3.90 | 4.35 | 7.05 | 4.56 |
| 7S | 3.92 | 4.11 | 2.78 | 4.21 | 4.68 | 7.40 | 4.87 |
| 9P | 3.88 | 4.07 | 2.72 | 4.18 | 4.61 | 7.35 | 4.82 |
| 9S | 4.30 | 4.49 | 3.12 | 4.61 | 5.05 | 7.75 | 5.26 |
| 3P | 3.86 | 4.06 | 2.70 | 4.16 | 4.60 | 7.31 | 4.77 |
| 3S | 3.95 | 4.16 | 2.80 | 4.28 | 4.70 | 7.41 | 4.91 |
| 1P | 3.55 | 3.72 | 2.16 | 3.55 | 4.06 | 6.96 | 4.30 |
| 1S | 4.11 | 4.30 | 2.78 | 4.11 | 4.68 | 7.59 | 4.96 |
| 2P | 3.80 | 3.95 | 2.42 | 3.80 | 4.35 | 7.26 | 4.60 |
| 2S | 4.61 | 4.77 | 3.27 | 4.61 | 5.17 | 8.07 | 5.41 |
| 3P | 4.56 | 4.70 | 3.20 | 4.56 | 5.10 | 7.99 | 5.31 |
| 03S | 4.70 | 4.87 | 3.36 | 4.70 | 5.26 | 8.18 | 5.52 |
| 4P | 3.92 | 4.09 | 2.56 | 3.92 | 4.47 | 7.40 | 4.72 |
| 04S | 4.46 | 4.61 | 3.08 | 4.46 | 5.00 | 7.92 | 5.26 |
| 05P | 3.66 | 3.86 | 2.30 | 3.66 | 4.20 | 7.12 | 4.47 |
| 05S | 3.67 | 3.88 | 2.35 | 3.67 | 4.21 | 7.15 | 4.49 |
| 06P | 3.60 | 3.80 | 2.26 | 3.60 | 4.16 | 7.07 | 4.42 |
| 06S | 4.21 | 4.42 | 2.89 | 4.21 | 4.77 | 7.69 | 5.05 |
| 07P | 3.81 | 4.00 | 2.46 | 3.81 | 4.37 | 7.29 | 4.61 |
| 07S | 4.28 | 4.46 | 2.92 | 4.28 | 4.82 | 7.71 | 5.10 |
| 08P | 3.08 | 3.27 | 1.72 | 3.08 | 3.62 | 6.56 | 3.90 |
| 08S | 3.90 | 4.07 | 2.52 | 3.90 | 4.46 | 7.38 | 4.70 |
| 09P | 3.26 | 3.40 | 1.88 | 3.26 | 3.80 | 6.70 | 4.06 |
| 09S | 4.11 | 4.30 | 2.78 | 4.11 | 4.68 | 7.59 | 4.96 |
| 10P | 3.26 | 3.40 | 1.88 | 3.26 | 3.80 | 6.70 | 4.06 |
| 10S | 3.38 | 3.55 | 2.02 | 3.38 | 3.92 | 6.86 | 4.18 |
| 11P | 3.00 | 3.20 | 1.66 | 3.00 | 3.55 | 6.47 | 3.81 |
| 11S | 3.26 | 3.40 | 1.88 | 3.26 | 3.80 | 6.70 | 4.06 |
| 12P | 3.92 | 4.09 | 2.56 | 3.92 | 4.47 | 7.40 | 4.72 |
| 12S | 4.56 | 4.70 | 3.20 | 4.56 | 5.10 | 7.99 | 5.31 |
| 13P | 3.62 | 3.81 | 2.28 | 3.62 | 4.18 | 7.10 | 4.46 |
| 13S | 4.06 | 4.20 | 2.70 | 4.06 | 4.60 | 7.50 | 4.86 |
| 14P | 4.35 | 4.49 | 2.98 | 4.35 | 4.87 | 7.80 | 5.15 |
| 14S | 4.98 | 5.15 | 3.60 | 4.98 | 5.52 | 8.46 | 5.78 |
| 15P | 3.88 | 4.06 | 2.49 | 3.88 | 4.42 | 7.35 | 4.68 |
| 15S | 4.72 | 4.91 | 3.38 | 4.72 | 5.27 | 8.20 | 5.55 |
| -16P | 4.06 | 4.20 | 2.70 | 4.06 | 4.60 | 7.50 | 4.86 |
| -16S | 4.11 | 4.30 | 2.78 | 4.11 | 4.68 | 7.59 | 4.96 |
| -17P | 3.88 | 4.06 | 2.49 | 3.88 | 4.42 | 7.35 | 4.68 |
| -17S | 4.00 | 4.16 | 2.66 | 4.00 | 4.56 | 7.45 | 4.77 |
| -18P | 3.60 | 3.80 | 2.26 | 3.60 | 4.16 | 7.07 | 4.42 |
| -18S | 3.66 | 3.86 | 2.30 | 3.66 | 4.20 | 7.12 | 4.47 |
| -19P | 4.28 | 4.46 | 2.92 | 4.28 | 4.82 | 7.71 | 5.10 |
| -19S | 4.35 | 4.49 | 2.98 | 4.35 | 4.87 | 7.80 | 5.15 |
| -20P | 3.72 | 3.90 | 2.38 | 3.72 | 4.28 | 7.17 | 4.56 |
| -20S | 3.90 | 4.07 | 2.52 | 3.90 | 4.46 | 7.38 | 4.70 |
| -21P | 4.07 | 4.21 | 2.72 | 4.07 | 4.61 | 7.52 | 4.87 |
| -21S | 4.60 | 4.75 | 3.26 | 4.60 | 5.15 | 8.06 | 5.40 |
| -22P | 4.37 | 4.56 | 3.00 | 4.37 | 4.91 | 7.85 | 5.17 |
| -22S | 5.50 | 5.67 | 4.11 | 5.50 | 6.02 | 8.97 | 6.30 |
| -23P | 4.18 | 4.37 | 2.82 | 4.18 | 4.72 | 7.66 | 5.00 |
| -23S | 5.38 | 5.55 | 4.02 | 5.38 | 5.92 | 8.81 | 6.20 |
| -24P | 3.57 | 3.78 | 2.21 | 3.57 | 4.11 | 7.05 | 4.40 |
| -24S | 3.80 | 3.95 | 2.42 | 3.80 | 4.35 | 7.26 | 4.60 |
| -26P | 4.02 | 4.18 | 2.68 | 4.02 | 4.58 | 7.47 | 4.82 |
| -26S | 4.56 | 4.70 | 3.20 | 4.56 | 5.10 | 7.99 | 5.31 |
| -27P | 4.11 | 4.30 | 2.78 | 4.11 | 4.68 | 7.59 | 4.96 |
| -27S | 4.46 | 4.61 | 3.08 | 4.46 | 5.00 | 7.92 | 5.26 |
| -28P | 3.95 | 4.11 | 2.61 | 3.95 | 4.49 | 7.41 | 4.75 |
| -28S | 5.45 | 5.66 | 4.09 | 5.45 | 5.99 | 8.89 | 6.27 |
| 2-29P | 4.30 | 4.47 | 2.96 | 4.30 | 4.86 | 7.75 | 5.12 |
| 2-29S | 4.87 | 5.05 | 3.52 | 4.87 | 5.41 | 8.32 | 5.69 |
| 2-33P | 3.57 | 3.78 | 2.21 | 3.57 | 4.11 | 7.05 | 4.40 |
| 2-33S | 3.67 | 3.88 | 2.35 | 3.67 | 4.21 | 7.15 | 4.49 |
| 2-34P | 3.62 | 3.81 | 2.28 | 3.62 | 4.18 | 7.10 | 4.46 |
| 2-34S | 3.80 | 3.95 | 2.42 | 3.80 | 4.35 | 7.26 | 4.60 |
| 2-36P | 18.90 | 19.06 | 17.54 | 18.90 | 19.46 | 22.36 | 19.70 |
| 2-36S | 20.68 | 20.85 | 19.34 | 20.68 | 21.24 | 24.16 | 21.48 |
| 2-404P | 18.90 | 19.06 | 17.54 | 18.90 | 19.46 | 22.36 | 19.70 |
| 2-404S | 20.68 | 20.85 | 19.34 | 20.68 | 21.24 | 24.16 | 21.48 |
| 4-01P | 4.61 | 4.65 | 3.01 | 4.70 | 5.69 | 8.46 | 5.19 |
| 4-01S | 5.50 | 5.52 | 3.90 | 5.57 | 6.56 | 9.29 | 6.07 |
| 4-02P | 4.40 | 4.42 | 2.80 | 4.47 | 5.45 | 8.20 | 4.98 |
| 4-02S | 5.29 | 5.31 | 3.72 | 5.40 | 6.37 | 9.12 | 5.88 |
| 4-03P | 4.11 | 4.16 | 2.52 | 4.20 | 5.19 | 7.95 | 4.70 |
| 4-03S | 4.20 | 4.21 | 2.66 | 4.30 | 5.27 | 8.01 | 4.77 |
| 4-04P | 4.86 | 4.87 | 3.27 | 4.96 | 5.92 | 8.67 | 5.41 |
| 4-04S | 5.52 | 5.55 | 3.92 | 5.59 | 6.58 | 9.31 | 6.09 |
| 4-05P | 4.87 | 4.91 | 3.29 | 4.98 | 5.95 | 8.69 | 5.45 |
| 4-05S | 5.50 | 5.52 | 3.90 | 5.57 | 6.56 | 9.29 | 6.07 |
| 4-06P | 4.58 | 4.60 | 2.98 | 4.65 | 5.66 | 8.39 | 5.15 |
| 4-06S | 5.95 | 5.97 | 4.37 | 6.02 | 7.01 | 9.77 | 6.51 |
| 4-07P | 5.10 | 5.12 | 3.50 | 5.17 | 6.16 | 8.87 | 5.67 |
| 4-07S | 5.50 | 5.52 | 3.90 | 5.57 | 6.56 | 9.29 | 6.07 |
| 4-09P | 4.35 | 4.37 | 2.75 | 4.42 | 5.40 | 8.15 | 4.91 |
| 4-09S | 4.82 | 4.86 | 3.26 | 4.91 | 5.88 | 8.61 | 5.40 |
| 4-10P | 6.35 | 6.37 | 4.75 | 6.42 | 7.41 | 10.17 | 6.91 |
| 4-10S | 7.29 | 7.31 | 5.97 | 7.38 | 8.32 | 11.07 | 7.87 |
| 4-11P | 5.41 | 5.45 | 3.86 | 5.52 | 6.49 | 9.26 | 5.99 |
| 4-11S | 6.89 | 6.91 | 5.29 | 6.98 | 7.97 | 10.71 | 7.47 |

| Insert | Net Each, Lots of 1-9* Shell Style 3100A | 3101A | 3102A | 3106A | 3106B | 3108A | 3108B |
|---|---|---|---|---|---|---|---|
| 24-12P | $ 5.67 | $ 5.69 | $ 4.07 | $ 5.76 | $ 6.75 | $ 9.45 | $ 6.25 |
| 24-12S | 6.79 | 6.81 | 5.19 | 6.87 | 7.87 | 10.59 | 7.38 |
| 24-14P | 5.38 | 5.40 | 3.80 | 5.45 | 6.42 | 9.17 | 5.95 |
| 24-14S | 6.75 | 6.77 | 5.15 | 6.81 | 7.80 | 10.51 | 7.31 |
| 24-16P | 4.70 | 4.72 | 3.10 | 4.77 | 5.78 | 8.51 | 5.27 |
| 24-16S | 5.50 | 5.52 | 3.90 | 5.57 | 6.56 | 9.29 | 6.07 |
| 24-17P | 3.90 | 3.92 | 2.30 | 4.00 | 4.98 | 7.69 | 4.47 |
| 24-17S | 4.35 | 4.37 | 2.75 | 4.42 | 5.40 | 8.15 | 4.91 |
| 24-18P | 3.95 | 4.10 | 2.38 | 4.06 | 5.01 | 7.75 | 4.56 |
| 24-18S | 6.11 | 6.16 | 4.56 | 6.21 | 7.17 | 9.91 | 6.70 |
| 24-19P | 4.87 | 4.91 | 3.29 | 4.98 | 5.95 | 8.69 | 5.45 |
| 24-19S | 5.19 | 5.22 | 3.60 | 5.27 | 6.27 | 9.01 | 5.78 |
| 24-20P | 4.56 | 4.58 | 2.96 | 4.61 | 5.59 | 8.32 | 5.12 |
| 24-20S | 4.60 | 4.61 | 3.00 | 4.68 | 5.67 | 8.41 | 5.17 |
| 24-21P | 4.56 | 4.58 | 2.96 | 4.91 | 5.59 | 8.32 | 5.12 |
| 24-21S | 4.87 | 4.91 | 3.29 | 4.98 | 5.95 | 8.69 | 5.45 |
| 24-22P | 5.17 | 5.19 | 3.57 | 5.26 | 6.25 | 9.00 | 5.76 |
| 24-22S | 6.39 | 6.42 | 4.82 | 6.49 | 7.47 | 10.21 | 6.98 |
| 24-23P | 5.19 | 5.22 | 3.60 | 5.27 | 6.27 | 9.01 | 5.78 |
| 24-23S | 6.30 | 6.32 | 4.70 | 6.37 | 7.38 | 10.11 | 6.87 |
| 24-24P | 5.26 | 5.27 | 3.66 | 5.31 | 6.32 | 9.07 | 5.81 |
| 24-24S | 5.92 | 5.95 | 4.35 | 5.99 | 6.98 | 9.71 | 6.49 |
| 24-27P | 3.90 | 3.92 | 2.30 | 4.00 | 4.98 | 7.69 | 4.47 |
| 24-27S | 4.02 | 4.06 | 2.42 | 4.09 | 5.10 | 7.85 | 4.60 |
| 24-28P | 5.31 | 5.38 | 3.78 | 5.41 | 6.35 | 9.15 | 5.92 |
| 24-28S | 6.02 | 6.07 | 4.46 | 6.11 | 7.10 | 9.85 | 6.60 |
| 24-768P | 5.71 | 5.76 | 4.11 | 5.80 | 6.79 | 9.55 | 6.30 |
| 24-768S | 7.69 | 7.71 | 6.11 | 7.80 | 8.77 | 11.51 | 8.27 |
| 24-835P | 4.60 | 4.61 | 3.00 | 4.68 | 5.67 | 8.41 | 5.17 |
| 24-835S | 5.67 | 5.69 | 4.07 | 5.76 | 6.75 | 9.45 | 6.25 |
| 28-01P | 5.59 | 6.16 | 4.09 | 5.80 | 6.32 | 9.49 | 6.37 |
| 28-01S | 7.15 | 7.69 | 5.67 | 7.38 | 7.89 | 11.05 | 7.95 |
| 28-02P | 5.00 | 5.55 | 3.50 | 5.22 | 5.71 | 8.87 | 5.78 |
| 28-02S | 5.31 | 5.88 | 3.86 | 5.55 | 6.07 | 9.26 | 6.11 |
| 28-03P | 5.17 | 5.71 | 3.66 | 5.38 | 5.88 | 9.07 | 5.95 |
| 28-03S | 5.50 | 6.02 | 4.00 | 5.69 | 6.21 | 9.37 | 6.27 |
| 28-04P | 4.61 | 5.17 | 3.10 | 4.82 | 5.31 | 8.51 | 5.40 |
| 28-04S | 4.86 | 5.40 | 3.36 | 5.05 | 5.57 | 8.75 | 5.66 |
| 28-05P | 5.00 | 5.55 | 3.50 | 5.19 | 5.71 | 8.87 | 5.78 |
| 28-05S | 5.71 | 6.27 | 4.20 | 5.92 | 6.42 | 9.61 | 6.49 |
| 28-06P | 6.07 | 6.60 | 4.58 | 6.27 | 6.79 | 9.95 | 6.86 |
| 28-06S | 6.79 | 7.35 | 5.27 | 6.98 | 7.50 | 10.69 | 7.57 |
| 28-07P | 5.17 | 6.71 | 3.66 | 5.38 | 5.88 | 9.07 | 5.95 |
| 28-07S | 5.80 | 6.35 | 4.30 | 5.99 | 6.51 | 9.69 | 6.58 |
| 28-08P | 5.00 | 5.55 | 3.50 | 5.19 | 5.71 | 8.87 | 5.78 |
| 28-08S | 5.17 | 5.71 | 3.66 | 5.38 | 5.88 | 9.07 | 5.95 |
| 28-09P | 5.27 | 5.81 | 3.80 | 5.50 | 5.99 | 9.17 | 6.07 |
| 28-09S | 5.78 | 6.32 | 4.28 | 5.97 | 6.49 | 9.67 | 6.56 |
| 28-10P | 6.86 | 7.40 | 5.31 | 7.05 | 7.57 | 10.75 | 7.61 |
| 28-10S | 8.61 | 9.17 | 7.12 | 8.81 | 9.35 | 12.55 | 9.40 |
| 28-11P | 5.67 | 6.21 | 4.16 | 5.85 | 6.37 | 9.57 | 6.42 |
| 28-11S | 6.87 | 7.41 | 5.38 | 7.07 | 7.59 | 10.77 | 7.66 |
| 28-12P | 5.88 | 6.42 | 4.40 | 6.09 | 6.60 | 9.80 | 6.67 |
| 28-12S | 6.87 | 7.41 | 5.38 | 7.07 | 7.59 | 10.77 | 7.66 |
| 28-13P | 6.49 | 7.05 | 5.00 | 6.70 | 7.21 | 10.39 | 7.29 |
| 28-13S | 7.52 | 8.07 | 6.02 | 7.71 | 8.25 | 11.45 | 8.29 |
| 28-14P | 5.66 | 6.20 | 4.11 | 5.81 | 6.35 | 9.55 | 6.39 |
| 28-14S | 6.20 | 6.75 | 4.68 | 6.37 | 6.89 | 10.07 | 6.96 |
| 28-15P | 6.60 | 7.15 | 5.12 | 6.81 | 7.35 | 10.49 | 7.40 |
| 28-15S | 7.61 | 8.18 | 6.11 | 7.85 | 8.32 | 11.51 | 8.41 |
| 28-16P | 5.81 | 6.37 | 4.35 | 6.02 | 6.56 | 9.71 | 6.60 |
| 28-16S | 5.88 | 6.42 | 4.40 | 6.09 | 6.60 | 9.80 | 6.67 |
| 28-17P | 4.96 | 5.50 | 3.46 | 5.15 | 5.67 | 8.81 | 5.67 |
| 28-17S | 5.27 | 5.81 | 3.80 | 5.50 | 5.99 | 9.17 | 6.07 |
| 28-18P | 4.77 | 5.31 | 3.27 | 5.00 | 5.52 | 8.69 | 5.57 |
| 28-18S | 5.22 | 5.78 | 3.72 | 5.41 | 5.95 | 9.12 | 5.99 |
| 28-19P | 4.86 | 5.40 | 3.36 | 5.05 | 5.57 | 8.75 | 5.66 |
| 28-19S | 5.88 | 6.42 | 4.40 | 6.09 | 6.60 | 9.80 | 6.67 |
| 28-20P | 5.71 | 6.27 | 4.20 | 5.92 | 6.42 | 9.61 | 6.49 |
| 28-20S | 6.35 | 6.89 | 4.86 | 6.56 | 7.07 | 10.25 | 7.12 |
| 28-21P | 6.81 | 7.38 | 5.29 | 7.01 | 7.52 | 10.71 | 7.59 |
| 28-21S | 7.71 | 8.27 | 6.25 | 7.95 | 8.47 | 11.61 | 8.51 |
| 28-22P | 6.70 | 7.26 | 5.19 | 6.89 | 7.41 | 10.59 | 7.47 |
| 28-22S | 7.97 | 8.51 | 6.47 | 8.18 | 8.69 | 11.87 | 8.75 |
| 28-766P | 7.85 | 8.39 | 6.32 | 8.01 | 8.55 | 11.71 | 8.60 |
| 28-766S | 9.71 | 10.27 | 8.21 | 9.91 | 10.45 | 13.65 | 10.49 |
| 32-01P | 7.40 | 7.89 | 5.76 | 8.60 | 8.67 | 12.91 | 9.09 |
| 32-01S | 9.07 | 9.57 | 7.41 | 10.27 | 10.35 | 14.59 | 10.77 |
| 32-02P | 7.67 | 8.18 | 6.02 | 8.87 | 8.97 | 13.21 | 9.37 |
| 32-02S | 8.89 | 9.40 | 7.29 | 10.15 | 10.20 | 14.46 | 10.61 |
| 32-03P | 8.11 | 8.60 | 6.47 | 9.31 | 9.37 | 13.66 | 9.81 |
| 32-03S | 9.89 | 10.39 | 8.25 | 11.09 | 11.17 | 15.44 | 11.59 |
| 32-04P | 5.66 | 6.11 | 4.00 | 6.86 | 6.89 | 11.17 | 7.35 |
| 32-04S | 6.47 | 6.96 | 4.82 | 7.67 | 7.71 | 12.01 | 8.18 |
| 32-05P | 7.07 | 7.57 | 5.41 | 8.27 | 8.32 | 12.60 | 8.77 |
| 32-05S | 7.85 | 8.29 | 6.20 | 9.05 | 9.09 | 13.37 | 9.55 |
| 32-06P | 7.61 | 8.11 | 5.97 | 8.81 | 8.87 | 13.17 | 9.31 |
| 32-06S | 10.81 | 11.31 | 9.17 | 12.05 | 12.09 | 16.36 | 12.55 |
| 32-07P | 7.21 | 7.69 | 5.57 | 8.46 | 8.49 | 12.74 | 8.89 |
| 32-07S | 9.17 | 9.67 | 7.52 | 10.39 | 10.45 | 14.74 | 10.89 |
| 32-08P | 7.89 | 8.39 | 6.25 | 9.09 | 9.15 | 13.40 | 9.59 |
| 32-08S | 7.99 | 8.49 | 6.35 | 9.21 | 9.27 | 13.51 | 9.69 |
| 32-09P | 6.77 | 7.26 | 5.12 | 7.97 | 8.01 | 12.29 | 8.47 |
| 32-09S | 7.69 | 8.20 | 6.07 | 8.89 | 9.00 | 13.25 | 9.40 |
| 32-10P | 7.61 | 8.11 | 5.97 | 8.81 | 8.87 | 13.17 | 9.31 |
| 32-10S | 8.27 | 8.77 | 6.65 | 9.49 | 9.57 | 13.89 | 9.97 |
| 32-101P | 16.66 | 17.14 | 15.00 | 17.86 | 17.91 | 22.18 | 18.36 |
| 32-101S | 15.58 | 16.08 | 13.94 | 16.78 | 16.85 | 21.14 | 17.28 |
| 32-102P | 12.27 | 12.74 | 10.61 | 13.47 | 13.51 | 17.80 | 13.96 |
| 32-102S | 14.27 | 14.76 | 12.60 | 15.47 | 15.54 | 19.79 | 15.96 |
| 32-12P | 5.88 | 6.37 | 4.21 | 7.10 | 7.15 | 11.45 | 7.59 |
| 32-12S | 7.35 | 7.85 | 5.69 | 8.55 | 8.60 | 12.86 | 9.05 |
| 32-13P | 6.51 | 7.01 | 4.87 | 7.71 | 7.80 | 12.06 | 8.21 |
| 32-13S | 7.45 | 7.95 | 5.80 | 8.67 | 8.72 | 12.99 | 9.15 |

★LARGER QUANTITY DISCOUNTS SHOWN ON FOLLOWING PAGE

BUNKER RAMO

# AMPHENOL MS and AN Connectors

## MS CONNECTORS (CONTINUED)

| Insert | Net Each, Lots of 1-9* Shell Style | | | | | | |
|---|---|---|---|---|---|---|---|
| | 3100A | 3101A | 3102A | 3106A | 3106B | 3108A | 3108B |
| 32-15P | $ 8.97 | $ 9.41 | $ 7.31 | $10.17 | $10.21 | $14.48 | $10.65 |
| 32-15S | 9.85 | 10.35 | 8.20 | 11.05 | 11.09 | 15.39 | 11.55 |
| 32-17P | 8.86 | 9.35 | 7.21 | 10.07 | 10.15 | 14.39 | 10.55 |
| 32-17S | 9.69 | 10.20 | 8.06 | 10.91 | 10.97 | 15.21 | 11.40 |
| 32-414P | 10.91 | 11.40 | 9.27 | 12.11 | 12.17 | 16.46 | 12.60 |
| 32-414S | 14.57 | 15.07 | 12.91 | 15.77 | 15.84 | 20.10 | 16.26 |
| 36-01P | 7.45 | 7.67 | 5.00 | 8.46 | 8.61 | 13.11 | 9.17 |
| 36-01S | 9.31 | 9.57 | 6.87 | 10.31 | 10.49 | 14.99 | 11.05 |
| 36-02P | 10.45 | 10.69 | 7.99 | 11.45 | 11.61 | 16.10 | 12.17 |
| 36-02S | 13.25 | 13.47 | 10.79 | 14.25 | 14.45 | 18.90 | 14.99 |
| 36-03P | 10.69 | 10.91 | 8.21 | 11.65 | 11.87 | 16.31 | 12.41 |
| 36-03S | 13.68 | 13.91 | 11.21 | 14.64 | 14.86 | 19.34 | 15.40 |
| 36-04P | 10.61 | 10.86 | 8.18 | 11.59 | 11.79 | 16.26 | 12.34 |
| 36-04S | 12.57 | 12.79 | 10.11 | 13.51 | 13.75 | 18.20 | 14.29 |
| 36-05P | 13.11 | 13.35 | 10.65 | 14.06 | 14.29 | 18.76 | 14.85 |
| 36-05S | 15.54 | 15.75 | 13.09 | 16.50 | 16.71 | 21.18 | 17.26 |
| 36-06P | 12.99 | 13.21 | 10.51 | 13.96 | 14.19 | 18.64 | 14.74 |
| 36-06S | 15.91 | 16.15 | 13.45 | 16.86 | 17.09 | 21.54 | 17.65 |
| 36-07P | 10.25 | 10.47 | 7.80 | 11.21 | 11.45 | 15.91 | 11.99 |
| 36-07S | 11.31 | 11.55 | 8.86 | 12.29 | 12.51 | 16.97 | 13.07 |
| 36-08P | 9.91 | 10.17 | 7.47 | 10.91 | 11.09 | 15.58 | 11.65 |
| 36-08S | 10.61 | 10.86 | 8.18 | 11.59 | 11.79 | 16.26 | 12.34 |
| 36-09P | 11.79 | 12.05 | 9.35 | 12.79 | 12.99 | 17.46 | 13.51 |
| 36-09S | 14.31 | 14.55 | 11.87 | 15.30 | 15.49 | 19.98 | 16.05 |
| 36-10P | 9.80 | 9.99 | 7.35 | 10.75 | 10.97 | 15.44 | 11.51 |
| 36-10S | 10.55 | 10.79 | 8.11 | 11.55 | 11.75 | 16.20 | 12.29 |
| 36-13P | 8.41 | 8.61 | 5.95 | 9.37 | 9.59 | 14.05 | 10.15 |
| 36-13S | 9.61 | 9.85 | 7.15 | 10.59 | 10.79 | 15.26 | 11.35 |
| 36-14P | 13.07 | 13.26 | 10.59 | 14.01 | 14.25 | 18.68 | 14.79 |
| 36-14S | 13.96 | 14.20 | 11.51 | 14.95 | 15.14 | 19.60 | 15.68 |
| 36-15P | 8.29 | 8.55 | 5.85 | 9.29 | 9.49 | 13.96 | 10.05 |
| 36-15S | 9.12 | 9.35 | 6.67 | 10.11 | 10.31 | 14.79 | 10.86 |
| 36-21P | 13.07 | 13.26 | 10.59 | 14.01 | 14.25 | 18.68 | 14.79 |
| 36-21S | 15.84 | 16.08 | 13.39 | 16.80 | 17.04 | 21.48 | 17.56 |
| 36-403P | 11.79 | 12.05 | 9.35 | 12.79 | 12.99 | 17.46 | 13.51 |
| 36-403S | 15.84 | 16.08 | 13.39 | 16.80 | 17.04 | 21.48 | 17.56 |
| 36-404P | 13.71 | 13.94 | 11.26 | 14.67 | 14.88 | 19.39 | 15.44 |
| 36-404S | 16.20 | 16.46 | 13.77 | 17.20 | 17.39 | 21.88 | 17.94 |
| 36-405P | 16.19 | 16.41 | 13.75 | 17.18 | 17.37 | 21.86 | 17.91 |
| 36-405S | 20.30 | 20.56 | 17.86 | 21.30 | 21.48 | 25.97 | 22.04 |
| 36-406P | 14.36 | 14.59 | 11.91 | 15.37 | 15.56 | 20.04 | 16.10 |
| 36-406S | 21.24 | 21.46 | 18.78 | 22.24 | 22.44 | 26.89 | 22.98 |
| 36-407P | 16.20 | 16.46 | 13.77 | 17.20 | 17.39 | 21.88 | 17.94 |
| 36-407S | 22.80 | 23.04 | 20.34 | 23.78 | 23.98 | 28.45 | 24.54 |
| 40-01P | 10.27 | 10.45 | 7.07 | ........ | ........ | ........ | 12.79 |
| 40-01S | 12.85 | 13.00 | 9.66 | ........ | ........ | ........ | 15.37 |
| 40-02P | 9.80 | 9.95 | 6.58 | ........ | ........ | ........ | 12.29 |
| 40-02S | 10.99 | 11.17 | 7.67 | ........ | ........ | ........ | 13.49 |
| 40-03P | 13.11 | 13.26 | 9.89 | ........ | ........ | ........ | 15.61 |
| 40-03S | 15.04 | 15.18 | 11.85 | ........ | ........ | ........ | 17.54 |
| 40-04P | 16.17 | 16.31 | 12.95 | ........ | ........ | ........ | 18.66 |
| 40-04S | 17.56 | 17.77 | 14.36 | ........ | ........ | ........ | 20.08 |
| 40-05P | 17.46 | 17.65 | 14.27 | ........ | ........ | ........ | 19.98 |
| 40-05S | 21.86 | 22.00 | 18.64 | ........ | ........ | ........ | 24.35 |
| 40-09P | 13.71 | 13.89 | 10.49 | ........ | ........ | ........ | 16.20 |
| 40-09S | 18.64 | 18.85 | 15.44 | ........ | ........ | ........ | 21.16 |
| 40-10P | 19.50 | 19.68 | 16.29 | ........ | ........ | ........ | 22.00 |
| 40-10S | 22.50 | 22.68 | 19.28 | ........ | ........ | ........ | 24.99 |
| 40-60P | 30.35 | 30.49 | 27.78 | 32.93 | ........ | ........ | 32.35 |
| 40-60S | 30.73 | 30.84 | 28.15 | 33.31 | ........ | ........ | 32.72 |

## CAP AND CHAIN ASSEMBLIES

Fits MS and 97 type receptacles and plugs. Provides protection against live circuits, dirt and dust when connector is not in use. Add P to the part number for plug cap and chain.

| Cap and Chain | | | Cap Only, No Chain | | |
|---|---|---|---|---|---|
| Amphenol Number | Shell Size | Net Ea. 1-9* | Amphenol Number | Shell Size | Net Ea. 1-9* |
| 9760-8 | 8S | # | 9760-8G | 8S | # |
| 9760-10 | 10S, SL | $0.64 | 9760-10G | 10S, SL | $0.50 |
| 9760-12 | 12, S, SL | .70 | 9760-12G | 12, S, SL | .58 |
| 9760-14 | 14, 14S | .78 | 9760-14G | 14, 14S | .64 |
| 9760-16 | 16, 16S | .84 | 9760-16G | 16, 16S | .70 |
| 9760-18 | 18 | 1.00 | 9760-18G | 18 | .86 |
| 9760-20 | 20 | 1.10 | 9760-20G | 20 | .96 |
| 9760-22 | 22 | 1.26 | 9760-22G | 22 | 1.10 |
| 9760-24 | 24 | 1.46 | 9760-24G | 24 | 1.32 |
| 9760-28 | 28 | 1.74 | 9760-28G | 28 | 1.60 |
| 9760-32 | 32 | 2.02 | 9760-32G | 32 | 1.90 |
| 9760-36 | 36 | 2.24 | 9760-36G | 36 | 2.12 |
| 9760-40 | 40 | # | 9760-40G | 40 | # |
| 9760-44 | 44 | # | 9760-44G | 44 | # |
| 9760-48 | 48 | # | 9760-48G | 48 | # |

#Prices on request.

## CABLE CLAMPS

Sturdy Amphenol AN3057 Cable Clamp supports cable or wire at the plug or receptacle, prevents twisting or pulling at soldered connections.

| Amphenol Number | Shell Size | Net Ea. 1-9* | Amphenol Number | Shell Size | Net Ea. 1-9* |
|---|---|---|---|---|---|
| AN3057-3 | 8S, 10S | $0.70 | AN3057-20 | 32 | $1.31 |
| AN3057-4 | 12, 12S | .64 | AN3057-24 | 36 | 1.75 |
| AN3057-6 | 14, 14S | .64 | AN3057-28 | 40 | 2.25 |
| AN3057-8 | 16, 16S | .68 | AN3057-32 | 44 | # |
| AN3057-10 | 18 | .71 | AN3057-40 | 48 | # |
| AN3057-12 | 20, 22 | .76 | 97-3057-10-6† | 18 | 1.24 |
| AN3057-16 | 24, 28 | .94 | 97-3057-12-6† | 20, 22 | 1.32 |

†Step-down type. #Prices on request.

## MINIATURE AN 165 SERIES CONNECTORS

Economical, quality miniature connectors feature quick mate an disconnect with reliable bayonet coupling. Pressure- and weathe proof. **Finish:** Aluminum shells with clear conversion seal. **Construction:** Internal rubber gasket cable clamp except those wit potting construction. **Inserts:** Hard dielectric, rubber faced t environmental capability. Available in eight insert configuration with from 5–24 contacts in two shell sizes. **Contacts:** Gold ove silver-plated; available in X and W alternate positions. **Mounting** Small receptacles mount in 13/16″ dia. hole, four .125 screw hole on 35/32″ centers. Large receptacles mount in 1 1/16″ hole with fou .125 screw holes on 1 5/16″ centers. **Size:** Small plugs, 2 1/16″ lg. 57/64″ dia.; large plugs, 2 1/16″ lg. x 1 9/64″ dia. **Rated:** 500 volts rm except as otherwise indicated. **Weight:** 3 oz., average.

### SMALL SIZE: FIVE #20 CONTACTS

Rated 600 volts rms.

| Type | Pin Contacts | | | Socket Contacts | | |
|---|---|---|---|---|---|---|
| | Amphenol Number 165- | Net Each, Lots of 1-49 | Net Each, Lots of 50-99 | Amphenol Number 165- | Net Each, Lots of 1-49 | Net Each, Lots of 50-99 |
| Plug | 33 | $4.10 | $3.23 | 34 | $5.56 | $4.43 |
| Recept.* | 35 | 2.90 | 2.32 | 36 | 3.52 | 2.79 |
| Plug† | 33-1000 | 3.13 | 2.50 | 34-1000 | 3.97 | 3.16 |
| Recept.† | 35-1000 | 5.38 | 4.30 | 36-1000 | 8.15 | 6.49 |
| Recept. | 35-1002 | 6.85 | 5.46 | 36-1003 | 7.51 | 5.99 |

### SMALL SIZE: NINE #20 CONTACTS

| Type | Pin Amphenol Number 165- | 1-49 | 50-99 | Socket Amphenol Number 165- | 1-49 | 50-99 |
|---|---|---|---|---|---|---|
| Plug | 13 | $4.26 | $3.40 | 14 | $6.55 | $5.21 |
| Recept.* | 15 | 3.16 | 2.51 | 16 | 4.04 | 3.22 |
| Plug | 13-1000 | 3.46 | 2.76 | 14-1000 | 4.84 | 3.84 |
| Recept. | 15-1000 | 5.95 | 4.73 | 16-1000 | 7.38 | 5.88 |
| Recept. | 15-1002 | 6.91 | 5.52 | 16-1003 | 8.32 | 6.61 |

### SMALL SIZE: EIGHT #20 AND ONE SHIELDED CONTACTS

| Type | Pin Amphenol Number 165- | 1-49 | 50-99 | Socket Amphenol Number 165- | 1-49 | 50-99 |
|---|---|---|---|---|---|---|
| Recept.* | 73 | $6.11 | $4.86 | 83 | $ 9.97 | $ 7.93 |
| Plug | 82 | 7.51 | 5.99 | 61-1008 | 11.75 | 9.36 |
| Recept.† | 73-1000 | 8.18 | 6.50 | 83-1000 | 12.89 | 10.26 |
| Plug† | 82-1000 | 6.45 | 5.14 | 61 | 10.13 | 8.05 |
| Recept. | 73-1001 | 8.69 | 6.91 | 83-1001 | 12.79 | 10.19 |

### SMALL SIZE: TWELVE #20 CONTACTS

| Type | Pin Amphenol Number 165- | 1-49 | 50-99 | Socket Amphenol Number 165- | 1-49 | 50-99 |
|---|---|---|---|---|---|---|
| Plug | 9 | $4.49 | $3.58 | 10 | $ 6.69 | $5.32 |
| Recept.* | 11 | 3.38 | 2.68 | 12 | 5.54 | 4.40 |
| Plug† | 9-1000 | 3.78 | 3.00 | 10-1000 | 6.40 | 5.10 |
| Recept.† | 11-1000 | 6.05 | 4.80 | 12-1000 | 9.60 | 7.65 |
| Recept. | 11-1002 | 7.30 | 5.80 | 12-1002 | 10.90 | 8.69 |

### LARGE SIZE: FOURTEEN #16 CONTACTS

| Type | Pin Amphenol Number 165- | 1-49 | 50-99 | Socket Amphenol Number 165- | 1-49 | 50-99 |
|---|---|---|---|---|---|---|
| Plug | 29 | $6.64 | $5.28 | 30 | $ 9.22 | $ 7.34 |
| Recept.* | 31 | 4.27 | 3.41 | 32 | 6.82 | 5.42 |
| Plug† | 29-1000 | 4.51 | 3.60 | 30-1000 | 7.99 | 6.35 |
| Recept.† | 31-1000 | 6.85 | 5.46 | 32-1000 | 10.33 | 8.23 |
| Recept. | 31-1003 | 9.16 | 7.30 | 32-1006 | 12.93 | 10.30 |

### LARGE SIZE: NINETEEN #20 AND ONE SHIELDED CONTACTS

| Type | Pin Amphenol Number 165- | 1-49 | 50-99 | Socket Amphenol Number 165- | 1-49 | 50-99 |
|---|---|---|---|---|---|---|
| Recept.* | 84 | $ 9.35 | $7.44 | 85 | $13.96 | $11.11 |
| Plug | 86 | 10.40 | 8.29 | 62-1007 | 17.38 | 13.85 |
| Recept.† | 84-1000 | 10.72 | 8.56 | 85-1000 | 17.31 | 13.79 |
| Plug† | 86-1000 | 8.74 | 6.95 | 62 | 14.74 | 11.72 |
| Recept. | 84-1001 | 9.52 | 7.60 | 85-1001 | 18.16 | 14.46 |

### LARGE SIZE: TWENTY-FOUR #20 CONTACTS

| Type | Pin Amphenol Number 165- | 1-49 | 50-99 | Socket Amphenol Number 165- | 1-49 | 50-99 |
|---|---|---|---|---|---|---|
| Plug | 25 | $ 7.69 | $6.12 | 26 | $10.11 | $ 8.04 |
| Recept.* | 27 | 5.30 | 4.24 | 28 | 7.05 | 5.61 |
| Plug† | 25-1000 | 5.92 | 4.70 | 26-1000 | 9.12 | 7.27 |
| Recept.† | 27-1000 | 8.61 | 6.86 | 28-1000 | 14.71 | 11.73 |
| Recept. | 27-1005 | 10.80 | 8.60 | 28-1003 | 14.19 | 11.30 |

*Square flange. †Potting construction.

## MS3057A CABLE CLAMPS & AN3420 BUSHING

Clamp for rubber-covered cables protected by tubing. Both halves float so cable is always centered for maximum strain relief. With unjacketed cable or wire bundles, use bushing. Shell sizes 16 and larger require two "telescoping" bushings (one corresponding size AN3420 with one smaller).

| MS3057A Cable Clamps | | | | AN3420 Bushings | | | |
|---|---|---|---|---|---|---|---|
| Amph. No. 97-3057- | MS No. MS-3057- | Shell Size | Net Ea., Lots 1-9* | Amph. No. 9779-513- | MS No. AN-3420- | I.D., In. | Net Ea., Lots 1-9* |
| ........ | ........ | ........ | ...... | 3 | 3 | .130 | $0.1 |
| 1004 | 4A | 10SL, 12S | $0.84 | 4 | 4 | .220 | .10 |
| 1007 | 6A | 14, 14S | .84 | 6 | 6 | .312 | .12 |
| 1008 | 8A | 16, 16S | .85 | 8 | 8 | .437 | .12 |
| 1010 | 10A | 18 | .85 | 10 | 10 | .562 | .16 |
| 1012 | 12A | 20, 22 | .96 | 12 | 12 | .625 | .16 |
| 1016 | 16A | 24, 28 | 1.05 | 16 | 16 | .750 | .20 |
| 1020 | 20A | 32 | 1.36 | 20 | 20 | .937 | .29 |
| 1024 | 24A | 36 | 1.64 | 24 | 24 | 1.250 | .35 |

## ★QUANTITY DISCOUNTS FOR MS TYPES

| Quantity In Lots | MS Connector Discount | MS Connector Multiplier | MS Fittings |
|---|---|---|---|
| 10–49 | –23% | 0.770 | Discounts vary with each item—complete price list on request |
| 50–99 | –31% | 0.690 | |
| 100–999 | –38% | 0.620 | |

# AMPHENOL MIL-Type Connectors

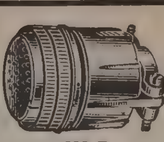
## MS-E AND MS-R CONNECTORS

e resistance to moisture, are pressurized up to one atmos-
lifferential (equivalent to MS-C), and are made of resilient
ic of MIL-R-3065 neoprene rubber for environmental capa-
All MS-R and MS-E connectors, except MS3102R and
2E receptacles, have an individual wire grommet seal.
**Information:** Construction, alternate position, voltage and
; ratings are similar to hard dielectric MS connectors. Will
ate with Series 172, hermetically-sealed receptacles. **MS-E**
As revised, is similar in size to the hard dielectric MS con-
s; employs a mechanical, self-centering strain relief clamp.
**Series:** Are ⅛ shorter and ⅛ lighter than the MS-E.
with O-ring seal in the MS3106R plug to provide addi-
environmental capability.

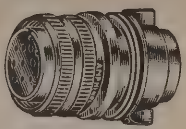
| | Net Each, Lots of 1-9*, Shell Style: MS- | | | | | | |
|---|---|---|---|---|---|---|---|
| ert* | 3100E | 3100R | 3101E | 3101R | 3102† | 3106E | 3106R |
| P | ...... | $4.44 | ...... | $4.56 | $1.99 | ...... | ...... |
| S | ...... | 4.53 | ...... | 4.68 | 2.09 | ...... | ...... |
| -2P | ...... | 3.31 | ...... | 4.23 | .75 | ...... | $3.86 |
| -2S | ...... | 3.56 | ...... | 4.48 | 1.00 | ...... | 4.11 |
| L-3P | $ 3.07 | 2.74 | $ 3.07 | 2.99 | 1.00 | $ 4.93 | 4.56 |
| L-3S | 3.52 | 3.19 | 3.51 | 3.44 | 1.47 | 5.39 | 5.01 |
| L-4P | 3.26 | 2.91 | 3.24 | 3.16 | 1.25 | 5.01 | 4.68 |
| L-4S | 3.49 | 3.14 | 3.47 | 3.39 | 1.49 | 5.24 | 4.91 |
| -3P | 2.99 | 2.15 | 2.99 | 2.22 | .90 | 3.16 | 2.74 |
| -3S | 3.19 | 2.67 | 3.19 | 2.74 | 1.40 | 3.66 | 3.24 |
| -1P | 3.44 | 2.52 | 3.69 | 2.64 | .90 | 3.57 | 3.19 |
| -1S | 3.47 | 2.91 | 3.49 | 3.01 | 1.30 | 3.99 | 3.61 |
| -2P | 3.47 | 2.27 | 3.47 | 2.39 | .99 | 3.42 | 2.99 |
| -2S | 3.56 | 2.59 | 3.57 | 2.69 | 1.30 | 3.66 | 3.27 |
| -5P | 3.56 | 2.40 | 3.61 | 2.52 | 1.02 | 3.52 | 3.11 |
| -5S | 3.66 | 2.67 | 3.69 | 2.76 | 1.32 | 3.72 | 3.36 |
| -6P | 3.66 | 2.32 | 3.69 | 2.40 | 1.17 | 3.66 | 3.02 |
| -6S | 3.77 | 2.72 | 3.86 | 2.81 | 1.49 | 3.77 | 3.42 |
| -7P | 3.32 | 2.27 | 3.41 | 2.39 | .90 | 3.36 | 2.99 |
| -7S | 3.44 | 2.64 | 3.49 | 2.72 | 1.24 | 3.67 | 3.31 |
| -9P | 3.17 | 2.24 | 3.24 | 2.32 | .84 | 3.32 | 2.97 |
| -9S | 3.27 | 2.52 | 3.32 | 2.64 | 1.15 | 3.57 | 3.19 |
| 10P | 3.67 | 3.06 | 3.74 | 3.19 | 1.19 | 4.24 | 3.74 |
| 10S | 4.01 | 3.51 | 4.14 | 3.64 | 1.89 | 4.69 | 4.19 |
| 11P | 3.51 | 3.01 | 3.66 | 3.16 | 1.40 | 4.19 | 3.69 |
| 11S | 3.74 | 3.26 | 3.91 | 3.42 | 1.64 | 4.44 | 3.97 |
| 5-1P | 3.99 | 2.56 | 4.07 | 2.64 | 1.22 | 4.11 | 3.02 |
| 5-1S | 4.11 | 2.99 | 4.18 | 3.06 | 1.65 | 4.19 | 3.57 |
| 5-4P | 3.44 | 2.69 | 3.49 | 2.77 | 1.02 | 3.67 | 3.31 |
| 5-4S | 3.51 | 2.91 | 3.56 | 2.99 | 1.27 | 3.91 | 3.52 |
| 5-5P | 3.52 | 2.67 | 3.61 | 2.76 | 1.05 | 3.66 | 3.27 |
| 5-5S | 3.61 | 2.76 | 3.67 | 2.82 | 1.42 | 3.99 | 3.61 |
| 5-8P | 3.72 | 2.82 | 3.81 | 2.94 | 1.17 | 3.86 | 3.31 |
| 5-8S | 3.77 | 3.36 | 3.97 | 3.44 | 1.69 | 4.23 | 3.86 |
| -1P | 4.26 | 3.19 | 4.36 | 3.31 | 1.49 | 4.44 | 3.64 |
| -1S | 4.61 | 3.74 | 4.73 | 3.86 | 2.05 | 4.69 | 4.19 |
| -4P | 3.86 | 3.26 | 3.97 | 3.36 | 1.25 | 4.19 | 3.69 |
| -4S | 3.99 | 3.49 | 4.07 | 3.57 | 1.47 | 4.43 | 3.92 |
| -8P | 4.41 | 3.51 | 4.49 | 3.61 | 1.44 | 4.53 | 3.97 |
| -8S | 4.53 | 3.72 | 4.68 | 3.81 | 1.92 | 4.68 | 4.18 |
| -11P | 4.14 | 3.26 | 4.24 | 3.36 | 1.39 | 4.26 | 3.69 |
| -11S | 4.53 | 3.97 | 4.61 | 4.06 | 2.09 | 4.91 | 4.41 |
| -12P | 4.02 | 3.31 | 4.14 | 3.42 | 1.32 | 4.24 | 3.74 |
| -12S | 4.94 | 3.66 | 4.68 | 3.74 | 1.65 | 4.59 | 4.11 |
| -20P | 3.89 | 3.27 | 3.99 | 3.41 | 1.27 | 4.23 | 3.72 |
| -20S | 4.73 | 3.69 | 4.86 | 3.77 | 1.69 | 4.64 | 4.16 |
| -4P | 4.14 | 3.27 | 4.19 | 3.42 | 1.42 | 4.56 | 4.14 |
| -4S | 4.48 | 3.89 | 4.59 | 4.01 | 2.00 | 5.16 | 4.73 |
| -7P | 4.48 | 3.27 | 4.61 | 3.42 | 1.42 | 4.61 | 4.14 |
| -7S | 4.59 | 3.74 | 4.69 | 3.89 | 1.90 | 5.03 | 4.59 |
| -15P | 4.59 | 3.56 | 4.69 | 3.67 | 1.72 | 4.86 | 4.41 |
| -15S | 5.23 | 4.53 | 5.34 | 4.68 | 2.72 | 5.85 | 5.41 |
| -16P | 4.49 | 3.57 | 4.64 | 3.92 | 1.67 | 4.89 | 4.43 |
| -16S | 4.94 | 4.02 | 5.01 | 4.44 | 2.15 | 5.31 | 4.89 |
| -18P | 4.73 | 3.61 | 4.86 | 3.74 | 1.74 | 4.91 | 4.44 |
| -18S | 5.01 | 4.07 | 5.11 | 4.19 | 2.19 | 5.39 | 4.93 |
| -27P | 4.94 | 3.77 | 5.23 | 3.69 | 1.82 | 5.09 | 4.43 |
| -27S | 5.59 | 4.18 | 5.73 | 4.31 | 2.40 | 5.48 | 5.01 |
| -29P | 5.09 | 3.81 | 5.23 | 3.97 | 1.99 | 5.43 | 4.43 |
| -29S | 6.11 | 4.36 | 6.23 | 4.48 | 2.76 | 5.68 | 5.16 |
| 2-14P | 5.48 | 4.24 | 5.73 | 4.31 | 2.17 | 5.59 | 4.59 |
| 2-14S | 6.85 | 5.11 | 6.93 | 5.16 | 3.02 | 6.18 | 5.48 |
| 2-19P | 5.06 | 4.33 | 5.31 | 4.39 | 1.89 | 5.39 | 4.68 |
| 2-19S | 6.23 | 4.99 | 6.35 | 5.03 | 2.56 | 6.01 | 5.34 |
| -5P | 5.14 | 4.07 | 5.48 | 4.16 | 2.17 | 5.91 | 5.28 |
| -5S | 7.20 | 5.09 | 7.41 | 5.16 | 3.17 | 6.91 | 6.28 |
| -20P | 4.86 | 3.61 | 5.09 | 3.69 | 1.89 | 5.44 | 4.83 |
| -20S | 5.95 | 4.19 | 6.20 | 4.26 | 2.44 | 6.00 | 5.41 |
| -28P | 5.93 | 4.18 | 6.20 | 4.24 | 2.72 | 6.20 | 5.39 |
| -28S | 8.15 | 5.48 | 8.27 | 5.56 | 4.01 | 7.28 | 6.68 |
| 3-2P | 5.51 | 4.26 | 5.85 | 4.53 | 2.27 | 5.98 | 5.26 |
| 3-2S | 6.85 | 5.09 | 7.10 | 5.34 | 3.07 | 6.78 | 6.03 |
| 3-11P | 6.45 | 4.64 | 6.85 | 4.91 | 2.72 | 6.70 | 5.59 |
| 3-11S | 8.83 | 5.76 | 9.19 | 6.00 | 3.81 | 7.62 | 6.73 |
| 3-12P | 6.11 | 4.64 | 6.45 | 4.91 | 2.69 | 6.85 | 5.59 |
| 3-12S | 8.68 | 5.81 | 9.00 | 6.03 | 3.86 | 8.00 | 6.75 |
| 3-15P | 6.95 | 5.78 | 7.41 | 6.01 | 3.56 | 7.50 | 6.75 |
| 3-15S | 9.92 | 7.48 | 9.92 | 7.73 | 5.24 | 9.19 | 8.45 |
| 8-16P | 5.81 | 4.69 | 6.11 | 4.94 | 2.57 | 6.41 | 5.68 |
| 8-16S | 7.33 | 5.68 | 7.70 | 5.91 | 3.51 | 7.35 | 6.61 |
| 8-20P | 6.48 | 5.74 | 6.85 | 5.98 | 3.72 | 7.45 | 6.70 |
| 8-20S | 7.95 | 7.20 | 8.27 | 7.45 | 5.19 | 8.92 | 8.17 |
| 8-21P | 7.18 | 5.41 | 7.41 | 5.66 | 3.67 | 7.62 | 6.36 |
| 8-21S | 9.92 | 7.28 | 9.92 | 7.57 | 5.59 | 9.02 | 8.27 |
| 2-7P | 8.12 | 7.11 | 8.45 | 7.18 | 3.86 | 9.34 | 7.62 |
| 2-7S | 11.19 | 8.42 | 11.57 | 8.48 | 5.14 | 10.35 | 8.87 |
| 6-10P | 9.44 | 8.03 | 9.92 | 8.12 | 4.56 | 11.26 | 8.27 |
| 6-10S | 13.04 | 9.24 | 13.43 | 9.34 | 5.76 | 12.37 | 9.44 |

ow full number when ordering; i.e., **MS3100E**-8S-1P. †Add
ix **E** or **R** (i.e., MS3102**E** or MS3102**R**).

**S-E AND MS-R QUANTITY DISCOUNTS;** 10–49, 10%;
99, 20%; 100–199, 34%.



MS-E



MS-R & Poke "R"

## 69 SERIES POKE "R" CONNECTORS

Similar to MS-R connectors, but exceed the capability of the MS-R. Crimp-type contacts save labor costs; assemble faster by semi-skilled labor while producing a reliable terminating conductor without the possibility of cold solder joints. Also facilitate easy removal of contact for rewiring at any time. Gold-plated contacts provide continual, low contact resistance by eliminating all possibility of tarnish. Tested at factory to maintain their voltage and 100 megohms min. insulation resistance after altitude cycling at 70,000 feet for 30 minutes while entirely immersed in water. **Prefix Indicates Shell Type:** 69-**0R** equivalent to MS3100; 69-**1R**=MS3101 and 69-**6R**=MS3106 (see MS listing at left).

### ACCESSORY TOOLS

| Amphen. No. | Description | Net Each |
|---|---|---|
| 294-57 | Crimping tool kit (#12, 16 and 20) | $160.00 |
| 294-71 | Shield. contact insertion & removal tool, #16 | 11.57 |
| 294-126 | Four indent #20, #16, #12 contacts crimp tools | 108.46 |
| 294-243 | Turret head crimp tool #20, #16, #12 | 174.23 |
| 294-39 | Insertion & removal tool, #16 contact size | 12.35 |
| 294-40 | Same, but #12 contact size | 10.23 |

### POKE "R" CONNECTORS

Supplied with contacts and sealing plugs, as listed.

| | 69-0R Shell | | 69-1R Shell | | 69-6R Shell | |
|---|---|---|---|---|---|---|
| | Net Each, Lots | | Net Each, Lots | | Net Each, Lots | |
| Insert* | 1-49 | 50-99 | 1-49 | 50-99 | 1-49 | 50-99 |
| 10SL-3P• | $ 4.88 | $ 3.88 | $ 4.94 | $ 3.94 | $ 4.89 | $ 3.90 |
| 10SL-3S• | 5.51 | 4.39 | 5.58 | 4.44 | 5.53 | 4.40 |
| 10SL-4P• | 5.08 | 4.04 | 5.11 | 4.07 | 5.08 | 4.04 |
| 10SL-4S• | 5.51 | 4.39 | 5.54 | 4.42 | 5.51 | 4.39 |
| 12S-3P | 4.28 | 3.40 | 4.33 | 3.44 | 4.94 | 3.94 |
| 12S-3S | 4.71 | 3.75 | 4.76 | 3.79 | 5.38 | 4.28 |
| 14S-2P† | 4.36 | 3.47 | 4.41 | 3.51 | 4.88 | 3.88 |
| 14S-2S† | 5.18 | 4.12 | 5.26 | 4.19 | 5.69 | 4.54 |
| 14S-5P‡ | 4.64 | 3.70 | 4.74 | 3.78 | 5.18 | 4.12 |
| 14S-5S‡ | 5.68 | 4.52 | 5.73 | 4.56 | 6.21 | 4.95 |
| 14S-6P• | 5.03 | 4.00 | 5.09 | 4.06 | 5.56 | 4.43 |
| 14S-6S• | 6.16 | 4.91 | 6.21 | 4.95 | 6.70 | 5.33 |
| 14S-7P# | 4.36 | 3.47 | 4.41 | 3.51 | 4.88 | 3.88 |
| 14S-7S# | 4.99 | 3.98 | 5.08 | 4.04 | 5.53 | 4.40 |
| 14S-9P | 4.23 | 3.36 | 4.28 | 3.40 | 4.91 | 3.91 |
| 14S-9S | 4.61 | 3.67 | 4.63 | 3.68 | 5.29 | 4.22 |
| 16S-1P§ | 5.69 | 4.54 | 5.76 | 4.59 | 6.38 | 5.08 |
| 16S-1S§ | 7.13 | 5.68 | 7.20 | 5.73 | 7.82 | 6.22 |
| 16S-4P | 5.08 | 4.04 | 5.13 | 4.08 | 5.73 | 4.56 |
| 16S-4S | 5.51 | 4.39 | 5.56 | 4.43 | 6.16 | 4.91 |
| 16S-8P† | 5.53 | 4.40 | 5.58 | 4.44 | 6.20 | 4.93 |
| 16S-8S† | 6.55 | 5.21 | 6.63 | 5.28 | 7.21 | 5.75 |
| 16-10P• | 6.05 | 4.81 | 6.10 | 4.85 | 6.71 | 5.35 |
| 16-10S• | 7.15 | 5.69 | 7.20 | 5.73 | 7.83 | 6.24 |
| 18-1P | 6.05 | 4.81 | 6.08 | 4.84 | 7.06 | 5.63 |
| 18-1S | 8.10 | 6.45 | 8.13 | 6.48 | 9.05 | 7.21 |
| 18-4P | 5.44 | 4.34 | 5.48 | 4.36 | 6.41 | 5.11 |
| 18-4S | 6.28 | 5.00 | 6.30 | 5.01 | 7.23 | 5.76 |
| 18-8P§ | 6.48 | 5.16 | 6.53 | 5.20 | 7.46 | 5.95 |
| 18-8S§ | 7.55 | 6.01 | 7.58 | 6.04 | 8.52 | 6.78 |
| 18-11P† | 7.48 | 5.96 | 7.52 | 5.99 | 8.60 | 6.85 |
| 18-11S† | 9.30 | 7.41 | 9.37 | 7.46 | 10.42 | 8.30 |
| 20-7P• | 6.15 | 4.89 | 6.23 | 4.96 | 7.20 | 5.73 |
| 20-7S• | 7.77 | 6.18 | 7.83 | 6.24 | 8.83 | 7.04 |
| 20-15P§ | 7.92 | 6.30 | 7.97 | 6.34 | 8.97 | 7.14 |
| 20-15S§ | 10.60 | 8.45 | 10.67 | 8.50 | 11.47 | 9.14 |
| 20-16P | 6.98 | 5.56 | 7.05 | 5.61 | 8.02 | 6.38 |
| 20-16S | 9.12 | 7.26 | 9.20 | 7.33 | 10.17 | 8.10 |
| 20-18P | 7.20 | 5.73 | 7.25 | 5.77 | 8.25 | 6.57 |
| 20-18S | 9.49 | 7.55 | 9.59 | 7.63 | 10.54 | 8.39 |
| 20-27P | 7.20 | 5.73 | 7.25 | 5.77 | 8.25 | 6.57 |
| 20-27S | 10.00 | 7.97 | 9.99 | 7.95 | 11.04 | 8.79 |
| 20-29P§ | 7.40 | 5.89 | 7.45 | 5.93 | 8.45 | 6.73 |
| 20-29S§ | 10.77 | 8.58 | 10.82 | 8.62 | 11.82 | 9.42 |
| 22-14P | 7.98 | 6.36 | 8.02 | 6.38 | 9.24 | 7.35 |
| 22-14S | 11.76 | 9.36 | 11.79 | 9.39 | 13.01 | 10.36 |
| 24-20P | 7.77 | 6.18 | 7.83 | 6.24 | 9.12 | 7.26 |
| 24-20S | 10.35 | 8.25 | 10.40 | 8.29 | 11.66 | 9.28 |
| 24-28P | 8.97 | 7.14 | 9.03 | 7.20 | 10.27 | 8.18 |
| 24-28S | 13.81 | 11.00 | 13.88 | 11.05 | 15.11 | 12.04 |
| 28-11P | 10.19 | 8.11 | 10.25 | 8.17 | 11.46 | 9.12 |
| 28-11S | 15.33 | 12.21 | 15.40 | 12.26 | 16.57 | 13.19 |
| 28-12P# | 9.69 | 7.71 | 9.75 | 7.77 | 10.75 | 8.57 |
| 28-12S# | 15.06 | 12.00 | 15.11 | 12.04 | 16.30 | 12.98 |
| 28-15P• | 11.02 | 8.78 | 11.12 | 8.86 | 12.27 | 9.78 |
| 28-15S• | 18.14 | 14.44 | 18.20 | 14.50 | 19.39 | 15.44 |
| 28-20P | 10.20 | 8.13 | 10.25 | 8.17 | 11.46 | 9.12 |
| 28-20S | 14.66 | 11.68 | 14.73 | 11.73 | 15.90 | 12.66 |
| 28-21P | 11.22 | 8.94 | 11.29 | 8.99 | 12.46 | 9.92 |
| 28-21S | 18.64 | 14.84 | 18.69 | 14.88 | 19.87 | 15.83 |
| 32-7P | 14.26 | 11.36 | 14.31 | 11.40 | 16.43 | 13.09 |
| 32-7S | 22.51 | 17.93 | 22.58 | 17.98 | 24.72 | 19.68 |
| 36-10P | 15.05 | 11.98 | 15.10 | 12.02 | 17.67 | 14.07 |
| 36-10S | 24.50 | 19.51 | 24.58 | 19.58 | 27.12 | 21.60 |

*Add suffix **(100)** when ordering; i.e., 69-0R-10SL-3P(**100**). Specify polarization W, X, Y or Z when ordering: †X or Y polarization only. ‡X polarization only. §W or Z polarization only. #No Z polarization. •Not polarized.

# ASTRO / 348®

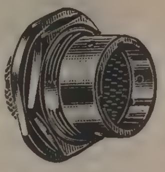
Astro/348® connectors meet new MIL-C-81511 for higher density, miniature connectors. Offer .085" contact spacing for 23-22 size contacts; full performance under extreme environments. Removable crimp contacts, grounded shells and choice of standard or long construction.

① ② ③ **The first major improvement in crimp, removable contact systems:** A molded, one-piece retention disc **1.** actuated by a rear locking nut. **2.** After crimped contacts are tool-inserted, the locking nut is tightened, moving the contact retention risers into confinement. **3.** The contacts are locked in the disc. In the locked condition the internal construction is monoblock, air voids are eliminated, and an interseal is achieved. The contact confinement is similar to molded-in, offering excellent vibration and shock-dampening characteristics. The operating simplicity of the disc assembly minimizes in-service reliability hazards.

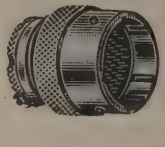
### OTHER IMPORTANT FEATURES

④ Pin Contact Protection. Choice of standard or long construction. Standard is scoop-proof in normal use where pin contacts are in receptacle shell. Long type can't be damaged if contacts are in plug or receptacle. See "How To Order" section on following page.

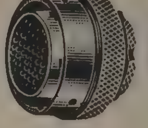
⑤ Closed entry socket contacts; hard front closed entry socket insert.



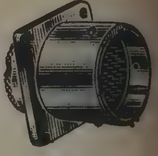
**"D" Hole Receptacle**



**Cable Receptacle**



**Plug**



**Square Flange**

⑥ Triple-track bayonet system: Positive coupling, with coupling ring mechanically captivated.

⑦ 5 key polarization.

⑧ Dual mating seals: Interfacial and dynamic "O" ring peripheral shell.

⑨ Monoblock internal construction; inserts are bonded to the shell.

⑩ Self-sealing rear grommet. No ferrule.

⑪ Color-marked. Fast visual inspection of mated condition.

⑫ Environmental performance per MIL-C-81511.

⑬ Contacts are crimp type, serviceable. (Fixed solder-type contacts in hermetics.)

⑭ Crimp form: Four indent with MS-3198-1 type tool.

⑮ Shell-to-shell grounding fingers.

⑯ Front release, rear serviceable contact system.

⑰ Contact retention in serviceable position, 3 pounds minimum.

⑱ Contact retention in locked condition, 10 pounds minimum after 10 cycles of maintenance aging.

⑲ Dielectric separation. Contact to contact min. wall section, 0.021".

⑳ Minimum creepage in unmated condition, 0.063".

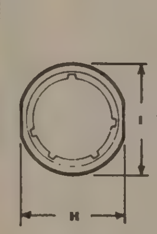
㉑ Wire sealing range: 0.030" dia. minimum to 0.054" diameter max.

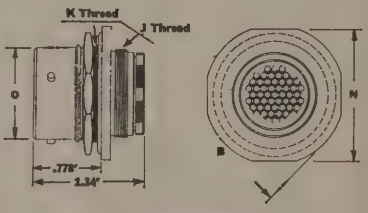
㉒ Alternate positions for connector polarity by rearranging secondary shell key and keyways. Master key remains in normal position.

㉓ Assembly of contacts to contact retention disc may be made outside of connector shells; provides quick inspection for proper installation.

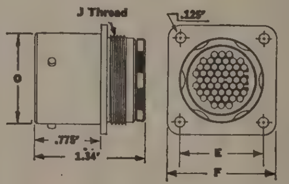
®Astro/348 is a registered, U.S. Patent Off., trademark of the Bunker-Ramo Corporation.

## CONNECTOR DIMENSIONS (BY SHELL SIZE)

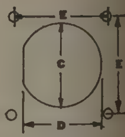




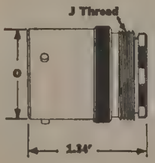
**"D" Hole Receptacle**



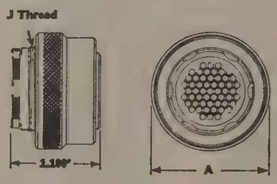
**Square Flange**



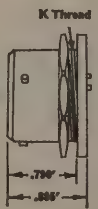
**Cut-out**



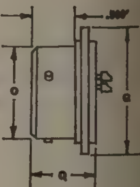
**Cable Receptacle**



**Plug**



**Harmetic Seal Single Hole Mounting**



**Hermetic Seal Solder Flange**

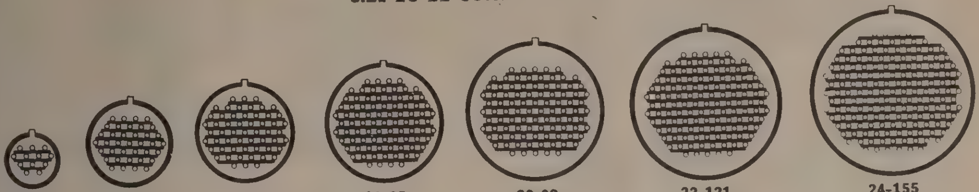
| Shell Size* | Max. Dimensions, Inches | | | | | | | | | Thread | | | | Q | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C ±.005" | D‡ ±.005" | E ±.005" | F | G | H | I | J | K | N | O | Std. | Long |
| 24† | 1.900 | 2.165 | 1.635 | 1.605 | 1.375 | 1.711 | 2.066 | 1.565 | 1.775 | 1½-28 | 1⅝-20 | 2.089 | 1.553 | ...... | .903 |
| 18 | 1.475 | 1.745 | 1.260 | 1.230 | 1.062 | 1.351 | 1.570 | 1.190 | 1.400 | 1⅛-28 | 1¼-20 | 1.651 | 1.178 | .740 | .873 |
| 16 | 1.350 | 1.635 | 1.135 | 1.105 | .969 | 1.258 | 1.446 | 1.066 | 1.280 | 1-28 | 1⅛-20 | 1.526 | 1.054 | .710 | .843 |
| 14 | 1.225 | 1.510 | 1.010 | .980 | .906 | 1.133 | 1.320 | .940 | 1.150 | ⅞-28 | 1-20 | 1.401 | .928 | .710 | .843 |
| 10 | .975 | 1.197 | .760 | .730 | .719 | .945 | 1.070 | .690 | .900 | ⅝-28 | ¾-20 | 1.114 | .678 | .710 | .843 |
| 08 | .850 | 1.072 | .635 | .605 | .594 | .820 | .945 | .565 | .780 | ½-28 | ⅝-20 | .989 | .553 | .710 | .843 |

*Write for dimensions of 20 and 22 size shells. †100% No-Scoop only. ‡Applies to "D" hole receptacle.

## INSERT AND CONTACT SIZES

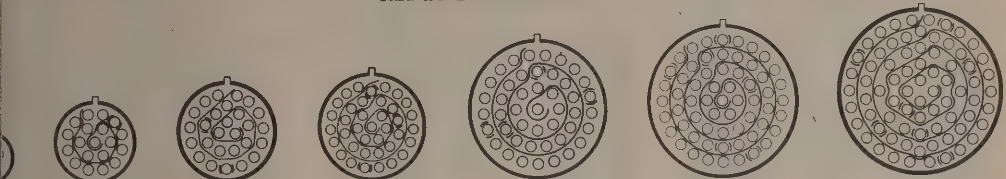
nated number below each diagram represents shell size umber) and number of contacts (second number). Example: 14-37 indicates a size 14 shell with 37 contacts.

### SIZE 23-22 CONTACTS



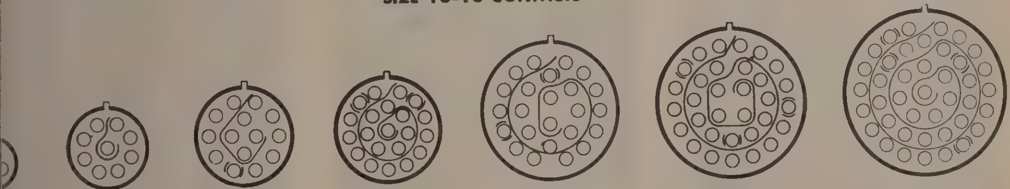
10-12 14-37 16-55 18-85 20-92 22-121 24-155

### SIZE 20-20 CONTACTS



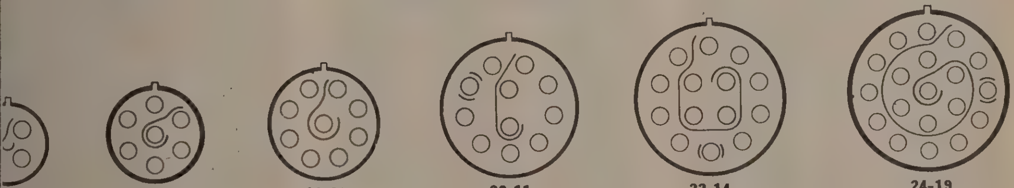
14-19 16-27 18-38 20-45 22-61 24-74

### SIZE 16-16 CONTACTS



14-09 16-14 18-21 20-24 22-32 24-41

### SIZE 12-12 CONTACTS



-04 16-07 18-09 20-11 22-14 24-19

### CONTACT SIZES AND PRICING (WHEN PURCHASED SEPARATELY)

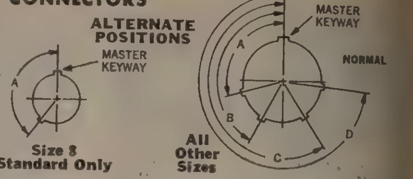
ıdard construction socket contacts .687″ lg.; long construction, 1.017″ lg.

| on- act ize | Wire Size AWG | Cur. Rtg., A | For Construction | Socket Contacts (Only) |  | Net Each, Lots |  | Pin Contacts (Only) |  | Net Each, Lots |  |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  | Amph. No. 348-100- | MIL No. MS- | 1-5499 | 5500-13,999 | Amph. No. 348-100- | MIL No. MS- | 1-5499 | 5500-13,999 |
| 3-22 | 22, 24, 26 | 5.0 | Std.<br>Long | 2201S-02<br>2203S-02* | 90460A23-22<br>3343A23-22 | $0.23<br>.267 | $0.19<br>.22 | 2202P-02<br>2202P-02 | 90461A23-22<br>90461A23-22 | $0.14<br>.14 | $0.116<br>.116 |
| 0-20 | 20, 22, 24 | 7.5 | Std.<br>Long | 2000S-02<br>2003S-02* | 90460A20-20<br>3343A20-20 | .291<br>.292 | .239<br>.24 | 2000P-02<br>2000P-02 | 90461A20-20<br>90461A20-20 | .153<br>.153 | .127<br>.127 |
| 6-16 | 16, 18, 20 | 13.0 | Std.<br>Long | 1600S-02<br>1603S-02* | 90460A16-16<br>3343A16-16 | .333<br>.373 | .274<br>.307 | 1600P-02<br>1600P-02 | 90461A16-16<br>90461A16-16 | .172<br>.172 | .142<br>.142 |
| 2-12 | 12, 14 | 23.0 | Std.<br>Long | 1200S-02<br>1203S-02* | 90460A12-12<br>3343A12-12 | .587<br>.655 | .483<br>.539 | 1200P-02<br>1200P-02 | 90461A12-12<br>90461A12-12 | .363<br>.363 | .299<br>.299 |

ın-stock item subject to $100.00 min. order.

## HOW TO ORDER ASTRO/348 CONNECTORS

| 348 | -3 | 0 | E | 18 | -85 | S | 1 | (200) |
|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | H | I |



(A) Series Designation: **348.**

(B) Type: **3**—Long MIL-C-81511, Rev. B. For blind mating; can't damage by wiping contacts across a mating shell. Even when mated, .090″ contact separation is guaranteed. Won't mate with Type 4. **4**—Standard MIL-C-81511, Rev. B. Standard construction; for most applications. Won't mate with Type 3.

(C) Shell Style: **0**—Square Flange Receptacle. **1**—Cable Receptacle. **3**—Single Hole Mounting Receptacle. **5**—Hermetically-sealed, Solder Flange Receptacle. **6**—Straight Plug.

(D) Class: **E**—Environmental is standard. H, Hermetic and P, Potted are available on special order.

(E) Shell Size: **08, 10, 14, 16 and 18** are standard; **20, 22 and 24** available only in long construction.

(F) Insert Arrangement: **03, 04, 05, 07, 09, 11, 12, 14, 19, 21, 24, 27, 32, 37, 38, 41, 45, 55, 61, 74, 85, 92, 121 and 155.**

(G) Contact Style: **P**—Pin Contact. **S**—Socket Contact.

(H) Shell Position: 1, normal; 2, 3, 4, 5 or 6 available.

(I) Deviations: Omit if no cable clamp is desired. **(200)**—connector with cable clamp; **(201)**—connector less contacts (separate contacts listed on the previous page).

**Write for key and keyway arrangement for standard and long construction types.**

| Amphenol No. 348- | Net Each, Lots of 1-9 | 10-24 | 25-99* |
|---|---|---|---|
| 20E08-04P1* | $24.18 | $22.04 | $19.92 |
| 20E08-04S1 | 23.80 | 21.69 | 19.60 |
| 20E10-12P1 | 28.69 | 26.15 | 23.63 |
| 20E10-12S1 | 28.94 | 26.38 | 23.84 |
| 20E14-37P1 | 41.42 | 37.75 | 34.11 |
| 20E14-37S1 | 45.22 | 41.22 | 37.24 |
| 20E16-55P1 | 47.20 | 43.02 | 38.87 |
| 20E16-55S1 | 55.25 | 48.54 | 43.86 |
| 20E18-85P1 | 50.13 | 45.69 | 41.28 |
| 20E18-85S1 | 60.84 | 55.46 | 50.10 |
| 21E08-04P1 | 24.25 | 22.10 | 19.97 |
| 21E08-04S1 | 22.80 | 20.78 | 18.78 |
| 21E10-12P1 | 22.06 | 20.11 | 18.17 |
| 21E10-12S1 | 22.31 | 20.34 | 18.38 |
| 21E14-37P1 | 41.46 | 37.79 | 34.14 |
| 21E14-37S1 | 45.22 | 41.22 | 37.24 |
| 21E16-55P1 | 47.20 | 43.02 | 38.87 |
| 21E16-55S1 | 53.25 | 48.54 | 43.86 |
| 21E18-85P1 | 50.13 | 45.69 | 41.28 |
| 21E18-85S1 | 60.86 | 55.48 | 50.12 |
| 23E08-04P1 | 28.62 | 26.09 | 23.57 |
| 23E08-04S1 | 27.88 | 25.41 | 22.96 |
| 23E10-12P1 | 30.37 | 27.68 | 25.01 |
| 23E10-12S1 | 30.62 | 27.91 | 25.22 |
| 23E14-37P1 | 33.92 | 30.91 | 27.93 |
| 23E14-37S1 | 46.41 | 42.30 | 38.22 |
| 23E16-55P1 | 49.17 | 44.82 | 40.50 |
| 23E16-55S1 | 55.23 | 50.34 | 45.48 |
| 23E18-85P1 | 51.28 | 46.74 | 42.23 |
| 23E18-85S1 | 62.01 | 56.52 | 51.07 |
| 26E08-04P1 | 22.82 | 20.80 | 18.80 |
| 26E08-04S1 | 21.57 | 19.66 | 17.76 |
| 26E10-12P1 | 26.78 | 24.41 | 22.05 |
| 26E10-12S1 | 27.03 | 24.64 | 22.26 |
| 26E14-37P1 | 41.23 | 37.58 | 33.95 |
| 26E14-37S1 | 44.99 | 41.01 | 37.05 |
| 23E16-55P1 | 47.24 | 43.06 | 38.90 |
| 26E16-55S1 | 53.30 | 48.58 | 43.89 |
| 26E18-85P1 | 51.19 | 46.66 | 42.16 |
| 26E18-85S1 | 61.05 | 55.65 | 50.28 |
| 30E08-04P1* | 18.14 | 16.55 | 14.96 |
| 30E08-04S1* | 17.81 | 16.25 | 14.69 |
| 30E10-03P1 | 20.20 | 18.42 | 16.65 |
| 30E10-03S1 | 19.90 | 18.16 | 16.41 |
| 30E10-05P1 | 20.41 | 18.62 | 16.83 |
| 30E10-05S1 | 20.62 | 18.81 | 17.00 |
| 30E10-12P1 | 21.47 | 19.58 | 17.70 |
| 30E10-12S1 | 22.41 | 20.44 | 18.48 |
| 30E14-04P1* | 21.43 | 19.55 | 17.67 |
| 30E14-04S1* | 21.51 | 19.62 | 17.73 |
| 30E14-09P1 | 20.97 | 19.13 | 17.29 |
| 30E14-09S1 | 22.42 | 20.45 | 18.49 |
| 30E14-19P1 | 23.23 | 21.19 | 19.15 |
| 30E14-19S1 | 25.16 | 22.95 | 20.74 |
| 30E14-37P1 | 32.28 | 29.45 | 26.61 |
| 30E14-37S1 | 37.13 | 33.87 | 30.61 |
| 30E16-07P1 | 24.53 | 22.37 | 20.22 |
| 30E16-07S1 | 25.55 | 23.31 | 21.06 |
| 30E16-14P1 | 22.75 | 20.75 | 18.76 |
| 30E16-14S1 | 24.63 | 22.47 | 20.31 |
| 30E16-27P1 | 25.34 | 23.11 | 20.89 |
| 30E16-27S1 | 29.93 | 27.31 | 24.68 |
| 30E16-55P1 | 36.80 | 33.57 | 30.34 |
| 30E16-55S1 | 44.26 | 40.37 | 36.49 |
| 30E18-09P1 | 25.30 | 23.08 | 20.85 |
| 30E18-09S1 | 27.22 | 24.83 | 22.44 |
| 30E18-21P1 | 31.96 | 29.14 | 26.32 |
| 30E18-21S1 | 38.47 | 35.07 | 31.68 |
| 30E18-38P1 | 30.46 | 27.77 | 25.08 |
| 30E18-38S1 | 35.95 | 32.78 | 29.61 |
| 30E18-85P1 | 39.16 | 35.73 | 32.29 |
| 30E18-85S1 | $52.42 | $47.80 | $43.17 |
| 30E20-11P1 | 30.06 | 27.42 | 24.78 |
| 30E20-11S1 | 32.38 | 29.54 | 26.70 |
| 30E20-24P1 | 31.68 | 28.90 | 26.12 |
| 30E20-24S1 | 34.79 | 31.73 | 28.68 |
| 30E20-45P1 | 36.89 | 33.65 | 30.41 |
| 30E20-45S1 | 42.48 | 38.75 | 35.02 |
| 30E20-92P1 | 43.81 | 39.96 | 36.12 |
| 30E20-92S1 | 56.51 | 51.55 | 46.59 |
| 30E22-14P1 | 33.32 | 30.40 | 27.47 |
| 30E22-14S1 | 35.87 | 32.72 | 29.57 |
| 30E22-32P1 | 34.04 | 31.05 | 28.06 |
| 30E22-32S1 | 39.94 | 36.44 | 32.93 |
| 30E22-61P1 | 40.33 | 36.79 | 33.25 |
| 30E22-61S1 | 49.47 | 45.10 | 40.74 |
| 30E22-121P1 | 50.79 | 46.33 | 41.88 |
| 30E22-121S1 | 68.11 | 62.14 | 56.16 |
| 30E24-19P1 | 36.52 | 33.32 | 30.11 |
| 30E24-19S1 | 41.36 | 37.73 | 34.10 |
| 30E24-41P1 | 37.89 | 34.56 | 31.24 |
| 30E24-41S1 | 46.43 | 42.35 | 38.28 |
| 30E24-74P1 | 45.09 | 41.13 | 37.18 |
| 30E24-74S1 | 57.56 | 52.51 | 47.46 |
| 30E24-155P1 | 60.82 | 55.48 | 50.14 |
| 30E24-155S1 | 83.63 | 76.29 | 68.95 |
| 31E08-04P1* | 18.30 | 16.70 | 15.09 |
| 31E08-04S1* | 18.09 | 16.51 | 14.92 |
| 31E10-03P1* | 20.17 | 18.40 | 16.63 |
| 31E10-03S1* | 20.07 | 18.31 | 16.55 |
| 31E10-05P1* | 20.52 | 18.72 | 16.92 |
| 31E10-05S1* | 20.58 | 18.78 | 16.97 |
| 31E10-12P1* | 20.35 | 18.56 | 16.77 |
| 31E10-12S1* | 22.41 | 20.44 | 18.48 |
| 31E14-04P1* | 21.42 | 19.54 | 17.66 |
| 31E14-04S1* | 21.46 | 19.58 | 17.69 |
| 31E14-09P1* | 21.13 | 19.28 | 17.43 |
| 31E14-09S1* | 22.42 | 20.45 | 18.49 |
| 31E14-19P1* | 23.40 | 21.35 | 19.29 |
| 31E14-19S1* | 25.30 | 23.08 | 20.86 |
| 31E14-37P1* | 32.28 | 29.44 | 26.61 |
| 31E14-37S1* | 33.13 | 30.22 | 27.31 |
| 31E16-07P1* | 24.53 | 22.37 | 20.22 |
| 31E16-07S1* | 25.55 | 23.31 | 21.07 |
| 31E16-14P1* | 23.10 | 21.07 | 19.04 |
| 31E16-14S1* | 25.57 | 23.32 | 21.08 |
| 31E16-27P1* | 25.64 | 23.39 | 21.14 |
| 31E16-27S1* | 35.45 | 32.34 | 29.23 |
| 31E16-55P1* | 36.79 | 33.56 | 30.33 |
| 31E16-55S1* | 44.27 | 40.38 | 36.50 |
| 31E18-09P1* | 25.15 | 22.94 | 20.73 |
| 31E18-09S1* | 27.30 | 24.90 | 22.50 |
| 31E18-21P1* | 25.90 | 23.63 | 21.36 |
| 31E18-21S1* | 29.41 | 26.83 | 24.25 |
| 31E18-38P1* | 29.13 | 26.58 | 24.02 |
| 31E18-38S1* | 35.36 | 32.25 | 29.15 |
| 31E18-85P1* | 38.91 | 35.49 | 32.08 |
| 31E18-85S1* | 48.76 | 44.48 | 40.20 |
| 31E20-11P1* | 29.93 | 27.30 | 24.67 |
| 31E20-11S1* | 32.30 | 29.47 | 26.63 |
| 31E20-24P1* | 30.15 | 27.50 | 24.86 |
| 31E20-24S1* | 34.34 | 31.32 | 28.31 |
| 31E20-45P1* | 35.40 | 32.29 | 29.18 |
| 31E20-45S1* | 40.83 | 37.25 | 33.66 |
| 31E20-92P1* | 43.71 | 29.87 | 36.03 |
| 31E20-92S1* | 57.21 | 52.19 | 47.17 |
| 31E22-14P1* | 31.85 | 29.05 | 26.26 |
| 31E22-14S1* | 34.75 | 31.70 | 28.65 |
| 31E22-32P1* | 32.19 | 29.37 | 26.54 |
| 31E22-32S1* | 37.94 | 34.61 | 31.28 |
| 31E22-61P1* | 40.25 | 36.70 | 33.15 |
| 31E22-61S1* | 49.49 | 45.10 | 40.74 |
| 31E22-121P1* | $47.63 | $43.45 | $39.27 |
| 31E22-121S1* | 66.11 | 60.30 | 54.50 |
| 31E24-19P1* | 36.65 | 33.44 | 30.22 |
| 31E24-19S1* | 41.50 | 37.85 | 34.21 |
| 31E24-41P1* | 37.85 | 34.33 | 31.21 |
| 31E24-41S1* | 46.39 | 42.31 | 38.24 |
| 31E24-74P1* | 44.99 | 41.04 | 37.09 |
| 31E24-74S1* | 56.70 | 51.72 | 46.74 |
| 31E24-155P1* | 60.71 | 55.38 | 50.05 |
| 31E24-155S1* | 83.52 | 76.19 | 68.86 |
| 33E08-04P1* | 18.50 | 16.88 | 15.25 |
| 33E08-04S1* | 18.72 | 17.07 | 15.43 |
| 33E10-03P1* | 20.95 | 19.11 | 17.27 |
| 33E10-03S1* | 21.22 | 19.36 | 17.49 |
| 33E10-05P1* | 21.41 | 19.53 | 17.65 |
| 33E10-05S1* | 21.76 | 19.85 | 17.94 |
| 33E10-12P1* | 22.21 | 20.26 | 18.31 |
| 33E10-12S1* | 23.16 | 21.13 | 19.09 |
| 33E14-04P1* | 22.71 | 20.71 | 18.72 |
| 33E14-04S1* | 22.75 | 20.75 | 18.76 |
| 33E14-09P1* | 22.19 | 20.25 | 18.30 |
| 33E14-09S1* | 23.37 | 21.32 | 19.27 |
| 33E14-19P1* | 24.47 | 22.32 | 20.17 |
| 33E14-19S1* | 26.40 | 24.08 | 21.76 |
| 33E14-37P1 | 30.05 | 27.41 | 24.77 |
| 33E14-37S1 | 38.07 | 34.73 | 31.39 |
| 33E16-07P1* | 24.92 | 22.74 | 20.55 |
| 33E16-07S1* | 26.81 | 24.46 | 22.11 |
| 33E16-14P1* | 23.93 | 21.83 | 19.73 |
| 33E16-14S1* | 26.94 | 24.57 | 22.21 |
| 33E16-27P1* | 25.29 | 23.07 | 20.85 |
| 33E16-27S1* | 31.34 | 28.59 | 25.84 |
| 33E16-55P1 | 38.20 | 34.85 | 31.49 |
| 33E16-55S1 | 45.68 | 41.67 | 37.66 |
| 33E18-09P1* | 26.60 | 24.26 | 21.93 |
| 33E18-09S1* | 28.52 | 26.02 | 23.52 |
| 33E18-21P1* | 27.20 | 24.81 | 22.42 |
| 33E18-21S1* | 30.71 | 28.01 | 25.32 |
| 33E18-38P1* | 30.43 | 27.76 | 25.09 |
| 33E18-38S1* | 36.98 | 33.74 | 30.49 |
| 33E18-85P1 | 40.46 | 36.90 | 33.35 |
| 33E18-85S1 | 53.93 | 49.20 | 44.46 |
| 33E20-11P1* | 31.41 | 28.65 | 25.89 |
| 33E20-11S1* | 33.78 | 30.81 | 27.85 |
| 33E20-24P1* | 31.63 | 28.85 | 26.08 |
| 33E20-24S1* | 35.82 | 32.67 | 29.53 |
| 33E20-45P1* | 36.97 | 33.73 | 30.48 |
| 33E20-45S1* | 43.92 | 40.07 | 36.21 |
| 33E20-92P1* | 45.16 | 41.19 | 37.23 |
| 33E20-92S1* | 57.88 | 52.80 | 47.71 |
| 33E22-14P1* | 34.63 | 31.59 | 28.55 |
| 33E22-14S1* | 38.06 | 34.72 | 31.38 |
| 33E22-32P1* | 35.50 | 32.38 | 29.27 |
| 33E22-32S1* | 41.25 | 37.63 | 34.00 |
| 33E22-61P1* | 41.64 | 37.99 | 34.33 |
| 33E22-61S1* | 51.64 | 47.11 | 42.58 |
| 33E22-121P1* | 52.09 | 47.52 | 42.95 |
| 33E22-121S1* | 69.41 | 63.32 | 57.23 |
| 33E24-19P1* | 29.27 | 26.70 | 24.13 |
| 33E24-19S1* | 43.59 | 39.76 | 35.93 |
| 33E24-41P1* | 40.58 | 37.02 | 33.45 |
| 33E24-41S1* | 49.04 | 44.74 | 40.43 |
| 33E24-74P1* | 47.71 | 43.52 | 39.34 |
| 33E24-74S1* | 60.18 | 54.90 | 49.62 |
| 33E24-155P1 | 63.46 | 57.89 | 52.32 |
| 33E24-155S1 | 85.51 | 78.00 | 70.50 |
| 36E08-04P1* | 19.84 | 18.10 | 16.36 |
| 36E08-04S1* | 19.93 | 18.18 | 16.43 |
| 36E10-03P1 | 18.85 | 17.20 | 15.54 |
| 36E10-03S1 | 21.02 | 19.17 | 17.33 |
| Alternate key† | 1.80 | 1.60 | 1.45 |

*Non-stock item subject to **$100.00** minimum order. †Add to price for key **other than 1.**

**★LARGER QUANTITY PRICES AVAILABLE ON REQUEST**

# AMPHENOL SUBMINIATURE CONNECTORS ASTRO / 348®

| nphenol<br>o. 348- | Net Each, Lots of 1-9 | 10-24 | 25-99* |
|---|---|---|---|
| -05P1 | $21.92 | $20.00 | $18.07 |
| -05S1 | 21.66 | 19.76 | 17.86 |
| -12P1 | 22.74 | 20.75 | 18.75 |
| -12S1 | 21.30 | 19.43 | 17.56 |
| -04P1 | 23.73 | 21.64 | 19.56 |
| -04S1 | 23.77 | 21.68 | 19.60 |
| -09P1 | 22.49 | 20.52 | 18.54 |
| -09S1 | 24.90 | 22.72 | 20.53 |
| -19P1 | 25.93 | 23.65 | 21.38 |
| -19S1 | 27.87 | 25.42 | 22.98 |
| -37P1 | 34.47 | 31.45 | 28.42 |
| -37S1 | 39.65 | 36.21 | 32.72 |
| 6-07P1 | 27.24 | 24.85 | 22.46 |
| 6-07S1 | 28.41 | 25.92 | 23.42 |
| 6-14P1 | 25.73 | 23.47 | 21.22 |
| 6-14S1 | 28.27 | 25.79 | 23.30 |
| 6-27P1 | 28.32 | 25.83 | 23.35 |
| 6-27S1 | 32.61 | 29.74 | 26.88 |
| 6-55P1 | 39.70 | 36.21 | 32.73 |
| 6-55S1 | 47.18 | 43.04 | 38.90 |
| 8-09P1 | 28.35 | 25.86 | 23.38 |
| 8-09S1 | 30.28 | 27.62 | 24.97 |
| 8-21P1 | 28.86 | 26.33 | 23.79 |
| 8-21S1 | 32.37 | 29.53 | 26.69 |
| 8-38P1 | 32.09 | 29.27 | 26.46 |
| 8-38S1 | 38.65 | 35.25 | 31.86 |
| 8-85P1 | 42.35 | 38.63 | 34.91 |
| 8-85S1 | 55.77 | 50.85 | 45.93 |
| 0-11P1 | 42.42 | 38.69 | 34.97 |
| 0-11S1 | 44.90 | 40.96 | 37.02 |
| 0-24P1 | 42.43 | 38.71 | 34.98 |
| 0-24S1 | 46.62 | 42.53 | 38.44 |
| 0-45P1 | 46.30 | 42.24 | 38.17 |
| 0-45S1 | 54.87 | 50.05 | 45.24 |
| 0-92P1 | 56.23 | 51.30 | 46.36 |
| 0-92S1 | 69.41 | 63.31 | 57.22 |
| 2-14P1 | 45.97 | 41.93 | 37.90 |
| 2-14S1 | 48.88 | 44.59 | 40.30 |
| 2-32P1 | 46.31 | 42.25 | 38.18 |
| 2-32S1 | 52.06 | 47.49 | 42.92 |
| 2-61P1 | 46.17 | 42.09 | 38.02 |
| 2-61S1 | 55.33 | 50.45 | 45.57 |
| 2-121P1 | 62.70 | 57.20 | 51.69 |
| 2-121S1 | 80.02 | 73.00 | 65.97 |
| 4-19P1 | 47.04 | 42.91 | 38.78 |
| 4-19S1 | 51.13 | 46.64 | 42.15 |
| 4-41P1 | 47.97 | 43.76 | 39.55 |
| 4-41S1 | 56.81 | 51.82 | 46.84 |
| 4-74P1 | 50.16 | 45.74 | 41.13 |
| 4-74S1 | 64.99 | 59.25 | 53.52 |
| 4-155P1 | 71.65 | 65.36 | 59.07 |
| 4-155S1 | 91.33 | 83.31 | 75.29 |
| 8-04P1 | 19.36 | 17.66 | 15.96 |
| 8-04S1 | 19.06 | 17.39 | 15.71 |
| 0-03P1 | 21.52 | 19.63 | 17.74 |
| 0-03S1 | 20.88 | 19.05 | 17.22 |
| 0-05P1 | 21.76 | 19.85 | 17.94 |
| 0-05S1 | 21.66 | 19.76 | 17.86 |
| 0-12P1 | 22.96 | 20.95 | 18.93 |
| 0-12S1 | 23.16 | 21.13 | 19.10 |
| rnate key† | 1.80 | 1.60 | 1.45 |

| Amphenol No. 348- | Net Each, Lots of 1-9 | 10-24 | 25-99* |
|---|---|---|---|
| 40E14-04P1 | $22.32 | $20.36 | $18.40 |
| 40E14-04S1 | 21.76 | 19.85 | 17.94 |
| 40E14-09P1 | 22.14 | 20.20 | 18.25 |
| 40E14-09S1 | 22.78 | 20.78 | 18.78 |
| 40E14-19P1 | 24.36 | 22.22 | 20.09 |
| 40E14-19S1 | 25.78 | 23.52 | 21.25 |
| 40E14-37P1 | 33.15 | 30.24 | 27.33 |
| 40E14-37S1 | 36.21 | 33.03 | 29.85 |
| 40E16-07P1 | 25.49 | 23.35 | 21.01 |
| 40E16-07S1 | 25.85 | 23.58 | 21.31 |
| 40E16-14P1 | 24.09 | 21.97 | 19.86 |
| 40E16-14S1 | 25.57 | 23.32 | 21.08 |
| 40E16-27P1 | 26.72 | 24.38 | 22.03 |
| 40E16-27S1 | 30.31 | 27.65 | 24.98 |
| 40E16-55P1 | 37.78 | 34.47 | 31.15 |
| 40E16-55S1 | 42.64 | 38.89 | 35.15 |
| 40E18-09P1 | 26.46 | 24.14 | 21.82 |
| 40E18-09S1 | 27.48 | 25.07 | 22.66 |
| 40E18-21P1 | 26.97 | 24.60 | 22.23 |
| 40E18-21S1 | 29.24 | 26.67 | 24.11 |
| 40E18-38P1 | 30.15 | 27.50 | 24.86 |
| 40E18-38S1 | 35.11 | 32.03 | 28.95 |
| 40E18-85P1 | 40.14 | 36.61 | 33.09 |
| 40E18-85S1 | 48.70 | 44.43 | 40.15 |
| 41E08-04P1* | 19.40 | 17.70 | 16.00 |
| 41E08-04S1* | 18.26 | 16.65 | 15.05 |
| 41E10-03P1* | 16.22 | 14.80 | 13.37 |
| 41E10-03S1* | 15.79 | 14.40 | 13.02 |
| 41E10-05P1* | 16.60 | 15.14 | 13.68 |
| 41E10-05S1* | 21.54 | 19.65 | 17.76 |
| 41E10-12P1* | 17.66 | 16.11 | 14.56 |
| 41E10-12S1* | 17.86 | 16.29 | 14.72 |
| 41E14-04P1* | 17.80 | 16.24 | 14.67 |
| 41E14-04S1* | 23.76 | 21.67 | 19.59 |
| 41E14-09P1* | 22.19 | 20.24 | 18.29 |
| 41E14-09S1 | 22.72 | 20.73 | 18.73 |
| 41E14-19P1* | 24.36 | 22.22 | 20.08 |
| 41E14-19S1* | 25.78 | 23.52 | 21.25 |
| 41E14-37P1* | 33.18 | 30.27 | 27.36 |
| 41E14-37S1* | 36.21 | 33.03 | 29.85 |
| 41E16-07P1* | 25.48 | 23.25 | 21.01 |
| 41E16-07S1* | 25.85 | 23.58 | 21.31 |
| 41E16-14P1* | 21.51 | 19.62 | 17.73 |
| 41E16-14S1* | 26.67 | 24.33 | 21.99 |
| 41E16-27P1* | 26.67 | 24.33 | 21.99 |
| 41E16-27S1* | 30.32 | 27.66 | 25.00 |
| 41E16-55P1* | 37.78 | 34.46 | 31.15 |
| 41E16-55S1* | 42.63 | 38.89 | 35.15 |
| 41E18-09P1* | 26.53 | 24.20 | 21.87 |
| 41E18-09S1* | 27.55 | 25.13 | 22.71 |
| 41E18-21P1* | 26.96 | 24.60 | 22.23 |
| 41E18-21S1* | 29.24 | 26.67 | 24.10 |
| 41E18-38P1* | 29.57 | 26.98 | 24.38 |
| 41E18-38S1* | 35.33 | 32.23 | 29.13 |
| 41E18-85P1* | 40.14 | 36.61 | 33.09 |
| 41E18-85S1* | 48.73 | 44.45 | 40.17 |
| 43E08-04P1* | 22.91 | 20.90 | 18.89 |
| 43E08-04S1* | 22.33 | 20.37 | 18.41 |
| 43E10-03P1* | 22.92 | 20.91 | 18.90 |
| 43E10-03S1* | 22.49 | 20.52 | 18.54 |
| Alternate key† | 1.80 | 1.60 | 1.45 |

| Amphenol No. 348- | Net Each, Lots of 1-9 | 10-24 | 25-99* |
|---|---|---|---|
| 43E10-05P1* | $23.33 | $21.29 | $19.24 |
| 43E10-05S1* | 23.08 | 21.06 | 19.03 |
| 43E10-12P1* | 24.31 | 22.17 | 20.04 |
| 43E10-12S1* | 24.51 | 22.36 | 20.20 |
| 43E14-04P1* | 23.71 | 21.62 | 19.54 |
| 43E14-04S1* | 23.14 | 21.11 | 19.08 |
| 43E14-09P1* | 23.14 | 21.11 | 19.08 |
| 43E14-09S1* | 23.72 | 21.64 | 19.55 |
| 43E14-19P1* | 25.27 | 23.05 | 20.83 |
| 43E14-19S1* | 26.69 | 24.34 | 22.00 |
| 43E14-37P1 | 27.15 | 24.76 | 22.38 |
| 43E14-37S1 | 37.16 | 33.90 | 30.64 |
| 43E16-07P1* | 26.85 | 24.50 | 22.14 |
| 43E16-07S1* | 27.22 | 24.83 | 22.44 |
| 43E16-14P1* | 25.30 | 23.08 | 20.85 |
| 43E16-14S1* | 27.17 | 24.78 | 22.40 |
| 43E16-27P1* | 27.89 | 25.44 | 22.99 |
| 43E16-27S1* | 31.75 | 28.97 | 26.18 |
| 43E16-55P1 | 39.36 | 35.91 | 32.45 |
| 43E16-55S1 | 44.22 | 40.33 | 36.45 |
| 43E18-09P1* | 27.46 | 25.05 | 22.64 |
| 43E18-09S1* | 28.48 | 25.98 | 23.48 |
| 43E18-21P1* | 27.97 | 25.51 | 23.06 |
| 43E18-21S1* | 30.24 | 27.59 | 24.93 |
| 43E18-38P1* | 31.12 | 28.39 | 25.66 |
| 43E18-38S1* | 36.78 | 33.56 | 30.33 |
| 43E18-85P1 | 41.05 | 37.44 | 33.84 |
| 43E18-85S1 | 49.64 | 45.28 | 40.93 |
| 46E08-04P1 | 18.28 | 16.68 | 15.07 |
| 46E08-04S1 | 17.27 | 15.76 | 14.24 |
| 46E10-03P1 | 19.95 | 18.20 | 16.45 |
| 46E10-03S1 | 19.35 | 17.65 | 15.95 |
| 46E10-05P1 | 20.47 | 18.67 | 16.87 |
| 46E10-05S1 | 20.09 | 18.32 | 16.56 |
| 46E10-12P1 | 21.44 | 19.56 | 17.68 |
| 46E10-12S1 | 21.64 | 19.74 | 17.84 |
| 46E14-04P1 | 22.06 | 20.12 | 18.19 |
| 46E14-04S1 | 21.49 | 19.61 | 17.72 |
| 46E14-09P1 | 21.79 | 19.87 | 17.96 |
| 46E14-09S1 | 22.32 | 20.36 | 18.40 |
| 46E14-19P1 | 23.96 | 21.86 | 19.75 |
| 46E14-19S1 | 25.38 | 23.15 | 20.92 |
| 46E14-37P1 | 33.00 | 30.10 | 27.21 |
| 46E14-37S1 | 36.02 | 32.86 | 29.70 |
| 46E16-07P1 | 25.12 | 22.92 | 20.71 |
| 46E16-07S1 | 25.49 | 23.25 | 21.01 |
| 46E16-14P1 | 24.01 | 21.90 | 19.80 |
| 46E16-14S1 | 25.66 | 23.41 | 21.16 |
| 46E16-27P1 | 26.54 | 24.21 | 21.88 |
| 46E16-27S1 | 30.18 | 27.53 | 24.88 |
| 46E16-55P1 | 37.82 | 34.50 | 31.18 |
| 46E16-55S1 | 42.67 | 38.92 | 35.18 |
| 46E18-09P1 | 26.47 | 24.14 | 21.82 |
| 46E18-09S1 | 27.49 | 25.07 | 22.66 |
| 46E18-21P1 | 24.92 | 22.74 | 20.55 |
| 46E18-21S1 | 29.24 | 26.68 | 24.11 |
| 46E18-38P1 | 27.77 | 25.33 | 22.89 |
| 46E18-38S1 | 35.79 | 32.65 | 29.51 |
| 46E18-85P1 | 40.99 | 37.39 | 33.79 |
| 46E18-85S1 | 48.88 | 44.59 | 40.29 |
| Alternate key† | 1.80 | 1.60 | 1.45 |

-stock item subject to **$100.00** minimum order. †Add to price for key **other than 1.** 201 Types connectors less contacts are non-stock subject to **$100.00** per line item minimum order; write for full information and prices.

## PLASTIC RETAINING CAPS

oth long or standard connectors.

| ph. No.<br>48- | Shell Size | Net Each, Lots of 1-9 | 10-24 | 25-99* |
|---|---|---|---|---|
| 8000* | 8 | $0.20 | $0.18 | $0.16 |
| 0000* | 10 | .20 | .18 | .16 |
| 4000* | 14 | .21 | .19 | .17 |
| 6000* | 16 | .21 | .19 | .17 |
| 8000* | 18 | .21 | .19 | .17 |

## PLUG CAPS WITH CHAINS

l cap seals face of unmated con-
rs. Basic Part No. M81511/17.

### For Standard Connectors

|  |  |  |  |  |
|---|---|---|---|---|
| 8001 | 8 | $2.92 | $2.67 | $2.41 |
| 0001 | 10 | 3.20 | 2.91 | 2.63 |
| 4001 | 14 | 3.54 | 3.22 | 2.91 |
| 6001 | 16 | 3.77 | 3.44 | 3.11 |
| 8001 | 18 | 3.88 | 3.53 | 3.19 |

### For Long Connectors

|  |  |  |  |  |
|---|---|---|---|---|
| 8001* | 8 | $6.53 | $5.95 | $5.38 |
| 0001* | 10 | 6.83 | 6.23 | 5.63 |
| 4001* | 14 | 6.83 | 6.23 | 5.63 |
| 6001* | 16 | 8.87 | 8.09 | 7.31 |
| 8001* | 18 | 8.74 | 7.97 | 7.20 |
| 20001* | 20 | 12.85 | 11.72 | 10.58 |
| 22001* | 22 | 12.82 | 11.69 | 10.56 |
| 24001* | 24 | 8.53 | 7.78 | 7.03 |

## ECEPTACLE CAPS WITH CHAINS

e as above, but use with long or std.
ectors. Basic Part No. M81511/18.

|  |  |  |  |  |
|---|---|---|---|---|
| 08001 | 8 | $4.62 | $4.22 | $3.81 |
| 10001 | 10 | 4.76 | 4.34 | 3.92 |
| 14001 | 14 | 4.59 | 4.19 | 3.78 |
| 16001 | 16 | 4.83 | 4.40 | 3.98 |
| 18001 | 18 | 4.96 | 4.53 | 4.09 |
| 20001 | 20 | 7.45 | 6.79 | 6.13 |
| 22001 | 22 | 8.09 | 7.38 | 6.66 |
| 24001 | 24 | 7.17 | 6.54 | 5.91 |

## STRAIGHT CABLE CLAMPS

Support cable or wire at connector; prevent twisting or strain on wire terminations. For either long or standard connectors. Basic Part No. M81511/13.

| Amph. No. 348- | Shell Size | Net Each, Lots of 1-9 | 10-24 | 25-99* |
|---|---|---|---|---|
| 260-08001 | 8 | $5.00 | $4.55 | $4.12 |
| 260-10001 | 10 | 4.76 | 4.34 | 3.92 |
| 260-14001 | 14 | 4.93 | 4.50 | 4.06 |
| 260-16001 | 16 | 5.24 | 4.77 | 4.31 |
| 260-18001 | 18 | 5.27 | 4.81 | 4.34 |
| 260-20001 | 20 | 22.20 | 20.24 | 18.28 |
| 260-22001 | 22 | 23.02 | 20.99 | 18.96 |
| 260-24001 | 24 | 22.17 | 20.21 | 18.26 |

## DUMMY RECEPTACLES

Anchor disconnected plugs; prevent damage or dirt buildup on plug face. Basic Part No. M81511/19.

### For Standard Connectors

|  |  |  |  |  |
|---|---|---|---|---|
| 167-08000-01 | 8 | $3.26 | $2.97 | $2.69 |
| 167-10000-01 | 10 | 3.47 | 3.16 | 2.86 |
| 167-14000-01 | 14 | 4.01 | 3.65 | 3.30 |
| 167-16000-01 | 16 | 5.44 | 4.96 | 4.98 |
| 167-18000-01 | 18 | 2.31 | 2.11 | 1.90 |

### For Long Connectors

|  |  |  |  |  |
|---|---|---|---|---|
| 292-08000-1* | 8 | $11.83 | $10.79 | $ 9.74 |
| 292-10000-1* | 10 | 11.46 | 10.45 | 9.44 |
| 292-14000-1* | 14 | 11.63 | 10.60 | 9.58 |
| 292-16000-1* | 16 | 13.12 | 11.97 | 10.81 |
| 292-18000-1* | 18 | 12.95 | 11.81 | 10.67 |
| 292-20000-1* | 20 | 24.55 | 22.38 | 20.22 |
| 292-22000-1* | 22 | 25.87 | 23.59 | 21.31 |
| 292-24000-1* | 24 | 26.38 | 24.06 | 21.73 |

*Non-stock item subject to **$100.00** per line item minimum order.

## ACCESSORY CONTACT TOOLS

### Insertion Tools

| Contact Size | Amphenol Number | MIL MS No. | Net Each |
|---|---|---|---|
| 23-22 | 294-278 | MS3323-22 | $12.31 |
| 20-20 | 294-27 | MS3320-20 | 12.94 |
| 16-16 | 294-30 | MS3320-16 | 14.06 |

### Pin Contact Removal Tools

|  |  |  |  |
|---|---|---|---|
| 23-22 | 294-286 | MS3342-23 | $8.53 |
| 20-20 | 294-28 | MS3342-20 | 7.86 |
| 16-16 | 294-31 | MS3342-16 | 8.43 |

### Socket Contact Removal Tools

|  |  |  |  |
|---|---|---|---|
| 23-22 | 294-287 | MS3344-23 | $20.29 |
| 20-20 | 294-29 | MS3344-20 | 20.25 |
| 16-16 | 294-32 | MS3344-16 | 21.78 |

### Crimping Tools

**Amphenol No. 294-268 MIL No. MS3198 Contact Crimping Tool**—With 4 notched indentors. Net Each .........**$116.32**

**Amphenol No. 294-1551 Contact Locator**—For use with above crimping tool. Net Each ...................**$15.70**

**Amphenol No. 294-1462, MIL No. MS3191-4 Daniels Crimping Pliers**—For #16 or #20 contacts. Net Each .**$121.46**

**Amphenol No. 294-1722-01 Contact Locator**—For use with Daniels crimping tool, above. Net Each .........**$55.00**

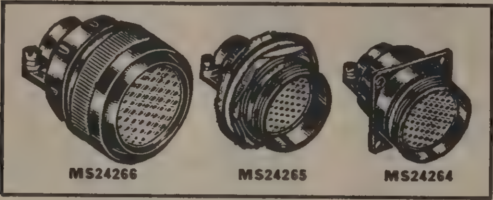
**Amphenol No. 294-1718, MIL No. MS3191-4 Buchanan Crimping Pliers**—For #16 or #20 contacts. Net...**$121.46**

**Amphenol No. 294-1722-02 Contact Locator**—For use with Buchanan crimping pliers, above. Net Each ........**$55.00**

**★LARGER QUANTITY PRICES AVAILABLE ON REQUEST**

# BUNKER RAMO AMPHENOL Miniature Connectors

## SERIES 48 MINIATURE MIL-C-26500 CONNECTORS



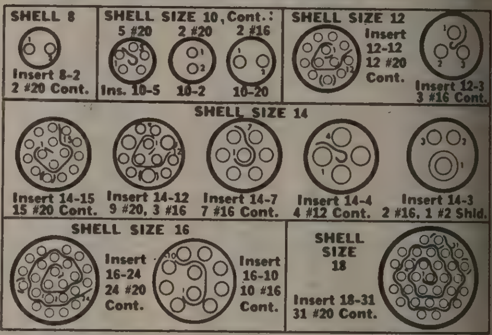
### WITH POKE HOME® CONTACTS

Miniature MIL-C-26500 (USAF) connectors meet missile and aircraft standards with 200° C environmental resistance. Assure utmost reliability at highest altitudes and widest range of temperatures. Corrosion and ozone resistant; moisture resistant with minimum insulation resistance of 1000 megohms. Sand and dust resistant per MIL-E-5272. Withstand shock cycling −55° C to +260° C. Support 1500 V rms from sea level to 350,000 ft. when mated. Poke Home® contacts to MIL-C-26636 have standardized crimped wire termination; rhodium-over-silver plating for high conductivity and long life. Construction features: Impact extruded aluminum shells; anti-deflection disk; integral insert and grommet; face seal, insert rim seal and shell peripheral seal; grommet double sealing risers for wire; visual, full engagement indicators; reversion-resistant silicone rubber inserts; metal-to-metal bottoming of mated shells. Available in threaded or bayonet coupling, with or without contacts, and in hermetic type.

**Amphenol No.**, in price tables following, indicates shell size and contacts per diagrams on this and the following page; e.g., No. 48-00R8-2P indicates shell size 8 with two #20 contacts. Final suffix **P** (e.g., 48-00R8-2**P**) indicates plug type; **S**, socket.

### TOOLS FOR SERIES 48

| Amphenol Number | Description | Net Each, Lots of 1-24 |
|---|---|---|
| 294-57 | Universal crimping kit | $160.00 |
| 294-126 | Crimp tool, 4 indent #20, #16, #12 contacts | 108.46 |
| 294-88 | Insertion tool for #20 contacts | 9.38 |
| 294-96 | Insertion tool for #16 contacts | 15.75 |
| 294-72 | Insertion tool for #12 contacts | 17.28 |
| 294-73 | Removal tool for #12 contacts | 10.73 |
| 294-89 | Removal tool for #20 contacts | 9.49 |
| 294-97 | Removal tool for #16 contacts | 8.86 |

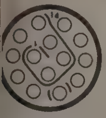


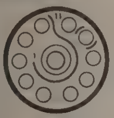
| THREADED COUPLING MS24264 FLANGE MOUNTED | | | | | | THREADED COUPLING MS24265 SINGLE HOLE MOUNTING | | | | | | CONNECTORS WITHOUT CONTACTS DEDUCT From Prices | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MS No.* MS-24264R- | Amphenol No.* 48- | Net Each, Lots of 1-9 | 10-24 | 25-99 | 100-249 | MS No.* MS-24265R | Amphenol No.* 48- | Net Each, Lots of 1-9 | 10-24 | 25-99 | 100-249 | 1-9 | 10-24 | 25-99 | 100-249 |
| ........... | 00R8-2P | $19.66 | $17.66 | $15.67 | $13.06 | ........... | 03R8-2P | $34.97 | $31.42 | $27.88 | $23.24 | $ 0.65 | $ 0.58 | $ 0.52 | $ 0.43 |
| ........... | 00R8-2S | 20.90 | 18.79 | 16.67 | 13.89 | ........... | 03R8-2S | 36.26 | 32.59 | 28.92 | 24.10 | 1.60 | 1.43 | 1.27 | 1.06 |
| ........... | 00R10-2P | 14.46 | 12.99 | 11.53 | 9.61 | ........... | 03R10-2P | 17.66 | 15.88 | 14.09 | 11.74 | .65 | .58 | .52 | .43 |
| ........... | 00R10-2S | 15.71 | 14.11 | 12.52 | 10.44 | ........... | 03R10-2S | 18.94 | 17.03 | 15.11 | 12.59 | 1.60 | 1.43 | 1.27 | 1.06 |
| 10T5P | 00R10-5P | 14.52 | 13.05 | 11.58 | 9.65 | 10T5P | 03R10-5P | 18.12 | 16.29 | 14.45 | 12.04 | 1.60 | 1.43 | 1.27 | 1.06 |
| 10T5S | 00R10-5S | 17.84 | 16.03 | 14.23 | 11.85 | 10T5S | 03R10-5S | 21.46 | 19.28 | 17.11 | 14.26 | 4.14 | 3.72 | 3.30 | 2.75 |
| ........... | 00R10-20P | 15.61 | 14.03 | 12.45 | 10.37 | ........... | 03R10-20P | 17.84 | 16.03 | 14.23 | 11.85 | .77 | .70 | .62 | .51 |
| ........... | 00R10-20S | 16.64 | 14.95 | 13.27 | 11.06 | ........... | 03R10-20S | 19.66 | 17.66 | 15.67 | 13.06 | 1.67 | 1.51 | 1.34 | 1.11 |
| 12T3P | 00R12-3P | 17.17 | 15.44 | 13.70 | 11.41 | 12T3P | 03R12-3P | 21.44 | 19.27 | 17.10 | 14.25 | 1.50 | 1.35 | 1.20 | 1.00 |
| 12T3S | 00R12-3S | 19.72 | 17.72 | 15.72 | 13.10 | 12T3S | 03R12-3S | 23.98 | 21.56 | 19.13 | 15.94 | 3.38 | 3.04 | 2.70 | 2.25 |
| 12T12P | 00R12-12P | 16.78 | 15.08 | 13.38 | 11.15 | 12T12P | 03R12-12P | 19.75 | 17.75 | 15.75 | 13.13 | 2.56 | 2.30 | 2.04 | 1.70 |
| 12T12S | 00R12-12S | 22.96 | 20.63 | 18.31 | 15.26 | 12T12S | 03R12-12S | 25.93 | 23.30 | 20.68 | 17.23 | 7.33 | 6.59 | 5.85 | 4.87 |
| 14T3P | 00R14-3P | 24.40 | 21.92 | 19.45 | 16.21 | 14T3P | 03R14-3P | 25.74 | 23.13 | 20.53 | 17.10 | 6.60 | 5.94 | 5.27 | 4.39 |
| 14T3S | 00R14-3S | 26.34 | 23.67 | 21.00 | 17.50 | 14T3S | 03R14-3S | 27.76 | 24.95 | 22.14 | 18.45 | 8.11 | 7.28 | 6.46 | 5.39 |
| 14T4P | 00R14-4P | 21.09 | 18.96 | 16.82 | 14.02 | 14T4P | 03R14-4P | 24.85 | 22.34 | 19.82 | 16.52 | 3.32 | 2.98 | 2.65 | 2.21 |
| 14T4S | 00R14-4S | 23.38 | 21.02 | 18.65 | 15.54 | 14T4S | 03R14-4S | 27.18 | 24.42 | 21.67 | 18.06 | 4.98 | 4.47 | 3.97 | 3.31 |
| 14T7P | 00R14-7P | 17.71 | 15.92 | 14.12 | 11.77 | 14T7P | 03R14-7P | 21.46 | 19.28 | 17.11 | 14.26 | 2.29 | 2.06 | 1.83 | 1.52 |
| 14T7S | 00R14-7S | 21.80 | 19.60 | 17.39 | 14.49 | 14T7S | 03R14-7S | 25.49 | 22.90 | 20.32 | 16.94 | 5.34 | 4.80 | 4.26 | 3.55 |
| ........... | 00R14-12P | 24.14 | 21.70 | 19.25 | 16.04 | ........... | 03R14-12P | 25.45 | 22.88 | 20.30 | 16.92 | 3.56 | 3.20 | 2.84 | 2.36 |
| ........... | 00R14-12S | 31.47 | 28.29 | 25.10 | 20.92 | ........... | 03R14-12S | 32.77 | 29.45 | 26.13 | 21.78 | 9.21 | 8.28 | 7.35 | 6.12 |
| 14T15P | 00R14-15P | 17.70 | 15.90 | 14.11 | 11.76 | 14T15P | 03R14-15P | 19.64 | 17.65 | 15.66 | 13.05 | 3.02 | 2.71 | 2.41 | 2.01 |
| 14T15S | 00R14-15S | 25.09 | 22.55 | 20.01 | 16.67 | 14T15S | 03R14-15S | 27.03 | 24.30 | 21.56 | 17.97 | 8.69 | 7.81 | 6.93 | 5.78 |
| ........... | 00R16-10P | 21.65 | 19.45 | 17.26 | 14.39 | ........... | 03R16-10P | 25.11 | 22.56 | 20.02 | 16.68 | 2.84 | 2.56 | 2.27 | 1.89 |
| ........... | 00R16-10S | 26.97 | 24.24 | 21.51 | 17.92 | ........... | 03R16-10S | 30.45 | 27.36 | 24.28 | 20.23 | 6.84 | 6.15 | 5.46 | 4.55 |
| 16T24P | 00R16-24P | 20.41 | 18.35 | 16.28 | 13.57 | 16T24P | 03R16-24P | 22.91 | 20.59 | 18.27 | 15.23 | 4.38 | 3.93 | 3.49 | 2.91 |
| 16T24S | 00R16-24S | 31.06 | 27.92 | 24.77 | 20.64 | 16T24S | 03R16-24S | 33.56 | 30.16 | 26.76 | 22.30 | 13.00 | 11.69 | 10.37 | 8.64 |
| 18T8P | 00R18-8P | 27.07 | 24.32 | 21.58 | 17.99 | 18T8P | 03R18-8P | 30.59 | 27.49 | 24.39 | 20.33 | 4.83 | 4.35 | 3.86 | 3.21 |
| 18T8S | 00R18-8S | 30.76 | 27.65 | 24.53 | 20.44 | 18T8S | 03R18-8S | 34.25 | 30.79 | 27.32 | 22.76 | 7.57 | 6.80 | 6.04 | 5.03 |
| 18T11P | 00R18-11P | 29.39 | 26.41 | 23.44 | 19.53 | 18T11P | 03R18-11P | 31.76 | 28.54 | 25.33 | 21.11 | 8.47 | 7.61 | 6.75 | 5.63 |
| 18T11S | 00R18-11S | 35.34 | 31.77 | 28.19 | 23.49 | 18T11S | 03R18-11S | 37.73 | 33.91 | 30.09 | 25.07 | 13.08 | 11.76 | 10.43 | 8.69 |
| 18T14P | 00R18-14P | 23.04 | 20.70 | 18.37 | 15.31 | 18T14P | 03R18-14P | 26.47 | 23.79 | 21.11 | 17.59 | 3.56 | 3.20 | 2.84 | 2.36 |
| 18T14S | 00R18-14S | 29.85 | 26.82 | 23.80 | 19.83 | 18T14S | 03R18-14S | 33.27 | 29.91 | 26.54 | 22.11 | 8.80 | 7.91 | 7.02 | 5.85 |
| 18T31P | 00R18-31P | 22.96 | 20.63 | 18.31 | 15.26 | 18T31P | 03R18-31P | 26.23 | 23.57 | 20.92 | 17.43 | 5.37 | 4.83 | 4.28 | 3.57 |
| 18T31S | 00R18-31S | 35.96 | 32.32 | 28.68 | 23.90 | 18T31S | 03R18-31S | 39.20 | 35.23 | 31.26 | 26.05 | 16.18 | 14.54 | 12.90 | 10.75 |
| ........... | 00R20-16P | 21.55 | 19.37 | 17.19 | 14.32 | ........... | 03R20-16P | 28.17 | 25.32 | 22.47 | 18.72 | 3.93 | 3.54 | 3.14 | 2.61 |
| ........... | 00R20-16S | 29.21 | 26.26 | 23.30 | 19.41 | ........... | 03R20-16S | 36.37 | 32.69 | 29.01 | 24.17 | 9.78 | 8.79 | 7.80 | 6.50 |
| ........... | 00R20-25P | 37.18 | 33.41 | 29.65 | 24.71 | ........... | 03R20-25P | 44.18 | 39.70 | 35.23 | 29.36 | 7.57 | 6.80 | 6.04 | 5.03 |
| ........... | 00R20-25S | 48.57 | 43.65 | 38.73 | 32.28 | ........... | 03R20-25S | 55.54 | 49.91 | 44.29 | 36.91 | 17.02 | 15.29 | 13.57 | 11.31 |
| ........... | 00R20-28P | 38.05 | 34.19 | 30.34 | 25.28 | ........... | 03R20-28P | 44.97 | 40.41 | 35.86 | 29.88 | 7.60 | 6.83 | 6.06 | 5.05 |
| ........... | 00R20-28S | 50.67 | 45.54 | 40.41 | 33.67 | ........... | 03R20-28S | 57.53 | 51.70 | 45.88 | 38.23 | 17.87 | 16.06 | 14.25 | 11.88 |
| ........... | 00R20-39P | 39.74 | 35.71 | 31.69 | 26.41 | ........... | 03R20-39P | 46.42 | 41.72 | 37.02 | 30.85 | 7.28 | 6.55 | 5.81 | 4.84 |
| ........... | 00R20-39S | 56.00 | 50.32 | 44.65 | 37.21 | ........... | 03R20-39S | 62.66 | 56.32 | 49.97 | 41.64 | 21.11 | 18.97 | 16.83 | 14.03 |
| ........... | 00R20-41P | 26.24 | 23.59 | 20.93 | 17.44 | ........... | 03R20-41P | 32.94 | 29.61 | 26.27 | 21.89 | 7.02 | 6.30 | 5.59 | 4.66 |
| ........... | 00R20-41S | 43.18 | 38.81 | 34.44 | 28.70 | ........... | 03R20-41S | 49.83 | 44.79 | 39.74 | 33.12 | 21.31 | 19.16 | 17.00 | 14.16 |
| 22T12P | 00R22-12P | 32.45 | 29.17 | 25.88 | 21.57 | 22T12P | 03R22-12P | 35.99 | 32.35 | 28.70 | 23.92 | 6.51 | 5.85 | 5.19 | 4.33 |
| 22T12S | 00R22-12S | 37.45 | 33.65 | 29.86 | 24.89 | 22T12S | 03R22-12S | 40.91 | 36.76 | 32.62 | 27.18 | 10.06 | 9.05 | 8.03 | 6.69 |
| 22T19P | 00R22-19P | 26.29 | 23.63 | 20.97 | 17.47 | 22T19P | 03R22-19P | 29.70 | 26.70 | 23.69 | 19.74 | 4.52 | 4.06 | 3.60 | 3.00 |
| 22T19S | 00R22-19S | 35.08 | 31.52 | 27.97 | 23.31 | 22T19S | 03R22-19S | 38.55 | 34.65 | 30.74 | 25.62 | 11.25 | 10.11 | 8.97 | 7.48 |
| ........... | 00R22-32P | 41.85 | 37.62 | 33.38 | 27.81 | ........... | 03R22-32P | 44.86 | 40.31 | 35.77 | 29.81 | 8.66 | 7.78 | 6.90 | 5.75 |
| ........... | 00R22-32S | 48.76 | 43.82 | 38.88 | 32.40 | ........... | 03R22-32S | 51.75 | 46.51 | 41.27 | 34.39 | 20.05 | 18.02 | 15.99 | 13.32 |
| 22T55P | 00R22-55P | 29.07 | 26.13 | 23.18 | 19.32 | 22T55P | 03R22-55P | 32.17 | 28.91 | 25.65 | 21.38 | 9.57 | 8.61 | 7.64 | 6.36 |
| 22T55S | 00R22-55S | 51.03 | 45.87 | 40.70 | 33.92 | 22T55S | 03R22-55S | 54.08 | 48.61 | 43.13 | 35.94 | 28.99 | 26.06 | 23.12 | 19.27 |
| ........... | 00R24-43P | 45.38 | 40.78 | 36.19 | 30.16 | ........... | 03R24-43P | 52.36 | 47.06 | 41.76 | 34.80 | 8.69 | 7.81 | 6.93 | 5.78 |
| ........... | 00R24-43S | 64.13 | 57.64 | 51.14 | 42.62 | ........... | 03R24-43S | 71.04 | 63.84 | 56.65 | 47.21 | 24.06 | 21.63 | 19.19 | 15.99 |
| ........... | 00R24-57P | 55.85 | 50.20 | 44.54 | 37.12 | ........... | 03R24-57P | 62.44 | 56.12 | 49.80 | 41.50 | 10.95 | 9.84 | 8.73 | 7.28 |
| ........... | 00R24-57S | 78.37 | 70.43 | 62.50 | 52.08 | ........... | 03R24-57S | 84.99 | 76.38 | 67.78 | 56.48 | 31.03 | 27.89 | 24.75 | 20.62 |
| ........... | 00R24-61P | 37.00 | 33.26 | 29.51 | 24.59 | ........... | 03R24-61P | 42.20 | 37.93 | 33.65 | 28.05 | 10.44 | 9.39 | 8.33 | 6.94 |
| ........... | 00R24-61S | 59.46 | 53.43 | 47.41 | 39.51 | ........... | 03R24-61S | 64.65 | 58.11 | 51.56 | 42.97 | 31.73 | 28.51 | 25.30 | 21.08 |

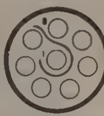
*For types **without** contacts, add suffix **-105**: MS24264R10T5P-**105**; 48-00R10-5P-**105**; MS24265R10T5P-**105**; 48-03R10-5P-**105**.

# SERIES 48 MINIATURE MIL-C-26500 CONNECTORS (CONT'D)

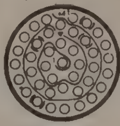
**SHELL SIZE 18**

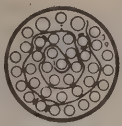

Insert 18-14
14 #16 Cont.

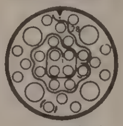

Insert 18-11
10 #16, 1 #2 Shld.

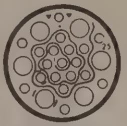

Insert 18-8
8 #12 Cont.

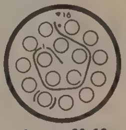
**SHELL SIZE 20**


Insert 20-41
41 #20 Cont.

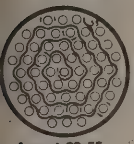

Insert 20-39
37 #20, 2 #16

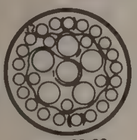

Insert 20-28
24 #20, 4 #12

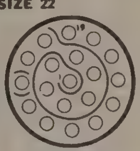

Insert 20-25
19 #20, 6 #12

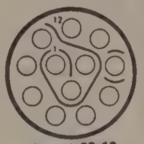

Insert 20-16
16 #16 Cont.

**SHELL SIZE 22**

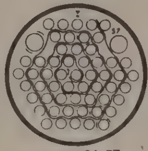

Insert 22-55
55 #20 Cont.

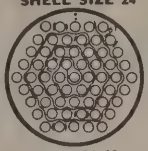

Insert 22-32
26 #20, 6 #12

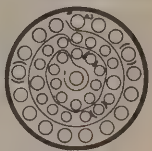

Insert 22-19
19 #16 Cont.


Insert 22-12
12 #12 Cont.

**SHELL SIZE 24**

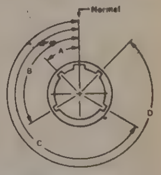

Insert 24-57
2 #12, 55 #20 Cont.


Insert 24-61
61 #20 Cont.


Insert 24-43
23 #20, 20 #16 Cont.

## ALTERNATE SHELL POSITIONS

vailable at no extra charge. Incorporate special shell polarizing key and keyways.



**FOR SIZE 8 AND 10 CONNECTORS**

| Position | A | B | C | D |
|---|---|---|---|---|
| Normal | 105° | 140° | 215° | 265° |
| 6 | 102° | 132° | 248° | 320° |
| 7 | 80° | 118° | 230° | 312° |
| 8 | 35° | 140° | 205° | 275° |
| 9 | 64° | 155° | 234° | 304° |
| 10* | 25° | 115° | 220° | 270° |

*Size 8 not available.

**FOR SIZES 12 THRU 24 CONNECTORS**

| Position | A | B | C | D |
|---|---|---|---|---|
| Normal | 105° | 140° | 215° | 265° |
| 6 | 18° | 149° | 192° | 259° |
| 7 | 92° | 152° | 222° | 342° |
| 8 | 84° | 152° | 204° | 334° |
| 9 | 24° | 135° | 199° | 240° |
| 10 | 98° | 152° | 268° | 338° |

| THREADED COUPLING MS24266 STRAIGHT CABLE CONNECTOR | | | | | | BAYONET COUPLING MS24264 FLANGE MOUNTED | | | | | | CONNECTORS WITHOUT CONTACTS * | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MS No.* MS-24266R- | Amphenol No.* 48- | Net Each, Lots of | | | | MS No.* MS-24264 | Amphenol No.* 48- | Net Each, Lots of | | | | DEDUCT From Prices | | | |
| | | 1-9 | 10-24 | 25-99 | 100-249 | | | 1-9 | 10-24 | 25-99 | 100-249 | 1-9 | 10-24 | 25-99 | 100-249 |
| .......... | 06R8-2P | $33.76 | $30.35 | $26.93 | $22.44 | .......... | 10R8-2P | $20.24 | $18.19 | $16.14 | $13.45 | $ 0.65 | $ 0.58 | $ 0.52 | $ 0.43 |
| .......... | 06R8-2S | 35.08 | 31.52 | 27.97 | 23.31 | .......... | 10R8-2S | 21.50 | 19.33 | 17.15 | 14.29 | 1.60 | 1.43 | 1.27 | 1.06 |
| .......... | 06R10-2P | 17.13 | 15.39 | 13.66 | 11.38 | .......... | 10R10-2P | 16.76 | 15.07 | 13.37 | 11.14 | .65 | .58 | .52 | .43 |
| .......... | 06R10-2S | 18.38 | 16.51 | 14.65 | 12.21 | .......... | 10R10-2S | 21.14 | 19.00 | 16.86 | 14.05 | 1.60 | 1.43 | 1.27 | 1.06 |
| 10T5P | 06R10-5P | 16.20 | 14.56 | 12.92 | 10.76 | 10B5P | 10R10-5P | 15.01 | 13.49 | 11.97 | 9.98 | 1.60 | 1.43 | 1.27 | 1.06 |
| 10T5S | 06R10-5S | 19.59 | 17.61 | 15.62 | 13.02 | 10B5S | 10R10-5S | 18.36 | 16.50 | 14.64 | 12.20 | 4.14 | 3.72 | 3.30 | 2.75 |
| .......... | 06R10-20P | 17.54 | 15.76 | 13.99 | 11.65 | .......... | 10R10-20P | 15.83 | 14.23 | 12.63 | 10.52 | .77 | .70 | .62 | .51 |
| .......... | 06R10-20S | 19.07 | 17.14 | 15.21 | 12.67 | .......... | 10R10-20S | 17.06 | 15.34 | 13.61 | 11.34 | 1.67 | 1.51 | 1.34 | 1.11 |
| 12T3P | 06R12-3P | 19.53 | 17.55 | 15.57 | 12.98 | 12B3P | 10R12-3P | 19.72 | 17.72 | 15.72 | 13.10 | 1.50 | 1.35 | 1.20 | 1.00 |
| 12T3S | 06R12-3S | 22.09 | 19.85 | 17.61 | 14.68 | 12B3S | 10R12-3S | 22.20 | 19.95 | 17.70 | 14.75 | 3.38 | 3.04 | 2.70 | 2.25 |
| 12T12P | 06R12-12P | 19.10 | 17.17 | 15.23 | 12.69 | 12B12P | 10R12-12P | 19.21 | 17.27 | 15.32 | 12.77 | 2.56 | 2.30 | 2.04 | 1.70 |
| 12T12S | 06R12-12S | 25.28 | 22.72 | 20.16 | 16.80 | 12B12S | 10R12-12S | 25.41 | 22.83 | 20.26 | 16.88 | 7.33 | 6.59 | 5.85 | 4.87 |
| 14T3P | 06R14-3P | 26.23 | 23.57 | 20.92 | 17.43 | 14B3P | 10R14-3P | 25.80 | 23.19 | 20.58 | 17.15 | 6.60 | 5.94 | 5.27 | 4.39 |
| 14T3S | 06R14-3S | 28.23 | 25.38 | 22.52 | 18.76 | 14B3S | 10R14-3S | 27.76 | 24.95 | 22.14 | 18.45 | 8.11 | 7.28 | 6.46 | 5.39 |
| 14T4P | 06R14-4P | 23.08 | 20.75 | 18.41 | 15.34 | 14B4P | 10R14-4P | 22.85 | 20.53 | 18.22 | 15.18 | 3.32 | 2.98 | 2.65 | 2.21 |
| 14T4S | 06R14-4S | 25.39 | 22.82 | 20.25 | 16.87 | 14B4S | 10R14-4S | 24.82 | 22.31 | 19.79 | 16.50 | 4.98 | 4.47 | 3.97 | 3.31 |
| 14T7P | 06R14-7P | 20.82 | 18.72 | 16.61 | 13.84 | 14B7P | 10R14-7P | 19.12 | 17.18 | 15.25 | 12.71 | 2.29 | 2.06 | 1.83 | 1.52 |
| 14T7S | 06R14-7S | 24.85 | 22.34 | 19.82 | 16.52 | 14B7S | 10R14-7S | 23.13 | 20.79 | 18.45 | 15.37 | 5.34 | 4.80 | 4.26 | 3.55 |
| .......... | 06R14-12P | 26.10 | 23.46 | 20.82 | 17.35 | .......... | 10R14-12P | 25.53 | 22.95 | 20.36 | 16.97 | 3.56 | 3.20 | 2.84 | 2.36 |
| .......... | 06R14-12S | 33.37 | 29.99 | 26.61 | 22.18 | .......... | 10R14-12S | 32.85 | 29.52 | 26.20 | 21.83 | 9.21 | 8.28 | 7.35 | 6.12 |
| 14T15P | 06R14-15P | 19.59 | 17.61 | 15.62 | 13.02 | 14B15P | 10R14-15P | 19.07 | 17.14 | 15.21 | 12.67 | 3.02 | 2.71 | 2.41 | 2.01 |
| 14T15S | 06R14-15S | 26.97 | 24.24 | 21.51 | 17.92 | 14B15S | 10R14-15S | 26.47 | 23.79 | 21.11 | 17.59 | 8.69 | 7.81 | 6.93 | 5.78 |
| .......... | 06R16-10P | 24.17 | 21.73 | 19.28 | 16.07 | .......... | 10R16-10P | 22.21 | 19.97 | 17.72 | 14.76 | 2.84 | 2.56 | 2.27 | 1.89 |
| .......... | 06R16-10S | 29.51 | 26.53 | 23.54 | 19.61 | .......... | 10R16-10S | 27.56 | 24.76 | 21.97 | 18.31 | 6.84 | 6.15 | 5.46 | 4.55 |
| 16T24P | 06R16-24P | 22.82 | 20.50 | 18.19 | 15.16 | 16B24P | 10R16-24P | 20.97 | 18.84 | 16.72 | 13.93 | 4.38 | 3.93 | 3.49 | 2.91 |
| 16T24S | 06R16-24S | 33.46 | 30.08 | 26.69 | 22.24 | 16B24S | 10R16-24S | 31.63 | 28.43 | 25.23 | 21.02 | 13.00 | 11.69 | 10.37 | 8.64 |
| 18T8P | 06R18-8P | 30.27 | 27.21 | 24.14 | 20.12 | 18B8P | 10R18-8P | 28.25 | 25.39 | 22.53 | 18.77 | 4.83 | 4.35 | 3.86 | 3.21 |
| 18T8S | 06R18-8S | 33.97 | 30.53 | 27.09 | 22.58 | 18B8S | 10R18-8S | 32.00 | 28.76 | 25.52 | 21.26 | 7.57 | 6.80 | 6.04 | 5.03 |
| 18T11P | 06R18-11P | 34.25 | 30.79 | 27.32 | 22.76 | 18B11P | 10R18-11P | 31.88 | 28.66 | 25.43 | 21.19 | 8.47 | 7.61 | 6.75 | 5.63 |
| 18T11S | 06R18-11S | 40.15 | 36.08 | 32.02 | 26.68 | 18B11S | 10R18-11S | 37.73 | 33.91 | 30.09 | 25.07 | 13.08 | 11.76 | 10.43 | 8.69 |
| 18T14P | 06R18-14P | 27.60 | 24.81 | 22.01 | 18.34 | 18B14P | 10R18-14P | 24.21 | 21.75 | 19.30 | 16.09 | 3.56 | 3.20 | 2.84 | 2.36 |
| 18T14S | 06R18-14S | 34.43 | 30.94 | 27.46 | 22.88 | 18B14S | 10R18-14S | 30.98 | 27.85 | 24.71 | 20.59 | 8.80 | 7.91 | 7.02 | 5.85 |
| 18T31P | 06R18-31P | 25.99 | 23.36 | 20.73 | 17.27 | 18B31P | 10R18-31P | 24.06 | 21.63 | 19.19 | 15.99 | 5.37 | 4.83 | 4.28 | 3.57 |
| 18T31S | 06R18-31S | 38.98 | 35.03 | 31.08 | 25.90 | 18B31S | 10R18-31S | 37.05 | 33.30 | 29.55 | 24.62 | 16.18 | 14.54 | 12.90 | 10.75 |
| .......... | 06R20-16P | 26.77 | 24.05 | 21.34 | 17.79 | .......... | 10R20-16P | 22.39 | 20.12 | 17.85 | 14.88 | 3.93 | 3.54 | 3.14 | 2.61 |
| .......... | 06R20-16S | 34.37 | 30.89 | 27.41 | 22.84 | .......... | 10R20-16S | 30.07 | 27.02 | 23.98 | 19.98 | 9.78 | 8.79 | 7.80 | 6.50 |
| .......... | 06R20-25P | 41.90 | 37.66 | 33.42 | 27.85 | .......... | 10R20-25P | 38.01 | 34.17 | 30.32 | 25.26 | 7.57 | 6.80 | 6.04 | 5.03 |
| .......... | 06R20-25S | 53.20 | 47.81 | 42.42 | 35.35 | .......... | 10R20-25S | 48.28 | 43.40 | 38.51 | 32.09 | 17.02 | 15.29 | 13.57 | 11.31 |
| .......... | 06R20-28P | 42.71 | 38.38 | 34.06 | 28.38 | .......... | 10R20-28P | 38.87 | 34.93 | 31.00 | 25.83 | 7.60 | 6.83 | 6.06 | 5.05 |
| .......... | 06R20-28S | 55.27 | 49.67 | 44.07 | 36.73 | .......... | 10R20-28S | 51.49 | 46.28 | 41.06 | 34.22 | 17.87 | 16.06 | 14.25 | 11.88 |
| .......... | 06R20-39P | 44.19 | 39.72 | 35.24 | 29.37 | .......... | 10R20-39P | 40.53 | 36.42 | 32.32 | 26.93 | 7.28 | 6.55 | 5.81 | 4.84 |
| .......... | 06R20-39S | 60.48 | 54.36 | 48.23 | 40.19 | .......... | 10R20-39S | 56.77 | 51.02 | 45.27 | 37.73 | 21.11 | 18.97 | 16.83 | 14.03 |
| .......... | 06R20-41P | 30.68 | 27.58 | 24.47 | 20.39 | .......... | 10R20-41P | 27.03 | 24.30 | 21.56 | 17.97 | 7.02 | 6.30 | 5.59 | 4.66 |
| .......... | 06R20-41S | 47.64 | 42.81 | 37.99 | 31.66 | .......... | 10R20-41S | 43.97 | 39.52 | 35.07 | 29.22 | 21.31 | 19.16 | 17.00 | 14.16 |
| 22T12P | 06R22-12P | 35.53 | 31.94 | 28.34 | 23.61 | 22B12P | 10R22-12P | 32.82 | 29.49 | 26.17 | 21.81 | 6.51 | 5.85 | 5.19 | 4.33 |
| 22T12S | 06R22-12S | 40.46 | 36.37 | 32.27 | 26.89 | 22B12S | 10R22-12S | 38.24 | 34.36 | 30.49 | 25.41 | 10.06 | 9.05 | 8.03 | 6.69 |
| 22T19P | 06R22-19P | 30.73 | 27.62 | 24.51 | 20.42 | 22B19P | 10R22-19P | 27.16 | 24.41 | 21.66 | 18.05 | 4.52 | 4.06 | 3.60 | 3.00 |
| 22T19S | 06R22-19S | 39.56 | 35.56 | 31.55 | 26.29 | 22B19S | 10R22-19S | 35.93 | 32.29 | 28.65 | 23.88 | 11.25 | 10.11 | 8.97 | 7.48 |
| .......... | 06R22-32P | 45.77 | 41.14 | 36.50 | 30.42 | .......... | 10R22-32P | 42.77 | 38.44 | 34.11 | 28.42 | 8.66 | 7.78 | 6.90 | 5.75 |
| .......... | 06R22-32S | 52.72 | 47.39 | 42.05 | 35.04 | .......... | 10R22-32S | 56.58 | 50.85 | 45.12 | 37.60 | 20.05 | 18.02 | 15.99 | 13.32 |
| 22T55P | 06R22-55P | 31.74 | 28.53 | 25.31 | 21.09 | 22B55P | 10R22-55P | 29.89 | 26.87 | 23.84 | 19.87 | 9.57 | 8.61 | 7.64 | 6.36 |
| 22T55S | 06R22-55S | 53.67 | 48.24 | 42.80 | 35.67 | 22B55S | 10R22-55S | 51.81 | 46.56 | 41.32 | 34.43 | 28.99 | 26.06 | 23.12 | 19.27 |
| .......... | 06R24-43P | 53.31 | 47.91 | 42.51 | 35.43 | .......... | 10R24-43P | 46.64 | 41.92 | 37.20 | 31.00 | 8.69 | 7.81 | 6.93 | 5.78 |
| .......... | 06R24-43S | 71.42 | 64.18 | 56.95 | 47.46 | .......... | 10R24-43S | 64.73 | 58.18 | 51.62 | 43.02 | 24.06 | 21.63 | 19.19 | 15.99 |
| .......... | 06R24-57P | 62.99 | 56.62 | 50.24 | 41.86 | .......... | 10R24-57P | 56.75 | 51.01 | 45.26 | 37.72 | 10.95 | 9.84 | 8.73 | 7.28 |
| .......... | 06R24-57S | 85.94 | 77.23 | 68.53 | 57.11 | .......... | 10R24-57S | 79.27 | 71.24 | 63.21 | 52.68 | 31.03 | 27.89 | 24.75 | 20.62 |
| .......... | 06R24-61P | 42.66 | 38.34 | 34.02 | 28.35 | .......... | 10R24-61P | 37.54 | 33.74 | 29.94 | 24.95 | 10.44 | 9.39 | 8.33 | 6.94 |
| .......... | 06R24-61S | 65.10 | 58.50 | 51.91 | 43.26 | .......... | 10R24-61S | 60.04 | 53.96 | 47.88 | 39.90 | 31.73 | 28.51 | 25.30 | 21.08 |

*For types **without** contacts, add suffix **-105**: MS24266R10T5P-**105**; 48-06R10-5P-**105**; MS2426410B5P-**105**; 48-10R10-5P-**105**.

# BUNKER RAMO AMPHENOL Miniature Connectors

## SERIES 48 MINIATURE MIL-C-26500 CONNECTORS (CONT'D)

| BAYONET COUPLING MS24265 SINGLE HOLE MOUNTING | | | | | | BAYONET COUPLING MS24266 CABLE CONNECTOR | | | | | | CONNECTORS WITHOUT CONTACTS* | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MS No.* MS-24265R- | Amphenol No.* 48- | Net Each, Lots of | | | | MS No.* MS-24266R- | Amphenol No.* 48- | Net Each, Lots of | | | | DEDUCT From Prices | | | |
| | | 1-9 | 10-24 | 25-99 | 100-249 | | | 1-9 | 10-24 | 25-99 | 100-249 | 1-9 | 10-24 | 25-99 | 100-249 |
| | 13R8-2P | $35.55 | $31.95 | $28.35 | $23.63 | | 16R8-2P | $34.37 | $30.89 | $27.41 | $22.84 | $ 0.65 | $ 0.58 | $ 0.52 | $ 0.43 |
| | 13R8-2S | 36.86 | 33.13 | 29.40 | 24.50 | | 16R8-2S | 35.68 | 32.06 | 28.45 | 23.71 | 1.60 | 1.43 | 1.27 | 1.06 |
| | 13R10-2P | 18.52 | 16.64 | 14.77 | 12.31 | | 16R10-2P | 20.15 | 18.11 | 16.07 | 13.39 | .65 | .58 | .52 | .43 |
| | 13R10-2S | 20.15 | 18.11 | 16.07 | 13.39 | | 16R10-2S | 21.98 | 19.75 | 17.53 | 14.61 | 1.60 | 1.43 | 1.27 | 1.06 |
| 10B5P | 13R10-5P | 18.90 | 16.98 | 15.07 | 12.56 | 10B5P | 16R10-5P | 18.58 | 16.70 | 14.82 | 12.35 | 1.60 | 1.43 | 1.27 | 1.06 |
| 10B5S | 13R10-5S | 22.21 | 19.97 | 17.72 | 14.76 | 10B5S | 16R10-5S | 22.03 | 19.79 | 17.56 | 14.64 | 4.14 | 3.72 | 3.30 | 2.75 |
| | 13R10-20P | 20.02 | 17.99 | 15.96 | 13.30 | | 16R10-20P | 19.42 | 17.45 | 15.49 | 12.90 | .77 | .70 | .62 | .51 |
| | 13R10-20S | 21.27 | 19.11 | 16.96 | 14.13 | | 16R10-20S | 20.68 | 18.59 | 16.49 | 13.74 | 1.67 | 1.51 | 1.34 | 1.11 |
| 12B3P | 13R12-3P | 21.93 | 19.71 | 17.49 | 14.57 | 12B3P | 16R12-3P | 22.15 | 19.91 | 17.67 | 14.72 | 1.50 | 1.35 | 1.20 | 1.00 |
| 12B3S | 13R12-3S | 24.46 | 21.98 | 19.50 | 16.25 | 12B3S | 16R12-3S | 24.03 | 21.60 | 19.16 | 15.97 | 3.38 | 3.04 | 2.70 | 2.25 |
| 12B12P | 13R12-12P | 21.41 | 19.24 | 17.07 | 14.23 | 12B12P | 16R12-12P | 21.58 | 19.40 | 17.21 | 14.34 | 2.56 | 2.30 | 2.04 | 1.70 |
| 12B12S | 13R12-12S | 27.60 | 24.81 | 22.01 | 18.34 | 12B12S | 16R12-12S | 27.78 | 24.96 | 22.15 | 18.46 | 7.33 | 6.59 | 5.85 | 4.87 |
| 14B3P | 13R14-3P | 27.18 | 24.42 | 21.67 | 18.06 | 14B3P | 16R14-3P | 28.69 | 25.79 | 22.88 | 19.07 | 6.60 | 5.94 | 5.27 | 4.39 |
| 14B3S | 13R14-3S | 29.23 | 26.27 | 23.31 | 19.43 | 14B3S | 16R14-3S | 30.67 | 27.56 | 24.46 | 20.38 | 8.11 | 7.28 | 6.46 | 5.39 |
| 14B4P | 13R14-4P | 25.56 | 22.98 | 20.39 | 16.99 | 14B4P | 16R14-4P | 25.44 | 22.86 | 20.29 | 16.91 | 3.32 | 2.98 | 2.65 | 2.21 |
| 14B4S | 13R14-4S | 27.93 | 25.11 | 22.28 | 18.56 | 14B4S | 16R14-4S | 27.76 | 24.95 | 22.14 | 18.45 | 4.98 | 4.47 | 3.97 | 3.31 |
| 14B7P | 13R14-7P | 22.15 | 19.91 | 17.67 | 14.72 | 14B7P | 16R14-7P | 23.13 | 20.79 | 18.45 | 15.37 | 2.29 | 2.06 | 1.83 | 1.52 |
| 14B7S | 13R14-7S | 26.20 | 23.54 | 20.89 | 17.41 | 14B7S | 16R14-7S | 27.19 | 24.44 | 21.68 | 18.07 | 5.34 | 4.80 | 4.26 | 3.55 |
| | 13R14-12P | 28.53 | 25.65 | 22.76 | 18.96 | | 16R14-12P | 28.42 | 25.55 | 22.67 | 18.89 | 3.56 | 3.20 | 2.84 | 2.36 |
| | 13R14-12S | 35.82 | 32.19 | 28.56 | 23.80 | | 16R14-12S | 35.71 | 32.09 | 28.48 | 23.73 | 9.21 | 8.28 | 7.35 | 6.12 |
| 14B15P | 13R14-15P | 22.06 | 19.82 | 17.59 | 14.66 | 14B15P | 16R14-15P | 21.95 | 19.72 | 17.50 | 14.58 | 3.02 | 2.71 | 2.41 | 2.01 |
| 14B15S | 13R14-15S | 29.42 | 26.44 | 23.46 | 19.55 | 14B15S | 16R14-15S | 29.26 | 26.30 | 23.34 | 19.45 | 8.69 | 7.81 | 6.93 | 5.78 |
| | 13R16-10P | 26.62 | 23.93 | 21.23 | 17.69 | | 16R16-10P | 26.62 | 23.93 | 21.23 | 17.69 | 2.84 | 2.56 | 2.27 | 1.89 |
| | 13R16-10S | 30.89 | 27.76 | 24.63 | 20.53 | | 16R16-10S | 31.95 | 28.71 | 25.48 | 21.23 | 6.84 | 6.15 | 5.46 | 4.55 |
| 16B24P | 13R16-24P | 24.70 | 22.19 | 19.69 | 16.41 | 16B24P | 16R16-24P | 25.19 | 22.63 | 20.08 | 16.74 | 4.38 | 3.93 | 3.49 | 2.91 |
| 16B24S | 13R16-24S | 35.34 | 31.77 | 28.19 | 23.49 | 16B24S | 16R16-24S | 35.85 | 32.22 | 28.59 | 23.82 | 13.00 | 11.69 | 10.37 | 8.64 |
| 18B8P | 13R18-8P | 29.58 | 26.58 | 23.59 | 19.66 | 18B8P | 16R18-8P | 31.87 | 28.64 | 25.41 | 21.18 | 4.83 | 4.35 | 3.86 | 3.21 |
| 18B8S | 13R18-8S | 33.34 | 29.96 | 26.59 | 22.16 | 18B8S | 16R18-8S | 35.55 | 31.95 | 28.35 | 23.63 | 7.57 | 6.80 | 6.04 | 5.03 |
| 18B11P | 13R18-11P | 33.21 | 29.85 | 26.49 | 22.07 | 18B11P | 16R18-11P | 35.87 | 32.23 | 28.60 | 23.84 | 8.47 | 7.61 | 6.75 | 5.63 |
| 18B11S | 13R18-11S | 39.17 | 35.20 | 31.24 | 26.03 | 18B11S | 16R18-11S | 41.73 | 37.50 | 33.28 | 27.73 | 13.08 | 11.76 | 10.43 | 8.69 |
| 18B14P | 13R18-14P | 27.16 | 24.41 | 21.66 | 18.05 | 18B14P | 16R18-14P | 29.15 | 26.20 | 23.25 | 19.37 | 3.56 | 3.20 | 2.84 | 2.36 |
| 18B14S | 13R18-14S | 33.97 | 30.53 | 27.09 | 22.58 | 18B14S | 16R18-14S | 35.98 | 32.33 | 28.69 | 23.91 | 8.80 | 7.91 | 7.02 | 5.85 |
| 18B31P | 13R18-31P | 26.88 | 24.15 | 21.43 | 17.86 | 18B31P | 16R18-31P | 27.46 | 24.68 | 21.90 | 18.25 | 5.37 | 4.83 | 4.28 | 3.57 |
| 18B31S | 13R18-31S | 39.85 | 35.81 | 31.78 | 26.48 | 18B31S | 16R18-31S | 40.56 | 36.45 | 32.34 | 26.95 | 16.18 | 14.54 | 12.90 | 10.75 |
| | 13R20-16P | 28.52 | 25.63 | 22.74 | 18.95 | | 16R20-16P | 27.32 | 24.55 | 21.79 | 18.15 | 3.93 | 3.54 | 3.14 | 2.61 |
| | 13R20-16S | 36.15 | 32.49 | 28.83 | 24.02 | | 16R20-16S | 35.00 | 31.45 | 27.91 | 23.26 | 9.78 | 8.79 | 7.80 | 6.50 |
| | 13R20-25P | 43.96 | 39.50 | 35.05 | 29.21 | | 16R20-25P | 42.85 | 38.51 | 34.17 | 28.48 | 7.57 | 6.80 | 6.04 | 5.03 |
| | 13R20-25S | 55.33 | 49.73 | 44.13 | 36.77 | | 16R20-25S | 54.23 | 48.73 | 43.24 | 36.04 | 17.02 | 15.29 | 13.57 | 11.31 |
| | 13R20-28P | 44.79 | 40.26 | 35.72 | 29.77 | | 16R20-28P | 43.80 | 39.36 | 34.93 | 29.11 | 7.60 | 6.83 | 6.06 | 5.05 |
| | 13R20-28S | 57.31 | 51.50 | 45.70 | 38.08 | | 16R20-28S | 56.20 | 50.51 | 44.82 | 37.35 | 17.87 | 16.06 | 14.25 | 11.88 |
| | 13R20-39P | 46.23 | 41.55 | 36.87 | 30.72 | | 16R20-39P | 45.08 | 40.51 | 35.95 | 29.96 | 7.28 | 6.55 | 5.81 | 4.84 |
| | 13R20-39S | 62.47 | 56.15 | 49.82 | 41.52 | | 16R20-39S | 61.40 | 55.18 | 48.96 | 40.80 | 21.11 | 18.97 | 16.83 | 14.03 |
| | 13R20-41P | 32.66 | 29.35 | 26.04 | 21.70 | | 16R20-41P | 31.65 | 28.44 | 25.24 | 21.03 | 7.02 | 6.30 | 5.59 | 4.66 |
| | 13R20-41S | 49.68 | 44.64 | 39.61 | 33.01 | | 16R20-41S | 48.60 | 43.68 | 38.76 | 32.30 | 21.31 | 19.16 | 17.00 | 14.16 |
| 22B12P | 13R22-12P | 36.51 | 32.82 | 29.12 | 24.27 | 22B12P | 16R22-12P | 38.36 | 34.48 | 30.59 | 25.49 | 6.51 | 5.85 | 5.19 | 4.33 |
| 22B12S | 13R22-12S | 41.44 | 37.25 | 33.05 | 27.54 | 22B12S | 16R22-12S | 43.28 | 38.89 | 34.51 | 28.76 | 10.06 | 9.05 | 8.03 | 6.69 |
| 22B19P | 13R22-19P | 30.84 | 27.72 | 24.60 | 20.50 | 22B19P | 16R22-19P | 32.82 | 29.49 | 26.17 | 21.81 | 4.52 | 4.06 | 3.60 | 3.00 |
| 22B19S | 13R22-19S | 39.61 | 35.60 | 31.59 | 26.32 | 22B19S | 16R22-19S | 41.60 | 37.39 | 33.18 | 27.65 | 11.25 | 10.11 | 8.97 | 7.48 |
| | 13R22-32P | 46.44 | 41.73 | 37.03 | 30.86 | | 16R22-32P | 48.76 | 43.82 | 38.88 | 32.40 | 8.66 | 7.78 | 6.90 | 5.75 |
| | 13R22-32S | 60.21 | 54.12 | 48.02 | 40.02 | | 16R22-32S | 62.60 | 56.26 | 49.92 | 41.60 | 20.05 | 18.02 | 15.99 | 13.32 |
| 22B55P | 13R22-55P | 33.13 | 29.78 | 26.42 | 22.02 | 22B55P | 16R22-55P | 34.19 | 30.73 | 27.27 | 22.72 | 9.57 | 8.61 | 7.64 | 6.36 |
| 22B55S | 13R22-55S | 55.09 | 49.52 | 43.94 | 36.61 | 22B55S | 16R22-55S | 56.17 | 50.48 | 44.79 | 37.33 | 28.99 | 26.06 | 23.12 | 19.27 |
| | 13R24-43P | 53.15 | 47.77 | 42.39 | 35.32 | | 16R24-43P | 53.99 | 48.52 | 43.05 | 35.88 | 8.69 | 7.81 | 6.93 | 5.78 |
| | 13R24-43S | 71.27 | 64.06 | 56.84 | 47.37 | | 16R24-43S | 72.10 | 64.79 | 57.49 | 47.91 | 24.06 | 21.63 | 19.19 | 15.99 |
| | 13R24-57P | 63.28 | 56.87 | 50.46 | 42.05 | | 16R24-57P | 64.27 | 57.77 | 51.26 | 42.71 | 10.95 | 9.84 | 8.73 | 7.28 |
| | 13R24-57S | 85.79 | 77.11 | 68.42 | 57.02 | | 16R24-57S | 86.79 | 78.00 | 69.21 | 57.68 | 31.03 | 27.89 | 24.75 | 20.62 |
| | 13R24-61P | 44.38 | 39.89 | 35.39 | 29.49 | | 16R24-61P | 43.91 | 39.46 | 35.02 | 29.18 | 10.44 | 9.39 | 8.33 | 6.94 |
| | 13R24-61S | 66.79 | 60.02 | 53.26 | 44.38 | | 16R24-61S | 60.85 | 54.68 | 48.52 | 40.44 | 31.73 | 28.51 | 25.30 | 21.08 |

## HERMETIC RECEPTACLES WITH CONTACTS

### THREADED COUPLING

Made to MS24265XXXTXXX. One hole mounting.

| Amphenol No.† 48- | Flat, Pierced Cont. Net Each, Lots of | | | Solder Cup Cont.† Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-99 | 1-9 | 10-24 | 25-99 |
| 03H10-2P | $17.88 | $16.69 | $14.90 | $18.65 | $17.40 | $15.54 |
| 03H10-5P | 18.38 | 17.15 | 15.31 | 20.27 | 18.91 | 16.89 |
| 03H12-3P | 18.99 | 17.72 | 15.83 | 20.91 | 19.52 | 17.43 |
| 03H12-12P | 20.00 | 18.66 | 16.66 | 24.56 | 22.92 | 20.46 |
| 03H14-3P | 24.62 | 22.97 | 20.51 | 25.44 | 23.74 | 21.20 |
| 03H14-4P | 19.97 | 18.63 | 16.64 | 22.98 | 21.45 | 19.15 |
| 03H14-7P | 20.34 | 18.98 | 16.95 | 24.90 | 23.24 | 20.75 |
| 03H14-15P | 21.57 | 20.13 | 17.98 | 27.30 | 25.48 | 22.75 |
| 03H16-24P | 23.91 | 22.32 | 19.93 | 33.03 | 30.83 | 27.53 |
| 03H18-8P | 22.46 | 20.96 | 18.71 | 28.13 | 26.25 | 23.44 |
| 03H18-11P | 26.87 | 25.07 | 22.39 | 32.87 | 30.67 | 27.49 |
| 03H18-14P | 22.94 | 21.41 | 19.11 | 31.97 | 29.83 | 26.64 |
| 03H18-31P | 24.96 | 23.30 | 20.80 | 36.75 | 34.30 | 30.63 |
| 03H22-12P | 25.14 | 23.46 | 20.95 | 33.63 | 31.39 | 28.03 |
| 03H22-19P | 26.25 | 24.50 | 21.88 | 38.58 | 36.01 | 32.15 |
| 03H22-55P | 32.13 | 29.99 | 26.78 | 53.04 | 49.50 | 44.20 |
| Made to MS27034XXXTXXP. Solder flange mounting. | | | | | | |
| 05H10-2P | $ 9.17 | $ 8.55 | $ 7.64 | $ 9.93 | $ 9.27 | $ 8.28 |
| 05H10-5P | 9.65 | 9.00 | 8.04 | 11.55 | 10.78 | 9.63 |
| 05H12-3P | 10.17 | 9.49 | 8.48 | 12.12 | 11.31 | 10.10 |
| 05H12-12P | 11.21 | 10.46 | 9.34 | 15.74 | 14.69 | 13.11 |
| 05H14-3P | 15.33 | 14.31 | 12.78 | 16.16 | 15.08 | 13.46 |
| 05H14-4P | 10.91 | 10.18 | 9.09 | 13.58 | 12.67 | 11.31 |
| 05H14-7P | 11.07 | 10.33 | 9.23 | 15.65 | 14.60 | 13.04 |
| 05H14-15P | 12.35 | 11.52 | 10.29 | 18.03 | 16.83 | 15.03 |
| 05H16-24P | 13.86 | 12.94 | 11.55 | 22.94 | 21.41 | 19.11 |
| 05H18-8P | 13.44 | 12.54 | 11.20 | 19.13 | 17.85 | 15.94 |
| 05H18-11P | 18.23 | 17.01 | 15.19 | 23.87 | 22.27 | 19.89 |
| 05H18-14P | 13.95 | 13.02 | 11.63 | 22.95 | 21.42 | 19.13 |
| 05H18-31P | 15.93 | 14.87 | 13.28 | 27.74 | 25.89 | 23.11 |
| 05H22-12P | 14.97 | 13.97 | 12.48 | 23.43 | 21.87 | 19.53 |
| 05H22-19P | 16.07 | 14.99 | 13.39 | 28.38 | 26.49 | 23.65 |
| 05H22-55P | 21.95 | 20.48 | 18.29 | 42.87 | 40.01 | 35.73 |

### BAYONET COUPLING

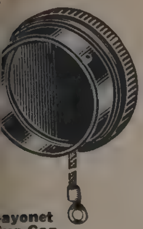
Made to MS24265XXXBXXX. One hole mounting.

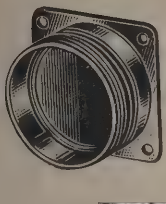
| Amphenol No.† 48- | Flat, Pierced Cont. Net Each, Lots of | | | Solder Cup Cont.† Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-99 | 1-9 | 10-24 | 25-99 |
| 13H10-2P | $17.78 | $16.59 | $14.81 | $18.56 | $17.32 | $15.46 |
| 13H10-5P | 16.07 | 14.99 | 13.39 | 18.30 | 17.08 | 15.25 |
| 13H12-3P | 19.34 | 18.05 | 16.11 | 21.29 | 19.87 | 17.74 |
| 13H12-12P | 20.37 | 19.01 | 16.98 | 24.90 | 23.24 | 20.75 |
| 13H14-3P | 24.51 | 22.88 | 20.43 | 25.34 | 23.65 | 21.11 |
| 13H14-4P | 20.07 | 18.73 | 16.73 | 22.92 | 21.39 | 19.10 |
| 13H14-7P | 20.25 | 18.90 | 16.88 | 24.83 | 23.17 | 20.69 |
| 13H14-15P | 21.51 | 20.08 | 17.93 | 27.21 | 25.40 | 22.68 |
| 13H16-24P | 23.75 | 22.16 | 19.79 | 32.87 | 30.67 | 27.39 |
| 13H18-8P | 23.42 | 21.85 | 19.51 | 27.17 | 25.35 | 22.64 |
| 13H18-11P | 27.80 | 25.94 | 23.16 | 33.83 | 31.57 | 28.19 |
| 13H18-14P | 23.88 | 22.29 | 19.90 | 32.94 | 30.74 | 27.45 |
| 13H18-31P | 25.91 | 24.18 | 21.59 | 37.70 | 35.18 | 31.41 |
| 13H22-12P | 25.68 | 23.97 | 21.40 | 34.17 | 31.89 | 28.48 |
| 13H22-19P | 26.81 | 25.02 | 22.34 | 39.11 | 36.50 | 32.59 |
| 13H22-55P | 32.72 | 30.53 | 27.26 | 53.61 | 50.04 | 44.68 |
| Made to MS27034XXXBXXP. Solder flange mounting. | | | | | | |
| 15H10-2P | $11.40 | $10.64 | $ 9.50 | $12.17 | $11.35 | $10.14 |
| 15H10-5P | 11.90 | 11.10 | 9.91 | 13.80 | 12.88 | 11.50 |
| 15H12-3P | 12.44 | 11.61 | 10.36 | 14.37 | 13.41 | 11.98 |
| 15H12-12P | 13.44 | 12.54 | 11.20 | 18.00 | 16.80 | 15.00 |
| 15H14-3P | 17.58 | 16.41 | 14.65 | 18.41 | 17.18 | 15.34 |
| 15H14-4P | 13.14 | 12.26 | 10.95 | 15.99 | 14.92 | 13.33 |
| 15H14-7P | 13.32 | 12.43 | 11.10 | 17.76 | 16.58 | 14.80 |
| 15H14-15P | 14.60 | 13.62 | 12.16 | 19.14 | 17.86 | 15.95 |
| 15H16-24P | 16.13 | 15.05 | 13.44 | 25.73 | 24.01 | 21.44 |
| 15H18-8P | 15.69 | 14.64 | 13.08 | 21.35 | 19.92 | 17.79 |
| 15H18-11P | 20.09 | 18.75 | 16.74 | 26.12 | 24.37 | 21.76 |
| 15H18-14P | 16.19 | 15.11 | 13.49 | 25.28 | 23.59 | 21.06 |
| 15H18-31P | 18.18 | 16.97 | 15.15 | 30.00 | 28.00 | 25.00 |
| 15H22-12P | 17.21 | 16.06 | 14.34 | 25.68 | 23.97 | 21.40 |
| 15H22-19P | 18.33 | 17.11 | 15.28 | 30.63 | 28.59 | 25.53 |
| 15H22-55P | 24.21 | 22.60 | 20.18 | 45.11 | 42.10 | 37.59 |

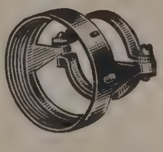
*For types **without** contacts, add suffix **-105**: MS24265R10B5P-**105**; 48-13R10-5P-**105**. †For **Solder Cup Contacts**, add suffix **-108**: 48-03H10-2P-**108**; 48-13H10-2P-**108**.

# 3UNKER RAMO AMPHENOL CONNECTOR ACCESSORIES

## SERIES 48 ACCESSORIES


ayonet
lug Cap


Threaded
Receptacle Cap


Cable
Clamp

### CAPS AND CHAINS

rotective metal caps provide an environmental seal for the con-
ector face. They exclude dirt, dust, moisture, and other foreign
aterials from the face of unmated plugs and receptacles. The
aps have a woven steel strap so they can be easily attached near
heir point of use. Chain length 3″ for size 10 and 12, 5″ all others.

#### PLUG FOR BAYONET CAP AND CHAIN

| MS No. MS- | Amphenol Number | Shell Size | Max. Dia., In. | Net Each, Lots of 1-9 | 10-24 | 25-99 |
|---|---|---|---|---|---|---|
| 27293-1 | 48-2144 | 10 | .906 | $ 4.39 | $ 3.95 | $ 3.50 |
| 27293-2 | 48-2143 | 12 | 1.078 | 4.20 | 3.78 | 3.35 |
| 27293-3 | 48-2142 | 14 | 1.141 | 4.61 | 4.15 | 3.68 |
| 27293-4 | 48-2141 | 16 | 1.266 | 11.58 | 10.41 | 9.24 |
| 27293-5 | 48-2140 | 18 | 1.375 | 4.96 | 4.46 | 3.96 |
| .......... | 48-2773 | 20 | 1.510 | 12.28 | 11.03 | 9.79 |
| 27293-6 | 48-2139 | 22 | 1.625 | 5.78 | 5.20 | 4.61 |
| .......... | 48-2767 | 24 | 1.760 | 13.29 | 11.94 | 10.60 |

#### RECEPTACLE FOR BAYONET CAP AND CHAIN

| MS No. MS- | Amphenol Number | Shell Size | Max. Dia., In. | Net Each, Lots of 1-9 | 10-24 | 25-99 |
|---|---|---|---|---|---|---|
| 27295-1 | 48-2150 | 10 | .906 | $ 6.26 | $5.62 | $4.99 |
| 27295-2 | 48-2149 | 12 | 1.078 | 6.37 | 5.72 | 5.08 |
| 27295-3 | 48-2148 | 14 | 1.141 | 5.94 | 5.34 | 4.74 |
| 27295-4 | 48-2147 | 16 | 1.266 | 6.37 | 5.72 | 5.08 |
| 27295-5 | 48-2146 | 18 | 1.375 | 6.73 | 6.05 | 5.37 |
| .......... | 48-2774 | 20 | 1.510 | 10.21 | 9.17 | 8.14 |
| 27295-6 | 48-2145 | 22 | 1.625 | 9.32 | 8.38 | 7.43 |
| .......... | 48-2768 | 24 | 1.760 | 11.00 | 9.88 | 8.77 |

#### PLUG FOR THREADED CAP AND CHAIN

| MS No. MS- | Amphenol Number | Shell Size | Max. Dia., In. | Net Each, Lots of 1-9 | 10-24 | 25-99 |
|---|---|---|---|---|---|---|
| 27292-1 | 48-2340-10 | 10 | .906 | $4.27 | $3.83 | $3.40 |
| 27292-2 | 48-2340-12 | 12 | 1.078 | 3.57 | 3.21 | 2.85 |
| 27292-3 | 48-2340-14 | 14 | 1.141 | 4.08 | 3.66 | 3.25 |
| 27292-4 | 48-2340-16 | 16 | 1.266 | 4.12 | 3.71 | 3.29 |
| 27292-5 | 48-2340-18 | 18 | 1.375 | 5.55 | 4.98 | 4.42 |
| .......... | 48-2340-20 | 20 | 1.510 | 6.05 | 5.44 | 4.83 |
| 27292-6 | 48-2340-22 | 22 | 1.625 | 5.20 | 4.67 | 4.15 |
| .......... | 48-2340-24 | 24 | 1.760 | 7.33 | 6.59 | 5.85 |

#### RECEPTACLE FOR THREADED CAP AND CHAIN

| MS No. MS- | Amphenol Number | Shell Size | Max. Dia., In. | Net Each, Lots of 1-9 | 10-24 | 25-99 |
|---|---|---|---|---|---|---|
| 27294-1 | 48-2301-10 | 10 | .906 | $4.16 | $3.73 | $3.31 |
| 27294-2 | 48-2301-12 | 12 | 1.078 | 4.20 | 3.78 | 3.35 |
| 27294-3 | 48-2301-14 | 14 | 1.141 | 5.25 | 4.71 | 4.18 |
| 27294-4 | 48-2301-16 | 16 | 1.266 | 4.66 | 4.19 | 3.72 |
| 27294-5 | 48-2301-18 | 18 | 1.375 | 4.99 | 4.49 | 3.98 |
| .......... | 48-2301-20 | 20 | 1.510 | 7.24 | 6.50 | 5.77 |
| 27294-6 | 48-2301-22 | 22 | 1.625 | 5.06 | 4.54 | 4.03 |
| .......... | 48-2301-24 | 24 | 1.760 | 6.34 | 5.69 | 5.05 |

### CABLE CLAMPS

Support cable or wire at the plug or receptacle and prevent twisting and pulling.

| MS No. MS- | Amphenol Number | Shell Size | Lgth., In. | I.D., In. | Net Each, Lots of 1-9 | 10-24 | 25-99 |
|---|---|---|---|---|---|---|---|
| .......... | 48-2840 | 8 | .935 | .180 | $2.48 | $2.23 | $1.98 |
| 27291-1 | 48-2341 | 10 | .935 | .270 | 2.29 | 2.06 | 1.83 |
| 27291-2 | 48-2342 | 12 | .935 | .400 | 2.29 | 2.06 | 1.83 |
| 27291-3 | 48-2343 | 14 | 1.170 | .460 | 2.29 | 2.06 | 1.83 |
| 27291-4 | 48-2344 | 16 | 1.170 | .610 | 2.15 | 1.93 | 1.71 |
| 27291-5 | 48-2345 | 18 | 1.170 | .690 | 2.37 | 2.13 | 1.89 |
| .......... | 48-2643 | 20 | 1.170 | .830 | 2.29 | 2.06 | 1.83 |
| 27291-6 | 48-2346 | 22 | 1.170 | .940 | 2.34 | 2.10 | 1.86 |
| .......... | 48-2644 | 24 | 1.170 | 1.040 | 2.99 | 2.68 | 2.38 |

### CONTACTS AND SEALING PLUGS

#### STANDARD CONTACTS

Enough contacts and sealing plugs are supplied with series 48 connectors. Additional contacts or plugs, if desired, are supplied at the following rates. Specify part number when ordering. Contacts may also be ordered in reels for use with automatic crimping tools.

| MS No.* MS- | Amph. No. 48- | Contact | Max. Amps | Wire AWG | Net Each, Lots of 1-99 | 100-499 | 500-999 | 1000-2499 |
|---|---|---|---|---|---|---|---|---|
| 24254-20P | 1595-02 | #20 | 3–7.5 | 20–24 | $0.145 | $0.137 | $0.123 | $0.11 |
| 24255-20S | 100-2000S-02 | #20 | 3–7.5 | 20–24 | .481 | .455 | .41 | .364 |
| 25254-16P | 1825-02 | #16 | 22, 16 | 16, 18 | .192 | .182 | .164 | .146 |
| 24255-16S | 100-1600S-02 | #16 | 22, 16 | 16, 18 | .531 | .502 | .44 | .40 |
| 24254-12P | 1827-02 | #12 | 41, 32 | 12, 14 | .433 | .41 | .368 | .328 |
| 24255-12S | 1215-02 | #12 | 41, 32 | 12, 14 | .674 | .638 | .573 | .51 |

*Suffix P = pin; S = socket.

#### SHIELDED CONTACTS

Resilient type.

| MS No.* MS- | Amph. No. 48- | Contact | Max. Amps | Net Each, Lots of 1-4 | 5-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|
| 27184-22P | 1226-02† | #1 | 3 | $4.73 | $4.47 | $4.02 | $3.53 |
| 27185-22S | 1227-02† | #1 | 3 | 3.60 | 3.41 | 3.06 | 2.72 |
| .......... | 1226-54# | #1§ | 1 | 4.05 | 3.83 | 3.44 | 3.05 |
| .......... | 1227-54• | #1§ | 1 | 3.73 | 3.53 | 3.18 | 2.81 |
| 27184-20P | 2187-02‡ | #2 | 7.5 | 5.87 | 5.55 | 4.99 | 4.43 |
| 27185-20S | 2188-02‡ | #2 | 7.5 | 6.50 | 6.15 | 5.51 | 4.90 |

*Suffix P = pin; S = socket. †Can accommodate cables RG179/U, RG179A/U, RG188/U, RG187/U and RG161/U as well as shielded wire; cables RG178/U, RG178A/U and RG196/U can also be accommodated with modification to shielded contacts. Cable MIL-C-27500-22KIN6 (Extruded) or 22 AWG per MIL-C-7078 type II. ‡Cable MIL-C-27500-22KIN6, 20KIN6, 18KIN6 (Extruded) or 22, 20, 18 AWG per MIL-C-7078 type II. §For RG-195/U or RG-108B/U. #Pin. •Socket.

#### GROMMET SEALING PLUGS

| MS No. MS- | Amphenol Number 48- | Size | Color Code | Net Each, Lots of 1-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| 27187-2 | 2221-12 | * | Yellow | $0.189 | $0.179 | $0.16 | $0.141 |
| 27187-1 | 2221-16 | 16 | Blue | .126 | .119 | .106 | .094 |
| 27186-1 | 2221-20 | 20 | Red | .111 | .105 | .094 | .084 |

*12 and #1 shielded.

## CONTACTS AND GUIDE PINS FOR SERIES 220 THRU 223 CONNECTORS

### INDIVIDUAL "WIRE-FORM" AND "RELIA-TAC" CONTACTS

For Amphenol Series 220–223 connectors. Current rating, 3 amps. Both take 22, 24, 26, 28 gauge solid wire; 24, 26, 28 gauge stranded wire. **Wire-Form:** 4-member spring design. Gold clad copper alloy wire contacts in copper sleeves. Size: .413″ long. **Relia-Tac:** Gold-over-nickel on copper alloy body. Male, .389″ long; female, .404″ long. Does not mate with Wire-Form. **Ask about solder-tail contacts, special adapters, Ultra-Tac crimp contacts, special contacts, guide pins and strain reliefs also available.**

| Amph. No. | Description | Net Each, Lots of 1-99 | 100-999 | 1M-4999 | 5M-9999 | 10M-24,999* |
|---|---|---|---|---|---|---|
| 220-P01 | Wire-Form male | $0.095 | $0.075 | $0.066 | $0.055 | $0.049 |
| 220-S01 | Wire-Form female | .04 | .033 | .03 | .025 | .022 |
| 220-P02 | Relia-Tac male | .079 | .063 | .055 | .047 | .04 |
| 220-S02 | Relia-Tac female | .198 | .158 | .138 | .119 | .103 |
| 221-759* | Relia-Tac male | .132 | .11 | .103 | .096 | .087 |
| 221-760† | Relia-Tac female | .30 | .253 | .234 | .209 | .198 |

*For 221-3680 strips. †For 221-3580 strips. ***25M Up On Request.**

### GUIDE PINS

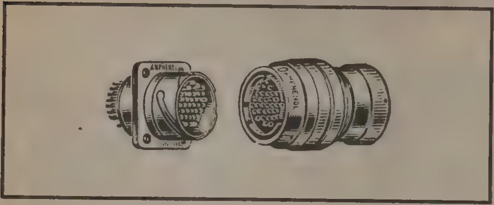
Poke-Home guide pins for polarizing, keying or connector alignment. Supplement the keyed slots; can be used in conjunction with either Relia-Tac or Wire-Form contacts. Insert into plug.

| Amph. No. | Type | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|
| 221-535 | Std. guide pin | $0.30 | $0.165 | $0.135 | $0.12 | $0.09 |
| 221-590 | Groove retention | .51 | .28 | .23 | .21 | .15 |

**WRITE FOR INFORMATION AND PRICES ON SERIES 48 CONTACT REELS, DUMMY RECEPTACLES, AND CONNECTORS TO MIL-C-38300 (USAF) ALSO AVAILABLE.**

# BUNKER RAMO AMPHENOL Miniature Connectors

## MINNI-E® SERIES 67 MINIATURE CONNECTORS



### CABLE-TO-CABLE RECEPTACLES

#### WITH FORM FOR POTTING SEAL

| No. Contacts | Pin Contacts Amph. No. 67-01- | Net Each, Lots of 1-24 | 25-99 | 100-199 | Socket Contacts Amph. No. 67-01- | Net Each, Lots of 1-24 | 25-99 | 100-199 |
|---|---|---|---|---|---|---|---|---|
| 7 | P12-7P | $ 8.32 | $ 7.28 | $ 6.24 | P12-7S | $ 9.94 | $ 8.70 | $ 7.46 |
| 3 | P12-60P | 8.20 | 7.17 | 6.15 | P12-60S | 9.10 | 7.96 | 6.83 |
| 5 | P14-5P | 6.80 | 5.95 | 5.10 | P14-5S | 7.74 | 6.77 | 5.81 |
| 9 | P14-9P | 7.24 | 6.33 | 5.43 | P14-9S | 8.54 | 7.47 | 6.41 |
| 12 | P14-12P | 7.32 | 6.40 | 5.49 | P14-12S | 8.92 | 7.80 | 6.69 |
| 9 | P14-61P | 8.32 | 7.28 | 6.24 | P14-61S | 12.28 | 10.74 | 9.21 |
| 5 | P14-63P | 7.66 | 6.70 | 5.75 | P14-63S | 8.80 | 7.70 | 6.60 |
| 24 | P18-24P | 8.20 | 7.17 | 6.15 | P18-24S | 12.00 | 10.50 | 9.00 |
| 20 | P18-62P | 9.64 | 8.43 | 7.23 | P18-62S | 17.53 | 15.34 | 13.16 |
| 14 | P18-64P | 9.32 | 8.15 | 6.99 | P18-64S | 10.40 | 9.10 | 7.80 |
| 11 | P18-65P | 10.28 | 8.99 | 7.71 | P18-65S | 9.64 | 8.43 | 7.23 |
| 37 | P20-37P | 12.40 | 10.85 | 9.30 | P20-37S | 17.83 | 15.61 | 13.38 |
| 19 | P20-66P | 10.52 | 9.20 | 7.89 | P20-66S | 14.01 | 12.27 | 10.52 |
| 48 | P22-48P | 13.79 | 12.07 | 10.35 | P22-48S | 20.49 | 17.93 | 15.38 |
| 25 | P22-67P | 11.90 | 10.41 | 8.93 | P22-67S | 16.53 | 14.47 | 12.41 |
| 38 | P22-68P | 12.83 | 11.23 | 9.63 | P22-68S | 18.61 | 16.29 | 13.97 |
| 42 | P22-69P | 13.43 | 11.76 | 10.08 | P22-69S | 19.17 | 16.78 | 14.39 |

#### WITH INDIVIDUAL WIRE SEAL GROMMET

| No. Contacts | Pin Contacts Amph. No. 67-01- | Net Each, Lots of 1-24 | 25-99 | 100-199 | Socket Contacts Amph. No. 67-01- | Net Each, Lots of 1-24 | 25-99 | 100-199 |
|---|---|---|---|---|---|---|---|---|
| 7 | E12-7P | $10.58 | $ 9.26 | $ 7.94 | E12-7S | $12.22 | $10.69 | $ 9.17 |
| 3 | E12-60P | 10.58 | 9.26 | 7.94 | E12-60S | 11.48 | 10.04 | 8.61 |
| 5 | E14-5P | 9.26 | 8.10 | 6.95 | E14-5S | 10.24 | 8.96 | 7.68 |
| 9 | E14-9P | 9.70 | 8.49 | 7.28 | E14-9S | 11.02 | 9.64 | 8.27 |
| 12 | E14-12P | 9.58 | 8.38 | 7.19 | E14-12S | 11.16 | 9.76 | 8.37 |
| 9 | E14-61P | 11.22 | 9.82 | 8.42 | E14-61S | 15.17 | 13.28 | 11.39 |
| 5 | E14-63P | 10.02 | 8.77 | 7.52 | E14-63S | 11.40 | 9.97 | 8.55 |
| 24 | E18-24P | 11.42 | 9.99 | 8.57 | E18-24S | 15.19 | 13.30 | 11.40 |
| 20 | E18-62P | 13.71 | 12.00 | 10.29 | E18-62S | 21.63 | 18.93 | 16.23 |
| 14 | E18-64P | 12.16 | 10.64 | 9.12 | E18-64S | 13.23 | 11.58 | 9.93 |
| 11 | E18-65P | 12.99 | 11.37 | 9.75 | E18-65S | 12.36 | 10.81 | 9.27 |
| 37 | E20-37P | 15.13 | 13.25 | 11.36 | E20-37S | 20.47 | 17.92 | 15.36 |
| 19 | E20-66P | 12.55 | 10.99 | 9.42 | E20-66S | 16.03 | 14.03 | 12.03 |
| 48 | E22-48P | 15.13 | 13.25 | 11.36 | E22-48S | 21.83 | 19.11 | 16.38 |
| 25 | E22-67P | 13.69 | 11.99 | 10.28 | E22-67S | 18.33 | 16.04 | 13.76 |
| 38 | E22-68P | 14.93 | 13.07 | 11.21 | E22-68S | 20.67 | 18.09 | 15.51 |
| 42 | E22-69P | 15.13 | 13.25 | 11.36 | E22-69S | 20.89 | 18.28 | 15.68 |

#### WITH CLAMP FOR JACKETED CABLE

| No. Contacts | Pin Contacts Amph. No. 67-01- | Net Each, Lots of 1-24 | 25-99 | 100-199 | Socket Contacts Amph. No. 67-01- | Net Each, Lots of 1-24 | 25-99 | 100-199 |
|---|---|---|---|---|---|---|---|---|
| 7 | J12-7P | $ 8.48 | $ 7.42 | $ 6.36 | J12-7S | $10.10 | $ 8.84 | $ 7.58 |
| 3 | J12-60P | 8.36 | 7.31 | 6.27 | J12-60S | 9.26 | 8.10 | 6.95 |
| 5 | J14-5P | 13.71 | 12.00 | 10.29 | J14-5S | 14.67 | 12.84 | 11.01 |
| 9 | J14-9P | 14.15 | 12.39 | 10.62 | J14-9S | 15.45 | 13.53 | 11.60 |
| 12 | J14-12P | 14.25 | 12.48 | 10.70 | J14-12S | 15.83 | 13.86 | 11.88 |
| 9 | J14-61P | 15.23 | 13.33 | 11.43 | J14-61S | 19.19 | 16.80 | 14.40 |
| 5 | J14-63P | 14.36 | 12.57 | 10.78 | J14-63S | 15.75 | 13.79 | 11.82 |
| 24 | J18-24P | 8.96 | 7.84 | 6.72 | J18-24S | 12.73 | 11.15 | 9.56 |
| 20 | J18-62P | 10.38 | 9.08 | 7.79 | J18-62S | 18.27 | 15.99 | 13.71 |
| 14 | J18-64P | 10.08 | 8.82 | 7.56 | J18-64S | 11.16 | 9.76 | 8.37 |
| 11 | J18-65P | 11.02 | 9.64 | 8.27 | J18-65S | 10.38 | 9.08 | 7.79 |
| 37 | J20-37P | 17.59 | 15.40 | 13.20 | J20-37S | 22.93 | 20.07 | 17.21 |
| 19 | J20-66P | 15.69 | 13.74 | 11.78 | J20-66S | 19.17 | 16.78 | 14.39 |
| 48 | J22-48P | 19.69 | 17.23 | 14.78 | J22-48S | 26.39 | 23.10 | 19.80 |
| 25 | J22-67P | 17.79 | 15.57 | 13.35 | J22-67S | 22.43 | 19.63 | 16.83 |
| 38 | J22-68P | 18.73 | 16.39 | 14.06 | J22-68S | 24.47 | 21.42 | 18.36 |
| 42 | J22-69P | 19.33 | 16.92 | 14.51 | J22-69S | 25.07 | 21.94 | 18.81 |

#### WITH STANDARD CABLE CLAMP

| No. Contacts | Pin Contacts Amph. No. 67-01- | Net Each, Lots of 1-24 | 25-99 | 100-199 | Socket Contacts Amph. No. 67-01- | Net Each, Lots of 1-24 | 25-99 | 100-199 |
|---|---|---|---|---|---|---|---|---|
| 7 | C12-7P | $ 9.90 | $ 8.66 | $ 7.43 | C12-7S | $11.52 | $10.08 | $ 8.64 |
| 3 | C12-60P | 9.80 | 8.57 | 7.35 | C12-60S | 10.70 | 9.36 | 8.03 |
| 5 | C14-5P | 9.20 | 8.05 | 6.90 | C14-5S | 10.14 | 8.87 | 7.61 |
| 9 | C14-9P | 9.64 | 8.43 | 7.23 | C14-9S | 10.94 | 9.57 | 8.21 |
| 12 | C14-12P | 9.72 | 8.50 | 7.29 | C14-12S | 11.30 | 9.89 | 8.48 |
| 9 | C14-61P | 10.72 | 9.38 | 8.04 | C14-61S | 14.67 | 12.84 | 11.01 |
| 5 | C14-63P | 9.84 | 8.61 | 7.38 | C14-63S | 11.22 | 9.82 | 8.42 |
| 24 | C18-24P | 10.30 | 9.01 | 7.73 | C18-24S | 14.07 | 12.32 | 10.56 |
| 20 | C18-62P | 11.72 | 10.25 | 8.79 | C18-62S | 19.61 | 17.16 | 14.72 |
| 14 | C18-64P | 11.42 | 9.99 | 8.57 | C18-64S | 12.50 | 10.94 | 9.38 |
| 11 | C18-65P | 12.34 | 10.80 | 9.26 | C18-65S | 11.72 | 10.25 | 8.79 |
| 37 | C20-37P | 16.99 | 14.87 | 12.75 | C20-37S | 20.07 | 17.57 | 15.06 |
| 19 | C20-66P | 12.81 | 11.22 | 9.62 | C20-66S | 16.31 | 14.28 | 12.24 |
| 48 | C22-48P | 15.89 | 13.91 | 11.93 | C22-48S | 22.61 | 19.79 | 16.97 |
| 25 | C22-67P | 14.01 | 12.27 | 10.52 | C22-67S | 18.65 | 16.32 | 14.00 |
| 38 | C22-68P | 14.95 | 13.09 | 11.22 | C22-68S | 20.69 | 18.11 | 15.53 |
| 42 | C22-69P | 15.55 | 13.61 | 11.67 | C22-69S | 21.29 | 18.63 | 15.98 |

Quick disconnect, multi-contact, miniature bayonet connecto are environment sealed with unitized back end grommet or pr vision for potting. Shells are polarized for easy mating alignmen single key on 12, 14 and 18 sizes, 5 keys for sizes 20 and 2 Spring-loaded coupling ring for positive locking action in bayon slot; stainless steel slots and pins. Hooded contacts resist te prod damage. Contacts gold plated over silver. Visual engagemen indicator built-in. Face seal gasket has individual barriers; har insert dielectric. **Insulation Resistance:** "E" type following alt tude-moisture resistance test, 1000 megs min.; MIL-C-5015 min mum following type "E" test, 100 megs. **Test Voltage:** 1500 rms. 70,000 ft. on sealed connectors. **Vibration:** 10–2,000 Hz at 2 G's per Method 204 of MIL-STD-202A. **Temperature Cycling** Per MIL-C-5015, Para. 4.5.3 increased to 257° F max., −67° F min. Diallyl phthalate dielectric except hermetically sealed type **Type P:** Potting mold meets MIL-C-5015. Indicated by P i number (example: 67-01P12-7S). Comes with disposable poly ethylene potting form. **Type E:** Meets MIL-C-5015. With unitize grommet and clamp; individual wire seal. **Type J:** For use with jacketed cables; has waterproofing type cable clamp. **Type C** General duty construction has standard type cable clamp t provide strong support for jacketed cables or unjacketed indi vidual wire leads. When potted, meets requirements of "E" per formance while providing a mechanical cable support. **Type H** Glass dielectric hermetically sealed. **For X or W Positioning** Specify by adding appropriate suffix, and **20c** (1–24), **18c** (25–99) or **15c** (100–199) to net price shown.

### PLUGS

#### WITH FORM FOR POTTING SEAL

| No. Contacts | Pin Contacts Amph. No. 67-06- | Net Each, Lots of 1-24 | 25-99 | 100-199 | Socket Contacts Amph. No. 67-06- | Net Each, Lots of 1-24 | 25-99 | 100-199 |
|---|---|---|---|---|---|---|---|---|
| 7 | P12-7P | $ 7.84 | $ 6.86 | $ 5.88 | P12-7S | $ 9.48 | $ 8.29 | $ 7.1 |
| 3 | P12-60P | 7.72 | 6.75 | 5.79 | P12-60S | 8.62 | 7.54 | 6.47 |
| 5 | P14-5P | 6.58 | 5.76 | 4.94 | P14-5S | 7.52 | 6.58 | 5.64 |
| 9 | P14-9P | 7.00 | 6.12 | 5.25 | P14-9S | 8.32 | 7.28 | 6.24 |
| 12 | P14-12P | 7.08 | 6.19 | 5.31 | P14-12S | 8.66 | 7.58 | 6.50 |
| 9 | P14-61P | 8.10 | 7.09 | 6.08 | P14-61S | 12.06 | 10.55 | 9.05 |
| 5 | P14-63P | 7.22 | 6.32 | 5.42 | P14-63S | 8.82 | 7.72 | 6.62 |
| 24 | P18-24P | 8.20 | 7.17 | 6.15 | P18-24S | 12.00 | 10.50 | 9.00 |
| 20 | P18-62P | 9.64 | 8.43 | 7.23 | P18-62S | 17.53 | 15.34 | 13.16 |
| 14 | P18-64P | 9.32 | 8.15 | 6.99 | P18-64S | 10.40 | 9.10 | 7.80 |
| 11 | P18-65P | 10.28 | 8.99 | 7.71 | P18-65S | 9.64 | 8.43 | 7.23 |
| 37 | P20-37P | 12.48 | 10.92 | 9.36 | P20-37S | 17.81 | 15.59 | 13.37 |
| 19 | P20-66P | 10.56 | 9.24 | 7.92 | P20-66S | 14.05 | 12.30 | 10.55 |
| 48 | P22-48P | 13.47 | 11.79 | 10.11 | P22-48S | 20.19 | 17.67 | 15.15 |
| 25 | P22-67P | 11.58 | 10.13 | 8.69 | P22-67S | 16.21 | 14.19 | 12.17 |
| 38 | P22-68P | 12.53 | 10.97 | 9.41 | P22-68S | 18.27 | 15.99 | 13.71 |
| 42 | P22-69P | 13.11 | 11.48 | 9.84 | P22-69S | 18.87 | 16.52 | 14.16 |

#### WITH INDIVIDUAL WIRE SEAL GROMMET

| No. Contacts | Pin Contacts Amph. No. 67-06- | Net Each, Lots of 1-24 | 25-99 | 100-199 | Socket Contacts Amph. No. 67-06- | Net Each, Lots of 1-24 | 25-99 | 100-199 |
|---|---|---|---|---|---|---|---|---|
| 7 | E12-7P | $10.10 | $ 8.84 | $ 7.58 | E12-7S | $11.74 | $10.27 | $ 8.81 |
| 3 | E12-60P | 10.10 | 8.84 | 7.58 | E12-60S | 11.02 | 9.64 | 8.27 |
| 5 | E14-5P | 9.04 | 7.91 | 6.78 | E14-5S | 9.98 | 8.73 | 7.49 |
| 9 | E14-9P | 9.84 | 8.61 | 7.38 | E14-9S | 11.16 | 9.76 | 8.37 |
| 12 | E14-12P | 9.32 | 8.15 | 6.99 | E14-12S | 10.92 | 9.55 | 8.19 |
| 9 | E14-61P | 11.00 | 9.62 | 8.25 | E14-61S | 14.95 | 13.09 | 11.22 |
| 5 | E14-63P | 9.80 | 8.57 | 7.35 | E14-63S | 11.18 | 9.78 | 8.39 |
| 24 | E18-24P | 11.42 | 9.99 | 8.57 | E18-24S | 15.19 | 13.30 | 11.40 |
| 20 | E18-62P | 13.71 | 12.00 | 10.29 | E18-62S | 21.63 | 18.93 | 16.23 |
| 14 | E18-64P | 12.16 | 10.64 | 9.16 | E18-64S | 13.23 | 11.58 | 9.93 |
| 11 | E18-65P | 12.99 | 11.37 | 9.75 | E18-65S | 12.36 | 10.81 | 9.27 |
| 37 | E20-37P | 15.17 | 13.28 | 11.39 | E20-37S | 20.51 | 17.95 | 15.39 |
| 19 | E20-66P | 12.59 | 11.02 | 9.45 | E20-66S | 16.07 | 14.07 | 12.06 |
| 48 | E22-48P | 14.81 | 12.97 | 11.12 | E22-48S | 21.53 | 18.84 | 16.16 |
| 25 | E22-67P | 13.39 | 11.72 | 10.05 | E22-67S | 18.03 | 15.78 | 13.53 |
| 38 | E22-68P | 14.59 | 12.77 | 10.95 | E22-68S | 20.37 | 17.83 | 15.29 |
| 42 | E22-69P | 14.81 | 12.97 | 11.12 | E22-69S | 20.57 | 18.00 | 15.44 |

#### WITH CLAMP FOR JACKETED CABLE

| No. Contacts | Pin Contacts Amph. No. 67-06- | Net Each, Lots of 1-24 | 25-99 | 100-199 | Socket Contacts Amph. No. 67-06- | Net Each, Lots of 1-24 | 25-99 | 100-199 |
|---|---|---|---|---|---|---|---|---|
| 7 | J12-7P | $ 8.06 | $ 7.05 | $ 6.05 | J12-7S | $ 8.96 | $ 7.84 | $ 6.72 |
| 3 | J12-60P | 8.06 | 7.05 | 6.05 | J12-60S | 8.96 | 7.84 | 6.72 |
| 5 | J14-5P | 9.38 | 8.21 | 7.04 | J14-5S | 10.34 | 9.05 | 7.76 |
| 9 | J14-9P | 9.82 | 8.59 | 7.37 | J14-9S | 11.14 | 9.75 | 8.36 |
| 12 | J14-12P | 9.90 | 8.66 | 7.43 | J14-12S | 11.48 | 10.04 | 8.61 |
| 9 | J14-61P | 10.90 | 9.54 | 8.18 | J14-61S | 14.87 | 13.02 | 11.16 |
| 5 | J14-63P | 10.02 | 8.77 | 7.52 | J14-63S | 11.40 | 9.97 | 8.55 |
| 24 | J18-24P | 8.96 | 7.84 | 6.72 | J18-24S | 12.73 | 11.15 | 9.56 |
| 20 | J18-62P | 10.76 | 9.41 | 8.07 | J18-62S | 18.67 | 16.34 | 14.01 |
| 14 | J18-64P | 10.48 | 9.17 | 7.86 | J18-64S | 11.52 | 10.08 | 8.64 |
| 11 | J18-65P | 11.40 | 9.97 | 8.55 | J18-65S | 10.76 | 9.41 | 8.07 |
| 37 | J20-37P | 15.73 | 13.77 | 11.81 | J20-37S | 21.07 | 18.44 | 15.81 |
| 19 | J20-66P | 13.81 | 12.09 | 10.37 | J20-66S | 17.31 | 15.15 | 12.99 |
| 48 | J22-48P | 17.83 | 15.61 | 13.38 | J22-48S | 24.53 | 21.47 | 18.41 |
| 25 | J22-67P | 15.91 | 13.93 | 11.94 | J22-67S | 20.57 | 18.00 | 15.44 |
| 38 | J22-68P | 16.87 | 14.77 | 12.66 | J22-68S | 22.63 | 19.81 | 16.98 |
| 42 | J22-69P | 17.45 | 15.27 | 13.10 | J22-69S | 23.23 | 20.33 | 17.43 |

#### WITH STANDARD CABLE CLAMP

| No. Contacts | Pin Contacts Amph. No. 67-06- | Net Each, Lots of 1-24 | 25-99 | 100-199 | Socket Contacts Amph. No. 67-06- | Net Each, Lots of 1-24 | 25-99 | 100-199 |
|---|---|---|---|---|---|---|---|---|
| 7 | C12-7P | $ 9.42 | $ 8.24 | $ 7.07 | C12-7S | $11.06 | $ 9.68 | $ 8.30 |
| 3 | C12-60P | 9.30 | 8.14 | 6.98 | C12-60S | 10.24 | 8.96 | 7.68 |
| 5 | C14-5P | 8.98 | 7.86 | 6.74 | C14-5S | 9.92 | 8.68 | 7.44 |
| 9 | C14-9P | 9.40 | 8.22 | 7.05 | C14-9S | 10.72 | 9.38 | 8.04 |
| 12 | C14-12P | 9.50 | 8.31 | 7.13 | C14-12S | 11.08 | 9.69 | 8.31 |
| 9 | C14-61P | 10.50 | 9.19 | 7.88 | C14-61S | 14.45 | 12.65 | 10.85 |
| 5 | C14-63P | 9.62 | 8.42 | 7.22 | C14-63S | 11.00 | 9.62 | 8.25 |
| 24 | C18-24P | 10.30 | 9.01 | 7.73 | C18-24S | 14.07 | 12.32 | 10.56 |
| 20 | C18-62P | 11.72 | 10.25 | 8.79 | C18-62S | 19.61 | 17.16 | 14.72 |
| 14 | C18-64P | 11.42 | 9.99 | 8.57 | C18-64S | 12.50 | 10.94 | 9.38 |
| 11 | C18-65P | 12.34 | 10.80 | 9.26 | C18-65S | 11.72 | 10.25 | 8.79 |
| 37 | C20-37P | 14.77 | 12.93 | 11.09 | C20-37S | 20.13 | 17.62 | 15.11 |
| 19 | C20-66P | 12.87 | 11.27 | 9.66 | C20-66S | 16.35 | 14.31 | 12.27 |
| 48 | C22-48P | 15.59 | 13.65 | 11.70 | C22-48S | 22.25 | 19.47 | 16.70 |
| 25 | C22-67P | 13.67 | 11.97 | 10.26 | C22-67S | 18.31 | 16.03 | 13.74 |
| 38 | C22-68P | 14.63 | 12.81 | 10.98 | C22-68S | 20.39 | 17.85 | 15.30 |
| 42 | C22-69P | 15.21 | 13.32 | 11.12 | C22-69S | 20.97 | 18.35 | 15.74 |

Continued on following page.

# AMPHENOL Miniature Connectors

## MINNI-E® SERIES 67 MINIATURE CONNECTORS (CONTINUED)

### WALL RECEPTACLES

#### WITH FORM FOR POTTING SEAL

| Pin Contacts | | | | Socket Contacts | | | |
|---|---|---|---|---|---|---|---|
| Amph. No. 67-00- | Net Each, Lots of | | | Amph. No. 67-00- | Net Each, Lots of | | |
| | 1-24 | 25-99 | 100-199 | | 1-24 | 25-99 | 100-199 |
| P12-7P | $ 8.38 | $ 7.33 | $ 6.29 | P12-7S | $10.02 | $ 8.77 | $ 7.52 |
| P12-60P | 8.28 | 7.24 | 6.21 | P12-60S | 9.18 | 8.03 | 6.89 |
| P14-5P | 7.64 | 6.68 | 5.73 | P14-5S | 8.58 | 7.51 | 6.44 |
| P14-9P | 8.08 | 7.07 | 6.06 | P14-9S | 9.38 | 8.21 | 7.04 |
| P14-12P | 8.16 | 7.14 | 6.12 | P14-12S | 9.74 | 8.52 | 7.31 |
| P14-61P | 9.16 | 8.01 | 6.87 | P14-61S | 13.11 | 11.48 | 9.84 |
| P14-63P | 8.28 | 7.24 | 6.21 | P14-63S | 9.66 | 8.45 | 7.25 |
| P18-24P | 9.00 | 7.87 | 6.75 | P18-24S | 12.77 | 11.18 | 9.59 |
| P18-62P | 10.42 | 9.12 | 7.82 | P18-62S | 18.31 | 16.03 | 13.74 |
| P18-64P | 10.12 | 8.85 | 7.59 | P18-64S | 11.20 | 9.80 | 8.40 |
| P18-65P | 11.06 | 9.68 | 8.30 | P18-65S | 10.42 | 9.12 | 7.82 |
| P20-37P | 13.35 | 11.69 | 10.02 | P20-37S | 18.69 | 16.36 | 14.03 |
| P20-66P | 11.44 | 10.01 | 8.58 | P20-66S | 14.93 | 13.07 | 11.21 |
| P22-48P | 16.05 | 14.05 | 12.05 | P22-48S | 22.77 | 19.93 | 17.09 |
| P22-67P | 14.15 | 12.39 | 10.62 | P22-67S | 18.81 | 16.46 | 14.12 |
| P22-68P | 15.11 | 13.23 | 11.34 | P22-68S | 20.87 | 18.27 | 15.66 |
| P22-69P | 15.69 | 13.74 | 11.78 | P22-69S | 21.45 | 18.77 | 16.10 |

#### WITH INDIVIDUAL WIRE SEAL GROMMET

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| E12-7P | $10.64 | $ 9.31 | $ 7.98 | E12-7S | $12.28 | $10.74 | $ 9.21 |
| E12-60P | 10.64 | 9.31 | 7.98 | E12-60S | 11.56 | 10.11 | 8.67 |
| E14-5P | 10.10 | 8.84 | 7.58 | E14-5S | 11.06 | 9.68 | 8.30 |
| E14-9P | 10.90 | 9.54 | 8.18 | E14-9S | 12.22 | 10.69 | 9.17 |
| E14-12P | 10.40 | 9.10 | 7.80 | E14-12S | 12.00 | 10.50 | 9.00 |
| E14-61P | 12.06 | 10.55 | 9.05 | E14-61S | 16.01 | 14.02 | 12.02 |
| E14-63P | 10.84 | 9.48 | 8.13 | E14-63S | 12.24 | 10.71 | 9.18 |
| E18-24P | 12.22 | 10.69 | 9.17 | E18-24S | 15.99 | 14.00 | 12.00 |
| E18-62P | 14.51 | 12.70 | 10.89 | E18-62S | 22.43 | 19.63 | 16.83 |
| E18-64P | 12.95 | 11.34 | 9.72 | E18-64S | 14.03 | 12.28 | 10.53 |
| E18-65P | 13.79 | 12.07 | 10.35 | E18-65S | 13.15 | 11.51 | 9.87 |
| E20-37P | 16.05 | 14.05 | 12.05 | E20-37S | 21.39 | 18.72 | 16.05 |
| E20-66P | 13.47 | 11.79 | 10.11 | E20-66S | 16.95 | 14.84 | 12.72 |
| E22-48P | 17.39 | 15.22 | 13.05 | E22-48S | 24.11 | 21.10 | 18.09 |
| E22-67P | 15.97 | 13.98 | 11.99 | E22-67S | 20.61 | 18.04 | 15.47 |
| E22-68P | 17.19 | 15.05 | 12.90 | E22-68S | 22.93 | 20.07 | 17.21 |
| E22-69P | 17.39 | 15.22 | 13.05 | E22-69S | 23.15 | 20.26 | 17.37 |

#### WITH STANDARD CABLE CLAMP

| o. n- cts | Pin Contacts | | | | Socket Contacts | | | |
|---|---|---|---|---|---|---|---|---|
| | Amph. No. 67-00- | Net Each, Lots of | | | Amph. No. 67-00- | Net Each, Lots of | | |
| | | 1-24 | 25-99 | 100-199 | | 1-24 | 25-99 | 100-199 |
| 7 | C12-7P | $ 9.96 | $ 8.71 | $ 7.47 | C12-7S | $11.60 | $10.15 | $ 8.70 |
| 3 | C12-60P | 9.86 | 8.63 | 7.40 | C12-60S | 10.76 | 9.41 | 8.07 |
| 5 | C14-5P | 10.04 | 8.78 | 7.53 | C14-5S | 11.00 | 9.62 | 8.25 |
| 9 | C14-9P | 10.48 | 9.17 | 7.86 | C14-9S | 11.80 | 10.32 | 8.85 |
| 2 | C14-12P | 10.56 | 9.24 | 7.92 | C14-12S | 12.14 | 10.62 | 9.11 |
| 9 | C14-61P | 11.56 | 10.11 | 8.67 | C14-61S | 15.53 | 13.60 | 11.66 |
| 5 | C14-63P | 10.68 | 9.34 | 8.01 | C14-63S | 12.06 | 10.55 | 9.05 |
| 24 | C18-24P | 11.08 | 9.69 | 8.31 | C18-24S | 14.87 | 13.02 | 11.16 |
| 20 | C18-62P | 12.51 | 10.95 | 9.39 | C18-62S | 20.41 | 17.86 | 15.32 |
| 14 | C18-64P | 12.22 | 10.69 | 9.17 | C18-64S | 13.27 | 11.62 | 9.96 |
| 11 | C18-65P | 13.13 | 11.50 | 9.86 | C18-65S | 12.51 | 10.95 | 9.39 |
| 37 | C20-37P | 15.65 | 13.70 | 11.75 | C20-37S | 21.01 | 18.39 | 15.77 |
| 19 | C20-66P | 13.75 | 12.04 | 10.32 | C20-66S | 17.23 | 15.08 | 12.93 |
| 48 | C22-48P | 18.17 | 15.90 | 13.64 | C22-48S | 24.87 | 21.77 | 18.66 |
| 25 | C22-67P | 16.27 | 14.24 | 12.21 | C22-67S | 20.91 | 18.30 | 15.69 |
| 38 | C22-68P | 17.21 | 15.06 | 12.92 | C22-68S | 22.95 | 20.09 | 17.22 |
| 42 | C22-69P | 17.81 | 15.59 | 13.37 | C22-69S | 23.55 | 20.61 | 17.67 |

### PANEL RECEPTACLES WITH 4-HOLE MOUNT

#### AND INDIVIDUAL WIRE SEAL GROMMET

| No. Contacts | Pin Contacts | | | | Socket Contacts | | | |
|---|---|---|---|---|---|---|---|---|
| | Amph. No. 67-02- | Net Each, Lots of | | | Amph. No. 67-02- | Net Each, Lots of | | |
| | | 1-24 | 25-99 | 100-199 | | 1-24 | 25-99 | 100-199 |
| 7 | E12-7P | $ 6.10 | $ 5.34 | $ 4.58 | E12-7S | $ 7.72 | $ 6.75 | $ 5.79 |
| 3 | E12-60P | 5.96 | 5.21 | 4.47 | E12-60S | 6.94 | 6.07 | 5.21 |
| 5 | E14-5P | 5.36 | 4.69 | 4.02 | E14-5S | 6.28 | 5.49 | 4.71 |
| 9 | E14-9P | 5.84 | 5.11 | 4.38 | E14-9S | 7.12 | 6.73 | 5.34 |
| 12 | E14-12P | 5.88 | 5.14 | 4.41 | E14-12S | 7.86 | 6.88 | 5.90 |
| 9 | E14-61P | 6.90 | 6.04 | 5.18 | E14-61S | 10.90 | 9.54 | 8.18 |
| 5 | E14-63P | 6.00 | 5.25 | 4.50 | E14-63S | 7.40 | 6.47 | 5.55 |
| 24 | E18-24P | 7.26 | 6.35 | 5.54 | E18-24S | 10.92 | 9.55 | 8.19 |
| 20 | E18-62P | 8.20 | 7.17 | 6.15 | E18-62S | 13.85 | 12.13 | 10.40 |
| 14 | E18-64P | 7.78 | 6.81 | 5.84 | E18-64S | 8.94 | 7.82 | 6.71 |
| 11 | E18-65P | 8.82 | 7.72 | 6.62 | E18-65S | 8.18 | 7.16 | 6.14 |
| 37 | E20-37P | 12.18 | 10.66 | 9.14 | E20-37S | 16.03 | 14.03 | 12.03 |
| 19 | E20-66P | 9.24 | 8.08 | 6.93 | E20-66S | 8.78 | 7.68 | 6.59 |
| 48 | E22-48P | 12.99 | 11.37 | 9.75 | E22-48S | 19.41 | 16.99 | 14.57 |
| 25 | E22-67P | 10.76 | 9.41 | 8.07 | E22-67S | 15.45 | 13.53 | 11.60 |
| 38 | E22-68P | 11.96 | 10.46 | 8.97 | E22-68S | 17.93 | 15.69 | 13.46 |
| 42 | E22-69P | 12.51 | 10.95 | 9.39 | E22-69S | 18.51 | 16.20 | 13.89 |

### ROUND FLANGE RECEPTACLES

#### REAR MOUNT WITH HEX NUT

| No. Contacts | Pin Contacts | | | | Socket Contacts | | | |
|---|---|---|---|---|---|---|---|---|
| | Amph. No. 67-03- | Net Each, Lots of | | | Amph. No. 67-03- | Net Each, Lots of | | |
| | | 1-24 | 25-99 | 100-199 | | 1-24 | 25-99 | 100-199 |
| 7 | E12-7P | $ 6.94 | $ 6.07 | $ 5.21 | E12-7S | $ 8.56 | $ 7.49 | $ 6.42 |
| 3 | E12-60P | 6.80 | 5.95 | 5.10 | E12-60S | 14.55 | 12.74 | 10.92 |
| 5 | E14-5P | 5.94 | 5.20 | 4.46 | E14-5S | 6.88 | 6.02 | 5.16 |
| 9 | E14-9P | 6.38 | 5.58 | 4.79 | E14-9S | 7.70 | 6.74 | 5.78 |
| 12 | E14-12P | 6.44 | 5.63 | 4.83 | E14-12S | 8.42 | 7.37 | 6.32 |
| 9 | E14-61P | 7.48 | 6.54 | 5.61 | E14-61S | 11.46 | 10.03 | 8.60 |
| 5 | E14-63P | 6.58 | 5.76 | 4.94 | E14-63S | 7.96 | 6.96 | 5.97 |
| 24 | E18-24P | 7.88 | 6.89 | 5.91 | E18-24S | 11.58 | 10.13 | 8.69 |
| 20 | E18-62P | 8.84 | 7.73 | 6.63 | E18-62S | 14.49 | 12.69 | 10.88 |
| 14 | E18-64P | 8.42 | 7.37 | 6.32 | E18-64S | 7.58 | 8.38 | 7.19 |
| 11 | E18-65P | 9.48 | 8.29 | 7.11 | E18-65S | 8.82 | 7.72 | 6.62 |
| 37 | E20-37P | 13.01 | 11.39 | 9.77 | E20-37S | 16.91 | 14.80 | 12.69 |
| 19 | E20-66P | 10.06 | 8.80 | 7.55 | E20-66S | 13.57 | 11.88 | 10.19 |
| 48 | E22-48P | 14.67 | 12.84 | 11.01 | E22-48S | 21.09 | 18.46 | 15.83 |
| 25 | E22-67P | 12.48 | 10.92 | 9.36 | E22-67S | 17.17 | 15.03 | 12.89 |
| 38 | E22-68P | 13.63 | 11.93 | 10.23 | E22-68S | 19.95 | 17.15 | 14.70 |
| 42 | E22-69P | 14.21 | 12.44 | 10.69 | E22-69S | 20.19 | 17.67 | 15.15 |

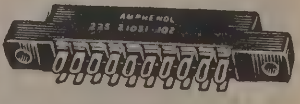
#### HERMETICALLY-SEALED, PIN CONTACT

| No. Contacts | Amph. No. 67-04- | Hex Nut Front Mount Type | | | Stake-On Solder Flange Type* | | |
|---|---|---|---|---|---|---|---|
| | | Net Each, Lots of | | | Net Each, Lots of | | |
| | | 1-24 | 25-99 | 100-199 | 1-24 | 25-99 | 100-199 |
| 7 | H12-7P | $21.25 | $18.60 | $15.95 | $10.74 | $ 9.40 | $ 8.06 |
| 12 | H14-12P | 24.57 | 21.50 | 18.44 | 13.35 | 11.69 | 10.02 |
| 9 | H14-61P | 14.49 | 12.69 | 10.88 | 10.50 | 9.19 | 7.88 |
| 24 | H18-24P | # | # | # | 19.28 | 16.88 | 14.48 |
| 20 | H18-62P | 33.27 | 29.12 | 24.96 | 18.55 | 16.24 | 13.92 |
| 37 | H20-37P | 36.93 | 32.32 | 27.71 | 31.37 | 27.77 | 23.81 |
| 48 | H22-48P | 45.66 | 39.96 | 34.26 | 38.98 | 34.12 | 29.25 |

*Add suffix **(105)** when ordering—example: 67-04-H12-7P **(105)**—stake-on solder flange type. #Prices on request.

## PRINTED CIRCUIT CONNECTORS

### SERIES 225 BLUE RIBBON® PRINTED CIRCUIT CONNECTORS



old plated bifurcated ribbon contacts with eyelet or straight pin solder type terminations. ated 5 amps at 600 VAC rms. Large mating surface provides low contact resistance. Centers 56″ for .154″ to .170″ PC boards. Glass filled diallyl phthalate. Meets MIL-C-21097B. Polariz- g key assures contact positioning. Straight pin is .406″. Screw mount.

#### WITH 2 ROWS OF INDEPENDENT CONTACTS

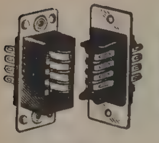
| mphenol o. 225- | Contacts | Tail Style | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 1-49 | 50-99 | 100-249 | 250-499 | 500-999 | 1000-2499 |
| 1021-101 | 20 | Eyelet | $2.16 | $1.81 | $1.52 | $1.35 | $1.24 | $1.15 |
| 1521-101 | 30 | Eyelet | 2.58 | 2.16 | 1.81 | 1.61 | 1.48 | 1.38 |
| 1821-101 | 36 | Eyelet | 2.87 | 2.40 | 2.01 | 1.79 | 1.64 | 1.54 |
| 2221-101 | 44 | Eyelet | 3.47 | 2.91 | 2.44 | 2.17 | 1.99 | 1.85 |
| 2821-101 | 56 | Eyelet | 4.87 | 4.07 | 3.42 | 3.04 | 2.78 | 2.60 |
| 1021-103 | 20 | Pin | 2.16 | 1.81 | 1.52 | 1.35 | 1.24 | 1.15 |
| 1521-103 | 30 | Pin | 2.58 | 2.16 | 1.81 | 1.61 | 1.48 | 1.38 |
| 1821-103 | 36 | Pin | 2.87 | 2.40 | 2.01 | 1.79 | 1.64 | 1.54 |
| 2221-103 | 44 | Pin | 3.47 | 2.91 | 2.44 | 2.17 | 1.99 | 1.85 |
| 2821-103 | 56 | Pin | 4.87 | 4.07 | 3.42 | 3.04 | 2.78 | 2.60 |

#### WITH 2 ROWS BRIDGED FOR SINGLE READOUT

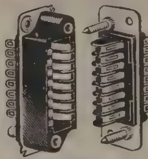
| Amphenol No. 225- | Contacts | Tail Style | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 1-49 | 50-99 | 100-249 | 250-499 | 500-999 | 1000-2499 |
| 21031-101 | 10 | Eyelet | $2.16 | $1.81 | $1.52 | $1.35 | $1.24 | $1.15 |
| 21531-101 | 15 | Eyelet | 2.58 | 2.16 | 1.81 | 1.61 | 1.48 | 1.38 |
| 21831-101 | 18 | Eyelet | 2.87 | 2.40 | 2.01 | 1.79 | 1.64 | 1.53 |
| 22231-101 | 22 | Eyelet | 3.47 | 2.91 | 2.44 | 2.17 | 1.99 | 1.85 |
| 22831-101 | 28 | Eyelet | 4.87 | 4.07 | 3.42 | 3.04 | 2.78 | 2.60 |
| 21031-103 | 10 | Pin | 2.16 | 1.81 | 1.52 | 1.35 | 1.24 | 1.15 |
| 21531-103 | 15 | Pin | 2.58 | 2.16 | 1.81 | 1.61 | 1.48 | 1.38 |
| 21831-103 | 18 | Pin | 2.87 | 2.40 | 2.01 | 1.79 | 1.64 | 1.53 |
| 22231-103 | 22 | Pin | 3.47 | 2.91 | 2.44 | 2.17 | 1.99 | 1.85 |
| 22831-103 | 28 | Pin | 4.87 | 4.07 | 3.42 | 3.04 | 2.78 | 2.60 |

# BUNKER RAMO AMPHENOL Rack, Panel Connector

## BLUE RIBBON® CONNECTORS



**Barrier Polarization**



**Pin Polarization**

Patented gold plated ribbon contact provides self-wiping action with low contact resistance. Steel mounting plates with float bushings for alignment in rack and panel applications. Impact and moisture resistant, high quality diallyl phthalate dielectric.

### BARRIER POLARIZATION TYPES

Requires rectangular panel cutout. Polarization and contact alignment by construction of dielectric barriers at end of connectors (26-182, -183), or by barrier thickness between contacts. **Rating:** 5 amps, 800 V.

| Amph. No. 26- | Contacts | * | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249* |
|---|---|---|---|---|---|---|
| 182 | 8 | M | $1.23 | $1.04 | $0.84 | $0.75 |
| 4100-8P | 8 | M | 1.12 | .94 | .76 | .69 |
| 4100-16P | 16 | M | 2.10 | 1.77 | 1.43 | 1.29 |
| 4100-24P | 24 | M | 2.52 | 2.13 | 1.73 | 1.55 |
| 4100-32P | 32 | M | 2.94 | 2.47 | 2.00 | 1.80 |
| 183 | 8 | F | 1.94 | 1.62 | 1.33 | 1.19 |
| 4200-8S | 8 | F | 1.83 | 1.55 | 1.26 | 1.12 |
| 4200-16S | 16 | F | 2.67 | 2.25 | 1.82 | 1.63 |
| 4200-24S | 24 | F | 3.16 | 2.66 | 2.16 | 1.94 |
| 4200-32S | 32 | F | 3.77 | 3.17 | 2.58 | 2.31 |

### PIN POLARIZATION TYPES

Polarized by two tapered posts which also align contacts prior to mating. **Rating:** 5 amps, 750 V.

| | | | | | | |
|---|---|---|---|---|---|---|
| 159-16 | 16 | M | $2.25 | $1.90 | $1.54 | $1.38 |
| 159-24 | 24 | M | 2.54 | 2.13 | 1.73 | 1.56 |
| 159-32 | 32 | M | 3.20 | 2.69 | 2.19 | 1.97 |
| 190-16 | 16 | F | 2.86 | 2.41 | 1.96 | 1.76 |
| 190-24 | 24 | F | 3.42 | 2.88 | 2.34 | 2.10 |
| 190-32 | 32 | F | 4.04 | 3.39 | 2.76 | 2.48 |

*Type: M-Male, F-Female.

## MINIATURE HEXAGON CONNECTORS

Quality miniature connectors at economy prices. Body of diallyl phthalate dielectric; gold-over-silver contacts. Rated 7.5 amps, 500 V rms at sea level.

### RACK AND PANEL WITH HEX NUT (ILLUSTRATED)

| No. 126- | Description | Net Each, Lots of 1-49 | 50-99 | 100-249 |
|---|---|---|---|---|
| 010 | 5-pin plug | $0.73 | $0.59 | $0.48 |
| 011 | 5-pin socket | 1.16 | .92 | .77 |
| 191 | 7-pin plug | .86 | .68 | .56 |
| 192 | 7-pin socket | 1.47 | 1.16 | .97 |
| 012 | 9-pin plug | .99 | .79 | .65 |
| 013 | 9-pin socket | 1.82 | 1.44 | 1.20 |

### RECEPTACLES WITH LOCKING CLIP

| | | | | |
|---|---|---|---|---|
| 214 | 4-pin plug | $0.87 | $0.69 | $0.57 |
| 216 | 5-pin plug | .78 | .62 | .52 |
| 218 | 5-pin socket | 1.24 | .98 | .82 |
| 197 | 7-pin plug | .92 | .73 | .62 |
| 198 | 7-pin socket | 1.55 | 1.23 | 1.03 |
| 219 | 9-pin plug | 1.06 | .85 | .70 |
| 221 | 9-pin socket | 1.90 | 1.50 | 1.25 |

### CABLE TO PANEL WITH HOOD AND CLAMP

| | | | | |
|---|---|---|---|---|
| 215 | 4-pin socket | $1.47 | $1.16 | $0.96 |
| 217 | 5-pin plug | 1.60 | 1.27 | 1.06 |
| 223 | 5-pin socket | 2.07 | 1.64 | 1.37 |
| 195 | 7-pin plug | 1.76 | 1.40 | 1.16 |
| 196 | 7-pin socket | 2.38 | 1.88 | 1.57 |
| 220 | 9-pin plug | 1.90 | 1.50 | 1.25 |
| 222 | 9-pin socket | 2.72 | 2.16 | 1.79 |

### KEYED SHELLS

For rack and panel or module applications requiring additional keying or connector protection. Notched keys in shell provide a variety of positioned connectors. Rated 5 amps, 800 V.

#### PLUGS

| Amph. No. 26- | Contacts | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249* |
|---|---|---|---|---|---|
| 4101-8P | 8 | $2.20 | $1.86 | $1.51 | $1.36 |
| 4101-16P | 16 | 3.33 | 2.81 | 2.27 | 2.05 |
| 4101-24P | 24 | 3.84 | 3.23 | 2.63 | 2.36 |
| 4101-32P | 32 | 4.41 | 3.71 | 3.01 | 2.70 |
| 4102-8P | 8 | 2.20 | 1.86 | 1.51 | 1.36 |
| 4102-16P | 16 | 3.33 | 2.81 | 2.27 | 2.05 |
| 4102-24P | 24 | 3.84 | 3.23 | 2.63 | 2.36 |
| 4102-32P | 32 | 4.41 | 3.71 | 3.01 | 2.70 |

#### MATING RECEPTACLES

| Amph. No. 26- | Contacts | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249* |
|---|---|---|---|---|---|
| 4201-8S | 8 | $2.54 | $2.14 | $1.74 | $1.56 |
| 4201-16S | 16 | 3.46 | 2.92 | 2.36 | 2.12 |
| 4201-24S | 24 | 4.14 | 3.49 | 2.83 | 2.53 |
| 4201-32S | 32 | 4.80 | 4.05 | 3.28 | 2.95 |
| 4202-8S | 8 | 2.54 | 2.14 | 1.74 | 1.56 |
| 4202-16S | 16 | 3.46 | 2.92 | 2.36 | 2.12 |
| 4202-24S | 24 | 4.14 | 3.49 | 2.83 | 2.53 |
| 4202-32S | 32 | 4.80 | 4.05 | 3.28 | 2.95 |

### CABLE TO PANEL TYPES WITH KEYED LATCH-LOCK SHELLS

With end cable clamp (26-4301) or right angle cable clamp (26-4501) on the plug; both units mate with receptacle 26-4401. With notched keying to avoid cross-mating.

#### PLUGS

| Amph. No. 26- | Contacts | * | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249* |
|---|---|---|---|---|---|---|
| 4301-8P | 8 | M | $5.68 | $4.77 | $3.87 | $3.49 |
| 4301-16P | 16 | M | 7.12 | 5.99 | 4.87 | 4.38 |
| 4301-24P | 24 | M | 7.98 | 6.71 | 5.44 | 4.90 |
| 4301-32P | 32 | M | 8.89 | 7.48 | 6.06 | 5.46 |
| 4301-8S | 8 | F | 6.90 | 5.81 | 4.71 | 4.24 |
| 4301-16S | 16 | F | 7.70 | 6.47 | 5.25 | 4.72 |
| 4301-24S | 24 | F | 8.98 | 7.56 | 6.14 | 5.51 |
| 4301-32S | 32 | F | 9.72 | 8.17 | 6.64 | 5.97 |
| 4501-8P | 8 | M | 5.68 | 4.77 | 3.87 | 3.49 |
| 4501-16P | 16 | M | 7.12 | 5.99 | 4.87 | 4.38 |
| 4501-24P | 24 | M | 7.98 | 6.71 | 5.44 | 4.90 |
| 4501-32P | 32 | M | 8.89 | 7.48 | 6.06 | 5.46 |
| 4501-8S | 8 | F | 6.39 | 5.37 | 4.37 | 3.92 |
| 4501-16S | 16 | F | 7.70 | 6.47 | 5.25 | 4.72 |
| 4501-24S | 24 | F | 8.69 | 7.31 | 5.94 | 5.33 |
| 4501-32S | 32 | F | 9.59 | 8.07 | 6.54 | 5.88 |

#### MATING RECEPTACLES

| | | | | | | |
|---|---|---|---|---|---|---|
| 4401-8P | 8 | M | $3.42 | $2.88 | $2.34 | $2.10 |
| 4401-16P | 16 | M | 4.51 | 3.78 | 3.07 | 2.77 |
| 4401-24P | 24 | M | 5.07 | 4.26 | 3.47 | 3.11 |
| 4401-32P | 32 | M | 5.63 | 4.74 | 3.84 | 3.47 |
| 4401-8S | 8 | F | 4.17 | 3.51 | 2.84 | 2.57 |
| 4401-16S | 16 | F | 5.10 | 4.28 | 3.48 | 3.13 |
| 4401-24S | 24 | F | 5.76 | 4.84 | 3.93 | 3.53 |
| 4401-32S | 32 | F | 6.49 | 5.46 | 4.43 | 3.99 |

*Type: M-Male, F-Female.

## MICRO RIBBON MINIATURE CONNECTORS

Extremely small connectors for dependable use where miniaturization is needed. Smooth, easy insertion and extraction. Self-wiping and cleaning. Double sided, flexing action of both contact members for added reliability. Available in up to 50-contact arrangements. Diallyl phthalate dielectric bodies. **Rating:** 700 VDC at sea level, 200 VDC at 70,000 feet. Shells, cadmium-plated brass with clear chromate finish.

| Amph. No. 57- | * | Contacts | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249* |
|---|---|---|---|---|---|---|
| 10140 | † | 14 | $1.96 | $1.64 | $1.34 | $1.21 |
| 20140 | ‡ | 14 | 2.01 | 1.70 | 1.37 | 1.24 |
| 30140 | § | 14 | 3.76 | 3.16 | 2.57 | 2.32 |
| 40140 | # | 14 | 2.47 | 2.09 | 1.70 | 1.53 |
| 10240 | † | 24 | 2.62 | 2.19 | 1.90 | 1.60 |
| 20240 | ‡ | 24 | 2.67 | 2.25 | 1.83 | 1.64 |
| 30240 | § | 24 | 4.13 | 3.48 | 2.81 | 2.54 |
| 40240 | # | 24 | 2.95 | 2.47 | 2.01 | 1.81 |
| 10360 | † | 36 | 3.00 | 2.52 | 2.05 | 1.84 |
| 20360 | ‡ | 36 | 3.17 | 2.59 | 2.10 | 1.89 |
| 30360 | § | 36 | 5.16 | 4.26 | 3.44 | 3.12 |
| 40360 | # | 36 | 3.18 | 2.67 | 2.16 | 1.94 |
| 10500 | † | 50 | 3.95 | 3.34 | 2.70 | 2.42 |
| 20500 | ‡ | 50 | 4.00 | 3.38 | 2.73 | 2.46 |
| 30500 | § | 50 | 5.54 | 4.66 | 3.79 | 3.41 |
| 40500 | # | 50 | 4.16 | 3.50 | 2.82 | 2.54 |

***Type:** †Plug; ‡receptacle; for rack and panel use. §Plug with cable clamp; #receptacle; for cable to panel use.

## MINIATURE RECTANGULAR CONNECTORS

Rectangular connectors of a miniature size, intended for use wherever a circuit must be re-routed, made or broken in the interior of the equipment. Contacts and polarizing pins are gold-plate over silver-base plating; will not tarnish or corro
Dielectric bodies are of melamine. **Volta**
**Rating:** Types A and B, 700 V rms at
level between terminal and 600 V rms
sea level between terminals and grou
with a current of 17 amps; Type C and
600 V with a current of 7.5 amps. **Ins**
**tion Force:** 15 lbs., minimum to 40 lb
max. **Withdrawal Force:** 1 lb., minimum
4 lbs., maximum.

| No. 126- | Contacts | Net Each, Lots of 1-49 | 50-99 | 100-24 |
|---|---|---|---|---|
| 016* | 7 p. | $1.39 | $1.10 | $0.92 |
| 017* | 7 s. | 1.55 | 1.55 | 1.28 |
| 204* | 15 p. | 1.97 | 1.56 | 1.29 |
| 205* | 15 s. | 3.62 | 2.85 | 2.36 |
| 206* | 18 p. | 2.15 | 1.70 | 1.40 |
| 207* | 18 s. | 4.19 | 3.31 | 2.75 |
| 173* | 14 p. | 2.42 | 1.91 | 1.58 |
| 174† | 14 s. | 3.89 | 3.06 | 2.54 |
| 199† | 18 p. | 2.43 | 1.92 | 1.59 |
| 189† | 18 s. | 4.11 | 3.25 | 2.70 |
| 171† | 21 p. | 3.73 | 2.95 | 2.44 |
| 172† | 21 s. | 6.01 | 4.75 | 3.93 |
| 188† | 34 p. | 3.59 | 2.84 | 2.35 |
| 187† | 34 s. | 6.55 | 5.18 | 4.29 |

**Current Rating:** *17 amps. †7.5 amps.
**Contacts:** p.-pins; s.-sockets.

## SERIES 126 RACK AND PANEL CONNECTOR

11, 15 and 20 contact connectors for us
on rack and panel mountings. All hav
eyelets inserted in the mounting holes fo
added strength, holes for wiring instead o
the usual hooks on the male contacts, an
interlocking barriers to prevent accidenta
shorting. All models can be supplied wit
or without a protective can and cabl
clamp as shown. Molded of mica-fille
phenolic. Male contacts are brass, silve
plated and molded into the insert. Femal
contacts are beryllium copper, silver plated.
**Voltage Rating:** 900 volts rms, 60 Hz,
at sea level.

### SPECIFICATIONS

| Amphenol No. 126- | Description | Contacts No. 16 | No. 20 | Spacing |
|---|---|---|---|---|
| 804, 809 | Male | 2 | 9 | .864 |
| 805, 808 | Female | 2 | 9 | .864 |
| 151, 152 | Male | 3 | 12 | 1.188 |
| 150, 153 | Female | 3 | 12 | 1.188 |
| 806, 811 | Male | 4 | 16 | 1.620 |
| 807, 810 | Female | 4 | 16 | 1.620 |
| 812 | Female | 20 | ...... | ..... |
| 813 | Male | 20 | ...... | ..... |

### SERIES 126 PRICES

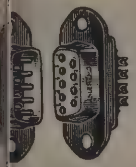
| No. 126- | Contacts | Mtg. Screw | Net Each, Lots of 1-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|
| 804* | 11 | #4 | $1.03 | $0.81 | $0.67 |
| 809 | 11 | #4 | 1.68 | 1.32 | 1.10 |
| 805* | 11 | #4 | 1.06 | .84 | .70 |
| 808 | 11 | #4 | 1.72 | 1.36 | 1.13 |
| 151* | 15 | #6 | 1.36 | 1.07 | .88 |
| 152 | 15 | #6 | 2.63 | 2.08 | 1.72 |
| 150* | 15 | #6 | 1.03 | .81 | .67 |
| 153 | 15 | #6 | 2.05 | 1.62 | 1.35 |
| 806* | 20 | #4 | 1.63 | 1.28 | 1.06 |
| 811 | 20 | #4 | 2.61 | 2.06 | 1.71 |
| 807* | 20 | #4 | 1.30 | 1.02 | .85 |
| 810 | 20 | #4 | 2.28 | 1.80 | 1.49 |
| 812* | 20 | #4 | 1.37 | 1.09 | .90 |
| 813* | 20 | #4 | 2.96 | 2.34 | 1.93 |

*Insert only, without shell and clamp.

**★Larger Quantity Prices on Request.**

# AMPHENOL Rack, Panel Connectors

## MIN-RAC 17 MINIATURE RACK AND PANEL CONNECTORS WITH POKE-HOME® CONTACTS



Half the size and weight of standards. "Poke Home" contacts are soldered to leads outside the connector, then "Poked Home" for quick, simple and reliable assembly. No damage or difficulty from "close in" soldering. From 9 to 50 contacts. Solder type contacts take up to #20 AWG wire. Crimp type take #20 or #22 AWG wire. Steel shells with either clear chromate (listed) or gold iridite (change 2nd number from 0 to 1, e.g., -21090), over cod-plate finish. Current rating: 5 amps. Prices listed are less cable housing.

### PLUGS WITH ZYTEL 101 NYLON INSERTS

| phenol No. | Contacts | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| 090* | 9 | $1.25 | $1.13 | $0.94 | $0.75 | $0.69 | $0.63 |
| 150* | 15 | 1.71 | 1.55 | 1.29 | 1.03 | .95 | .86 |
| 250* | 25 | 2.41 | 2.18 | 1.79 | 1.44 | 1.30 | 1.19 |
| 370* | 37 | 3.30 | 3.00 | 2.49 | 2.00 | 1.78 | 1.64 |
| 500* | 50 | 4.20 | 3.82 | 3.15 | 2.53 | 2.31 | 2.11 |
| 090-1† | 9 | 1.25 | 1.13 | .94 | .75 | .69 | .63 |
| 150-1† | 15 | 1.71 | 1.55 | 1.29 | 1.03 | .95 | .86 |
| 250-1† | 25 | 2.41 | 2.18 | 1.79 | 1.44 | 1.30 | 1.19 |
| 370-1† | 37 | 3.30 | 3.00 | 2.49 | 2.00 | 1.78 | 1.64 |
| 500-1† | 50 | 4.20 | 3.82 | 3.15 | 2.53 | 2.31 | 2.11 |

### MATING RECEPTACLES

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0090* | 9 | $1.71 | $1.55 | $1.29 | $1.03 | $0.95 | $0.86 |
| 0150* | 15 | 2.45 | 2.23 | 1.84 | 1.47 | 1.35 | 1.23 |
| 0250* | 25 | 3.64 | 3.30 | 2.73 | 2.20 | 2.00 | 1.83 |
| 0370* | 37 | 5.18 | 4.68 | 3.86 | 3.11 | 2.81 | 2.58 |
| 0500* | 50 | 6.61 | 6.00 | 4.95 | 3.99 | 3.64 | 3.33 |
| 0090-1† | 9 | 1.71 | 1.55 | 1.29 | 1.03 | .95 | .86 |
| 0150-1† | 15 | 2.45 | 2.23 | 1.84 | 1.47 | 1.35 | 1.23 |
| 0250-1† | 25 | 3.64 | 3.30 | 2.73 | 2.20 | 2.00 | 1.83 |
| 0370-1† | 37 | 5.18 | 4.68 | 3.86 | 3.11 | 2.81 | 2.58 |
| 0500-1† | 50 | 6.61 | 6.00 | 4.95 | 3.99 | 3.64 | 3.33 |

der contacts; for float mount, add suffix -5; prices slightly er. †Crimp contacts; for float mount, change suffix to -6; es slightly higher.

### FIXED PIN MIN-RAC 17

cost, with fixed contacts; dimensions, mounting and panel outs same as standard 17 series. Solder cup contacts; maximum size, 20 gauge. Glass-filled nylon dielectric.

#### PLUGS

| nphenol No. | Contacts | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| 00090-16 | 9 | $1.15 | $1.04 | $0.86 | $0.69 | $0.63 | $0.58 |
| 00150-16 | 15 | 1.62 | 1.47 | 1.22 | .98 | .89 | .82 |
| 00250-16 | 25 | 2.34 | 2.12 | 1.76 | 1.41 | 1.29 | 1.18 |
| 00370-16 | 37 | 3.20 | 2.90 | 2.40 | 1.93 | 1.76 | 1.61 |
| 00500-16 | 50 | 4.15 | 3.76 | 3.11 | 2.50 | 2.29 | 2.09 |

#### MATING RECEPTACLES

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 80090-16 | 9 | $1.65 | $1.49 | $1.23 | $0.99 | $0.91 | $0.83 |
| 80150-16 | 15 | 2.41 | 2.18 | 1.81 | 1.45 | 1.33 | 1.21 |
| 80250-16 | 25 | 3.66 | 3.32 | 2.75 | 2.21 | 2.02 | 1.85 |
| 80370-16 | 37 | 5.15 | 4.64 | 3.83 | 3.09 | 2.78 | 2.55 |
| 80500-16 | 50 | 6.60 | 6.00 | 4.94 | 3.99 | 3.62 | 3.31 |

### HIGH-TEMP. HARD DIELECTRIC PLUGS

Diallyl phthalate glass-filled per MIL-M-19833 Type GDI-30.

| Amphenol No. | Contacts | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| 17-70090* | 9 | $2.44 | $2.20 | $1.84 | $1.66 | $1.43 | $1.37 |
| 17-70150* | 15 | 3.56 | 3.22 | 2.71 | 2.45 | 2.11 | 2.03 |
| 17-70250* | 25 | 5.29 | 4.82 | 3.99 | 3.59 | 3.07 | 2.95 |
| 17-70370* | 37 | 7.46 | 6.83 | 5.63 | 5.08 | 4.35 | 4.18 |
| 17-70500* | 50 | 9.80 | 8.85 | 7.41 | 6.69 | 5.74 | 5.53 |
| 17-70090-1† | 9 | 2.32 | 2.09 | 1.75 | 1.58 | 1.36 | 1.31 |
| 17-70150-1† | 15 | 3.41 | 3.05 | 2.57 | 2.33 | 2.01 | 1.93 |
| 17-70250-1† | 25 | 4.99 | 4.47 | 3.74 | 3.38 | 2.90 | 2.78 |
| 17-70370-1† | 37 | 6.97 | 6.30 | 5.27 | 4.75 | 4.09 | 3.94 |
| 17-70500-1† | 50 | 9.09 | 8.26 | 6.92 | 6.26 | 5.38 | 5.17 |

#### MATING RECEPTACLES

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 17-60090* | 9 | $ 3.65 | $ 3.28 | $ 2.73 | $ 2.54 | $2.09 | $2.01 |
| 17-60150* | 15 | 5.38 | 4.85 | 4.05 | 3.64 | 3.11 | 2.99 |
| 17-60250* | 25 | 8.66 | 7.79 | 6.46 | 5.80 | 4.93 | 4.72 |
| 17-60370* | 37 | 12.50 | 11.25 | 9.34 | 8.38 | 7.13 | 6.83 |
| 17-60500* | 50 | 16.29 | 14.98 | 12.46 | 11.17 | 9.51 | 9.08 |
| 17-60090-1† | 9 | 3.51 | 3.17 | 2.63 | 2.36 | 2.01 | 1.93 |
| 17-60150-1† | 15 | 5.39 | 4.85 | 4.04 | 3.64 | 3.11 | 2.98 |
| 17-60250-1† | 25 | 8.30 | 7.46 | 6.20 | 5.57 | 4.73 | 4.54 |
| 17-60370-1† | 37 | 11.95 | 10.75 | 9.06 | 8.02 | 6.83 | 6.55 |
| 17-60500-1† | 50 | 16.09 | 14.38 | 12.02 | 10.71 | 9.11 | 8.74 |

*Solder contacts; †Crimp contacts.

#### CABLE ASSEMBLIES FOR MIN-RAC SERIES

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 17-310-01 | 9 | $1.13 | $0.95 | $0.76 | $0.68 | $0.57 | $0.52 |
| 17-311-01 | 15 | 1.18 | .99 | .78 | .71 | .59 | .54 |
| 17-312-01 | 25 | 1.24 | 1.02 | .82 | .74 | .62 | .57 |
| 17-313-01 | 37 | 1.28 | 1.07 | .86 | .77 | .64 | .59 |
| 17-314-01 | 50 | 1.31 | 1.09 | .87 | .79 | .65 | .60 |
| 17-529* | 9–37 | .65 | .59 | .49 | .40 | .36 | .30 |
| 17-770* | 50 | .65 | .59 | .49 | .40 | .36 | .30 |

*Locking assemblies latch cable to panel with clamp assemblies.

**No. 294-136 Crimping Tool**—Net Each............**$124.74**

**No. 294-155 Insertion and Removal Tool**—Net Each. **13.28**

### ENCAPSULATED CONTACT MIN-RAC 17

Crimp Poke-Home contacts. Extra depth of nylon dielectric at rear of connector protects contacts from arcing, shorting. No sleeving, potting necessary. Shell dimensions, specifications same as standard.

#### PLUGS

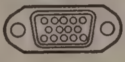
| Amphenol No. | Contacts | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| 17-20090-1 (390) | 9 | $1.29 | $1.17 | $0.97 | $0.78 | $0.72 | $0.66 |
| 17-20150-1 (390) | 15 | 1.76 | 1.59 | 1.32 | 1.06 | .97 | .88 |
| 17-20250-1 (390) | 25 | 2.42 | 2.19 | 1.80 | 1.45 | 1.30 | 1.20 |
| 17-20370-1 (390) | 37 | 3.36 | 3.04 | 2.52 | 2.02 | 1.79 | 1.65 |
| 17-20500-1 (390) | 50 | 4.24 | 3.84 | 3.18 | 2.55 | 2.33 | 2.14 |

#### MATING RECEPTACLES

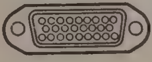
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 17-10090-1 (390) | 9 | $1.75 | $1.59 | $1.31 | $1.06 | $0.97 | $0.88 |
| 17-10150-1 (390) | 15 | 2.48 | 2.25 | 1.86 | 1.49 | 1.36 | 1.25 |
| 17-10250-1 (390) | 25 | 3.62 | 3.28 | 2.71 | 2.18 | 1.99 | 1.82 |
| 17-10370-1 (390) | 37 | 5.20 | 4.70 | 3.89 | 3.13 | 2.82 | 2.60 |
| 17-10500-1 (390) | 50 | 6.63 | 6.00 | 4.96 | 4.00 | 3.65 | 3.34 |

### HIGH DENSITY MIN-RAC 17

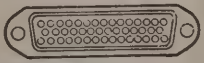
ers 50% to nearly 100% more circuits n standard in the standard size shell. ch #24 size crimp Poke-Home contact ries 3 amps at 500 V rms. Shell dimenns and mounting same as standard. ass-filled nylon dielectric. Wire size: , #26, #28 AWG.



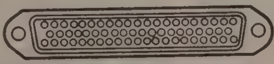
Shell Size 9



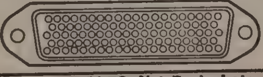
Shell Size 15



Shell Size 25



Shell Size 37

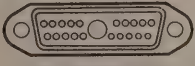


Shell Size 50

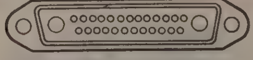
| Contacts | Shell Size | Amphenol No. | PLUGS, Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 | 500-999 | Amphenol No. | RECEPTACLES, Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | 9 | 17-90140-1 | $2.28 | $1.91 | $1.72 | $1.60 | $1.41 | $1.35 | 17-80140-1 | $2.93 | $2.41 | $2.07 | $1.95 | $1.71 | $1.63 |
| 26 | 15 | 17-90260-1 | 2.70 | 2.51 | 2.37 | 2.11 | 1.97 | 1.89 | 17-80260-1 | 4.34 | 3.11 | 2.97 | 2.61 | 2.47 | 2.29 |
| 44 | 25 | 17-90440-1 | 4.39 | 3.31 | 3.17 | 2.80 | 2.66 | 2.49 | 17-80440-1 | 6.29 | 4.32 | 4.16 | 3.66 | 3.50 | 3.23 |
| 65 | 37 | 17-90650-1 | 4.81 | 4.28 | 3.79 | 3.64 | 3.35 | 3.13 | 17-80650-1 | 6.99 | 5.79 | 5.09 | 4.91 | 4.48 | 4.25 |
| 98 | 50 | 17-90980-1 | 6.57 | 5.84 | 5.17 | 4.99 | 4.61 | 4.32 | 17-80980-1 | 9.78 | 8.04 | 7.06 | 6.85 | 6.25 | 5.95 |

### POWER/COAX MIN-RAC 17

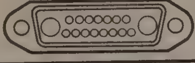
variety of combinations available where ax must be terminated with power circuits. Power contacts are #20 size; coax are shielded. Shell dimensions and mounting same as standard Crimp, Poke-Home ntacts; rated at 7.5 amps, 500 V rms ower max.). Glass-filled nylon dielectric.



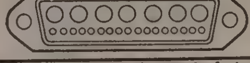
Shell Size 25
1 Coax Contact



Shell Size 37



Shell Size 25
2 Coax Contacts

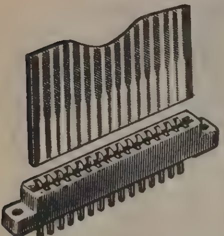


Shell Size 50

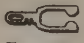
| Contacts ower | Coax | Shell Size | Amphenol No. | PLUGS, Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 | 500-999 | Amphenol No. | RECEPTACLES, Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 3 | 15 | 17-90003-1 | $1.21 | $1.09 | $0.97 | $0.87 | $0.78 | $0.69 | 17-80003-1 | $1.52 | $1.37 | $1.21 | $1.10 | $0.99 | $0.88 |
| 20 | 1 | 25 | 17-90201-1 | 1.94 | 1.75 | 1.50 | 1.41 | 1.26 | 1.12 | 17-80201-1 | 2.88 | 2.59 | 2.30 | 2.08 | 1.87 | 1.65 |
| 15 | 2 | 25 | 17-90152-1 | 1.87 | 1.68 | 1.49 | 1.35 | 1.21 | 1.07 | 17-80152-1 | 2.96 | 2.66 | 2.37 | 2.15 | 1.93 | 1.71 |
| 25 | 2 | 37 | 17-90252-1 | 2.34 | 2.10 | 1.92 | 1.74 | 1.56 | 1.38 | 17-80252-1 | 3.86 | 3.46 | 3.16 | 2.87 | 2.57 | 2.27 |
| 17 | 7 | 50 | 17-90177-1 | 2.00 | 1.80 | 1.60 | 1.45 | 1.30 | 1.15 | 17-80177-1 | 2.32 | 2.09 | 1.86 | 1.68 | 1.51 | 1.34 |

# BUNKER RAMO AMPHENOL PRINTED CIRCUIT, RACK AND PANEL CONNECTORS

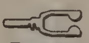
## PRIN-CIR® CONNECTORS



### PRIN-CIR RECEPTACLES —143 SERIES



**Type 01**



**Type 03**

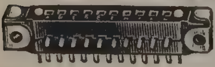
The contact is the secret of these connectors' effectiveness; gold plated tuning fork contacts firmly, but gently. Will form-fit any standard .055″ to .073″ board. Contacts are on .156″ centers. Rated 600 v. rms, 5 amps.

**Contact Style**

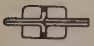
**-01**—Eyelet contact type. **-03**—Pin contact type. May be ordered with one contact replaced with a key, for positioning. When ordering, number indicates exactly what is desired: Example—143-010-01 indicates 143 Series, 10 contacts, -01 contact style.

| No. 143- | Contacts | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-49 | 50-99 | 100-249 | 250-999 | 1M-2499 |
| 006-01 | 6 | $0.99 | $0.84 | $0.70 | $0.60 | $0.53 |
| 010-01 | 10 | 1.04 | .87 | .73 | .63 | .56 |
| 012-01 | 12 | 1.14 | .96 | .80 | .69 | .61 |
| 015-01 | 15 | 1.31 | 1.10 | .92 | .79 | .70 |
| 018-01 | 18 | 1.56 | 1.31 | 1.10 | .94 | .83 |
| 022-01 | 22 | 1.87 | 1.57 | 1.31 | 1.13 | 1.00 |
| 036-01 | 36 | 3.62 | 3.03 | 2.54 | 2.18 | 1.93 |
| 006-03 | 6 | .98 | .84 | .70 | .60 | .53 |
| 010-03 | 10 | 1.04 | .87 | .73 | .63 | .56 |
| 012-03 | 12 | 1.14 | .96 | .80 | .69 | .61 |
| 015-03 | 15 | 1.31 | 1.10 | .92 | .79 | .70 |
| 018-03 | 18 | 1.56 | 1.31 | 1.10 | .94 | .83 |
| 022-03 | 22 | 1.87 | 1.57 | 1.31 | 1.13 | 1.00 |
| 036-03 | 36 | 3.62 | 3.03 | 2.54 | 2.18 | 1.93 |

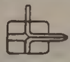
### PRIN-CIR PLUGS—133 SERIES



For use with printed circuit boards requiring frequent mating and disengagement, also for boards of non-standard thickness. Contacts are on .156″ centers. Type 21 contact tail for use in cable to panel applications using a mate to 143 Series connector. Rugged, gold plated contacts. Rated 600 v. rms, 5 amps. May be ordered with contact omitted for keying.



**Type 21**



**Type 03**

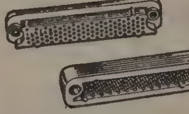
**Contact Types**

**-21**—Double Tail, solder type.
**-03**—Single Side Mount, pin type.

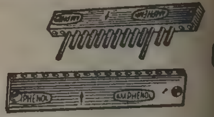
**Stock Number Identification:** No. 133-022-21 indicates 133 Series, 22 contacts, 21 contact tail (double tail, solder type).

| No. 133- | Contacts | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-49 | 50-99 | 100-249 | 250-999 | 1M-2499 |
| 006-21 | 6 | $2.06 | $1.72 | $1.45 | $1.24 | $1.10 |
| 010-21 | 10 | 1.77 | 1.48 | 1.24 | 1.06 | .94 |
| 012-21 | 12 | 2.14 | 1.79 | 1.50 | 1.29 | 1.14 |
| 015-21 | 15 | 2.48 | 2.07 | 1.74 | 1.49 | 1.32 |
| 018-21 | 18 | 2.56 | 2.14 | 1.80 | 1.54 | 1.37 |
| 022-21 | 22 | 2.91 | 2.44 | 2.04 | 1.75 | 1.55 |
| 006-03 | 6 | 1.87 | 1.57 | 1.31 | 1.13 | 1.00 |
| 010-03 | 10 | 1.52 | 1.27 | 1.07 | .91 | .81 |
| 012-03 | 12 | 1.87 | 1.57 | 1.31 | 1.13 | 1.00 |
| 015-03 | 15 | 2.08 | 1.74 | 1.46 | 1.25 | 1.11 |
| 018-03 | 18 | 2.14 | 1.79 | 1.50 | 1.29 | 1.14 |
| 022-03 | 22 | 2.35 | 1.97 | 1.65 | 1.41 | 1.25 |

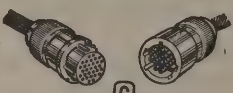
## MICRO-MINIATURE CONNECTORS



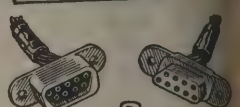
A



B



C



D

### SERIES 220 "MICRO-RAC" CONNECTORS (FIG. A)

Rack and panel connectors with monoblock body of polycarbonate resin. Polarization through trapezoidal mating area; molded-in slot-and-key arrangement. Float-mounted connectors. **52-Contact:** 1.888″ x .677″; 1.492″ mtg. ctrs. **104-Contact:** 3.017″ x .677″; 2.611″ mtg. ctrs.

| Amphenol No. | Contacts | Description | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|---|
| | | | 1-9 | 10-49 | 50-99 | 100-249 | 250-499 |
| 220-1N052 | 52 | Plug | $1.77 | $1.42 | $1.24 | $1.06 | $0.92 |
| 220-2N052 | 52 | Receptacle | 1.54 | 1.23 | 1.08 | .92 | .80 |
| 220-5 | 52 | Cable clamp | 1.38 | 1.10 | .97 | .83 | .72 |
| 220-1N104 | 104 | Plug | 2.20 | 1.76 | 1.54 | 1.32 | 1.15 |
| 220-2N104 | 104 | Receptacle | 1.91 | 1.53 | 1.34 | 1.15 | .99 |
| 220-6 | 104 | Cable clamp | 1.43 | 1.14 | 1.00 | .86 | .74 |

### SERIES 221 MULTI-PURPOSE STRIP CONNECTORS (FIG. B)

Economical connectors with highly versatile adaptability. May be used full 4″ or 6″ length or cut with scissors and stacked to any configuration desired. Standard material, black nylon; Lexon* available on request.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 221-1560* | 60 | 6″ plug | $0.75 | $0.64 | $0.56 | $0.53 | $0.47 |
| 221-1660* | 60 | 6″ recept. | .62 | .53 | .47 | .44 | .39 |
| 221-2553† | 53 | 4″ plug | .66 | .57 | .49 | .46 | .41 |
| 221-2653† | 53 | 4″ recept. | .57 | .48 | .43 | .40 | .36 |
| 221-3580‡ | 80 | Plug | .76 | .65 | .57 | .53 | .48 |
| 221-3680‡ | 80 | Recept. | .75 | .64 | .56 | .53 | .47 |

Spacing: *.100″; †.075″; ‡.050″. *Reg. GE TM.

### SERIES 222 "MIGHTY MITE" CABLE CONNECTORS (FIG. C)

Reliable, low cost connectors for cable-to-cable and cable-to-chassis application. Five molded-in alignment keys. **Spacing:** .085″ centers. Size: **19-Contact,** .621″ dia. x 2.618″ lg.; **31-Contact,** .746″ dia. x 2.948″ lg.; **61-Contact,** .996″ dia. x 3.530″ lg.

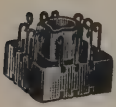
| Amphenol No. | Contacts | Description | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|
| | | | 1-9 | 10-49 | 50-99 | 100-249 |
| 222-11N19 | 19 | Plug | $1.00 | $0.83 | $0.67 | $0.57 |
| 222-12N19 | 19 | Receptacle | .80 | .67 | .54 | .46 |
| 222-518 | 19 | Cable clamp | 1.68 | 1.39 | 1.13 | .96 |
| 222-11N31 | 31 | Plug | 1.00 | .82 | .66 | .57 |
| 222-12N31 | 31 | Receptacle | .80 | .66 | .54 | .46 |
| 222-519 | 31 | Cable clamp | 1.80 | 1.48 | 1.20 | 1.02 |
| 222-11N61 | 61 | Plug | 1.08 | .89 | .72 | .61 |
| 222-12N61 | 61 | Receptacle | .85 | .71 | .57 | .49 |
| 222-520 | 61 | Cable clamp | 4.10 | 3.39 | 2.74 | 2.33 |

### SERIES 223 "TINY TIM" CONNECTORS (FIG. D)

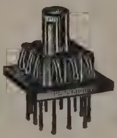
Screw-mount rack and panel connectors ideal for circuit modules either potted or surface mounted and for cable-to-cable use. Meets MIL-C-8384B requirements. Trapezoidal mating for polarization. Contact spacing, .100″ centers each row. Overall length: **5-Contact,** .843″; **9-Contact,** 1.043″; **17-Contact,** 1.443″; **25-Contact,** 1.843″; **33-Contact,** 2.243″.

| Amphenol No. | Contacts | Description | Mtg. Ctrs. | Net Each, Lots of | | | |
|---|---|---|---|---|---|---|---|
| | | | | 1-9 | 10-49 | 50-99 | 100-249 |
| 223-1105 | 5 | Plug | .593″ | $0.60 | $0.50 | $0.41 | $0.35 |
| 223-1205 | 5 | Receptacle | .593″ | .57 | .48 | .38 | .33 |
| 223-1109 | 9 | Plug | .793″ | .53 | .44 | .35 | .30 |
| 223-1209 | 9 | Receptacle | .793″ | .57 | .48 | .38 | .33 |
| 223-1117 | 17 | Plug | 1.193″ | .62 | .52 | .42 | .36 |
| 223-1217 | 17 | Receptacle | 1.193″ | .60 | .49 | .39 | .34 |
| 223-1125 | 25 | Plug | 1.593″ | .55 | .46 | .37 | .32 |
| 223-1225 | 25 | Receptacle | 1.593″ | .60 | .50 | .41 | .34 |
| 223-1133 | 33 | Plug | 1.993″ | .67 | .55 | .45 | .38 |
| 223-1233 | 33 | Receptacle | 1.993″ | .62 | .50 | .41 | .35 |

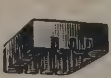
**SERIES 220 THRU 223 SUPPLIED LESS CONTACTS; SEE PAGE 483 FOR "WIRE-FORM" AND "RELIA-TAC" CONTACTS**



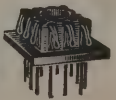
96-1



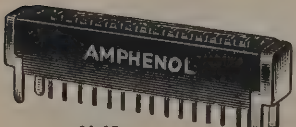
96-2



96-3



96-4



64-15

## MICRO MOD* CONNECTORS

Compact .380″ sq. connectors for interconnection of micro-miniature modules or "stick" circuitry. Number of contacts is 12. Available in polarized and non-polarized versions. 96-3 is supplied without contacts to permit the using of module conductors as contacts. AWG #28 solid conductors are recommended.

| Amph. No. | Type | Net Each, Lots of | | | |
|---|---|---|---|---|---|
| | | 1-49 | 50-99 | 100-249 | 250-999 |
| 96-1 | # | $4.86 | $4.07 | $3.42 | $2.93 |
| 96-2 | † | 7.67 | 6.44 | 5.51 | 4.90 |
| 96-3 | ‡ | 1.25 | 1.04 | .88 | .75 |
| 96-4 | § | 7.10 | 5.96 | 5.10 | 4.53 |

#Polarized receptacle. †Polarized plug. ‡Receptacle, less contacts. §Plug. *TM.

## MICRO EDGE* RECEPTACLE

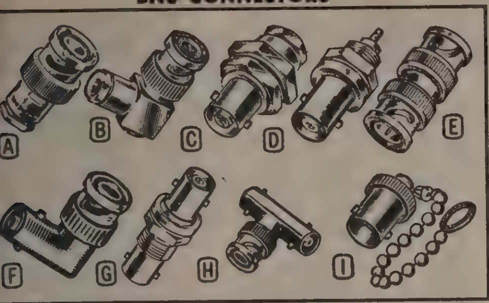
Reliable 15-contact micro-miniature printed circuit or printed wiring receptacle. 60% smaller than standard receptacles. Contacts on .075″ centers, are .010″ beryllium copper, gold-over-silver plated. Glass-filled diallyl phthalate per MIL-M-19833, Type GDI-30. Overall Size: 1.4″ w. x .167″ d. x .243″ h. with ⁹⁄₆₄″ contact tails. Will take ¹⁄₃₂″ printed board or cable.

| No. | Net Each, Lots of | | | |
|---|---|---|---|---|
| | 1-9 | 10-49 | 50-99 | 100-249 |
| 64-15 | $9.14 | $7.67 | $6.56 | $5.83 |

UNKER RAMO

# AMPHENOL RF Connectors

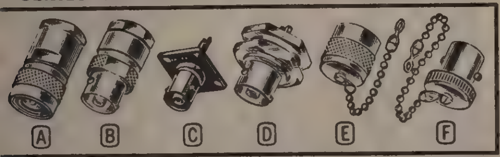
## BNC CONNECTORS



ayonet coupling coax connectors designed for RG-58, RG-59 and her cable as indicated. Use to 10,000 MHz, 500 V maximum. so available with non-tarnish **ASTROplate®** finish. **ASTROplate** sists corrosion and abrasion; can take constant handling and gh temperatures without wear-off. Mates with silver without rrosion; has equal solderability. Ideal for high temperature plication (up to 2500° F).

| mphenol No. | UG/U No. | Fig. | Description | Imped. Ohms | RG Cable |
|---|---|---|---|---|---|
| 31-002* | 88 | A | Plug | ....... | 55, 58 |
| 31-012* | 260 | A | Plug | ....... | 59, 62, 71 |
| 31-018* | 88B | A | Plug | ....... | 55, 58 |
| 31-021* | 260A | A | Plug | ....... | 59, 62, 71 |
| 31-202* | 88C | A | Plug | 50 | 55, 58 |
| 31-212* | 260B | A | Plug | ....... | 59, 62, 71 |
| 31-204 | 913 | B | Angle Plug | ....... | 55, 58 |
| 31-850 | .......... | B | Angle Plug | ....... | 59, 62, 71 |
| 31-005* | 89 | .... | Jack | ....... | 55, 58 |
| 31-015 | 261 | .... | Jack | ....... | 59, 62, 71 |
| 31-019 | 89A | .... | Jack | ....... | 55, 58 |
| 31-022 | 261A | .... | Jack | ....... | 59, 62, 71 |
| 31-205 | 89B | .... | Jack | 50 | 55, 58 |
| 31-215 | 261B | .... | Jack | ....... | 59, 62, 71 |
| 31-001* | 291 | .... | Panel Jack | ....... | 55, 58 |
| 31-011 | 262 | .... | Panel Jack | ....... | 59, 62, 71 |
| 31-020 | 291A | .... | Panel Jack | ....... | 55, 58 |
| 31-023 | 262A | .... | Panel Jack | ....... | 59, 62, 71 |
| 31-201 | 291B | .... | Panel Jack | 50 | 55, 58 |
| 31-211 | 262B | .... | Panel Jack | ....... | 59, 62, 71 |
| 31-206 | 909 | C | Blkhd. Jack | 50 | 55, 58 |
| 31-207 | 910 | C | Blkhd. Jack | ....... | 59, 62, 71 |
| 2075 | 624 | C | Blkhd. Jack | ....... | 59, 62, 71 |
| 31-003* | 290 | .... | Panel Recpt. | ....... | .......... |
| 31-105 | .......... | .... | Panel Recpt. | ....... | .......... |
| 31-203* | 290A | .... | Panel Recpt. | 50 | .......... |
| 31-817 | 447 | .... | Panel Recpt. | ....... | .......... |
| 31-842 | .......... | .... | Panel Recpt. | ....... | .......... |
| 4500 | 185 | .... | Panel Recpt. | ....... | .......... |
| 31-222 | 1098 | .... | Angle Recpt. | 50 | .......... |
| 31-016 | 254A | D | Blkhd. Recpt. | ....... | .......... |
| 31-102* | 657 | D | Blkhd. Recpt. | ....... | .......... |
| 31-221* | 1094 | D | Blkhd. Recpt. | 50 | .......... |
| 31-236* | 625B | D | Blkhd. Recpt. | 50 | .......... |
| 31-218* | 491A | E | Adapter | 50 | .......... |
| 31-219* | 914 | E | Adapter | 50 | .......... |
| 31-009* | 306 | F | Angle Adapter | ....... | .......... |
| 31-209* | 306A | F | Angle Adapter | 50 | .......... |
| 31-220* | 492A | G | Blkhd. Adapter | 50 | .......... |
| 47000 | 414 | G | Blkhd. Adapter | ....... | .......... |
| 31-008* | 274 | H | "T" Adapter | ....... | .......... |
| 31-208* | 274A | H | "T" Adapter | 50 | .......... |
| 31-006 | CW-123 | .... | Cap & Chain | ....... | .......... |
| 31-007* | CW-155 | .... | Cap & Chain | ....... | .......... |
| 31-017 | CW-159 | .... | Cap & Chain | ....... | .......... |
| 31-026* | CW-123A | .... | Cap & Chain | ....... | .......... |
| 31-027 | CW-155A | .... | Cap & Chain | ....... | .......... |
| 31-210 | CW-282 | I | Cap & Chain | ....... | .......... |

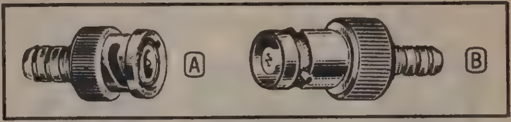
## SERIES 82 TYPE C COAXIAL CONNECTORS



ow VSWR to 10,000 MHz, 1,500 V peak. Also used with cables ther than 50 ohms. Meets applicable portions of MIL-C-3989.

| mphenol No. | UG/U No. | Fig. | Description | RG Cable |
|---|---|---|---|---|
| 82-530 | 573A | A | Plug | 8, 9 |
| 82-532 | 628A | A | Plug | 8, 9A |
| 82-534 | 709A | A | Plug | 55, 58 |
| 82-531 | 710A | .... | Angle Plug | 8, 9 |
| 82-503 | 572 | B | Panel Jack | 8, 9 |
| 82-504 | 568 | C | Panel Recpt. | ....... |
| 82-515 | 634 | D | Blkhd. Recpt. | ....... |
| 82-535 | 567A | .... | Angle Adapter | ....... |
| 82-512 | MX-1142 | E | Male Cap & Chain | ....... |
| 82-513 | MX-1143 | F | Female Cap & Chain | ....... |

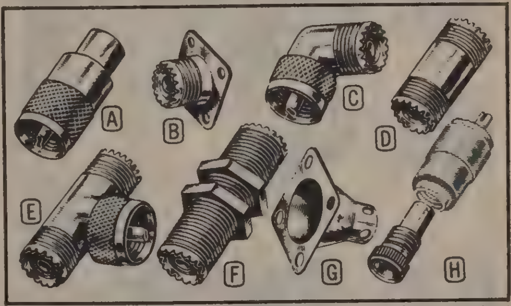
## QUICK-CRIMP BNC



Exclusive design with optional crimp or solder center contact. Even with center contact crimped, connector maintains constant impedance. Non-impedance match connector when used with cables other than 50 ohm. VSWR identical to standard solder type BNC connectors, 1.25 to 1, over a frequency range to 10,000 MHz.

| Amphenol No. | Like No. UG | Fig. | Description | RG/U Cable |
|---|---|---|---|---|
| 36775* | 88E | A | Plug | 58, 58A, 58C, 141 |
| 36875* | 88E | A | Plug | 55, 55A, 142, 223 |
| 36800 | 89C | B | Cable Jack | 58, 58A, 58C, 141 |
| 36900 | 89C | B | Cable Jack | 55, 55A, 142, 223 |
| 34625 | 260B | A | Plug | 71 |
| 68175* | 260B | A | Plug | 59, 59A, 59B, 62, 62A, 62C, 140 |
| 68150 | 261C | B | Cable Jack | 59, 59A, 59B, 62, 62A, 62C, 140 |
| 95700 | 909B | .... | Blkhd. Jack | 55, 55A, 142, 223 |
| 95725 | 909B | .... | Blkhd. Jack | 58, 58A, 58C, 141 |
| 95750 | 910B | .... | Blkhd. Jack | 59, 59A, 59B, 62, 62A. 62C, 140 |
| 95800 | 910B | .... | Blkhd. Jack | 122, 180A, 195, Amphenol 21-597 |
| 95575 | 913A | .... | Right Angle Plug | 55, 55A, 142, 223 |
| 95600 | 913A | .... | Right Angle Plug | 58, 58A, 58C, 141 |
| 95625 | 913A | .... | Right Angle Plug | 59, 59A, 59B, 62, 62A, 62C, 140 |
| 95650 | 913A | .... | Right Angle Plug | 71 |
| 95675 | 913A | .... | Right Angle Plug | 122, 180A, 195, Amphenol 21-597 |
| 36650 | 1033 | A | Plug | 122, 180A, 195, Amphenol 21-597 |
| 36675* | 1056 | B | Cable Jack | 122, 180A, 195, Amphenol 21-597 |

## SERIES 83 UHF TYPE COAXIAL CONNECTORS



Small, single contact, general purpose connectors of non-constant impedance. Meet military specifications and also available with non-tarnish **ASTROplate** finish.

| Amphenol No. | UG/U No. | Fig. | Description | RG/U Cable |
|---|---|---|---|---|
| 83-1SP* | PL259 | A | Plug | 8, 11 |
| 83-1SPN* | PL259A | A | Plug | 8, 11 |
| 83-750* | 111 | A | Plug | 59, 62 |
| 83-850 | .......... | A | Plug | 11 |
| 83-851 | .......... | A | Plug | 8 |
| 83-59 | .......... | ...... | Angle Plug | 8, 11 |
| 83-1R* | SO239 | B | Panel Recpt. | .......... |
| 83-1RTY* | SO239 | B | Panel Recpt. | .......... |
| 83-716 | .......... | B | Panel Recpt. | .......... |
| 83-798* | SO239A | ...... | Panel Recpt. | .......... |
| 83-1F* | 363 | F | Straight Adapter | .......... |
| 83-1J* | PL258 | D | Straight Adapter | .......... |
| 83-1AP* | 646 | C | Angle Adapter | .......... |
| 83-1T* | .......... | E | "T" Adapter | .......... |
| 83-168* | 176 | H | Reducing Adapter | 59, 62, 71 |
| 83-185* | 175 | H | Reducing Adapter | 55, 58 |
| 83-1H* | 106 | G | Hood | 8, 11 |
| 83-1HP | 372 | G | Hood | 8, 11 |
| 83-765* | 177 | G | Hood | 55, 58 |
| 83-877* | .......... | ...... | Double Male Adpt. | .......... |
| 83-878* | .......... | ...... | Single Hole Recpt. | .......... |

## BN TYPE COAXIAL CONNECTORS

Non-impedance, low power connectors for use up to 200 MHz. Threaded coupling. 250 V maximum.

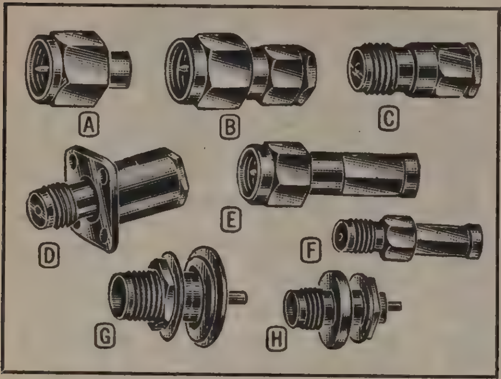
| Amphenol No. | UG/U No. | Description | RG Cable |
|---|---|---|---|
| 82-21 | 85 | Plug | 58, 59, 62 |
| 82-42 | 87 | Receptacle | .................. |

*Available with **ASTROplate** finish. Add suffix **1050** to part no. Other part numbers available in **ASTROplate** on special order.

SEE FOLLOWING PAGES FOR PRICING

# AMPHENOL RF Connectors

## SERIES SMA SEMI-PRECISION 3mm HIGH FREQUENCY CONNECTORS



Excellent mechanical and electrical performance, DC to 18 GHz, even after 100 mating cycles. "Thin Wall" beryllium copper bodies have .00452" interface mating cross-section. Coupling nut torque can be twice that of other SMA designs. Easy assembly requires only a simple, low-cost tool kit; crimp style uses standard BNC/TNC Crimper No. 227-350.

**Amphenol No. 901-2500 Tool Kit**—Jacket and dielectric trim tools for precise cable preparation required for electric performance specified. Net Each, Lots 1–99 .................... **$12.50**

### PLUGS AND JACKS

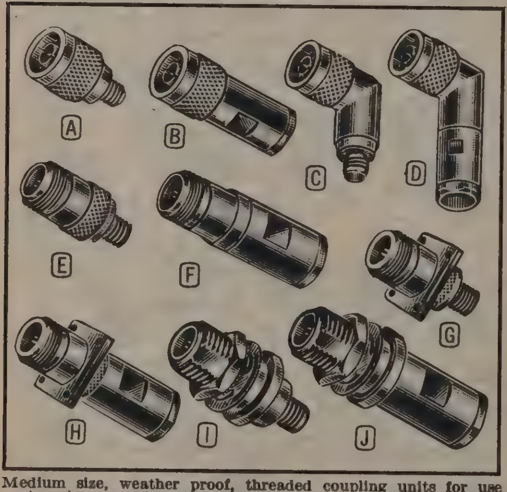
Solder affixment, except: *Clamp; †Crimp.

| Amphenol Number | Fig. | Description | For RG/U Cable |
|---|---|---|---|
| 901-113 | A | Plug, less contact & insul. | .141" dia. Cujak |
| 901-105 | B | Plug with contact & insul. | .141" dia. Cujak |
| 901-111* | .... | Plug, less contact & insul. | .141" dia. Cujak |
| 901-107* | .... | Plug with contact & insul. | .141" dia. Cujak |
| 901-106 | C | Jack with contact & insul. | .141" dia. Cujak |
| 901-108* | .... | Jack with contact & insul. | .141" dia. Cujak |
| 901-103* | .... | Straight plug | 55, 58, 141, 142, 223 |
| 901-104* | .... | Straight jack | 55, 58, 141, 142, 223 |
| 901-121* | D | Panel jack | 55, 58, 141, 142, 223 |
| 901-122* | .... | Bulkhead jack | 55, 58, 141, 142, 223 |
| 901-101† | E | Straight plug | 55, 142, 223 |
| 901-102† | F | Straight jack | 55, 143, 223 |
| 901-109† | .... | Straight plug | 58, 141, 303 |
| 901-110 | .... | Straight jack | 58, 141, 303 |

### RECEPTACLES & WITHIN-SERIES ADAPTERS

| Amphenol Number | Fig. | Description | Std. Wave Ratio | |
|---|---|---|---|---|
| | | | Max. SWR | To f(GHz) |
| 901-112 | .... | Panel receptacle | ........ | ........ |
| 901-116 | G | Rear-mt. bulkhead recept. | ........ | ........ |
| 901-117 | H | Front-mt. bulkhead recept. | ........ | ........ |
| 901-118 | .... | Straight plug-plug adapter | 1.15 | .01 |
| 901-119 | .... | Straight jack-jack adapter | 1.15 | .01 |
| 901-120 | .... | Bulkhead jack-jack adapter | 1.15 | .01 |

## TYPE N MIL-C-39012 CONNECTORS

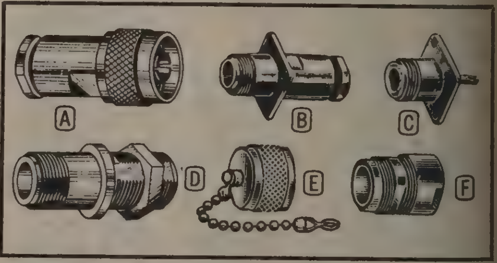


Medium size, weather proof, threaded coupling units for use up-to microwave frequencies. Designed to meet MIL-C-39012. They have crimpable fully captivated contacts, cable retention equal to the strength of the cable braid and utilize the same series of crimpable tools as the Amphenol BNC/TNC MIL type. Frequency range 0–10,000 MHz. 1500 V peak voltage.

| Amphenol Number | UG/U No. | Fig. | MIL No. M39012/ | Imped. Ohms | RG/U Cable |
|---|---|---|---|---|---|
| 82-340 | 1681 | A | Mil crimp 01-0007 | 50 | 8, 9, 213 |
| 82-332 | 1682 | A | Mil crimp 01-0008 | 50 | 214 |
| 82-352 | 1185B | B | Mil clamp 01-0005 | 50 | ............ |
| 82-352-1 | 21H | B | Mil clamp 01-0002 | 50 | ............ |
| 82-5370 | ...... | A | Mil crimp | 50 | 55, 58, 141 |
| 82-5375 | ...... | A | Mil crimp | 50 | 142, 223 |
| 82-5381 | ...... | B | Mil clamp | 50 | ............ |
| 82-336 | 1708 | C | Mil crimp 05-0003 | 50 | 8, 9, 213, 214 |
| 82-357 | 594C | D | Mil clamp 05-0001 | 50 | ............ |
| 82-5379 | ...... | C | Mil crimp | 50 | 55, 58, 141, 142 |
| 82-5374 | ...... | C | Mil crimp | 50 | 223 |
| 82-337 | 1688 | E | Mil crimp 02-0008 | 50 | 8, 9, 213, 214 |
| 82-333 | 1689 | E | Mil crimp 02-0009 | 50 | ............ |
| 82-356 | 1186B | F | Mil clamp 02-0003 | 50 | ............ |
| 82-356-1 | 23G | F | Mil clamp 02-0002 | 50 | ............ |
| 82-5371 | ...... | E | Mil crimp | 50 | 142, 223 |
| 82-334 | 1698 | G | Mil crimp 02-0017 | 50 | ............ |
| 82-360 | 1187B | H | Mil clamp 02-0006 | 50 | ............ |
| 82-360-1 | 22G | H | Mil clamp 02-0005 | 50 | ............ |
| 82-335 | 1701 | I | Mil crimp 03-0005 | 50 | 8, 9, 213, 214 |
| 82-5373 | ...... | I | Mil crimp | 50 | 142, 223 |

**SEE FOLLOWING PAGES FOR PRICING AND BETWEEN SERIES ADAPTERS**

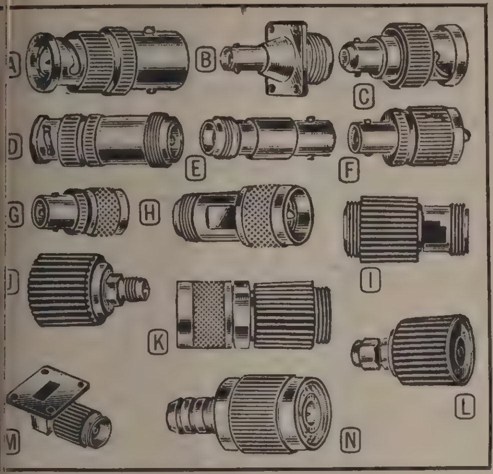
## TYPE N COAXIAL CONNECTORS



Impedance matched to 50 or 70-ohm cables. 50-ohm connectors **will not** mate with 75-ohm connectors. Frequency range, 0–10,000 MHz. 500 V maximum. Threaded coupling. Also available with non-tarnish **ASTROplate**® finish. **ASTROplate** resists corrosion and abrasion; can take constant handling and high temperatures without wear-off. Mates with silver without corrosion; has equal solder ability. Ideal for high temp. application (up to 2500° F).

| Amphenol No. | UG/U No. | Fig. | Description | Imped. Ohms | RG/U Cable |
|---|---|---|---|---|---|
| 82-61* | 21B | A | Plug | 50 | 8, 9, 10 |
| 82-84 | 94A | A | Plug | 70 | 11, 12, 13 |
| 82-86 | 18B | A | Plug | 50 | 5, 6, 21 |
| 82-96 | 21C | A | Plug | 50 | 8, 9, 10 |
| 82-104 | 167A | .... | Plug | 50 | 17, 18 |
| 82-202* | 21D | A | Plug | 50 | 8, 9, 10 |
| 82-203 | 18C | A | Plug | 50 | 5, 6, 21 |
| 82-204 | 941A | A | Plug | 50 | 10, 12 |
| 34000* | 536 | A | Plug | 50 | 58, 141 |
| 82-835 | ......... | .... | Angle Plug | 50 | 8, 9, 10, 87A |
| 82-63 | 23B | B | Jack | 50 | 8, 9, 10 |
| 82-88 | 20B | B | Jack | 50 | 5, 6, 21 |
| 82-89 | 95A | B | Jack | 70 | 11, 12, 13 |
| 82-209 | 23D | B | Jack | 50 | 8, 9, 10 |
| 82-212 | 940A | B | Jack | 50 | 10, 12 |
| 82-62 | 22B | B | Panel Jack | 50 | 8, 9, 10 |
| 82-87 | 19B | B | Panel Jack | 50 | 5, 6, 21 |
| 82-90 | 96A | B | Panel Jack | 70 | 11, 12, 13 |
| 35500 | 593 | B | Panel Jack | 50 | 59, 62, 71 |
| 82-67 | 160A | .... | Blkhd. Jack | 50 | 8, 9, 10 |
| 82-93 | 160B | .... | Blkhd. Jack | 50 | 8, 9, 10 |
| 82-24* | 58 | C | Panel Recpt. | 50 | ............ |
| 82-97* | 58A | C | Panel Recpt. | 50 | ............ |
| 82-112 | ......... | C | Panel Recpt. | 70 | ............ |
| 82-811* | 680 | .... | Blkhd. Recpt. | 50 | ............ |
| 82-65 | 29A | D | Adapter | 50 | ............ |
| 82-100* | 57B | D | Adapter | 50 | ............ |
| 82-101 | 29B | D | Adapter | 50 | ............ |
| 82-64 | 27A | .... | Angle Adapter | 50 | ............ |
| 82-98 | 27B | .... | Angle Adapter | 50 | ............ |
| 82-213 | 27C | .... | Angle Adapter | 50 | ............ |
| 82-66 | 30 | .... | Blkhd. Adapter | 50 | ............ |
| 82-36 | 107A | .... | "T" Adapter | 50 | ............ |
| 82-99 | 28A | .... | "T" Adapter | 50 | ............ |
| 82-102 | 107B | .... | "T" Adapter | 50 | ............ |
| 82-106* | MX913 | E | Cap & Chain | ........ | ............ |

*For **ASTROplate** finish, add suffix **1050** to part no. Other numbers also available in **ASTROplate** on special order.



## BETWEEN SERIES ADAPTERS

### APC, BNC, C, HN, MB, N, SMA, TNC, UHF

| phenol No. | UG/U No. | Fig. | Mates with Plug | Mates with Recpt. | Mates with Plug | Mates with Recpt. | Imp., Ohms |
|---|---|---|---|---|---|---|---|
| 33175 | 635 | A | ........ | BNC | C | ........ | 50 |
| 33200 | 636A | A | BNC | ........ | ........ | C | 50 |
| 8900 | 309 | B | BNC | ........ | ........ | HN | 50 |
| 32750 | ........ | B | ........ | BNC | HN | ........ | ..... |
| 47200 | ........ | C | BNC | ........ | MB | ........ | 50 |
| 47250 | ........ | C | BNC | ........ | ........ | MB | 50 |
| 47275 | ........ | C | ........ | BNC | MB | ........ | 50 |
| 31-216• | 201A | D | BNC | ........ | ........ | N | ..... |
| 31-217• | 349A | D | ........ | BNC | N | ........ | ..... |
| 31-830 | 201 | D | BNC | ........ | ........ | N | ..... |
| 2800* | ........ | D | BNC | ........ | N | ........ | 50 |
| 2975 | 349 | D | ........ | BNC | N | ........ | 50 |
| 3025† | 335 | D | ........ | BNC | N | ........ | 50 |
| 4900 | ........ | D | ........ | BNC | ........ | N | 50 |
| 5225• | 1034 | D | ........ | BNC | ........ | N | 50 |
| 5850‡ | ........ | D | BNC | ........ | N | ........ | 50 |
| 21850† | ........ | D | BNC | ........ | N | ........ | 50 |
| 79025 | ........ | E | ........ | BNC | TNC | ........ | 50 |
| 79675• | ........ | E | BNC | ........ | ........ | TNC | 50 |
| 31-028• | 273 | F | BNC | ........ | ........ | UHF | ..... |
| 2900• | 255 | F | ........ | BNC | UHF | ........ | 50 |
| 12025 | ........ | F | BNC | ........ | ........ | UHF | 50 |
| 82-508 | 564 | G | C | ........ | ........ | N | 50 |
| 82-540 | 565A | G | ........ | C | N | ........ | 50 |
| 4400• | 146 | H | ........ | N | UHF | ........ | ..... |
| 14000 | 83 | H | N | ........ | ........ | UHF | ..... |
| 26700 | 318 | H | ........ | N | ........ | UHF | ..... |
| 131-1025 | ........ | I | APC-7 | | ........ | N | 50 |
| 131-1026 | ........ | .... | APC-7 | | ........ | BNC | 50 |
| 131-1027 | ........ | .... | APC-7 | | ........ | OSM | 50 |
| 131-1028 | ........ | J | APC-7 | | ........ | SMA | 50 |
| 131-1035 | ........ | K | APC-7 | | N | ........ | 50 |
| 131-1036 | ........ | .... | APC-7 | | TNC | ........ | 50 |
| 131-1037 | ........ | .... | APC-7 | | BNC | ........ | 50 |
| 131-1038 | ........ | L | APC-7 | | SMA | ........ | 50 |
| 131-1201 | ........ | M | APC-7 | | WR-62 wavegd. | | ..... |
| 131-1202 | ........ | M | APC-7 | | WR-90 wavegd. | | ..... |

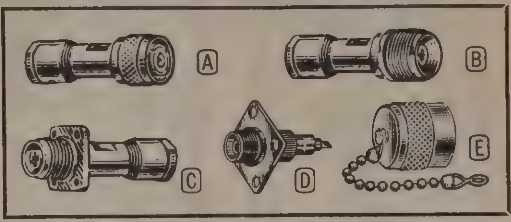
ngle, flange mount. †Bulkhead mount. ‡Pressurized, bulkhead ount. •Available with **ASTROplate**® finish. Mates with silver lthout corrosion; has equal solderability. Rated to 2500° F. To der, add suffix **1050** to part number.

## QUICK-CRIMP TNC SERIES CONNECTORS

xclusive design has optional crimp or solder center contact. aintains constant impedance even when center contact is imped. Non-impedance match connector when used with cables ther than 50 ohms. VSWR is identical to standard solder type NC connectors, 1.25 to 1, over frequency range to 10,000 MHz.

| mphenol No. | Fig. | Description | RG/U Cable |
|---|---|---|---|
| 36825 | N | Plug | 58, 58A, 58C, 141 |
| 36925 | N | Plug | 55, 55B, 142, 223 |
| 34825 | N | Plug | 71 |
| 69350 | N | Plug | 59, 59A, 59B, 62, 62A, 62C, 140 |
| 97750 | ....... | Blkhd. Jack | 55, 55B, 142, 223 |
| 97775 | ....... | Blkhd. Jack | 58, 58A, 58C, 141 |
| 97825 | ....... | Blkhd. Jack | 71 |
| 97875 | ....... | Right Angle Plug | 55, 55B, 142, 223 |
| 97900 | ....... | Right Angle Plug | 58, 58A, 58C, 141 |
| 97925 | ....... | Right Angle Plug | 59, 59A, 59B, 62, 62A, 62C, 140 |

## TYPE HN COAXIAL CONNECTORS



Medium size, high voltage, 50-ohm constant impedance connectors with threaded coupling. Meets applicable sections of MIL-C-3643. Low VSWR to 10,000 MHz. 1,500 V maximum.

| Amphenol No. | UG/U No. | Fig. | Description | RG/U Cable |
|---|---|---|---|---|
| 82-38* | 59A | A | Straight Plug | 8, 9, 10 |
| 82-111 | 495A | A | Straight Plug | 17, 18 |
| 82-804 | 59B | A | Straight Plug | 8, 9, 10 |
| 82-816 | .............. | A | Straight Plug | 54A |
| 82-833 | .............. | ..... | Angle Plug | 8, 9, 10 |
| 82-856 | .............. | ..... | Angle Plug | 8, 9, 10 |
| 82-39 | 60A | B | Straight Jack | 8, 9, 10 |
| 82-56 | 333 | B | Straight Jack | 17, 18 |
| 82-107 | 333A | B | Straight Jack | 17, 18 |
| 82-814 | 60B | B | Straight Jack | 8, 9, 10, 87 |
| 82-40 | 61A | C | Panel Jack | 8, 9, 10 |
| 82-57 | 334 | C | Panel Jack | 17, 18 |
| 82-92 | 496 | D | Panel Recpt. | ........... |
| 82-805 | 560 | D | Panel Recpt. | ........... |
| 82-91* | 212A | ..... | Angle Adapter | ........... |
| 82-130 | .............. | E | Cap & Chain | ........... |

*For **ASTROplate** finish add suffix **1050** to part no. Other numbers also available in **ASTROplate** on special order.

## AMPHENOL RF CONNECTOR PRICING

| MIL No. | Amphenol Number | Net Each, Lots of 1-24 | 25-99 | 100-499 | 500-999 | 1000-2499 |
|---|---|---|---|---|---|---|
| CW-123 | 31-006 | $0.84 | $0.69 | $0.58 | $0.50 | $0.44 |
| CW-123A | 31-026 | .58 | .48 | .40 | .35 | .30 |
| CW-155 | 31-007 | .36 | .30 | .25 | .22 | .19 |
| CW-155A | 31-027 | .49 | .40 | .34 | .29 | .26 |
| CW-159 | 31-017 | 1.16 | .95 | .80 | .69 | .61 |
| CW-282 | 31-210 | .86 | .70 | .59 | .51 | ..... |
| MX-913 | 82-106 | .73 | .60 | .50 | .43 | .38 |
| MX-1142 | 82-512 | 1.38 | 1.13 | .95 | .82 | ..... |
| MX-1143 | 82-513 | 1.38 | 1.13 | .95 | ..... | ..... |
| PL-258 | 83-1J | 1.21 | .99 | .83 | .72 | .63 |
| PL-259 | 83-1SP | .61 | .50 | .42 | .36 | .32 |
| PL-259A | 83-1SPN | 1.19 | .98 | .82 | .71 | .62 |
| SO-239 | 83-1R | .58 | .48 | .40 | .35 | .30 |
| SO-239 | 83-1RTY | .97 | .80 | .67 | .58 | .51 |
| SO-239A | 83-798 | 1.47 | 1.20 | 1.01 | .87 | .77 |
| UG-18B/U | 82-86 | 2.28 | 1.87 | 1.57 | 1.35 | ..... |
| UG-18C/U | 82-203 | 2.57 | 2.11 | 1.77 | ..... | ..... |
| UG-19B/U | 82-87 | 2.90 | 2.38 | 2.00 | ..... | ..... |
| UG-20B/U | 82-88 | 2.38 | 1.95 | 1.64 | ..... | ..... |
| UG-21B/U | 82-61 | 1.44 | 1.18 | .99 | .85 | .75 |
| UG-21C/U | 82-96 | 1.68 | 1.38 | 1.16 | 1.00 | .88 |
| UG-21D/U | 82-202 | 1.68 | 1.38 | 1.16 | 1.00 | .88 |
| UG-21H/U | 82-352-1 | 2.38 | 1.95 | 1.64 | 1.42 | ..... |
| UG-22B/U | 82-62 | 2.21 | 1.81 | 1.52 | 1.31 | 1.16 |
| UG-22G/U | 82-360-1 | 3.44 | 2.82 | 2.37 | ..... | ..... |
| UG-23B/U | 82-63 | 1.77 | 1.45 | 1.22 | 1.05 | .93 |
| UG-23D/U | 82-209 | 2.00 | 1.64 | 1.38 | 1.19 | 1.05 |
| UG-23G/U | 82-356-1 | 2.13 | 1.75 | 1.47 | ..... | ..... |
| UG-27A/U | 82-64 | 3.73 | 3.06 | 2.57 | 2.22 | 1.95 |
| UG-27B/U | 82-98 | 4.04 | 3.31 | 2.78 | 2.40 | 2.11 |
| UG-27C/U | 82-213 | 3.38 | 2.78 | 2.33 | 2.01 | 1.77 |
| UG-28A/U | 82-99 | 4.23 | 3.47 | 2.91 | 2.51 | 2.21 |
| UG-29A/U | 82-65 | 2.29 | 1.88 | 1.58 | 1.36 | 1.20 |
| UG-29B/U | 82-101 | 2.00 | 1.64 | 1.38 | 1.19 | 1.05 |
| UG-30/U | 82-66 | 4.56 | 3.74 | 3.14 | 2.71 | 2.39 |
| UG-57B/U | 82-100 | 2.51 | 2.06 | 1.73 | 1.49 | 1.31 |
| UG-58/U | 82-24 | 1.18 | .96 | .81 | .70 | .62 |
| UG-58A/U | 82-97 | 1.15 | .94 | .79 | .68 | .60 |
| UG-59A/U | 82-38 | 4.27 | 3.50 | 2.94 | 2.54 | 2.23 |
| UG-59B/U | 82-804 | 3.79 | 3.11 | 2.61 | 2.25 | 1.98 |
| UG-60A/U | 82-39 | 5.65 | 4.63 | 3.89 | ..... | ..... |
| UG-60B/U | 82-814 | 4.36 | 3.57 | 3.00 | ..... | ..... |
| UG-61A/U | 82-40 | 6.21 | 5.10 | 4.28 | ..... | ..... |
| UG-83/U | 14000 | 4.68 | 3.84 | 3.22 | 2.78 | 2.45 |
| UG-85/U | 82-21 | 7.33 | 6.01 | 5.05 | ..... | ..... |
| UG-87/U | 82-42 | 6.85 | 5.62 | 4.72 | ..... | ..... |
| UG-88/U | 31-002 | .74 | .61 | .51 | .44 | .39 |
| UG-88B/U | 31-018 | .93 | .76 | .64 | .55 | .49 |
| UG-88C/U | 31-202 | .80 | .66 | .55 | .47 | .42 |
| UG-89/U | 31-005 | 1.28 | 1.05 | .88 | .76 | .67 |
| UG-89A/U | 31-019 | 1.23 | 1.01 | .85 | ..... | ..... |
| UG-89B/U | 31-205 | 1.18 | .96 | .81 | .70 | .62 |
| UG-94A/U | 82-84 | 2.40 | 1.97 | 1.65 | 1.42 | 1.25 |
| UG-95A/U | 82-89 | 2.51 | 2.06 | 1.73 | 1.49 | ..... |
| UG-96A/U | 82-90 | 2.82 | 2.31 | 1.94 | ..... | ..... |
| UG-106/U | 83-1H | .54 | .44 | .37 | .32 | .28 |
| UG-107A/U | 82-36 | 5.42 | 4.44 | 3.73 | 3.22 | ..... |
| UG-107B/U | 82-102 | 5.69 | 4.67 | 3.92 | 3.38 | 2.98 |

Continued on the following page

# BUNKER RAMO AMPHENOL RF Connector Pricing

## RF CONNECTOR PRICING (CONT'D)

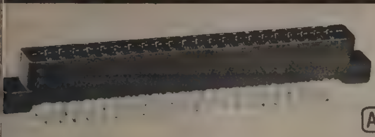
| MIL No. | Amphenol Number | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-499 | 500-999 | 1000-2499 |
| UG-111/U | 83-750 | $ 1.12 | $ 0.92 | $ 0.77 | $0.66 | $0.59 |
| UG-146/U | 4400 | 3.86 | 3.17 | 2.66 | 2.30 | 2.02 |
| UG-160A/U | 82-67 | 3.63 | 2.98 | 2.50 | ..... | ..... |
| UG-160B/U | 82-93 | 2.90 | 2.38 | 2.00 | ..... | ..... |
| UG-167A/U | 82-104 | 7.48 | 6.13 | 5.15 | 4.44 | ..... |
| UG-175/U | 83-185 | .19 | .15 | .13 | .11 | .10 |
| UG-176/U | 83-168 | .20 | .17 | .14 | .12 | .11 |
| UG-177/U | 83-765 | .48 | .39 | .33 | .28 | .25 |
| UG-185/U | 4500 | 1.35 | 1.11 | .93 | .80 | .71 |
| UG-201/U | 31-830 | 2.99 | 2.45 | 2.06 | 1.78 | 1.57 |
| UG-201A/U | 31-216 | 2.03 | 1.67 | 1.40 | 1.21 | 1.06 |
| UG-212A/U | 82-91 | 6.49 | 5.32 | 4.47 | ..... | ..... |
| UG-254A/U | 31-016 | 5.55 | 4.55 | 3.82 | 3.30 | 2.90 |
| UG-255/U | 2900 | 2.57 | 2.11 | 1.77 | 1.53 | 1.35 |
| UG-260/U | 31-012 | .83 | .68 | .57 | .49 | .43 |
| UG-260A/U | 31-021 | .94 | .77 | .65 | .56 | .49 |
| UG-260B/U | 31-212 | .93 | .76 | .64 | .55 | .49 |
| UG-261/U | 31-015 | 1.48 | 1.21 | 1.02 | .88 | .78 |
| UG-261A/U | 31-022 | 1.68 | 1.38 | 1.16 | ..... | ..... |
| UG-261B/U | 31-215 | 1.42 | 1.17 | .98 | .85 | .74 |
| UG-262/U | 31-011 | 1.61 | 1.32 | 1.11 | .96 | .84 |
| UG-262A/U | 31-023 | 2.21 | 1.81 | 1.52 | ..... | ..... |
| UG-262B/U | 31-211 | 1.64 | 1.35 | 1.13 | ..... | ..... |
| UG-273/U | 31-028 | 1.60 | 1.31 | 1.10 | .95 | .84 |
| UG-274/U | 31-008 | 2.48 | 2.04 | 1.71 | 1.48 | 1.30 |
| UG-274A/U | 31-208 | 2.72 | 2.23 | 1.87 | 1.61 | 1.42 |
| UG-290/U | 31-003 | .87 | .71 | .60 | .52 | .46 |
| UG-290A/U | 31-203 | .93 | .76 | .64 | .55 | .49 |
| UG-291/U | 31-001 | 1.44 | 1.18 | .99 | .85 | .75 |
| UG-291A/U | 31-020 | 1.44 | 1.18 | .99 | .85 | ..... |
| UG-291B/U | 31-201 | 1.50 | 1.23 | 1.03 | .89 | ..... |
| UG-306/U | 31-009 | 2.22 | 1.82 | 1.53 | 1.32 | 1.16 |
| UG-306A/U | 31-209 | 2.74 | 2.25 | 1.89 | 1.63 | 1.44 |
| UG-309/U | 8900 | 4.14 | 3.39 | 2.85 | ..... | ..... |
| UG-318/U | 26700 | 4.76 | 3.91 | 3.28 | 2.83 | ..... |
| UG-333/U | 82-56 | 17.09 | 14.02 | 11.77 | ..... | ..... |
| UG-333A/U | 82-107 | 16.19 | 13.28 | 11.15 | ..... | ..... |
| UG-334/U | 82-57 | 17.70 | 14.52 | 12.19 | ..... | ..... |
| UG-335/U | 3025 | 4.44 | 3.64 | 3.06 | ..... | ..... |
| UG-349/U | 2975 | 4.25 | 3.49 | 2.93 | 2.53 | ..... |
| UG-349A/U | 31-217 | 3.01 | 2.47 | 2.07 | 1.79 | 1.57 |
| UG-363/U | 83-1F | 2.87 | 2.36 | 1.98 | 1.71 | 1.50 |
| UG-372/U | 83-1HP | .58 | .48 | .40 | .35 | ..... |
| UG-414/U | 47000 | 2.05 | 1.68 | 1.41 | 1.22 | 1.07 |
| UG-447/U | 31-817 | 1.19 | .98 | .82 | .71 | .62 |
| UG-491A/U | 31-218 | 2.54 | 2.08 | 1.75 | 1.51 | 1.33 |
| UG-492A/U | 31-220 | 2.90 | 2.38 | 2.00 | 1.73 | 1.52 |
| UG-495A/U | 82-111 | 11.65 | 9.55 | 8.02 | ..... | ..... |
| UG-496/U | 82-92 | 3.28 | 2.69 | 2.26 | 1.95 | 1.72 |
| UG-536/U | 34000 | 2.47 | 2.02 | 1.70 | 1.47 | 1.29 |
| UG-560/U | 82-805 | 3.76 | 3.08 | 2.59 | 2.24 | 1.97 |
| UG-564/U | 82-508 | 3.66 | 3.00 | 2.52 | 2.17 | ..... |
| UG-565A/U | 82-540 | 4.12 | 3.38 | 2.84 | ..... | ..... |
| UG-567A/U | 82-535 | 5.29 | 4.34 | 3.64 | ..... | ..... |
| UG-568/U | 82-504 | 2.24 | 1.83 | 1.54 | 1.33 | 1.17 |
| UG-572/U | 82-503 | 2.99 | 2.45 | 2.06 | ..... | ..... |
| UG-573A/U | 82-530 | 2.72 | 2.23 | 1.87 | 1.61 | 1.42 |
| UG-593/U | 35500 | 4.44 | 3.64 | 3.06 | ..... | ..... |
| UG-594C/U | 82-357 | 6.27 | 5.15 | 4.32 | ..... | ..... |
| UG-624/U | 2075 | 1.95 | 1.60 | 1.34 | ..... | ..... |
| UG-625B/U | 31-236 | .86 | .70 | .59 | .51 | .45 |
| UG-628A/U | 82-532 | 3.56 | 2.92 | 2.45 | 2.11 | 1.86 |
| UG-634/U | 82-515 | 3.56 | 2.92 | 2.45 | 2.11 | 1.86 |
| UG-635/U | 83175 | 3.83 | 3.14 | 2.64 | 2.28 | ..... |
| UG-636A/U | 83200 | 4.18 | 3.43 | 2.88 | 2.49 | ..... |
| UG-646/U | 83-1AP | 1.77 | 1.45 | 1.22 | 1.05 | .93 |
| UG-657/U | 31-102 | 1.32 | 1.08 | .91 | .79 | .69 |
| UG-680/U | 82-811 | 2.56 | 2.10 | 1.76 | 1.52 | 1.34 |
| UG-709A/U | 82-534 | 3.11 | 2.55 | 2.14 | 1.85 | 1.63 |
| UG-710A/U | 82-531 | 5.34 | 4.38 | 3.68 | 3.18 | ..... |
| UG-909/U | 31-206 | 1.74 | 1.43 | 1.20 | 1.04 | .91 |
| UG-910/U | 31-207 | 1.83 | 1.50 | 1.26 | 1.09 | .96 |
| UG-913/U | 31-204 | 3.43 | 2.81 | 2.36 | 2.04 | 1.79 |
| UG-914/U | 31-219 | 1.38 | 1.13 | .95 | .82 | .72 |
| UG-940A/U | 82-212 | 3.21 | 2.63 | 2.21 | ..... | ..... |
| UG-941A/U | 82-204 | 2.99 | 2.45 | 2.06 | ..... | ..... |
| UG-1034/U | 5225 | 5.29 | 4.34 | 3.64 | ..... | ..... |
| UG-1094/U | 31-221 | .74 | .61 | .51 | .44 | .39 |
| UG-1098/U | 31-222 | 2.98 | 2.44 | 2.05 | 1.77 | 1.56 |
| UG-1185B/U | 82-352 | 2.38 | 1.95 | 1.64 | 1.42 | ..... |
| UG-1186B/U | 82-356 | 2.34 | 1.92 | 1.61 | ..... | ..... |
| UG-1187B/U | 82-360 | 3.44 | 2.82 | 2.37 | ..... | ..... |
| UG-1681/U | 82-340 | 1.70 | 1.39 | 1.17 | 1.01 | .89 |
| UG-1682/U | 82-332 | 1.70 | 1.39 | 1.17 | 1.01 | .89 |
| UG-1688/U | 82-337 | 1.89 | 1.55 | 1.30 | ..... | ..... |
| UG-1689/U | 82-333 | 1.89 | 1.55 | 1.30 | ..... | ..... |
| UG-1698/U | 82-334 | 2.21 | 1.81 | 1.52 | ..... | ..... |
| UG-1701/U | 82-335 | 3.44 | 2.82 | 2.37 | ..... | ..... |
| UG-1708/U | 82-336 | 5.68 | 4.66 | 3.91 | 3.37 | 2.97 |
| ............ | 31-105 | 1.47 | 1.20 | 1.01 | .87 | .77 |

| MIL No. | Amphenol Number | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-24 | 25-99 | 100-499 | 500-999 | 1000-2499 |
| ............ | 31-842 | $ 1.90 | $ 1.56 | $1.31 | ..... | ..... |
| ............ | 31-850 | 3.93 | 3.23 | 2.71 | $2.34 | $2.06 |
| ............ | 82-112 | 2.28 | 1.87 | 1.57 | 1.35 | 1.19 |
| ............ | 82-816 | 4.72 | 3.87 | 3.25 | 2.80 | 2.47 |
| ............ | 82-833 | 8.16 | 6.69 | 5.62 | 4.85 | 4.27 |
| ............ | 82-835 | 4.84 | 3.97 | 3.33 | 2.87 | 2.53 |
| ............ | 82-856 | 8.31 | 6.81 | 5.72 | 4.94 | 4.35 |
| ............ | 82-5370 | 2.06 | 1.69 | 1.42 | 1.23 | ..... |
| ............ | 82-5371 | 2.44 | 2.00 | 1.68 | ..... | ..... |
| ............ | 82-5373 | 4.53 | 3.72 | 3.12 | ..... | ..... |
| ............ | 82-5374 | 4.70 | 3.86 | 3.24 | ..... | ..... |
| ............ | 82-5375 | 2.06 | 1.69 | 1.42 | 1.23 | 1.08 |
| ............ | 82-5379 | 4.79 | 3.93 | 3.30 | ..... | ..... |
| ............ | 82-5381 | 2.32 | 1.91 | 1.60 | ..... | ..... |
| ............ | 83-1T | 3.18 | 2.61 | 2.19 | 1.89 | 1.66 |
| ............ | 83-59 | 5.01 | 4.11 | 3.45 | 2.98 | 2.62 |
| ............ | 82-130 | 1.76 | 1.44 | 1.21 | 1.04 | ..... |
| ............ | 83-716 | 5.17 | 4.24 | 3.56 | ..... | ..... |
| ............ | 83-850 | 3.76 | 3.08 | 2.59 | ..... | ..... |
| ............ | 83-851 | 2.53 | 2.07 | 1.74 | 1.50 | 1.32 |
| ............ | 131-1025 | 50.00 | 50.00 | ..... | ..... | ..... |
| ............ | 131-1026 | 50.00 | 50.00 | ..... | ..... | ..... |
| ............ | 131-1027 | 50.00 | 50.00 | ..... | ..... | ..... |
| ............ | 131-1028 | 50.00 | 50.00 | ..... | ..... | ..... |
| ............ | 131-1035 | 50.00 | 50.00 | ..... | ..... | ..... |
| ............ | 131-1036 | 50.00 | 50.00 | ..... | ..... | ..... |
| ............ | 131-1037 | 50.00 | 50.00 | ..... | ..... | ..... |
| ............ | 131-1038 | 80.00 | 80.00 | ..... | ..... | ..... |
| ............ | 131-1201 | 65.00 | 65.00 | ..... | ..... | ..... |
| ............ | 131-1202 | 65.00 | 65.00 | ..... | ..... | ..... |
| ............ | 901-101 | 3.14 | 2.57 | 2.16 | 1.86 | ..... |
| ............ | 901-102 | 2.69 | 2.20 | 1.85 | 1.60 | ..... |
| ............ | 901-103 | 3.86 | 3.17 | 2.66 | 2.30 | ..... |
| ............ | 901-104 | 3.35 | 2.75 | 2.31 | 1.99 | ..... |
| ............ | 901-105 | 2.08 | 1.70 | 1.43 | 1.23 | ..... |
| ............ | 901-106 | 1.76 | 1.44 | 1.21 | 1.04 | ..... |
| ............ | 901-107 | 3.08 | 2.52 | 2.12 | 1.83 | ..... |
| ............ | 901-108 | 2.76 | 2.26 | 1.90 | 1.64 | ..... |
| ............ | 901-109 | 3.14 | 2.57 | 2.16 | 1.86 | ..... |
| ............ | 901-110 | 2.85 | 2.33 | 1.96 | 1.69 | ..... |
| ............ | 901-111 | 2.25 | 1.85 | 1.55 | 1.34 | ..... |
| ............ | 901-112 | 2.89 | 2.37 | 1.99 | 1.72 | ..... |
| ............ | 901-113 | 1.68 | 1.38 | 1.16 | 1.00 | ..... |
| ............ | 901-116 | 2.48 | 2.04 | 1.71 | 1.48 | ..... |
| ............ | 901-117 | 2.53 | 2.07 | 1.74 | 1.50 | ..... |
| ............ | 901-118 | 3.75 | 3.07 | 2.58 | 2.23 | ..... |
| ............ | 901-119 | 2.42 | 1.99 | 1.67 | 1.44 | ..... |
| ............ | 901-120 | 3.21 | 2.63 | 2.21 | 1.91 | ..... |
| ............ | 901-121 | 4.27 | 3.50 | 2.94 | 2.54 | ..... |
| ............ | 901-122 | 3.80 | 3.12 | 2.62 | 2.26 | ..... |
| ............ | 2800 | 7.97 | 6.54 | 5.49 | 4.74 | ..... |
| ............ | 4900 | 7.22 | 5.92 | 4.97 | ..... | ..... |
| ............ | 5850 | 10.79 | 8.85 | 7.43 | ..... | ..... |
| ............ | 12025 | 2.95 | 2.42 | 2.03 | 1.75 | 1.54 |
| ............ | 21850 | 5.74 | 4.70 | 3.95 | ..... | ..... |
| ............ | 32750 | 8.19 | 6.72 | 5.64 | ..... | ..... |
| ............ | 34625 | 1.21 | .99 | .83 | .72 | .63 |
| ............ | 34825 | 1.87 | 1.54 | 1.29 | ..... | ..... |
| ............ | 36650 | 1.44 | 1.18 | .99 | .85 | .75 |
| ............ | 36675 | 2.87 | 2.36 | 1.98 | ..... | ..... |
| ............ | 36775 | 1.12 | .92 | .77 | .66 | .59 |
| ............ | 36800 | 1.48 | 1.21 | 1.02 | .88 | .78 |
| ............ | 36825 | 1.87 | 1.54 | 1.29 | 1.11 | .98 |
| ............ | 36875 | 1.12 | .92 | .77 | .66 | .59 |
| ............ | 36900 | 1.55 | 1.27 | 1.07 | ..... | ..... |
| ............ | 36925 | 1.70 | 1.39 | 1.17 | 1.01 | ..... |
| ............ | 47200 | 4.43 | 3.63 | 3.05 | 2.63 | ..... |
| ............ | 47250 | 3.66 | 3.00 | 2.52 | 2.17 | ..... |
| ............ | 47275 | 3.64 | 2.99 | 2.51 | ..... | ..... |
| ............ | 68150 | 1.68 | 1.38 | 1.16 | 1.00 | ..... |
| ............ | 68175 | 1.10 | .91 | .76 | .66 | .58 |
| ............ | 69350 | 1.87 | 1.54 | 1.29 | ..... | ..... |
| ............ | 79025 | 5.31 | 4.36 | 3.66 | 3.16 | ..... |
| ............ | 79675 | 3.79 | 3.11 | 2.61 | 2.25 | 1.98 |
| ............ | 95575 | 4.20 | 3.44 | 2.89 | 2.49 | ..... |
| ............ | 95600 | 4.17 | 3.42 | 2.87 | 2.48 | 2.18 |
| ............ | 95625 | 4.31 | 3.54 | 2.97 | ..... | ..... |
| ............ | 95650 | 4.11 | 3.37 | 2.83 | ..... | ..... |
| ............ | 95675 | 4.33 | 3.55 | 2.98 | ..... | ..... |
| ............ | 95700 | 2.24 | 1.83 | 1.54 | 1.33 | ..... |
| ............ | 95725 | 2.16 | 1.77 | 1.49 | 1.29 | 1.13 |
| ............ | 95750 | 2.24 | 1.83 | 1.54 | 1.33 | 1.17 |
| ............ | 95800 | 2.34 | 1.92 | 1.61 | ..... | ..... |
| ............ | 97750 | 2.60 | 2.13 | 1.79 | ..... | ..... |
| ............ | 97775 | 2.56 | 2.10 | 1.76 | ..... | ..... |
| ............ | 97825 | 2.66 | 2.18 | 1.83 | ..... | ..... |
| ............ | 97875 | 4.91 | 4.03 | 3.38 | ..... | ..... |
| ............ | 97900 | 4.82 | 3.95 | 3.32 | ..... | ..... |
| ............ | 97925 | 4.91 | 4.03 | 3.38 | ..... | ..... |

**COMPLETE LINE OF RF CONNECTORS FOR PROMPT DELIVERY.**

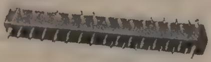
**ASK FOR UNLISTED OR NON-STOCK ITEMS, AVAILABLE ON SPECIAL ORDER.**

# BURNDY Connectors


A

B

C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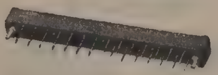

F

D

## HYFEN® EDGE-ON® CONNECTORS (FIG. B)

### TYPES PB AND PC

pe PB has .100″ center-to-center spacing; .156″ for PC type. cordian-type spring contacts provide multipoint contact with printed circuit board; guarantees excellent electrical charac- istics and low board insertion forces. Spring contacts designed accommodate both single-sided (.058″–.072″ thick) and double- ed (.054″ to .072″ thick) printed circuit boards. No insertion l is needed; contacts are easily removed with an extraction l. Since the inserted crimp contacts are recessed in the con- tor, insulating sleeves are not required. **Material:** Connector ly, polycarbonate; spring contacts, beryllium copper; Hytab tacts, high-conductivity copper alloy; gold plate finish. **erating Volts:** 290 VAC rms; 380 VDC. **Current Rating:** amps. **Operating Temp.:** −55° C to +105° C. **Insulation sistance:** 5000 megohms, min. **#Prices on request.**

| o. of ntact sitions | Lgth., In. | Single-Sided Burndy No. | Net Ea., Lots of* 1-9 | Net Ea., Lots of* 10-24 | Double-Sided Burndy No. | Net Each, Lots of* 1-9 | Net Each, Lots of* 10-24 |
|---|---|---|---|---|---|---|---|
| 15 | 2.600 | **PB4S2S15-1** | $4.87 | $4.06 | **PB4D2D15-1** | $ 6.46 | $ 5.38 |
| 22 | 3.300 | **PB4S2S22-1** | 6.34 | 5.28 | **PB4D2D22-1** | 9.58 | 7.98 |
| 29 | 4.000 | **PB4S2S29-1** | # | # | **PB4D2D29-1** | 12.55 | 10.46 |
| 30 | 4.100 | **PB4S2S30-1** | 7.94 | 6.62 | **PB4D2D30-1** | 12.72 | 10.60 |
| 43 | 5.400 | **PB4S2S43-1** | 10.06 | 8.38 | **PB4D2D43-1** | 17.42 | 14.52 |
| 50 | 6.100 | **PB4S2S50-1** | # | # | **PB4D2D50-1** | 20.47 | 17.06 |
| 15 | 3.188 | **PC4S2S15-4** | 5.04 | 4.20 | **PC4D2D15-4** | 6.60 | 5.50 |
| 19 | 3.812 | **PC4S2S19-4** | # | # | **PC4D2D19-4** | 9.34 | 7.78 |
| 22 | 4.280 | **PC4S2S22-4** | 6.65 | 5.54 | **PC4D2D22-4** | 9.89 | 8.24 |
| 30 | 5.528 | **PC4S2S30-4** | 8.21 | 6.84 | **PC4D2D30-4** | 13.10 | 10.92 |
| 36 | 6.464 | **PC4S2S36-4** | # | # | **PC4D2D36-4** | 15.50 | 12.92 |
| 43 | 7.556 | **PC4S2S43-4** | 10.37 | 8.64 | **PC4D2D43-4** | 17.83 | 14.86 |

### TYPE PBM HYTAB® CONTACTS

| ire ze | Burndy Number | Mil Spec. | Size, In. Lgth. | Size, In. O.D. | Net per 100, Lots of* 1M-4999 | Net per 100, Lots of* 5M-24,999 |
|---|---|---|---|---|---|---|
|  | **PBM24-H1** | MIL-W-16878 | .44 | .100 | $6.32 | $5.27 |
| . | **SPBM24-H1*** | Type B | .44 | .100 | 6.72 | 5.60 |
| -24<br>. | **PBM24-H1** | MIL-W-16878<br>Type B | .44 | .100 | 6.32 | 5.27 |
|  | **SPBM24-H1*** | MIL-W-76<br>Type LW | .44 | .100 | 6.72 | 5.60 |
| -22<br>ld | **PBM20-1** | MIL-W-16878<br>Types B, C, E, EE | .44 | .090 | 6.32 | 5.27 |
| l<br>. | **SPBM20-1†** | MIL-W-76<br>Types LW, MW |  |  | 6.72 | 5.60 |

00 pcs; †4000 pcs/reel to be installed by Hyfematic machine.

### TYPE PC4DD (FIG. C)

ctangular, printed circuit edge-on connector accommodates ble-sided PC boards; can be furnished for single-sided boards. et MIL-C-21097 requirements. Center-to-center spacing .156″. urcated, accordian-type spring contacts. Each spring contact ition can accommodate one or two, crimp Hytip contacts. **terial:** Connector body, glass-filled diallyl phthalate per L-P-19833; spring contacts, Hytip contacts and finish same PB type. **Test Volts:** 1800 VAC rms. **Current Rating:** 5 amps. **erating Temp.:** −65° C to +125° C. **Insulation Resis.:** 0 megohms min.

| o. of ontact sitions* | Double-Sided Burndy Number | Size, In. Lgth. | Size, In. Ht. | Net Each, Lots of* 1-9 | Net Each, Lots of* 10-24 | Net Each, Lots of* 25-99 | Net Each, Lots of* 100-249 |
|---|---|---|---|---|---|---|---|
| 15 | **PC4DD15-4** | 3.188 | .703 | $13.32 | $11.10 | $ 9.60 | $ 7.99 |
| 18 | **PC4DD18-4** | 3.656 | .703 | 15.74 | 13.12 | 11.35 | 9.45 |
| 22 | **PC4DD22-4** | 4.280 | .703 | 20.57 | 17.14 | 14.83 | 12.34 |
| 36 | **PC4DD36-1** | 6.510 | .703 | 23.18 | 19.32 | 16.71 | 13.91 |
| 43 | **PC4DD43-1** | 7.600 | .670 | 26.54 | 22.12 | 19.13 | 15.93 |

ther sizes can be provided.

### TYPE PCM HYTIP® CONTACTS

ecial, removable solder-type or crimp-removable contacts. e: Strip length, 3/16″; length, .36″; O.D., .090″.

| Wire Size | Burndy Number | Installation Tooling (Manual) | Net per 100, Lots of 1M-4999 | Net per 100, Lots of 5M-24999 | Net per 100, Lots of 25M-99999 | Net per 100, Lots of 100M Up |
|---|---|---|---|---|---|---|
| -22 Str. | **PCM22M-H1** | M8ND/<br>Y8ND | $7.06 | $5.88 | $4.90 | $4.41 |
| pe B* | **MPCM22M-H1†** | Die Set<br>N22PCT-1 | 8.21 | 6.84 | 5.70 | 5.13 |
| -20 Str. | **PCM20M-H1** | N20PCT-2 | 7.06 | 5.88 | 4.90 | 4.41 |
| pe BN* | **MPCM20M-H1†** |  | 8.21 | 6.84 | 5.70 | 5.13 |

IL-W-16878. †Magazine mounted contacts, furnished on endable plastic carry strips in multiples of 70 pieces.

### UNINSULATED ACCESSORY CLIPS

Commoning clips for joining adjacent, opposing or diagonal contact positions. Spacing "A", .156″.

| Burndy Number | Color Code | Net per 100, Lots of* 1-9 | Net per 100, Lots of* 10-24 | Net per 100, Lots of* 25-99 | Net per 100, Lots of* 100-249 |
|---|---|---|---|---|---|
| **PCMB2M-1** | Uncolored | $42.05 | $35.04 | $30.31 | $25.23 |
| **PCMB2M-3** | Violet | 42.05 | 35.04 | 30.31 | 25.23 |
| **PCMB2M-5** | White | 42.05 | 35.04 | 30.31 | 25.23 |
| **PCMB2M-6** | Black | 42.05 | 35.04 | 30.31 | 25.23 |

## SOLDER EDGE-ON® CONNECTORS (FIG. A)

### TYPE PSC (.156″ SPACING)

Designed to accommodate .054″ to .072″ thick, single-sided or double-sided PC boards. Available in solder-eye and solder-dip termination. The external dimension, in accordance with MIL-C-21097, permits complete interchangeability of the PSC with any connector. Electrical and mechanical performance meets the applicable requirements of MIL-C-21097. **Material:** Connector body, glass-filled molded phenolic; spring contacts, beryllium copper; gold plated finish. **Operating Volts:** 350 VAC rms; 490 VDC. **Current Rating:** 3 amps. **Operating Temp.:** −55° C to +177° C. **Insulation Resistance:** 5000 megohms min. **Size:** Ends projected .26″ for solder eye, suffix **11** (e.g., PSC4DD10-**11**); .135″ for solder dip, suffix **12** (e.g., PSC4SS15-**12**).

| No. of Contact Pos.* | Lgth., In. | Single-Sided Burndy No. | Net Each, Lots of* 1-9 | Net Each, Lots of* 10-24 | Double-Sided Burndy No. | Net Each, Lots of* 1-9 | Net Each, Lots of* 10-24 |
|---|---|---|---|---|---|---|---|
| 10 | 2.409 | **PSC4SS10-11** | $1.61 | $1.34 | **PSC4DD10-11** | $1.94 | $1.62 |
| 15 | 3.189 | **PSC4SS15-11** | 1.78 | 1.48 | **PSC4DD15-11** | 2.57 | 2.14 |
| 18 | 3.657 | **PSC4SS18-11** | 1.99 | 1.66 | **PSC4DD18-11** | 2.93 | 2.44 |
| 22 | 4.281 | **PSC4SS22-11** | 2.35 | 1.96 | **PSC4DD22-11** | 3.43 | 2.86 |
| 10 | 2.409 | **PSO4SS10-12** | 1.80 | 1.50 | **PSC4DD10-12** | 2.09 | 1.74 |
| 15 | 3.189 | **PSC4SS15-12** | 1.90 | 1.58 | **PSC4DD15-12** | 2.81 | 2.34 |
| 18 | 3.657 | **PSC4SS18-12** | 2.18 | 1.82 | **PSC4DD18-12** | 3.22 | 2.68 |
| 22 | 4.281 | **PSC4SS22-12** | 2.62 | 2.18 | **PSC4DD22-12** | 3.79 | 3.16 |

*Other sizes (between 6 and 43 spring-contact positions) available on request.

## CARD RECEPTACLES (FIG. D)

### TYPE PSE SOLDER/WELD TERMINATION

Rugged, reliable edge-type connector for micro-miniature (.050″) spaced, double-sided PC boards. Accordian, beryllium copper, contact spring assures constant high pressure and stable electrical performance over repeated insertions and withdrawals. Termination can be either soldered, welded, or dip soldered to any 1/16″–1/8″ thick PC board. Glass filled, molded phenolic connector body. **Operating Volts:** 200 V. **Contact Rating:** 1 amp. **Operating Temp.:** −55° C to +177° C. **Insulation Resis.:** 5000 megohms min. **Shock:** 50 g. **Size:** Max. height, .290″; end projection, .145″.

| No. of Contact Positions | Burndy Number | Lgth., In. | Net Each, Lots of 1-9 | Net Each, Lots of 10-24 | Net Each, Lots of 25-99 | Net Each, Lots of 100-249 | Net Each, Lots of 250-999 |
|---|---|---|---|---|---|---|---|
| 10 | **PSE4DD10-1** | 1.050 | $4.56 | $3.80 | $3.29 | $2.74 | $2.28 |
| 15 | **PSE4DD15-1** | 1.300 | 5.54 | 4.62 | 4.00 | 3.33 | 2.77 |
| 18 | **PSE4DD18-1** | 1.450 | 6.34 | 5.28 | 4.57 | 3.80 | 3.17 |
| 20 | **PSE4DD20-1** | 1.550 | 6.89 | 5.74 | 4.97 | 4.13 | 3.44 |
| 22 | **PSE4DD22-1** | 1.650 | 7.20 | 6.00 | 5.19 | 4.32 | 3.60 |
| 25 | **PSE4DD25-1** | 1.800 | 7.66 | 6.38 | 5.52 | 4.59 | 3.83 |

## TYPE UPC ULTRAMINIATURE PC PLUG (FIG. E) AND RECEPTACLE (FIG. F) CONNECTORS

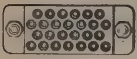
Designed for use with printed wiring board-to-board applications (.100″ and .150″ spacing). Available in two- or three-row arrangements. Plug accommodates .062″ nominal thickness boards; receptacle, .094″. Terminal pins may be dip soldered to the printed wiring or multilayered boards. Mechanical attachment of connector to board is accomplished by utilizing molded-in hollow rivets. Receptacles have built-in board levelers; prevent boards from being bowed during soldering. Heavily gold-plated, beryllium copper contacts for dry circuit applications. Meet requirements of SCL6250 and MIL-C-55302. **Operating Volts:** 300 VAC at 60 Hz. **Current Rating:** 3 amps. **Operating Temp.:** −67° F to +257° F. **Contact Resistance:** .010 ohm min., average; .020 ohm min., individual. **Insulation Resis.:** 1000 megohms min. between adjacent contacts.

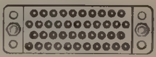
| No. of Contacts | Lgth., In. | Burndy Plug No. UPC- | Net Each, Lots of* 1-9 | Net Each, Lots of* 10-24 | Burndy Recep. No. UPC- | Net Each, Lots of* 1-9 | Net Each, Lots of* 10-24 |
|---|---|---|---|---|---|---|---|
| 17 | 1.550 | **2A17P-4** | $ 6.58 | $ 5.48 | **2A17R-4** | $10.06 | $ 8.38 |
| 23 | 2.000 | **2A23P-4** | 7.34 | 6.12 | **2A23R-4** | 12.24 | 10.20 |
| 28 | 2.400 | **2A28P-4** | 7.92 | 6.60 | **2A28R-4** | 14.04 | 11.70 |
| 41 | 3.350 | **2A41P-4** | 10.18 | 8.48 | **2A41R-4** | 24.22 | 20.18 |
| 17 | 1.150 | **2B17P-4** | 6.48 | 5.40 | **2B17R-4** | 9.96 | 8.30 |
| 25 | 1.550 | **2B25P-4** | 8.28 | 6.90 | **2B25R-4** | 13.10 | 10.92 |
| 33 | 1.950 | **2B33P-4** | 8.62 | 7.18 | **2B33R-4** | 20.06 | 16.72 |
| 41 | 2.350 | **2B41P-4** | 9.86 | 8.22 | **2B41R-4** | 23.62 | 19.68 |
| 13 | .800 | **3B13P-4** | 4.92 | 4.10 | **3B13R-4** | 8.50 | 7.08 |
| 25 | 1.200 | **3B25P-4** | 8.28 | 6.90 | **3B25R-4** | 13.10 | 10.92 |
| 49 | 1.600 | **3B49P-4** | 11.47 | 9.56 | **3B49R-4** | 23.06 | 19.22 |
| 61 | 2.400 | **3B61P-4** | 13.32 | 11.10 | **3B61R-4** | 28.34 | 23.62 |
| 92 | 3.425 | **3B92P-1** | 19.44 | 16.20 | **3B92R-2** | 45.00 | 37.50 |
| 92 | 3.425 | ........ | ...... | ...... | **3B92RW-1*** | 66.72 | 55.60 |

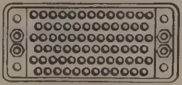
*Only receptacle designed for use with solderless wrap.

**★LARGER QUANTITY PRICES ON REQUEST**

# BURNDY HYFEN® CONNECTORS, UNIRING AND HYRING


MS26


MS42


MS75

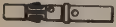
RM24M-9

RM20M-12, -13

RM16M-23

RC24M-9

RC20M-12, -13

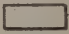

RC16M-23

No. 20 Pin

No. 20 Socket

RMD26L-1

RCDX60-2


YOC-074

RFD26L-1

RMDX60-2

RMDXB055-1

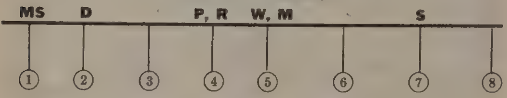
## PLUG AND RECEPTACLE TYPES MS, MS-W, AND MS-M

Dimensionally identical, with the lettering of the receptacle a mirror image of the plug. Pins and sockets may be snapped into either plug or receptacle. **Connector Height:** Type MS, .84″; type MS-W, .97″; type MS-M, 1.10″.

### SIZE

| No. of Positions | Dimensions, Inches | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| 14 | .46 | .79 | .937 | 1.25 | ...... | ...... | ...... |
| 20 | .46 | 1.10 | 1.250 | 1.56 | ...... | ...... | ...... |
| 26 | .59 | 1.07 | 1.312 | 1.62 | ...... | ...... | ...... |
| 34 | .75 | 1.41 | 1.686 | 2.00 | .468 | ...... | ...... |
| 42 | .75 | 1.69 | 1.990 | 2.31 | .468 | ...... | ...... |
| 50 | .75 | 2.00 | 2.281 | 2.59 | .468 | .87 | 2.72 |
| 75 | 1.11 | 2.00 | 2.281 | 2.59 | .764 | 1.23 | 2.72 |

### HOW TO ORDER



① Miniature rectangular HYFEN connector.

② MS-M connector material: For standard glass-filled phenolic, leave blank; insert **D** for diallyl phthalate molded connector.

③ No. of contact positions: 14, 20, 26, 34, 42, 50 or 75.

④ **P** for plug; **R** for receptacle.

⑤ Contact design: Blank, for #20 machined contacts, .040″ dia.; **W**, for #20 formed contacts, .040″ dia.; **M**, for #16 machined and formed contacts, .0625″ dia., submin. coaxial contacts.

⑥ MS connector variations: **1** Standard panel, consists of panel and one set of gold-plated guide pin and guide socket; **57** consists of panel and one stainless-steel turnable jackscrew pin and jackscrew receptacle; **58** consists of panel and one stainless-steel fixed jackscrew pin and jackscrew receptacle; **118** consists of cable clamp assembled to panel with one stainless-steel turnable jackscrew pin and jackscrew receptacle; **120** consists of Burndy clam-shell hood assembled to panel with one set of gold-plated guide pin and guide socket; **124** consists of Burndy clam-shell hood assembled to panel with one stainless-steel turnable jackscrew pin and jackscrew receptacle; **140** consists of Burndy clam-shell hood assembled to panel with one stainless-steel fixed jackscrew pin and jackscrew receptacle.

⑦ Pin protector.

⑧ Pin protector polarization number: Insert **S**- and No. of polarization (e.g. MS75PW-124S3).

## #16 MACHINED CONTACTS (.0625″ DIA.)

For miniature rectangular Hyfen connectors, type MS-M. Pins and sockets made of high conductivity, copper alloy. Springs are spring-temper, heat-treated, nickel-plated beryllium copper. Socket spring supplies high contact pressure to ensure low resistance contact between pin and socket. Socket contact has closed entry to prevent probe damage. Barrels on both contacts have insulation grips for vibration support, cable stop, and inspection hole. Contacts gold-plated. Wire sizes per MIL-W-16878 or MIL-W-76. Extraction tools RX20-25 or RXK20-25.

| Wire Size | For Cable Size, Min.-Max. | Size, In. | | Burndy Pin No. | L., In. | Burndy Socket No. | L., In. |
|---|---|---|---|---|---|---|---|
| | | Cable Strip | O. D. | | | | |
| 26 | .035″-.062″ | .188 l. | .101 | **RM24M-9** | 1.02 | **RC24M-9** | .71 |
| 22 | .046″-.062″ | .188 l. | .116 | **RM20M-13** | 1.02 | **RC20M-13** | .71 |
| 22-20 | .060″-.090″ | .188 l. | .116 | **RM20M-12** | 1.02 | **RC20M-12** | .71 |
| 20-16 | .......... | .281 l. | .101 | **RM16M-23** | 1.02 | **RC16M-23** | .71 |

## #20 MACHINED CONTACTS (.040″ DIA.)

For miniature rectangular Hyfen connectors, type MS. Features same as #16 machined contacts. Extraction tool, RX20-10 or RXK20-10.

| Wire Size | For Cable Size, Min.-Max. | Size, In. | | Burndy Pin No. | L., In. | Burndy Socket No. | L., In. |
|---|---|---|---|---|---|---|---|
| | | Cable Strip | O. D. | | | | |
| 30* | .068″-.072″ | .188 l. | .121 | **RM24W-8** | .77 | **RC24W-8** | .56 |
| 24 | .035″-.058″ | .188 l. | .121 | **RM24W-1†** | .77 | **RC24W-1†** | .56 |
| 26-24 | .035″-.058″ | .188 l. | .121 | **RM24W-1†** | .77 | **RC24W-1†** | .56 |
| (2) 24 | .052″-.072″ | .188 l. | .121 | **RM20W-2†‡** | .77 | **RC20W-2†‡** | .56 |
| 22-20 | .052″-.072″ | .188 l. | .121 | **RM20W-2†‡** | .77 | **RC20W-2†‡** | .56 |
| 26-24 | .052″-.072″ | .188 l. | .121 | **RM20W-2** | .77 | **RC20W-2** | .56 |
| 22 | .052″-.072″ | .188 l. | .121 | **RM20W-2†‡** | .77 | **RC20W-2†‡** | .56 |
| 22-20 | .072″-.090″ | .188 l. | .121 | **RM20W-1†** | .77 | **RC20W-1†** | .56 |
| 20 | .072″-.090″ | .188 l. | .121 | **RM20W-1†** | .77 | **RC20W-1†** | .56 |
| 20-18 | .054″-.078″ | .188 l. | .118 | **RM18W-2** | .77 | **RC18W-2** | .56 |
| 18 | .072″-.092″ | .188 l. | .121 | **RM18W-10†** | .77 | **RC18W-10†** | .56 |
| 20-16 | .......... | .281 l. | .101 | **RM16W-13†** | .77 | **RC16W-4†** | .57 |

*Inner conductor of RG187/U. †Available in expendable plastic carry strips, pink color; to order, add prefix **M** (e.g., **M**RM24W-1). Supplied in strips (13 contacts each strip; 5 strips per box). ‡Available on reels, 2000 contacts to a reel; to order, add prefix **C** (e.g., **C**RM20W-2).

## SUBMINIATURE COAXIAL CONTACTS TYPE RCDX-2/RMDX-2

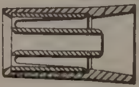
For miniature rectangular Hyfen connectors, type MS-M; subminiature coaxial cables, shielded cables, and twisted pair wires (#24 solid or stranded, or #26 stranded). Consists of an inner pin/socket and an outer male/female body. Thermoplastic insulating bushing in the outer body accepts and permanently retains the inner contact. Tin-plated, corrosion resistant outer ferrules hold the outer braid to the outer contacts and act as an insulation support to ensure against bending and vibration stresses. Inner and outer conductors are crimped individually; enables inspection of both critical crimp points. **Operating Volts:** Between inner and outer contact, 230 VDC at sea level. **Test Volts:** 500 VAC, 60 Hz for one minute. **Operating Temperature:** −55° C to 125° C.

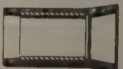
For coaxial cables RG161/U, RG179A/U, RG187/U, RG174/U, RG188/U, Amphenol 21-598, RG178A/U, or RG196/U order Burndy Pin No. **RMD26L-1**, Socket No. **RFD26L-1**, for inner conductor contact; Outer Female Body No. **RCDX60-2**, Outer Male Body No. **RMDX60-2**, for outer braid contact; Hyring No. **YOC-074**, RCDXB055-1 (for RG196/U only); Extraction Tool RX20-25 or RXK20-25. Kits are also available for inner pin and outer female body component, or inner socket and outer male body components. **Kit RCDXK-1:** consists of one each RCDX60-2, RMD26L-1, RCDXB055-1 and YOC-074. **Kit RMDXK-1:** Consists of one each RMDX60-2, RFD26L-1, RMDXB055-1, and YOC-074.

**Hyfen RM24L-2 Contact:** A subminiature coaxial contact can be mated with a single conductor Hyfen contact RM24L-2. This permits conversion from a coaxial cable to a #26 stranded wire or a #24 solid or stranded wire through the pin and socket arrangement in the MS-M connector block.

**WRITE FOR PRICES FOR CONNECTORS**

## UNIRING AND HYRING


Type YEC


Type YOE

### TYPE YEC INSULATED UNIRING

One piece, nylon insulated ferrule for tapping, grounding, or terminating shielded cable. Provides high electrical conductivity, prevents heating and eliminates noises caused by isolated metal parts. Nylon insulation, extending beyond both ends of the Uniring, eliminates metal-to-metal contact and prevents wire chafing in tight locations. Installation tools and dies are common for both YEC and YOE Hyrings. Length, .46″.

| Burndy Number | Color | Size, Inches | | Net per 100, Lots of* | | | |
|---|---|---|---|---|---|---|---|
| | | A Dia. | B Dia. | 100-499 | 500-999 | 1M-4999 | 5M-9999 |
| **YEC90** | Red | .058 | .150 | **$16.97** | **$14.35** | **$12.63** | **$11.48** |
| **YEC100** | Yellow | .063 | .165 | **17.39** | **14.70** | **12.94** | **11.76** |
| **YEC110** | Blue | .080 | .173 | **17.80** | **15.05** | **13.24** | **12.04** |
| **YEC120** | Green | .101 | .195 | **18.42** | **15.58** | **13.71** | **12.46** |
| **YEC130** | Black | .115 | .213 | **18.73** | **15.84** | **13.94** | **12.67** |
| **YEC150** | Green | .134 | .235 | **19.56** | **16.54** | **14.55** | **13.23** |
| **YEC160** | Red | .156 | .267 | **20.60** | **17.41** | **15.32** | **13.93** |
| **YEC180** | Blue | .179 | .306 | **23.08** | **19.51** | **17.17** | **15.61** |
| **YEC200** | Yellow | .210 | .337 | **27.12** | **22.93** | **20.17** | **18.34** |

### TYPE YOE INSULATED HYRING

An outer Hyring insulated with nylon jacket. The metal ferrule is identical to the uninsulated YOC type. Length, outer Hyring, .46″; inner Hyring, .31″.

**OUTER HYRING**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **YOE90** | Red | .149 | .25 | **$ 9.52** | **$ 8.05** | **$ 7.08** | **$ 6.44** |
| **YOE100** | Yellow | .156 | .27 | **10.45** | **8.84** | **7.78** | **7.07** |
| **YOE110** | Blue | .180 | .28 | **10.66** | **9.01** | **7.93** | **7.21** |
| **YOE120** | Green | .187 | .30 | **10.87** | **9.19** | **8.09** | **7.35** |
| **YOE130** | Black | .207 | .32 | **11.07** | **9.36** | **8.24** | **7.49** |
| **YOE150** | Green | .235 | .34 | **12.83** | **10.85** | **9.55** | **8.68** |
| **YOE160** | Red | .261 | .37 | **13.25** | **11.20** | **9.86** | **8.96** |
| **YOE180** | Blue | .281 | .41 | **16.25** | **13.74** | **12.09** | **10.99** |
| **YOE200** | Yellow | .312 | .44 | **18.42** | **15.58** | **13.71** | **12.46** |

***Larger quantity prices available on request.**

CONTINUED ON FOLLOWING PAGE

# BURNDY HYRING AND BANTAM CONNECTORS

## TYPE YOE HYRINGS (CONT'D)

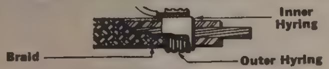
### INNER HYRING

d with type YOE and YOC shielded cable.

| urndy umber | Color | Size, Inches I.D. | Size, Inches O.D. | Net per 100, Lots of 100-999 | 1M-4999 | 5M-9999 | 10M Up |
|---|---|---|---|---|---|---|---|
| 046 | Tin | .046 | .070 | $ 4.05 | $ 2.88 | $ 2.16 | $ 1.80 |
| 058 | Yellow | .058 | .083 | 4.05 | 2.88 | 2.16 | 1.80 |
| 063 | Red | .063 | .088 | 4.05 | 2.88 | 2.16 | 1.80 |
| 071 | Green | .071 | .096 | 4.05 | 2.88 | 2.16 | 1.80 |
| 080 | Blue | .080 | .104 | 4.05 | 2.88 | 2.16 | 1.80 |
| 090 | Orange | .090 | .114 | 4.05 | 2.88 | 2.16 | 1.80 |
| 101 | Yellow | .101 | .124 | 4.05 | 2.88 | 2.16 | 1.80 |
| 109 | Red | .109 | .131 | 4.05 | 2.88 | 2.16 | 1.80 |
| 115 | Tin | .115 | .146 | 4.05 | 2.88 | 2.16 | 1.80 |
| 124 | Green | .124 | .145 | 4.05 | 2.88 | 2.16 | 1.80 |
| 125 | Yellow | .125 | .156 | 4.95 | 3.52 | 2.64 | 2.20 |
| 134 | Orange | .134 | .156 | 4.95 | 3.52 | 2.64 | 2.20 |
| 150 | Blue | .150 | .181 | 4.95 | 3.52 | 2.64 | 2.20 |
| 156 | Red | .156 | .191 | 4.95 | 3.52 | 2.64 | 2.20 |
| 180 | Green | .180 | .204 | 4.95 | 3.52 | 2.64 | 2.20 |
| 194 | Blue | .194 | .225 | 4.95 | 3.52 | 2.64 | 2.20 |
| 219 | Tin | .219 | .243 | 4.95 | 3.52 | 2.64 | 2.20 |
| 261 | Blue | .261 | .297 | 4.95 | 3.52 | 2.64 | 2.20 |
| 297 | Red | .297 | .337 | 4.95 | 3.52 | 2.64 | 2.20 |
| 375G1* | Tin | .375 | .423 | 73.65 | 49.10 | 39.28 | 24.55 |
| 472G1* | Tin | .472 | .516 | 110.25 | 73.50 | 58.80 | 36.75 |
| 495G1* | Tin | .495 | .535 | 140.85 | 93.90 | 75.12 | 46.95 |

r YOC shielded cable only.

## TYPE YOC UNINSULATED HYRING



### FOR SHIELDED CABLES

r rapid and reliable grounding or terminating for shielded
ble. Small, inner Hyring (shown under insulated Hyring) is
ped under the braided shield; larger, outer Hyring is slipped
r the shield and ground leads. Only the outer Hyring is
mped; the inner Hyring remains free to slide over the con-
tor insulation. Ground lead may be common bonding braid
#22-#18 AWG stranded. For installation tooling refer to
rndy.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| C70 | Tin | .101 | .124 | $ 4.95 | $ 3.52 | $ 2.64 | $ 2.20 |
| C80 | Blue | .125 | .156 | 4.95 | 3.52 | 2.64 | 2.20 |
| C90 | Purple | .149 | .179 | 4.95 | 3.52 | 2.64 | 2.20 |
| C100 | Yellow | .156 | .196 | 4.95 | 3.52 | 2.64 | 2.20 |
| C110 | Blue | .180 | .204 | 4.95 | 3.52 | 2.64 | 2.20 |
| C112 | Blue | .175 | .215 | 4.95 | 3.52 | 2.64 | 2.20 |
| C120 | Orange | .187 | .227 | 4.95 | 3.52 | 2.64 | 2.20 |
| C128 | Tin | .199 | .235 | 4.95 | 3.52 | 2.64 | 2.20 |
| C130 | Yellow | .207 | .243 | 4.95 | 3.52 | 2.64 | 2.20 |
| C140 | Green | .219 | .250 | 4.95 | 3.52 | 2.64 | 2.20 |
| C150 | Orange | .235 | .266 | 4.95 | 3.52 | 2.64 | 2.20 |
| C160 | Yellow | .261 | .297 | 4.95 | 3.52 | 2.64 | 2.20 |
| C180 | Purple | .281 | .331 | 4.95 | 3.52 | 2.64 | 2.20 |
| C190 | Green | .300 | .335 | 5.63 | 4.00 | 3.00 | 2.50 |
| C200 | Yellow | .312 | .362 | 5.63 | 4.00 | 3.00 | 2.50 |
| C220 | Orange | .344 | .394 | 5.63 | 4.00 | 3.00 | 2.50 |
| C240 | Blue | .375 | .406 | 5.63 | 4.00 | 3.00 | 2.50 |
| C250 | Red | .405 | .453 | 5.63 | 4.00 | 3.00 | 2.50 |
| C320G1 | Purple | .500 | .550 | 20.03 | 14.24 | 10.68 | 8.90 |
| C371G1 | Tin | .580 | .620 | 21.71 | 15.44 | 11.58 | 9.65 |
| C370 | Tin | .705 | .755 | 22.73 | 16.16 | 12.12 | 10.10 |

### FOR MULTI-CONDUCTOR SHIELDED CABLES

r rapid and reliable termination of multi-conductor shielded
ble. When properly installed, Hyring assembly does not exceed
e O.D. of the conductor locking ring for the shell size indicated.
semblies are color-coded with an ink that does not outgas,
ip, flake, or peel.

### OUTER HYRING

ngth, .44".

| ax. ell ize | Burndy No. | Color Code | Size, In. O.D. | Size, In. I.D. | Net per 100, Lots of 1-24 | 25-99 | 100-999 | 1M Up |
|---|---|---|---|---|---|---|---|---|
| | YOC430 | Yellow | .750 | .670 | $184.95 | $123.30 | $ 98.64 | $ 61.65 |
| | YOC474 | Blue | .820 | .740 | 231.15 | 154.10 | 123.28 | 77.05 |
| | YOC601 | Black | 1.020 | .940 | 295.20 | 196.80 | 157.44 | 98.40 |
| | YOC676 | Orange | 1.136 | 1.056 | 295.20 | 196.80 | 157.44 | 98.40 |
| | YOC768 | Green | 1.280 | 1.200 | 295.20 | 196.80 | 157.44 | 98.40 |
| | YOC832 | Violet | 1.380 | 1.300 | 328.50 | 219.00 | 175.20 | 109.50 |
| | YOC966 | Tin | 1.510 | 1.430 | 353.10 | 235.40 | 188.32 | 117.70 |
| | YOC992 | Red | 1.620 | 1.550 | 375.75 | 250.50 | 200.40 | 125.25 |
| | YOC1085 | Yellow | 1.695 | 1.615 | 401.55 | 267.70 | 214.16 | 133.85 |
| ... | YOC2200 | Blue | 2.000 | 1.875 | 442.20 | 294.80 | 235.84 | 147.40 |

### INNER HYRING

ngth, 1.00" for YIC1100 and YIC1180, all others .60".

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | YIC430 | Yellow | .500 | .430 | $147.45 | $ 98.30 | $ 78.64 | $ 49.15 |
| | YIC551 | Blue | .620 | .551 | 163.50 | 109.00 | 87.20 | 54.50 |
| | YIC670 | Black | .750 | .670 | 185.28 | 123.50 | 98.80 | 61.75 |
| | YIC810 | Orange | .880 | .810 | 198.15 | 132.10 | 105.68 | 66.05 |
| | YIC880 | Green | .950 | .880 | 205.95 | 137.30 | 109.84 | 68.65 |
| | YIC920 | Violet | 1.000 | .920 | 211.05 | 140.70 | 112.56 | 70.35 |
| | YIC990 | Tin | 1.120 | .990 | 271.50 | 181.00 | 144.80 | 90.50 |
| | YIC1122 | Red | 1.192 | 1.122 | 277.80 | 185.20 | 148.16 | 92.60 |
| | YIC1224 | Yellow | 1.294 | 1.224 | 288.90 | 192.60 | 154.08 | 96.30 |
| | YIC1260 | Blue | 1.330 | 1.260 | 288.90 | 192.60 | 154.08 | 96.30 |
| | YIC1276 | Black | 1.346 | 1.276 | 288.90 | 192.60 | 154.08 | 96.30 |
| | YIC1320 | Orange | 1.390 | 1.320 | 303.30 | 202.20 | 161.76 | 101.10 |
| | YIC1356 | Green | 1.426 | 1.356 | 303.30 | 202.20 | 161.76 | 101.10 |
| .... | YIC1100 | Tin | 1.625 | 1.522 | 277.80 | 185.20 | 148.16 | 92.60 |
| .... | YIC1180 | Violet | 1.705 | 1.602 | 288.90 | 192.60 | 154.08 | 96.30 |

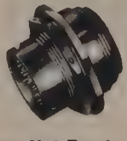
**Wall Mounting Receptacle**

**Cable Receptacle**

**Straight Plug**

**Box Mount Receptacle**

**Jam Nut Recpt. For Potting**


**Jam Nut Recpt. Wire Sealing Grommet**

**Strain Relief Clamp**

**Large Flange Wall Mount Receptacle**

## SOLDER BANTAM CONNECTORS

### HOW TO ORDER

| BURNDY No. | | | | | | | | MIL-C-26482 EQUIVALENTS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B | T | 00 | E | 8 | 4 | S | W* | MS3110 | E | 8 | - | 4 | S | W* |
| ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ③ | ④ | ⑤ | | ⑥ | ⑦ | ⑧ |

① Solder bantam.

② Tri-lok bayonet coupling.

③ Shell Type: **00** (**MS3110**), wall mounting flange receptacle; **01** (**MS3111**), cable connecting receptacle; **02** (**MS3112**), box mounting flange receptacle; **06** (**MS3116**), straight plug; **07A**, jam nut rear mounting receptacle; **07P** (**MS3114P**), jam nut rear mounting receptacle for potting; **07E** (**MS3114E**), jam nut rear mounting receptacle with wire sealing grommet.

④ Termination Class: **A**, adapter for use with conduit and MS 3057 cable clamp; **P** (**P**), potting boot; **E** (**E**), environment resisting grommet wire seal; **AC**, general duty strain relief clamps; **PC**, potting type strain relief clamps; **EC** (**F**), wire sealing strain relief clamps; **L**, right angle strain relief clamps; **J**, compression clamp neoprene gland for moisture proofing jacked cables; **JF**, compression clamp neoprene gland for moisture proofing jacked cables with strain relief.

⑤ Shell size.

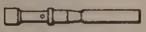
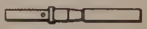
⑥ Insert arrangement.

⑦ Contact style: **P**, pin; **S**, socket.

⑧ Insert position (Polarization): * shows alternate polarization position.

## SMOOTH BANTAM CONNECTORS

**Pin Contacts**



**Socket Contacts**

### HOW TO ORDER

| BURNDY No. | | | | | | | | | MIL-C-26482 EQUIVALENTS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L | 22 | T | F | 55 | P | O | N | A | MS3120 | F | 22 | - | 55 | P |
| ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ | ⑦ | ④ | ② | | ⑤ | ⑥ |

① Smooth bantam.

② Shell size.

③ Tri-lok bayonet coupling.

④ Termination Class: **A**, environmental resistant adapter for use with conduit and/or MS3057 clamps; **E** (**E**), environmental resistant grommet seal; **F** (**F**), environmental resistant grommet seal with strain relief clamp; **L**, 90° elbow environmental resistant with strain relief; **P** (**P**), potting type.

⑤ Insert arrangement.

⑥ Contact style: **P**, pin; **S**, socket.

⑦ Shell style: **0** (**MS3120**), wall mounting flange receptacle; **1** (**MS3121**), cable connecting receptacle; **2** (**MS3122**), box mounting flange receptacle; **6** (**MS3126**), straight plug; **4** (**MS3124**), jam nut rear mounting receptacle; **3**, jam nut rear mounting receptacle without accessory back; **7** (**MS3127**), box mounting large flange receptacle for rear panel mounting; **8** (**MS3128**), wall mounting large flange receptacle for rear panel mounting.

⑧ Insert position (polarization).

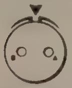
⑨ Indicates connector furnished with standard contacts per MIL-C-23216. Substitute **1** for the A to order the connector without contacts. For connectors shipped with special or coaxial contacts, request Burndy for the catalog number variation.

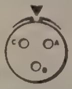
### INSERT ARRANGEMENTS

The insert arrangements shown are in the normal position as specified by military standards. Number under each illustration follows the sequence of shell size, no. of contacts, (contact size) and (service rating). Service rating indicates test-voltage, 1500 V rms at sea level and 375 V rms at 70,000 ft. for service rating 1; 2300 V rms and 550 V rms respectively for service rating 2. The arrangement holds true for both solder and smooth bantam connectors, unless otherwise stated below.

| MIL Standards (Insert Arrangement Only) | Shell Size & Insert Arrangement | MIL Standards (Insert Only) | Shell Size & Insert Arrangement |
|---|---|---|---|
| ............... | 8-2* | ............... | 18-30* |
| MS33708-3 | 8-3* | MS33713-32 | 18-32 |
| MS33708-4 | 8-4* | MS33714-16 | 20-16 |
| MS33709-6 | 10-6 | ............... | 20-24* |
| ............... | 10-98* | ............... | 20-25* |
| MS33710-3 | 12-3 | ............... | 20-27* |
| ............... | 12-8* | MS33714-39 | 20-39 |
| MS33710-10 | 12-10 | MS33714-41 | 20-41 |
| ............... | 12-14* | ............... | 22-19† |
| MS33711-5 | 14-5 | MS33715-21 | 22-21 |
| MS33711-12 | 14-12 | ............... | 22-32* |
| MS33711-15 | 14-15 | ............... | 22-34* |
| ............... | 14-18* | ............... | 22-36* |
| MS33711-19 | 14-19 | ............... | 22-37† |
| MS33712-8 | 16-8 | ............... | 22-41† |
| ............... | 16-23* | MS33715-55 | 22-55 |
| MS33712-26 | 16-26 | ............... | 22-95† |
| ............... | 16-95† | ............... | 22-96† |
| MS33713-11 | 18-11 | MS33716-61 | 24-61 |

*For solder bantam connectors only. †For smooth bantam connectors only.


8-2 (#20) (1)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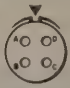
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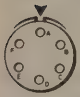
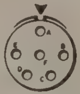

10-6 (#20) (1)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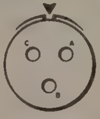
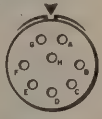
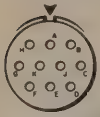

12-3 (#16) (2)


12-8 (#20) (1)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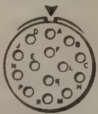
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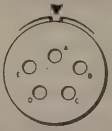
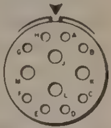
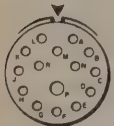
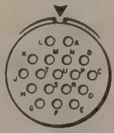
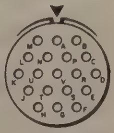
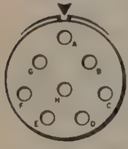

14-5 (#16) (2)


14-12 (4 #16 / 8 #20) (1)


14-15 (1 #16 / 14 #20) (1)


14-18 (#20) (1)


14-19 (#20) (1)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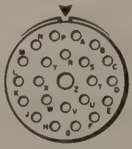
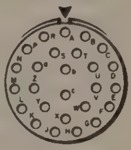

16-23 (1 #16 / 22 #20) (1)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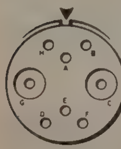
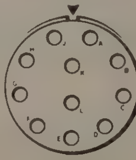
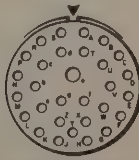
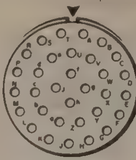

16-95 (6 #20 / 2 #8) (1)


18-11 (#16) (2)


18-30 (1 #16 / 29 #20) (1)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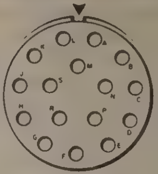
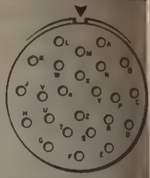
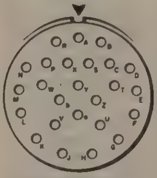
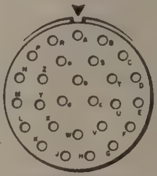
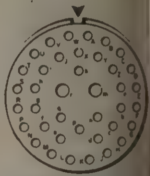
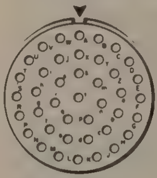

20-16 (#16) (2)

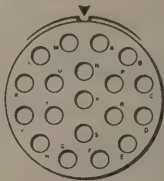

20-24 (#20) (1)

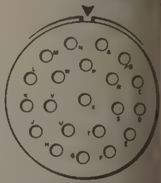

20-25 (#20) (1)

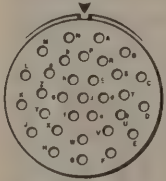

20-27 (#20) (1)

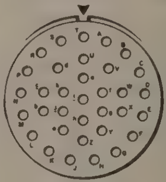

20-39 (2 #16 / 37 #20) (1)

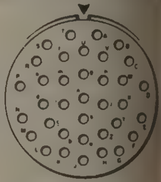

20-41 (#20) (1)

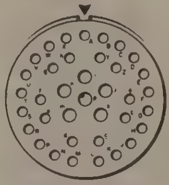

22-19 (#12) (1)

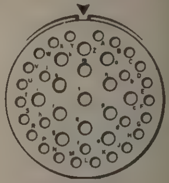

22-21 (#16) (2)

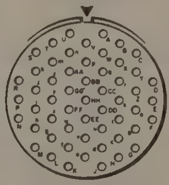

22-32 (#20) (1)

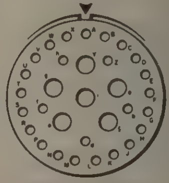

22-34 (#20) (1)

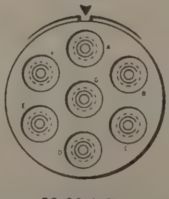

22-36 (#20) (1)

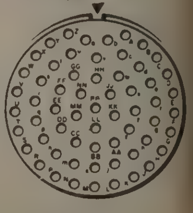

22-37 (6 #16 / 31 #20) (1)


22-41 (27 #20 / 14 #16) (1)


22-55 (#20) (1)


22-95 (26 #20 / 6 #12) (1)


22-96 (#8)


24-61 (#20) (1)

# ITT CANNON ELECTRIC Connectors

## MS-A AND MS-B (MIL-C-5015) CONNECTORS

**MS3100A**

**MS3101A**

**MS3102A**

**MS3106A**

**MS3108B**

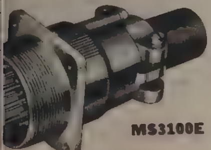
**MS3106B**

eral purpose non-environmental connectors have melamine
ts; meet MIL-C-5015 specifications. MS-A types have solid
ells; MS3108B, MS3101B and MS3106B have split endbells.
ls: Aluminum alloy. **Finish:** Olive drab chromate coating
cadmium plating. **Contacts:** Silver plated copper alloy.
minals: Tinned solder pot type. **Clocking Positions:** Normal,
K, Y. or Z.

**Order:** Use complete MS number, denoting shell style and
t type: e.g., MS3100A8S-1P.

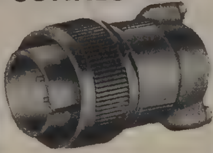
**MS3100A:** Wall mounting receptacle: solid endbell.
**MS3101A:** Cable connector plug: solid endbell.
**MS3102A:** Box mounting receptacle: solid endbell.
**MS3106A:** Straight plug: solid endbell.
**MS3108B:** 90° angle plug: split endbell.
**MS3101B:** Cable connector plug: split endbell.
**MS3106B:** Straight plug: split endbell.

## MS-E AND MS-R ENVIRONMENTAL CONNECTORS

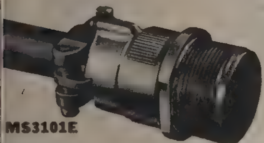

**MS3100E**

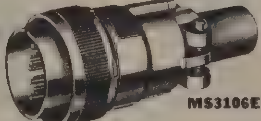
**MS3102E, MS3102R**

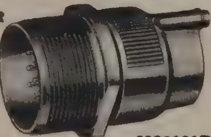
**MS3100R**


**MS3106R**

**MS3108E**


**MS3101E**


**MS3106E**

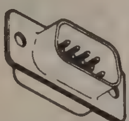

**MS3101R**

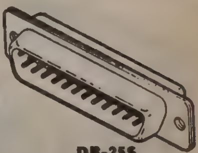
ironmental connectors meet MIL-C-5015 requirements. Fea-
resilient insulators and wire sealing grommets for extreme
ironmental conditions and high altitude sealing. MS-E types
e mechanical cable clamp for strain relief. MS-R types have
ter, lighter weight endbell without cable clamp, and O-ring
upplement the interfacial seal. **Shell:** Aluminum alloy. **Con-**
**s:** Silver plated copper alloy. **Finish:** Chromate coating over
mium plating. **Insulator:** Polychloroprene. **Terminals:** Tinned
ler pot type.
**e:** Available with five clocking positions—normal, W, X, Y,
; no extra charge for positions other than normal.

**MS3100E:** Wall mounting receptacle.
**MS3101E:** Cable connector plug.
**MS3102E, MS3102R:** Box mounting receptacle.
**MS3106E:** Straight plug.
**MS3100R:** Wall mounting receptacle.
**MS3101R:** Cable connector plug.
**MS3106R:** Straight plug.
**MS3108E:** 90° angle plug.

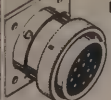
## D SUBMINIATURE PLUGS

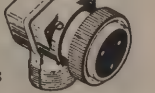
ubminiature plugs are small, lightweight, rectangular plugs available in 5 sizes, with
5, 25, 37 and 50 gold plated contacts. Shells are steel or brass with gold chromate
sh. Insulators are Diallyl-phthalate. D subminiatures are available with accommoda-
s for coaxial contacts and taper pins. Solderless, crimp-type, snap-in contacts can
be supplied. The Golden D is an addition to the D subminiature line, meeting more
ical applications. It features monobloc insulators, closed entry socket contacts and
p-in coaxial contacts, except for grounded coaxials. Insert material is Diallyl-phthalate.
ll finish is golden iridite over cadmium plate. The Golden D is physically inter-
ngeable with the D subminiature with the exception of the solder pot and rear insulator
ension which are slightly longer.

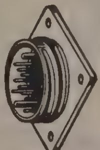

**DE-9P**

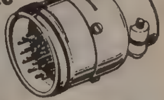

**DB-25S**

## K PLUGS


**K-31SL**


**K-23**


**K-32SL**


**K-22C**

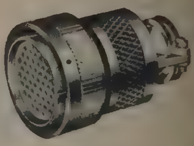
NNON Series K Plugs are similar in many respects to the
ies MS. The principal difference is in the coupling thread,
ich is an acme thread in the V line, whereas the MS uses
fied screw threads. The K line comes in standard K and RK
ies. The RK is, essentially, a reverse coupling version of the
ndard K, and hence the two will not mate. Shells are made of
minum alloy with standard cadmium finish. Contacts are copper alloy, silver-plated with tinned solder pots. Come in eight basic shell types with eight insert sizes totaling 350 arrangements with a variety of amperage and voltage capacities. They are available with 1 to 110 contacts. Prefix R (RWK, RLK, etc.) types are reverse versions with pin insert typical in the plug; socket insert in the receptacle; and, coupling nut reversed. Alternate positions V, W, X, Y and Z are available at the same price.

CANNON" is a trademark registered in the U.S. Patent Office and in other countries by ITT Cannon Electric Inc.

## KJ SERIES CONNECTORS

Low profile, environment-resistant miniature circular connectors meet MIL-C-38999 requirements. Engineered for high density applications at temperatures from −65° F to +302° F or −65° F to +392° F. Crimp snap-in contacts in Little Caesar® rear release contact retention assembly; features multiple-tine metal retaining clip for dependable retention. Contacts are inserted, released and extracted from rear of connector. Monobloc (one-piece) hard inserts are made of strong, durable thermosetting plastic. Pin contact cavities are designed with closed-down effect for superior pin stability and positive axial alignment of the contacts. Lead-in chamfers in hard front socket face provide positive contact mating. Five-keyway shell polarization assures alignment during engagement; three-point bayonet lock coupling provides fast connect and disconnect. Complete environmental sealing by interfacial seal with individual raised tapered sealing barriers around each pin contact, a peripheral seal, and multiple-ripple wire sealing grommet. Available in nine shell styles, including three hermetic version; total or 33 contact arrangements that will accommodate from 3 to 128 contacts using AWG wire sizes from 16 through 28. Contacts are high conductivity copper alloy with gold over silver plate finish. **Write or call for complete descriptive information and quantity pricing.**

## PV SERIES CONNECTORS



High performance, crimp contact miniature environmental connectors are designed to NAS1599 specifications. Made for highly demanding space age applications. Little Caesar® rear release contact assembly features stamped metal retaining clip captivated by molded-in shoulders in the insulator. Easy insertion and extraction of crimp snap-in contacts, using rear-inserted plastic tool. Closed-entry socket design insures positive mating. Wire sealing is accomplished by multiple ripple design, exceeding NAS1599 wire sealing requirements. An interfacial seal on pin insert is bonded to hard dielectric. Raised tapered barriers around each pin contact lock into the lead-in chamfers on the socket insert, assuring individual contact sealing. Simple, strong contact design offers high resistance to bending or damage. Contacts have a single holding shoulder and no undercuts. PV series connectors come complete with expandable plastic insertion/extraction tool; cannot damage contact, insulator or grommet. Available in four shell styles (narrow flange receptacle, wide flange receptacle, jam nut receptacle, or straight plug; three environment-resistant classes; nine shell styles, plus a variety of special types. **Write or call for complete information and quantity pricing.**

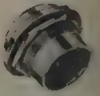
## KPT AND KPSE SERIES (MIL-C-26482) CONNECTORS

**KPT00/MS3110, KPSE00/MS3120**
**Wall Receptacle**

**KPT01, KPSE01**
**Cable Plug**

**KPT02/MS3112, KPSE02**
**Box Mtg. Receptacle**

**KPT06/MS3116, KPSE06/MS3126**
**Straight Plug**



**KPT07/MS3114, KPSE07/MS3124**
**Jam Nut Receptacle**

Miniature circular connectors meet MIL-C-26482 requirements. **KPT Series:** General purpose connectors with solder pot terminations; closed-entry socket contacts for positive mating. **KPSE Series:** Environment-resistant connectors with front release, crimp snap-in contacts. Unique unitized insulator, integrally molded into a single voidless part; mechanically retained in the shell by a positive, hard plastic-to-metal lock retention. Complete moisture sealing achieved by four seals: Shell, peripheral, interfacial and wire seals. Closed-entry socket contacts for positive mating.

## XLR SERIES AUDIO CONNECTORS

**XLR-*-11C**

**XLR-*-12C**

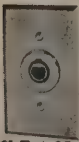
**XLR-*-13**

**XLR-*-14N**

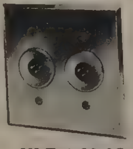
**XLR-15**

**XLR-*-31**

**XLR-*-32**



**XLR-*-35**



**XLR-*-36-2G**

**XLR-*-42**

**XLR-*-50**

Advanced design, streamlined audio connectors with resilient socket insulator for shock protection and quiet operation. Latchlock coupling insures positive mating. Integral cable clamp with two clamping positions for positive grip on cable from 7/32" to 5/16" dia. Neoprene bushing design permits easy cable insertion. Aluminum alloy shell has protective satin nickel finish and thick aluminum cross-sections for added strength. Glass-filled nylon pin insulator; resilient polychloroprene socket insulator. Silver plated brass contacts. XLR-3 types have three 15-amp contacts; XLR-4 types have four 10-amp contacts; XLR-5 types have five 7½-amp contacts.

| ITT Cannon No. XLR-* | Description | Contacts | Size, Inches Lgth. x Dia. |
|---|---|---|---|
| 11C | Straight cord plug | Skt. | 3 1/16 x 3/4 |
| 11SC | Same, but steel shell† | Skt. | 3 1/16 x 3/4 |
| 12C | Straight cord plug | Pin | 2 7/8 x 3/4 |
| 12SC | Same, but steel shell† | Pin | 2 7/8 x 3/4 |
| 13 | Wall mtg. receptacle | Skt. | 1 1/16 x 1 7/16 |
| 11C-A95 | Straight cord plug‡ | Skt. | 3 1/16 x 3/4 |
| 12C-A95 | Straight cord plug‡ | Pin | 2 7/8 x 3/4 |
| 13N | Panel mtg. receptacle | Skt. | 1 1/16 x 1 7/16 |
| 14 | Wall mtg. receptacle | Pin | 27/32 x 1 7/16 |
| 14N | Panel mtg. receptacle | Pin | 27/32 x 1 7/16 |
| 15 | 90° cord plug | Skt. | ........ |
| 31 | Wall mtg. receptacle | Skt. | 1 1/16 x 1 1/16 x 1 7/16 |
| 32 | Wall mtg. receptacle | Pin | 27/32 x 7/8 x 1 7/16 |
| 35 | Wall recep.; 1-gang | Skt. | 1 1/16 x 2 3/4 x 4 1/2 |
| 35-2G | Wall recep.; 2-gang | Skt. | 1 1/16 x 4 9/16 x 4 1/2 |
| 36 | Wall recep.; 1-gang | Pin | 27/32 x 2 3/4 x 4 1/2 |
| 36-2G | Wall recep.; 2-gang | Pin | 27/32 x 4 9/16 x 4 1/2 |
| 32-A95 | Wall mtg. receptacle‡ | Pin | 27/32 x 7/8 x 1 7/16 |
| 42 | 90° wall/mike recep. | Pin | 1 7/16 x 1 1/4 x 1 3/16 |
| 50 | Plain shell adapter | ........ | 1 1/8 x 47/64 |
| 50N | Same, w/coupling nut | ........ | 1 1/8 x 47/64 |
| 50T | Same, threaded barrel | ........ | 13/16 x 47/64 |

*Add interfix 3-, 4- or 5- to indicate number of contacts; e.g., XLR-3-11C. †Finger grips extend completely around shell. ‡Contacts finished in gold over silver plate.

**E. F. JOHNSON COMPANY**

# JCM MINIATURE COAXIAL CONNECTORS

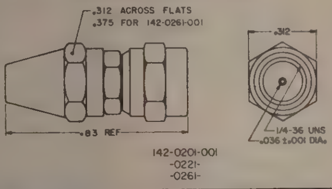
## COAXIAL CONNECTORS

precision, 3 mm miniature JCM connector gives repeatable ic performance from DC to 3 GHz. At a fraction of the price IL-C-39012B SMA connectors, the JCM offers full mating atibility with SMA types. Bright gold finish is more dense wice as hard as ordinary gold. Non-galling finish is 40% more ant to wear and abrasion. Plating is 98.5 to 99.5% pure gold a Knoop hardness of 120–140. Cable clamp JCM plugs and consist of 5 or fewer parts easily assembled. Only one set of ing dimensions is required for all cables from .070" to .220" ll diameter. Beryllium copper contacts assure superior quali- nd lowest contact resistance.

## ELECTRICAL, TYPICAL

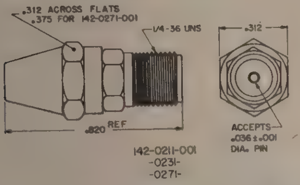
**dance:** 50 ohms. **Frequency:** DC to 3 GHz. **Voltage Rating:** rms at sea level. **Dielectric Withstanding Voltage:** 1000 V at sea level. **VSWR:** 1.15:1 to 3 GHz. **Contact Resistance:** er, 2.5 milliohms; body, 1 milliohm; braid to body, 0.5 milli- **Insulation Resistance:** 5000 megohms.

## PLUG-CLAMP TYPE


.312 ACROSS FLATS
.375 FOR 142-0261-001
.312
.83 REF
1/4-36 UNS
.036 ±.001 DIA.
142-0201-001
-0221-
-0261-

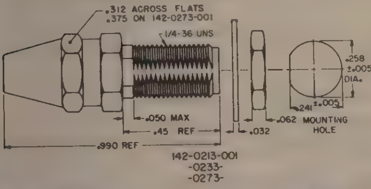
| E. F. Johnson No. | Net Each |
|---|---|
| 142-0201-001 | $1.55 |
| 142-0221-001 | 1.55 |
| 142-0261-001 | 1.60 |

## JACK-CLAMP TYPE


.312 ACROSS FLATS
.375 FOR 142-0271-001
1/4-36 UNS
.312
.820 REF
ACCEPTS
.036 ±.001
DIA. PIN
142-0211-001
-0231-
-0271-

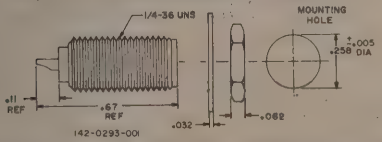
| E. F. Johnson No. | Net Each |
|---|---|
| 142-0211-001 | $1.35 |
| 142-0231-001 | 1.35 |
| 142-0271-001 | 1.45 |

## BULKHEAD JACK-CLAMP TYPE


.312 ACROSS FLATS
.375 ON 142-0273-001
1/4-36 UNS
.258
±.005
DIA.
.241 ±.005
.050 MAX
.45 REF
.062 MOUNTING HOLE
.032
.990 REF
142-0213-001
-0233-
-0273-

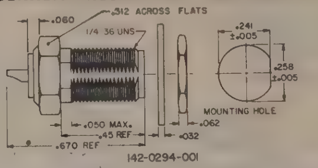
| E. F. Johnson No. | Net Each |
|---|---|
| 142-0213-001 | $1.60 |
| 142-0233-001 | 1.60 |
| 142-0273-001 | 1.65 |

## BULKHEAD FEEDTHROUGH RECEPTACLE


1/4-36 UNS
MOUNTING HOLE
±.005
.258 DIA
.11 REF
.67 REF
.032
.062
142-0293-001

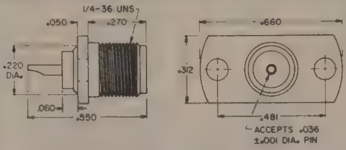
| E. F. Johnson No. | Net Each |
|---|---|
| 142-0293-001 | $1.20 |

## BULKHEAD RECEPTACLE REAR MOUNT


.060
.312 ACROSS FLATS
1/4 36 UNS
.241
±.005
.258
±.005
MOUNTING HOLE
.050 MAX.
.062
.45 REF
.032
.670 REF
142-0294-001

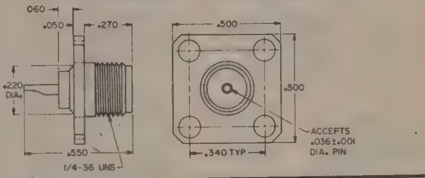
| E. F. Johnson No. | Net Each |
|---|---|
| 142-0294-001 | $1.20 |

## 2-HOLE PANEL RECEPTACLE, FRONT MOUNT


1/4-36 UNS
.050
.270
.660
.220 DIA.
.312
.060
.550
.481
ACCEPTS .036
±.001 DIA. PIN

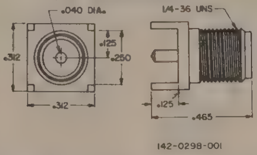
| E. F. Johnson No. | Net Each |
|---|---|
| 142-0296-001 | $1.70 |

## 4-HOLE RECEPTACLE, FRONT MOUNT


060
.050
.270
.500
.220 DIA.
.500
ACCEPTS
.036 ±.001
DIA. PIN
.550
.340 TYP
1/4-36 UNS

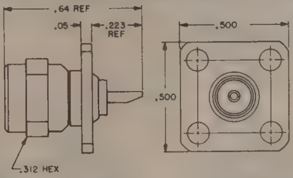
| E. F. Johnson No. | Net Each |
|---|---|
| 142-0297-001 | $1.55 |

## PC RECEPTACLE


.040 DIA.
1/4-36 UNS
.125
.312
.250
.312
.125
.465
142-0298-001

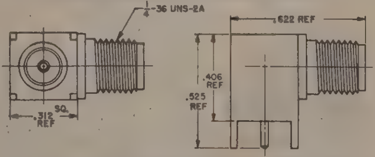
| E. F. Johnson No. | Net Each |
|---|---|
| 142-0298-001 | $0.95 |

## 4-HOLE PANEL PLUG, FRONT MOUNT


.64 REF
.05
.223 REF
.500
.500
.312 HEX

| E. F. Johnson No. | Net Each |
|---|---|
| 142-0287-001 | $1.70 |

## RIGHT-ANGLE PC RECEPTACLE


1/4-36 UNS-2A
.622 REF
.406 REF
.525 REF
.312 SQ. REF

| E. F. Johnson No. | Net Each |
|---|---|
| 142-0299-001 | $1.75 |

**SIX NEW JCM CONNECTOR DESIGNS ARE AVAILABLE FOR USE WITH .141" AND .085" SEMI-RIGID CABLE. WRITE FOR FULL INFORMATION.**

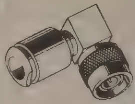
# Kings RF Connectors

BNC Plug

BNC Receptacle

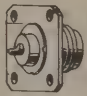
BNC Cap and Chain

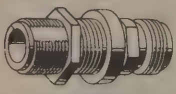
BNC Bulkhead Jack

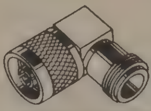

C Angle Plug

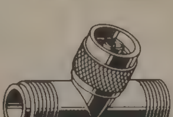
HN Armor Clamp

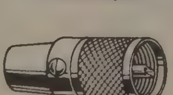
N Plug


N Receptacle


N Adapter


N Angle Adapter


N Tee Adapter


UHF PL-259A Plug

## BNC SERIES

**Impedance:** 50 ohms, nom. **Frequency Range:** To 10,000 MHz with 50-ohm cables. **Rating:** 500 V p

| Military Number | Kings Number | Description | Cable Size, RG- | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|---|
| UG-88/U | KC-51-01 | Plug | 55, 58/U | $0.85 | $0.71 | $0.59 | $0.54 |
| UG-88B/U | KC-57-01 | Plug | 55, 58/U | .92 | .77 | .64 | .58 |
| UG-88C/U | KC-58-01 | Plug | 55, 58, 142, 223/U | .84 | .70 | .58 | .53 |
| UG-88D/U | KC-56-01 | Plug | 55, 58, 142, 223/U | 1.01 | .85 | .70 | .64 |
| UG-88E/U | KC-53-01 | Plug | 55, 58, 142, 223/U | 1.01 | .85 | .70 | .64 |
| UG-89B/U | KC-37-01 | Jack | 55, 58, 142, 223/U | .97 | .80 | .67 | .61 |
| UG-89C/U | KC-38-02 | Jack | 55, 58, 142, 223/U | .97 | .80 | .67 | .61 |
| CW-123A/U | KC-81-01 | Cap and chain assembly | ........................ | .50 | .42 | .35 | .32 |
| CW-155A/U | KC-81-02 | Cap assembly | ........................ | .40 | .33 | .28 | .25 |
| CW-159/U | KC-81-16 | Shorting plug | ........................ | 1.08 | .90 | .75 | .68 |
| MX-195/U | KB-81-01 | Hood | 55, 58/U | 1.34 | 1.12 | .93 | .85 |
| MX-195A/U | KC-84-01 | Hood | 55, 58/U | .62 | .52 | .43 | .39 |
| UG-201A/U | KN-94-05 | BNC to N adapter | ........................ | 1.76 | 1.47 | 1.23 | 1.12 |
| UG-253B/U | KC-17-04 | Bulkhead jack | 55, 58, 223/U | 5.13 | 4.27 | 3.55 | 3.23 |
| UG-254A/U | KC-74-01 | Receptacle | ........................ | 4.74 | 3.95 | 3.29 | 2.99 |
| UG-255/U | KC-91-01 | BNC to UHF adapter | ........................ | 2.55 | 2.12 | 1.77 | 1.61 |
| UG-260/U | KC-51-02 | Plug | 59, 62, 71, 210/U | 1.09 | .91 | .76 | .69 |
| UG-260A/U | KC-54-02 | Plug | 59, 62, 71, 210/U | .98 | .82 | .68 | .62 |
| UG-260B/U | KC-57-02 | Plug | 59, 62, 71, 210/U | .87 | .73 | .61 | .55 |
| UG-260C/U | KC-58-02 | Plug | 59, 62, 71, 210/U | 1.11 | .92 | .77 | .70 |
| UG-260D/U | KC-56-02 | Plug | 59, 62, 71, 210/U | 1.01 | .85 | .70 | .64 |
| UG-261C/U | KC-38-01 | Jack | 59, 62, 71, 210/U | 1.10 | .91 | .76 | .69 |
| UG-262B/U | KC-17-03 | Panel jack | 59, 62, 71, 210/U | 1.34 | 1.12 | .94 | .85 |
| UG-262C/U | KC-18-01 | Panel jack | 59, 62, 71, 210/U | 1.36 | 1.13 | .95 | .86 |
| UG-273/U | KC-91-02 | BNC to UHF adapter | ........................ | 1.56 | 1.30 | 1.08 | .98 |
| UG-274A/U | KC-94-10 | Tee adapter | ........................ | 2.78 | 2.32 | 1.94 | 1.76 |
| UG-274B/U | KC-97-02 | Tee adapter | ........................ | 2.83 | 2.35 | 1.96 | 1.78 |
| CW-282/U | KC-82-03 | Cap and chain | ........................ | .73 | .61 | .51 | .46 |
| UG-290/U | KC-71-01 | Receptacle | ........................ | 1.51 | 1.25 | 1.05 | .95 |
| UG-290A/U | KC-74-04 | Receptacle | ........................ | .94 | .78 | .65 | .59 |
| UG-291/U | KC-11-02 | Panel jack | 55, 58/U | 1.73 | 1.44 | 1.20 | 1.09 |
| UG-291B/U | KC-17-02 | Panel jack | 55, 58, 142, 223/U | 1.32 | 1.10 | .91 | .83 |
| UG-291C/U | KC-18-02 | Panel jack | 55, 58, 142, 223/U | 1.27 | 1.06 | .88 | .80 |
| UG-306/U | KC-91-04 | Angle adapter | ........................ | 3.28 | 2.73 | 2.28 | 2.07 |
| UG-306A/U | KC-94-01 | Angle adapter | ........................ | 2.90 | 2.42 | 2.01 | 1.83 |
| UG-306B/U | KC-97-04 | Angle adapter | ........................ | 2.68 | 2.23 | 1.86 | 1.69 |
| UG-309/U | KH-91-06 | BNC to HN adapter | ........................ | 3.58 | 2.98 | 2.49 | 2.26 |
| UG-349A/U | KN-94-09 | BNC to N adapter | ........................ | 2.44 | 2.04 | 1.69 | 1.54 |
| UG-349B/U | KN-97-06 | BNC to N adapter | ........................ | 2.44 | 2.04 | 1.69 | 1.54 |
| UG-414A/U | KC-94-03 | Adapter | ........................ | 2.11 | 1.76 | 1.46 | 1.33 |
| UG-447/U | KC-71-10 | Receptacle | ........................ | 1.41 | 1.18 | .98 | .89 |
| UG-491A/U | KC-94-02 | Adapter | ........................ | 2.30 | 1.91 | 1.60 | 1.45 |
| UG-491B/U | KC-97-03 | Adapter | ........................ | 2.44 | 2.04 | 1.69 | 1.54 |
| UG-492A/U | KC-94-09 | Bulkhead adapter | ........................ | 2.79 | 2.33 | 1.95 | 1.77 |
| UG-492B/U | KC-97-01 | Bulkhead adapter | ........................ | 3.19 | 2.66 | 2.22 | 2.02 |
| UG-492C/U | KC-98-01 | Bulkhead adapter | ........................ | 2.83 | 2.35 | 1.96 | 1.78 |
| UG-492D/U | KC-96-01 | Bulkhead adapter | ........................ | 2.84 | 2.37 | 1.97 | 1.79 |
| UG-535/U | KC-71-14 | Angle receptacle | ........................ | 2.98 | 2.49 | 2.07 | 1.88 |
| UG-604/U | KC-71-16 | Receptacle | ........................ | 1.21 | 1.01 | .85 | .77 |
| UG-625/U | KC-71-11 | Receptacle | ........................ | 1.11 | .92 | .77 | .70 |
| UG-625B/U | KC-77-01 | Receptacle | ........................ | .81 | .68 | .57 | .52 |
| UG-657/U | KC-71-09 | Receptacle | ........................ | 1.38 | 1.14 | .95 | .87 |
| UG-909/U | KC-11-09 | Bulkhead jack | 55, 58, 142, 223/U | 1.45 | 1.21 | 1.01 | .92 |
| UG-909B/U | KC-17-06 | Bulkhead jack | 55, 58, 142, 223/U | 1.51 | 1.25 | 1.05 | .95 |
| UG-910/U | KC-11-10 | Bulkhead jack | 59, 62, 71, 210/U | 1.51 | 1.25 | 1.05 | .95 |
| UG-910B/U | KC-17-07 | Bulkhead jack | 59, 62, 71, 210/U | 1.51 | 1.25 | 1.05 | .95 |
| UG-911A/U | KC-74-07 | Receptacle | ........................ | 1.90 | 1.58 | 1.32 | 1.20 |
| UG-912A/U | KC-74-10 | Receptacle | ........................ | 1.90 | 1.58 | 1.32 | 1.20 |
| UG-913/U | KC-51-04 | Angle plug | 55, 58, 142, 223/U | 3.25 | 2.71 | 2.26 | 2.05 |
| UG-913A/U | KC-54-03 | Angle plug | 55, 58, 142, 223/U | 3.09 | 2.57 | 2.15 | 1.95 |
| UG-914/U | KC-91-11 | Adapter | ........................ | 1.32 | 1.10 | .91 | .83 |
| UG-959A/U | KC-54-04 | Plug | 8, 9, 11, 213, 214/U | 3.01 | 2.51 | 2.10 | 1.90 |
| UG-1094/U | KC-74-06 | Receptacle | ........................ | .79 | .66 | .55 | .50 |
| UG-1094A/U | KC-74-12 | Receptacle | ........................ | .88 | .74 | .62 | .56 |
| UG-1098/U | KC-74-05 | Angle receptacle | ........................ | 2.95 | 2.45 | 2.05 | 1.86 |
| UG-1098A/U | KC-74-11 | Angle receptacle | ........................ | 3.55 | 2.96 | 2.46 | 2.24 |

## C SERIES

**Impedance:** 50 ohms, nom. **Frequency Range:** To 10,000 MHz (except UG-634/U to 2000 MH

| Military Number | Kings Number | Description | Cable Size, RG- | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|---|
| UG-564/U | KD-91-01 | C to N adapter | ........................ | $2.99 | $2.50 | $2.08 | $1.89 |
| UG-565A/U | KD-94-01 | C to N adapter | ........................ | 3.62 | 3.04 | 2.53 | 2.30 |
| UG-566A/U | KD-94-02 | Tee adapter | ........................ | 7.70 | 6.41 | 5.35 | 4.86 |
| UG-567A/U | KD-94-03 | Angle adapter | ........................ | 4.54 | 3.77 | 3.16 | 2.87 |
| UG-568/U | KD-71-01 | Receptacle | ........................ | 2.46 | 2.06 | 1.72 | 1.56 |
| UG-569A/U | KD-74-01 | Receptacle | ........................ | 3.03 | 2.52 | 2.10 | 1.91 |
| UG-571A/U | KD-14-02 | Panel jack | 8, 9, 11, 213, 214/U | 3.08 | 2.56 | 2.13 | 1.94 |
| UG-572A/U | KD-34-05 | Jack | 8, 9, 11, 213, 214/U | 2.46 | 2.05 | 1.71 | 1.55 |
| UG-573A/U | KD-34-01 | Plug | 8, 9, 11, 213, 214/U | 2.53 | 2.11 | 1.76 | 1.60 |
| UG-573B/U | KD-56-03 | Plug | 8, 9, 11, 213, 214/U | 2.56 | 2.13 | 1.78 | 1.62 |
| UG-626B/U | KD-56-01 | Plug | 5, 6, 212/U | 3.08 | 2.56 | 2.13 | 1.94 |
| UG-627B/U | KD-56-02 | Plug | 59, 62, 71, 210/U | 2.98 | 2.49 | 2.07 | 1.88 |
| UG-628A/U | KD-34-03 | Plug | 8, 9, 11, 213, 214/U | 3.67 | 3.06 | 2.55 | 2.32 |
| UG-630A/U | KD-14-03 | Panel jack | 5, 6, 212/U | # | # | # | # |
| UG-631A/U | KD-14-05 | Panel jack | 59, 62, 71, 210/U | 2.78 | 2.32 | 1.94 | 1.76 |
| UG-634/U | KD-71-03 | High-voltage receptacle | ........................ | 3.50 | 2.92 | 2.43 | 2.21 |
| UG-636A/U | KD-94-04 | C to BNC adapter | ........................ | 3.43 | 2.70 | 2.24 | 2.04 |
| UG-643/U | KD-91-09 | Adapter | ........................ | 2.46 | 2.06 | 1.72 | 1.56 |
| UG-702/U | KD-91-11 | C to HN adapter | ........................ | 4.38 | 3.65 | 3.05 | 2.77 |
| UG-703A/U | KD-94-06 | C to HN adapter | ........................ | 4.29 | 3.58 | 2.98 | 2.71 |
| UG-709A/U | KD-54-02 | Plug | 55, 58, 142, 223/U | 2.56 | 2.13 | 1.78 | 1.62 |
| UG-709B/U | KD-57-01 | Plug | 55, 58, 142, 223/U | 2.76 | 2.30 | 1.91 | 1.74 |
| UG-710B/U | KD-57-04 | Angle plug | 8, 9, 11, 213, 214/U | 5.17 | 4.31 | 3.60 | 3.27 |

#Prices on request.

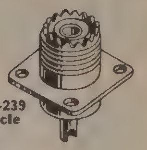
**★LARGER QUANTITY PRICES ON REQUEST**

# ings RF Connectors

## HN SERIES

**edance:** 50 ohms, nom. **Rating:** 5000 V peak.

| ilitary umber | Kings Number | Description | Cable Size, RG- | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499* |
|---|---|---|---|---|---|---|---|---|
| -59D/U | KH-56-01 | Plug | 8, 9, 11, 213, 214/U | $4.75 | $3.96 | $3.30 | $3.00 | $2.73 |
| -59E/U | KH-53-01 | Plug | 8, 9, 11, 213, 214/U | 4.76 | 3.97 | 3.31 | 3.01 | 2.74 |
| -60E/U | KH-33-01 | Jack | 8, 9, 11, 213, 214/U | 3.78 | 3.16 | 2.63 | 2.39 | 2.17 |
| -212C/U | KH-98-01 | Angle adapter | .................... | 6.84 | 5.70 | 4.75 | 4.32 | 3.93 |
| -494A/U | KH-54-02 | Plug | 14/U | 7.35 | 6.13 | 5.10 | 4.64 | 4.22 |
| -496/U | KH-71-01 | Receptacle | .................... | 2.63 | 2.19 | 1.83 | 1.66 | 1.51 |
| -560/U | KH-71-02 | Receptacle | .................... | 3.55 | 2.96 | 2.46 | 2.24 | 2.04 |
| -564A/U | KN-84-01 | Armor clamp | 10, 12/U | .97 | .80 | .67 | .61 | .55 |
| -1213/U | KH-51-01 | Plug | 8, 9, 87, 115, 213/U | 5.16 | 4.30 | 3.59 | 3.26 | 2.96 |


UHF SO-239 Receptacle

UHF Reducing Adapter

## N SERIES

**pedance:** 50 ohms. **Frequency Range:** To 10,000 MHz. **Rating:** 1500 volts peak.

| ilitary umber | Kings Number | Type * | For RG- † | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | Military Number | Kings Number | Type * | For RG- † | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -18B/U | KN-57-01 | P | a | # | # | # | # | # | UG-107B/U | KN-97-02 | TA | .... | $4.10 | $3.42 | $2.85 | $2.59 | $2.35 |
| -18C/U | KN-58-03 | P | a | $1.69 | $1.41 | $1.18 | $1.07 | $0.97 | UG-146A/U | KN-94-12 | UA | .... | 3.55 | 2.96 | 2.46 | 2.24 | 2.04 |
| -18D/U | KN-56-04 | P | b | 1.77 | 1.47 | 1.23 | 1.12 | 1.02 | UG-160D/U | KN-16-02 | BJ | c | 3.11 | 2.60 | 2.17 | 1.97 | 1.79 |
| -20D/U | KN-36-02 | J | b | 1.87 | 1.56 | 1.30 | 1.18 | 1.07 | UG-167E/U | KN-53-01 | P | d | 7.00 | 5.83 | 4.86 | 4.42 | 4.02 |
| -21B/U | KN-57-02 | P | c | 1.53 | 1.27 | 1.07 | .97 | .88 | UG-202A/U | KN-94-11 | AA | .... | 7.63 | 6.36 | 5.30 | 4.82 | 4.38 |
| -21C/U | KN-58-02 | P | c | 1.68 | 1.40 | 1.17 | 1.06 | .96 | UG-204C/U | KN-58-04 | P | e | 4.07 | 3.39 | 2.83 | 2.57 | 2.34 |
| -21D/U | KN-56-01 | P | c | 1.41 | 1.18 | .98 | .89 | .81 | UG-483/U | KN-31-08 | J | f | 3.65 | 3.05 | 2.54 | 2.31 | 2.10 |
| -21E/U | KN-53-02 | P | c | 1.52 | 1.27 | 1.06 | .96 | .87 | UG-536A/U | KN-54-11 | P | g | 1.56 | 1.30 | 1.08 | .98 | .89 |
| -21F/U | KN-55-01 | P | c | 1.60 | 1.33 | 1.11 | 1.01 | .92 | UG-536B/U | KN-57-05 | P | g | 1.56 | 1.30 | 1.08 | .98 | .89 |
| -22D/U | KN-16-01 | PJ | c | 1.87 | 1.56 | 1.30 | 1.18 | 1.07 | UG-556B/U | KN-17-04 | BJ | g | 2.90 | 2.42 | 2.01 | 1.83 | 1.66 |
| -22E/U | KN-13-01 | PJ | c | 2.05 | 1.71 | 1.42 | 1.29 | 1.17 | UG-593A/U | KN-14-09 | PJ | h | 2.55 | 2.12 | 1.77 | 1.61 | 1.46 |
| -22F/U | KN-15-01 | PJ | c | 2.07 | 1.73 | 1.44 | 1.31 | 1.19 | UG-594A/U | KN-54-15 | P | i | 5.24 | 4.37 | 3.64 | 3.31 | 3.01 |
| -23B/U | KN-37-02 | J | c | 1.76 | 1.46 | 1.22 | 1.11 | 1.01 | UG-602A/U | KN-34-09 | J | h | 2.07 | 1.73 | 1.44 | 1.31 | 1.19 |
| -23D/U | KN-36-01 | J | c | 1.57 | 1.31 | 1.09 | .99 | .90 | UG-603A/U | KN-54-12 | P | h | 2.19 | 1.83 | 1.52 | 1.38 | 1.25 |
| -23E/U | KN-33-01 | J | c | 1.66 | 1.39 | 1.16 | 1.05 | .95 | UG-606/U | KN-91-17 | A | .... | 6.20 | 5.17 | 4.31 | 3.92 | 3.56 |
| -27B/U | KN-97-01 | AA | .... | 3.28 | 2.73 | 2.28 | 2.07 | 1.88 | UG-680A/U | KN-74-04 | R | .... | 2.53 | 2.11 | 1.76 | 1.61 | 1.46 |
| -27C/U | KN-98-01 | AA | .... | 2.88 | 2.40 | 2.00 | 1.82 | 1.65 | MX-913/U | KN-81-03 | CC | .... | .72 | .59 | .50 | .45 | .41 |
| -28A/U | KN-94-04 | TA | .... | 3.71 | 3.09 | 2.57 | 2.34 | 2.13 | UG-941A/U | KN-54-10 | P | j | 2.64 | 2.20 | 1.84 | 1.67 | 1.52 |
| -29B/U | KN-97-03 | A | .... | 1.85 | 1.54 | 1.28 | 1.17 | 1.06 | UG-941B/U | KN-57-06 | P | k | 2.56 | 2.13 | 1.78 | 1.62 | 1.47 |
| -30/U | KN-91-03 | BA | .... | 4.83 | 4.03 | 3.36 | 3.05 | 2.77 | UG-982/U | KN-51-14 | P | l | 7.21 | 6.01 | 5.01 | 4.55 | 4.14 |
| -30C/U | KN-98-02 | BA | .... | 3.88 | 3.23 | 2.70 | 2.45 | 2.23 | UG-997A/U | KN-74-03 | R | .... | 5.54 | 4.62 | 3.85 | 3.50 | 3.18 |
| -30D/U | KN-96-02 | BA | .... | 3.64 | 3.04 | 2.53 | 2.30 | 2.09 | UG-999A/U | KV-94-01 | LA | .... | 9.90 | 8.25 | 6.88 | 6.25 | 5.68 |
| -30E/U | KN-91-01 | BA | .... | 3.71 | 3.09 | 2.57 | 2.34 | 2.13 | UG-1095B/U | KN-17-06 | PJ | g | 2.78 | 2.32 | 1.94 | 1.76 | 1.60 |
| -57B/U | KN-97-11 | A | .... | 2.11 | 1.76 | 1.46 | 1.33 | 1.21 | UG-1185/U | KN-51-17 | P | c | 1.45 | 1.21 | 1.01 | .92 | .84 |
| -58/U | KN-71-01 | R | .... | 1.96 | 1.63 | 1.35 | 1.23 | 1.12 | UG-1185A/U | KN-54-14 | P | c | 1.57 | 1.31 | 1.09 | .99 | .90 |
| -58A/U | KN-74-01 | R | .... | 1.31 | 1.09 | .91 | .83 | .75 | UG-1186A/U | KN-34-08 | J | c | 1.89 | 1.57 | 1.31 | 1.19 | 1.08 |
| -83B/U | KN-97-04 | UA | .... | 2.50 | 2.09 | 1.74 | 1.58 | 1.44 | UG-1187A/U | KN-14-07 | PJ | c | 2.38 | 1.98 | 1.65 | 1.50 | 1.36 |

–plug; J–jack; PJ–panel jack; A–adapter; AA–angle adapter; TA–tee adapter; BA–bulkhead adapter; R–receptacle; UA–N to UHF apter; BJ–bulkhead jack; CC–cap and chain; LA–N to LC adapter. †a–5, 6, 21; b–5, 6, 21, 212; c–8, 9, 11, 213, 214; d–17, 218; e–14; 1; g–55, 58, 142, 223; h–59, 62, 71, 210; i–8, 11, 213; j–10, 12; k–8, 9, 10, 213, 214, 215; l–18, 219. #Prices on request.

## UHF SERIES

**equency Range:** To 200 MHz (with caution, to 500 MHz). **Rating:** 500 volts peak.

| ilitary umber | Kings Number | Description | Cable Size, RG- | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499* |
|---|---|---|---|---|---|---|---|---|
| -175/U | KU-91-02 | Reducing adapter | 58/U | $0.22 | $0.19 | $0.15 | $0.14 | $0.13 |
| -176/U | KU-91-03 | Reducing adapter | 59, 62, 71/U | .22 | .19 | .15 | .14 | .13 |
| -203/U | KU-51-04 | Plug | 55, 59, 62, 71/U | 1.73 | 1.44 | 1.20 | 1.09 | .99 |
| -239 | KU-71-02 | Receptacle | 8, 9, 10, 11, 12, 13, 63, 65/U | .77 | .64 | .53 | .48 | .44 |
| -258 | KU-91-05 | Female-female adapter | ............................ | 1.69 | 1.41 | 1.18 | 1.07 | .97 |
| -259 | KU-51-01 | Plug | 8, 9, 10, 11, 12, 13, 63, 65/U | .65 | .54 | .45 | .41 | .37 |
| -259A | KU-51-02 | Plug | 8, 9, 10, 11, 12, 13, 63, 65/U | 1.17 | .87 | .80 | .73 | .66 |
| -363/U | KU-91-06 | Female-female bulkhead adapter | ............................ | 2.99 | 2.50 | 2.08 | 1.89 | 1.72 |

## LC, MHV, QDS, PULSE, TWIN AND MISCELLANEOUS CONNECTORS

| Military Number | Kings Number | Series | Description | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499* |
|---|---|---|---|---|---|---|---|---|
| G-102/U | KU-51-03 | Twin | Plug for RG-22/U | $ 2.32 | $ 1.94 | $ 1.62 | $ 1.47 | $1.34 |
| G-103A/U | KU-71-08 | Twin | Receptacle for RG-22/U | 4.75 | 3.96 | 3.30 | 3.00 | 2.73 |
| G-154A/U | KV-54-04 | LC | Plug for RG-17, 18, 218, 219/U | 11.70 | 9.76 | 8.13 | 7.39 | 6.72 |
| G-180A/U | KV-54-01 | Pulse | Plug for RG-25, 26, 64, 77, 78, 88/U | # | # | # | # | # |
| G-259A/U | KV-94-06 | LC to HN | Adapter | 9.50 | 7.92 | 6.60 | 6.00 | 5.45 |
| G-271A/U | KV-94-05 | LC to N | Adapter | 9.61 | 8.01 | 6.68 | 6.07 | 5.52 |
| G-348A/U | KS-74-01 | Coax plug-in | Female quick-disconnect receptacle | 2.63 | 2.19 | 1.83 | 1.66 | 1.51 |
| G-352B/U | KV-77-01 | LC | Receptacle | 10.55 | 8.79 | 7.33 | 6.66 | 6.05 |
| G-421B/U | KU-57-01 | Twin | Plug for RG-22/U | 4.38 | 3.65 | 3.05 | 2.77 | 2.52 |
| G-422/U | KU-71-03 | Twin | Receptacle for RG-22/U | 5.79 | 4.82 | 4.02 | 3.65 | 3.32 |
| G-423B/U | KU-17-01 | Twin | Panel Jack | 5.79 | 4.82 | 4.02 | 3.65 | 3.32 |
| G-446A/U | KW-94-01 | X Band to N | Waveguide adapter | 50.18 | 41.82 | 34.85 | 31.68 | ........ |
| G-493A/U | KU-94-03 | Twin | Female-female adapter | 12.09 | 10.08 | 8.39 | 7.63 | 6.94 |
| G-693/U | KY-51-02 | SM | Plug for RG-122/U | 1.03 | .86 | .72 | .65 | .59 |
| G-931/U | KC-79-02 | MHV | Receptacle; rated 5 kV | 2.04 | 1.69 | 1.41 | 1.28 | 1.16 |
| G-932A/U | KV-54-05 | MHV | Plug for RG-59, 62, 71/U; rated 5 kV | 1.96 | 1.63 | 1.35 | 1.23 | 1.12 |
| G-972B/U | KS-17-02 | QDS | Panel jack for RG-8, 10, 213, 215/U | 5.72 | 4.76 | 3.97 | 3.61 | 3.28 |

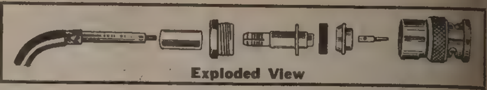
rices on request.

★LARGER QUANTITY PRICES ON REQUEST

# Kings K-Grips, MIL Connectors

## K-GRIP® CONNECTORS

A cost-reducing method for attaching RF connectors to coaxial cables. K-Grips are easily assembled—no highly skilled personnel required. Offer superior strength, ease of inspection or replacement, and uniformity of performance from unit to unit. Connector holds cable and dielectric firmly in proper position.


Exploded View

| Kings Number | For RG- | For Series | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499* |
|---|---|---|---|---|---|---|---|
| KS-89-04 | 8, 11, 213/U | BNC, C, HN, KG, N, QDS, End Seal | $0.74 | $0.62 | $0.52 | $0.47 | $0.43 |
| KS-89-05 | 58/U | BNC, C, KG, MHV, N, TNC, End Seal | .54 | .45 | .37 | .34 | .31 |
| KS-89-06 | 59, 62, 210/U | BNC, C, MHV, TNC, End Seal, Misc. | .54 | .45 | .37 | .34 | .31 |
| KS-89-17 | 55, 142, 223/U | BNC, C, KG, N, TNC, End Seal | .53 | .44 | .36 | .33 | .30 |
| KS-89-24 | 9, 214/U | BNC, C, HN, KG, N, QDS, End Seal | .80 | .67 | .56 | .51 | .46 |
| KS-89-31* | 58/U | BNC, C, KG, N, TNC, End Seal | .65 | .54 | .45 | .41 | .37 |
| KS-89-35* | 9, 214/U | BNC, C, HN, KG, N, QDS, End Seal | .85 | .70 | .58 | .53 | .48 |
| KS-89-46* | 115/U | HN, QN, N, C | 1.34 | 1.12 | .94 | .85 | .77 |

*Weatherproof.

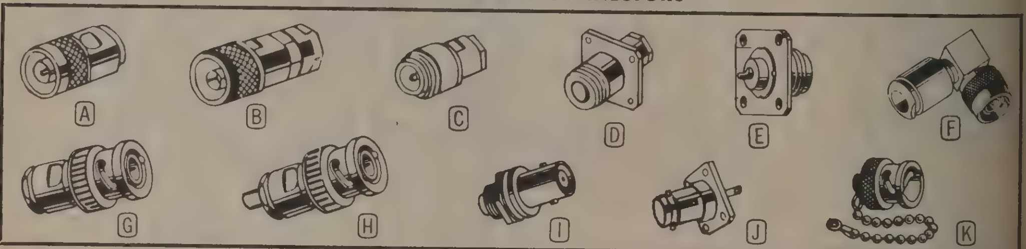
## K-GRIP JR.® CONNECTORS

| Kings Number | Series | Description | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499* |
|---|---|---|---|---|---|---|---|
| KA-39-17 | TNC | Jack for RG-58, 141/U | $1.44 | $1.20 | $1.00 | $0.91 | $0.83 |
| KA-39-18 | TNC | Jack for RG-55, 142/U | 1.45 | 1.21 | 1.01 | .92 | .84 |
| KA-39-19 | TNC | Jack for RG-59, 62/U | # | # | # | # | # |
| KA-39-20 | TNC | Jack for RG-71/U | # | # | # | # | # |
| KA-59-44 | TNC | Plug for RG-58, 141/U | 1.91 | 1.60 | 1.33 | 1.21 | 1.10 |
| KA-59-45 | TNC | Plug for RG-55, 142/U | 1.91 | 1.60 | 1.33 | 1.21 | 1.10 |
| KA-59-46 | TNC | Plug for RG-59, 62/U | 1.91 | 1.60 | 1.33 | 1.21 | 1.10 |
| KA-59-47 | TNC | Plug for RG-71/U | # | # | # | # | # |
| KC-39-26 | BNC | Jack for RG-58, 141/U | 1.33 | 1.11 | .92 | .84 | .76 |
| KC-39-27 | BNC | Jack for RG-55, 142/U | 1.33 | 1.11 | .92 | .84 | .76 |
| KC-39-28 | BNC | Jack for RG-59, 62/U | 1.33 | 1.11 | .92 | .84 | .76 |
| KC-39-29 | BNC | Jack for RG-71/U | 1.33 | 1.11 | .92 | .84 | .76 |
| KC-59-78 | BNC | Plug for RG-58, 141/U | 1.11 | .92 | .77 | .70 | .64 |
| KC-59-79 | BNC | Plug for RG-59, 62/U | $1.17 | $0.97 | $0.80 | $0.73 | $0.66 |
| KC-59-80 | BNC | Plug for RG-55, 142/U | 1.13 | .95 | .79 | .72 | .65 |
| KC-59-81 | BNC | Plug for RG-71/U | 1.13 | .95 | .79 | .72 | .65 |
| KC-59-98 | BNC | Plug for RG-58, 141/U | 1.08 | .90 | .75 | .68 | .62 |
| KD-39-11 | C | Jack for RG-8, 11/U | # | # | # | # | # |
| KD-39-12 | C | Jack for RG-9, 214/U | # | # | # | # | # |
| KD-59-51 | C | Plug for RG-8, 11/U | # | # | # | # | # |
| KD-59-52 | C | Plug for RG-9, 214/U | 3.18 | 2.65 | 2.21 | 2.01 | 1.83 |
| KN-39-30 | N | Jack for RG-8, 11/U | 2.04 | 1.69 | 1.41 | 1.28 | 1.16 |
| KN-39-31 | N | Jack for RG-9, 214/U | 2.04 | 1.69 | 1.41 | 1.28 | 1.16 |
| KN-59-67 | N | Plug for RG-8, 11/U | 1.84 | 1.53 | 1.28 | 1.16 | 1.05 |
| KN-59-68 | N | Jack for RG-9, 214/U | 1.84 | 1.53 | 1.28 | 1.16 | 1.05 |

*Weatherproof. #Prices on request.

**★LARGER QUANTITY PRICES ON REQUEST**

## MIL-C-39012 BNC CONNECTORS



| Military Number M-39012/ | Kings Number | Fig. | Description | Construction* | Cable Size, RG- | Net Each, Lots of 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01-0001 | KN-59-172 | A | Plug | C | 5, 5A, 5B, 6, 6A, 21, 21A, 143, 143A, 212, 222/U | $2.06 | $1.72 | $1.43 | $1.30 | $1.18 | $1.07 |
| 01-0002 | KN-59-173 | A | Plug | C | 8, 8A, 9, 9A, 9B, 11, 11A, 13A, 144, 149, 165, 213, 214, 216, 225/U | 1.90 | 1.58 | 1.32 | 1.20 | 1.09 | .99 |
| 01-0005 | KN-59-176 | A | Plug | C | | 1.89 | 1.57 | 1.31 | 1.19 | 1.08 | .98 |
| 01-0025 | KN-59-178 | B | Plug | C | 9, 9A, 9B, 10A, 13A, 214, 215, 216/U | 2.71 | 2.26 | 1.88 | 1.71 | 1.55 | 1.41 |
| 02-0002 | KN-39-67 | C | Jack | C | 8, 8A, 9, 9A, 9B, 11, 11A, 13A, 144, 149, 165, 213, 214, 216, 225/U | 2.11 | 1.76 | 1.46 | 1.33 | 1.21 | 1.10 |
| 02-0003 | KN-39-68 | C | Jack | C | | 2.07 | 1.73 | 1.44 | 1.31 | 1.19 | 1.08 |
| 02-0005 | KN-19-109 | D | Panel jack | C | | 2.42 | 2.01 | 1.68 | 1.53 | 1.39 | 1.26 |
| 03-0002 | KN-19-113 | .... | Bulkhead jack | C | | 3.91 | 3.26 | 2.72 | 2.49 | 2.26 | 2.05 |
| 04-0001 | KN-79-69 | .... | Bulkhead receptacle | P | .... | 3.43 | 2.86 | 2.38 | 2.17 | 1.97 | 1.79 |
| 04-0002 | KN-79-70 | E | Panel receptacle | C | .... | 1.38 | 1.15 | .96 | .87 | .79 | .72 |
| 05-0001 | KN-59-179 | F | Angle plug | C | 8, 8A, 9, 9A, 9B, 11, 11A, 13A, 144, 149, 165, 213, 214, 216, 225/U | 5.52 | 4.60 | 3.83 | 3.49 | 3.17 | 2.88 |
| 06-0002 | KD-59-119 | G | Plug | C | 8, 9, 213, 214 | 3.25 | 2.71 | 2.26 | 2.04 | 1.86 | 1.69 |
| 13-0001 | KD-79-13 | .... | Bulkhead receptacle | C | .... | 3.05 | 2.54 | 2.12 | 1.92 | 1.75 | 1.59 |
| 15-0002 | KD-59-130 | G | Plug | C | 55, 58, 223 | 3.36 | 2.80 | 2.33 | 2.12 | 1.93 | 1.75 |
| 16-0001 | KC-59-274 | G | Plug | C | 55, 55A, 55B, 58, 58A, 58C, 141, 141A, 142, 142A, 142B, 223/U | 1.03 | .86 | .72 | .65 | .59 | .54 |
| 16-0002 | KC-59-275 | G | Plug | C | 59, 59A, 59B, 62, 62A, 62B, 62C, 71, 71A, 71B, 210/U | 1.13 | .94 | .79 | .71 | .65 | .59 |
| 16-0004 | KC-59-195 | H | Plug | WKJ | 58, 58A, 58C, 141, 141A/U | 1.51 | 1.26 | 1.05 | .96 | .87 | .79 |
| 16-0005 | KC-59-218 | H | Plug | WKJ | 55A, 142, 142A, 223/U | 1.65 | 1.37 | 1.14 | 1.04 | .95 | .86 |
| 16-0010 | KC-59-228 | H | Plug | WKJ | 59, 59A, 59B, 210/U | 1.73 | 1.44 | 1.20 | 1.09 | .99 | .90 |
| 17-0001 | KC-39-75 | .... | Jack | C | 55, 55A, 55B, 58, 58A, 58C, 141, 141A, 142, 142A, 142B, 223/U | 1.23 | 1.02 | .85 | .77 | .70 | .64 |
| 19-0001 | KC-19-154 | I | Bulkhead jack | C | | 1.63 | 1.36 | 1.13 | 1.03 | .94 | .85 |
| 19-0002 | KC-19-155 | I | Bulkhead jack | C | 59, 59A, 59B, 62, 62A, 62B, 62C, 71, 71A, 71B, 210/U | 1.73 | 1.44 | 1.20 | 1.09 | .99 | .90 |
| 20-0001 | KC-59-245 | .... | Angle plug | C | 55, 55A, 55B, 58, 58A, 58C, 141, 141A, 142, 142A, 142B, 223/U | 3.28 | 2.73 | 2.28 | 2.07 | 1.88 | 1.71 |
| 21-0001 | KC-79-105 | .... | Bulkhead receptacle | C | .... | .90 | .75 | .63 | .57 | .52 | .47 |
| 21-0002 | KC-79-106 | .... | Bulkhead receptacle | C | .... | 1.00 | .83 | .69 | .63 | .57 | .52 |
| 21-0003 | KC-79-121 | .... | Bulkhead receptacle | C | .... | 1.15 | .96 | .80 | .73 | .66 | .60 |
| 22-0001 | KC-79-109 | J | Panel receptacle | .... | .... | 1.13 | .94 | .79 | .71 | .65 | .59 |
| 24-0001 | KC-79-017 | .... | Bulkhead receptacle | P | .... | 2.01 | 1.68 | 1.40 | 1.27 | 1.16 | 1.05 |
| 24-0002 | KC-79-108 | .... | Bulkhead receptacle | P | .... | 2.20 | 1.84 | 1.53 | 1.39 | 1.27 | 1.15 |
| 25-0006 | KC-89-87 | K | Cap, with bead chain, for jacks | .... | .... | .61 | .51 | .43 | .39 | .35 | .32 |

*C—conventional; P—pressurized; WKJ—weatherproof K-Grip Jr.

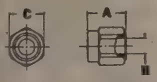
# Sealectro SRM® STAINLESS STEEL MINIATURE RF CONNECTORS

iature RF connectors of gold-plated stainless steel; meet or ed proposed MIL-C-39012 requirements. Offer high perform- e, low VSWR, and easy assembly. Captivated gold plated acts are half hard brass (male) or beryllium copper (female). lation is TFE fluorocarbon. **VSWR:** 1.05 plus .005 times frequency in GHz, from DC to 18 GHz. **Working Voltage:** 500 V rms at 60 Hz at sea level. **Contact Resistance:** 2.0 mV max. **Insulation Resistance:** 5000 megohms minimum. **Mating Torque:** 7–10 in.-lbs. **RF Leakage:** 90 dB minimum, 6–8 GHz. **Contact Durability:** 500 insertion and withdrawal cycles.

## SOLDER-TYPE CONNECTORS

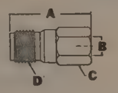
.141″ diameter semi-rigid cable.

### STRAIGHT CABLE PLUG



| Dim. | No. 55-607-3703-31 |
|---|---|
| A | .330 (approx.) |
| B | .142 dia. minimum |
| C | .312 hex |

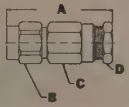
### STRAIGHT CABLE JACK



| Dim. | No. 55-608-3703-31 |
|---|---|
| A | .625 (approx.) |
| B | .142 dia. minimum |
| C | .250 hex |
| D | .250-36 UNS-2A |

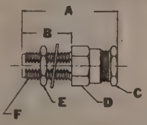
## CLAMP-TYPE CONNECTORS

### STRAIGHT CABLE PLUG



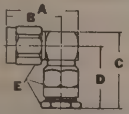
| Dim. | No. 50-607-XXXX-31* |
|---|---|
| A | .750 maximum |
| B | .312 hex |
| C | .312 hex |
| D | .312 hex |

### STRAIGHT BULKHEAD CABLE JACK



| Dim. | No. 50-610-XXXX-31* |
|---|---|
| A | .850 maximum |
| B | .450 |
| C | .312 hex |
| D | .312 hex |
| E | .312 hex |
| F | .250-36, UNS-2A |

### RIGHT ANGLE CABLE PLUG

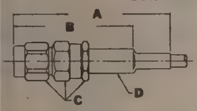


| Dim. | No. 50-611-XXXX-31* |
|---|---|
| A | .675 maximum |
| B | .535 maximum |
| C | .710 maximum |
| D | .562 maximum |
| E | .312 hex |

dd interfix to replace XXXX in part number, to indicate cable pe: **-3188-**, for RG-174/U, -179/U, -187/U, -188/U or -316/U le; **-3141-**, for RG-55/U, -58/U, -141/U, -142/U, or -223/U; 03-, for .141″ dia. semi-rigid cable.

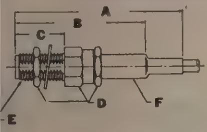
## CRIMP-TYPE CONNECTORS

### STRAIGHT CABLE PLUG



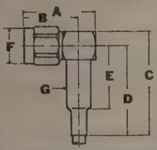
| Dim. | No. 50-624-XXXX-31† |
|---|---|
| A | 1.375 maximum |
| B | 1.125 maximum |
| C | .312 hex |
| D | Shrink tubing |

### STRAIGHT BULKHEAD CABLE JACK



| Dim. | No. 50-627-XXXX-31† |
|---|---|
| A | 1.500 maximum |
| B | 1.250 maximum |
| C | .450 |
| D | .312 hex |
| E | .250-36, UNS-2A |
| F | Shrink tubing |

### RIGHT ANGLE CABLE PLUG

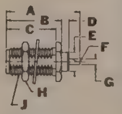


| Dim. | No. 50-628-XXXX-31† |
|---|---|
| A | .675 maximum |
| B | .535 maximum |
| C | .937 maximum |
| D | .812 maximum |
| E | .562 maximum |
| F | .312 hex |
| G | Shrink tubing |

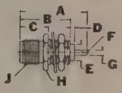
dd interfix to replace XXXX in part number, to indicate cable pe: **-3188-**, for RG-174/U, -179/U, -187/U, -188/U or -316/U; 141-, for RG-58/U or -141/U; **-3142-**, for RG-55/U, -142/U, 23/U.

## BULKHEAD JACK RECEPTACLES

### CAPTIVATED CONTACT



50-643-0000-31

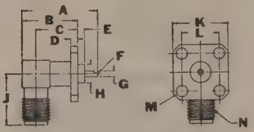


50-645-0000-31

| Dim. | No. 50-643-0000-31 | No. 50-645-0000-31 |
|---|---|---|
| A | .668 appr. | .668 appr. |
| B | .500 | .500 |
| C | .450 | .280 |
| D | .066 appr. | .066 appr. |
| E | .162 dia. | .162 dia. |
| F | .031 dia. | .031 dia. |
| G | .050 dia. | .050 dia. |
| H | .312 hex | .312 hex |
| J | .250-36 UNS-2A | |

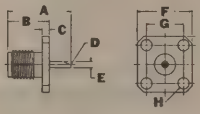
## RIGHT ANGLE PANEL JACK RECEPTACLE

### CAPTIVATED CONTACT

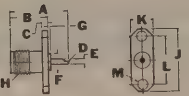


| Dim. | No. 50-647-4504-31 |
|---|---|
| A | .685 (approx.) |
| B | .505 |
| C | .380 |
| D | .065 |
| E | .062 (approx.) |
| F | .031 diameter |
| G | .050 diameter |
| H | .162 diameter |
| J | .458 |
| K | .500 |
| L | .340 |
| M | .102 dia. holes |
| N | .250-36 UNS-2A |

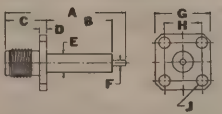
## FLANGE MOUNT PANEL JACK RECEPTACLES



| Dim. | No. 50-645-4504-31‡ or 50-645-4505-31§ |
|---|---|
| A | .575 (approx.) |
| B | .375 |
| C | .065 |
| D | .031 diameter |
| E | .050 diameter |
| F | .500 (typical) |
| G | .340 (typical) |
| H | .102 dia. holes |



| Dim. | No. 50-645-4524-31‡ or 50-645-4525-31§ |
|---|---|
| A | .575 (approx.) |
| B | .375 |
| C | .065 |
| D | .031 diameter |
| E | .050 diameter |
| F | .162 diameter |
| G | .020 |
| H | .250-36 UNS-2A |
| J | .625 |
| K | .223 |
| L | .481 |
| M | .102 dia. holes |



| Dim. | No. 50-645-4520-31‡ or 50-645-4521-31§ |
|---|---|
| A | 1.080 (approx.) |
| B | .590 (approx.) |
| C | .375 |
| D | .065 |
| E | .162 diameter |
| F | .050 diameter |
| G | .500 |
| H | .340 |
| J | .102 dia. holes |

‡Captivated contact type. §Removable contact type.

## QUANTITY PRICES

| Sealectro Part No. | Net Each, Lots of 1-9* | Sealectro Part No. | Net Each, Lots of 1-9* |
|---|---|---|---|
| 55-607-3703-31 | $2.01 | 50-627-3141-31 | $4.73 |
| 55-608-3703-31 | 2.21 | 50-627-3142-31 | 4.73 |
| 50-607-3188-31 | 4.70 | 50-628-3188-31 | 5.65 |
| 50-607-3141-31 | 4.70 | 50-628-3141-31 | 5.65 |
| 50-607-3703-31 | 4.84 | 50-628-3142-31 | 5.65 |
| 50-610-3188-31 | 4.98 | 50-643-0000-31 | 2.38 |
| 50-610-3141-31 | 4.98 | 50-645-0000-31 | 2.50 |
| 50-610-3703-31 | 5.11 | 50-647-4504-31 | 6.40 |
| 50-611-3188-31 | 7.05 | 50-645-4504-31 | 4.05 |
| 50-611-3141-31 | 7.05 | 50-645-4505-31 | 3.98 |
| 50-611-3703-31 | 7.25 | 50-645-4524-31 | 4.10 |
| 50-624-3188-31 | 4.46 | 50-645-4525-31 | 4.05 |
| 50-624-3141-31 | 4.46 | 50-645-4520-31 | 4.10 |
| 50-624-3142-31 | 4.46 | 50-645-4521-31 | 4.05 |
| 50-627-3188-31 | 4.73 | | |

*Larger Quantity Prices On Request.

# Sealectro PRESS-FIT® TRANSISTOR SOCKETS CONHEX® RF CONNECTORS

## TRANSISTOR HOLDERS AND SOCKETS

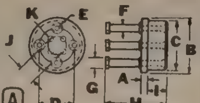
**Dimensions:** **A**, .040"; **B**, .325"; **C**, .290"; **D**, .200" (pitch circle); **E**, .030" dia. hole thru (typ); **F**, .045"; **G**, .065".

| Number | Fig. | Dimensions, In. | | | | Net per M Lots of 100 |
|---|---|---|---|---|---|---|
| | | H | I | J | K | |
| TC-404T | A | .362 | .115 | .100 | .035 | $365.50 |
| TC-400T | B | .362 | .115 | ..... | ..... | 297.50 |
| TC-303T | C | .362 | .115 | .100 | .035 | 323.00 |
| TC-300T | D | .362 | .115 | ..... | ..... | 255.00 |
| RTC-304T | E | .362 | .115 | .100 | .035 | 331.50 |
| RTC-303T | F | .362 | .115 | .100 | .035 | 331.50 |
| RTC-301T | G | .417 | .170 | ..... | ..... | 272.00 |
| RTC-300T | H | .362 | .115 | ..... | ..... | 263.50 |
| RTC-404T | I | .362 | .115 | .100 | .035 | 374.00 |
| RTC-400T | J | .362 | .115 | ..... | ..... | 306.00 |

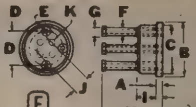
## TRANSISTOR SOCKETS

**Dimensions:** **A**, .422"; **B**, .063".

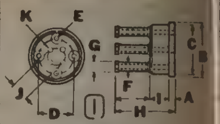
| Number | Fig. | Dimensions, In. | | | | Net per M Lots of 100 |
|---|---|---|---|---|---|---|
| | | C | D | E | F | |
| TS-365-1 | K | .301 | .281 | .256 | .100 | $221.00 |
| TS-366 | K | .301 | .398 | .373 | .200 | 272.00 |
| TS-461 | L | .301 | .398 | .373 | .200 | 297.50 |
| TS-461-1 | L | .301 | .281 | .256 | .100 | 246.50 |



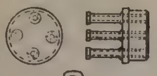
A



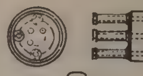
E



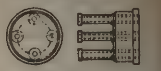
I



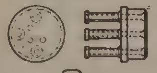
B



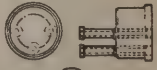
F



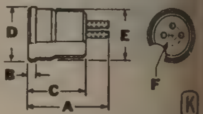
J



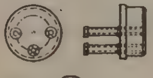
C



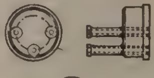
G



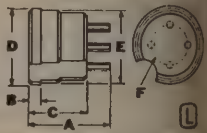
K



D



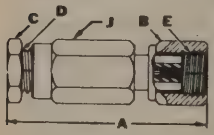
H

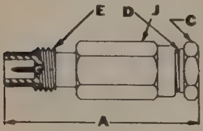


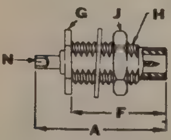
L

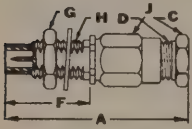
## SUBMINIATURE RF CONNECTORS★

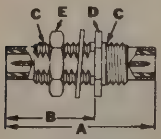
**Plating:** 0.0001" gold over 0.0001" copper. **Mating Connectors:** All screw-on (snap-on) plugs will mate with all screw-on (snap-on) jacks and receptacles of the same impedance rating.

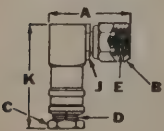












| Dim. | 50-ohms | 75-ohm |
|---|---|---|
| | 50-007-0000* | 50-107-0000† |
| A | 7/8‡ | 13/16‡ |
| B | 15/64 hex | 11/32 hex |
| C | 15/64 hex | 5/16 hex |
| D | 10-32, UNF-2A | 9/32-40, UNS-2A |
| E | 10-32, UNF-2B | 5/16-32, UNEF-2B |
| J | 15/64 hex | 5/16 hex |

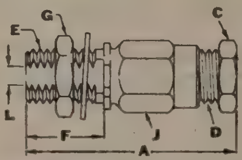
| Dim. | 50-008-0000* | 50-108-0000† |
|---|---|---|
| A | 27/32‡ | 51/64‡ |
| C | 15/64 hex | 5/16 hex |
| D | 10-32, UNF-2A | 9/32-40, UNS-2A |
| E | 10-32, UNF-2A | 5/16-32, UNEF-2A |
| J | 15/64 hex | 5/16 hex |

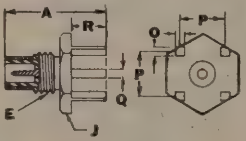
| Dim. | 50-043-0000 | 50-143-0000 |
|---|---|---|
| A | 19/32 | 19/32 |
| F | .426 | .426 |
| G | 1/4 hex | 3/8 hex |
| H | 10-32, UNF-2A | 5/16-32, UNEF-2A |
| J | 1/4 hex | 3/8 hex |
| N | .060 O.D. x .040 I.D. x .078 d. | .060 O.D. x .040 I.D. x .078 d. |

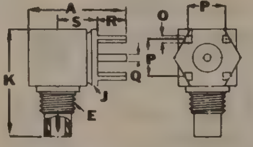
| Dim. | 50-010-0000* | 50-110-0000† |
|---|---|---|
| A | 7/8‡ | 7/8‡ |
| C | 15/64 hex | 5/16 hex |
| D | 10-32, UNF-2A | 9/32-40, UNS-2A |
| F | .425 | .425 |
| G | 1/4 hex | 3/8 hex |
| H | 10-32, UNF-2A | 5/16-32, UNEF-2A |
| J | 15/64 hex | 11/32 hex |

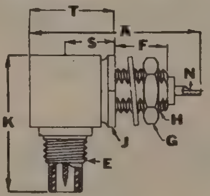
| Dim. | 50-075-0000 | 50-175-0000 |
|---|---|---|
| A | .671 | .671 |
| B | .397 | .397 |
| C | 10-32, UNF-2A | 5/16-32, UNEF-2A |
| D | 1/4 hex | 3/8 hex |
| E | 1/4 hex | 3/8 hex |

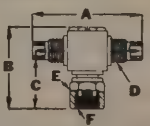
| Dim. | 50-011-0000* | 50-111-0000† |
|---|---|---|
| A | 39/64‡ | 23/32‡ |
| B | 15/64 hex | 11/32 hex |
| C | 15/64 hex | 5/16 hex |
| D | 10-32, UNF-2A | 9/32-40, UNS-2A |
| E | 10-32, UNF-2B | 5/16-32, UNEF-2B |
| J | 15/64 hex | 11/32 hex |
| K | 3/4‡ | 27/32‡ |

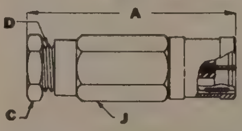












| Dim. | 50-ohm | 75-ohm |
|---|---|---|
| | 55-013-0000* | 55-113-0000† |
| A | 49/64‡ | 3/4‡ |
| C | 15/64 hex | 5/16 hex |
| D | 10-32, UNF-2A | 9/32-40, UNS-2A |
| E | 10-32, UNF-2A | 5/16-32, UNEF-2A |
| F | .277 | .277 |
| G | 1/4 hex | 3/8 hex |
| J | 15/64 hex | 11/32 hex |
| L | .067 dia. | .111 dia. |

| Dim. | 50-051-0000 | 50-151-0000 |
|---|---|---|
| A | .448 | .448 |
| E | 10-32, UNF-2A | 5/16-32, UNEF-2A |
| J | 5/16 hex | 3/8 hex |
| O | .040 (typ.) | .040 (typ.) |
| P | .200 | .200 |
| Q | .038 dia. | .038 dia. |
| R | .155 | .155 |

| Dim. | 50-053-0000 | 50-153-0000 |
|---|---|---|
| A | 17/32‡ | 19/32‡ |
| E | 10-32, UNF-2A | 5/16-32, UNEF-2A |
| J | 5/16 hex | 3/8 hex |
| K | 19/32 | 21/32 |
| O | .040 (typ.) | .040 (typ.) |
| P | .200 | .200 |
| Q | .038 dia. | .038 dia. |
| R | .155 | .155 |
| S | .215 | .247 |

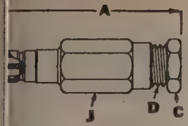
| Dim. | 50-047-0000 | 50-147-0000 |
|---|---|---|
| A | 3/4‡ | 13/16‡ |
| E | 10-32, UNF-2A | 5/16-32, UNEF-2A |
| F | .228 | .228 |
| G | 1/4 hex | 3/8 hex |
| H | 10-32, UNF-2A | 5/16-32, UNEF-2A |
| J | 5/16 hex | 3/8 hex |
| K | 19/32 | 21/32 |
| N | .038 O.D. x .025 I.D. x .078 d. | .038 O.D. x .025 I.D. x .078 d. |
| S | .215 | .247 |
| T | .372 | .435 |

| Dim. | 50-085-0000 | 50-185-0000 |
|---|---|---|
| A | .860 | .923 |
| B | 21/32‡ | 23/32‡ |
| C | 15/32‡ | 1/2‡ |
| D | 10-32, UNF-2A | 5/16-32, UNEF-2A |
| E | 15/64 hex | 11/32 hex |
| F | 10-32, UNF-2B | 5/16-32, UNEF-2B |

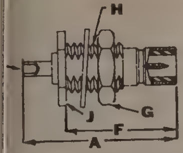
| Dim. | 51-007-0000* | 51-107-0000† |
|---|---|---|
| A | 7/8‡ | 27/32‡ |
| C | 15/64 hex | 5/16 hex |
| D | 10-32, UNF-2A | 9/32-40; UNS-2A |
| J | 15/64 hex | 11/32 hex |

*Designed for use with 50-ohm subminiature cables such as RG-188/U or RG-174/U. †Designed for use with many of the 75-ohm and 95-ohm subminiature cables. ‡Approximate. ★**See following page for Pricing and Quantity Discounts.**

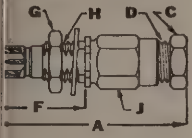
# Sealectro ConheX® SUBMINIATURE RF CONNECTORS



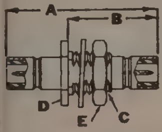
| Dim. | 50-ohm | 75-ohm |
|---|---|---|
| | **51-008-0000*** | **51-108-0000†** |
| A | 7/8‡ | 51/64‡ |
| C | 15/64 hex | 5/16 hex |
| D | 10-32, UNF-2A | 9/32-40, UNS-2A |
| J | 15/64 hex | 5/16 hex |



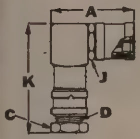
| | **51-043-0000** | **51-143-0000** |
|---|---|---|
| A | 19/32 | 19/32 |
| F | .426 | .426 |
| G | 1/4 hex | 3/8 hex |
| H | 10-32, UNF-2A | 5/16-32, UNEF-2A |
| J | 1/4 hex | 3/8 hex |
| N | .060 O.D. x .040 I.D. x .078 d. | .060 O.D. x .040 I.D. x .078 d. |



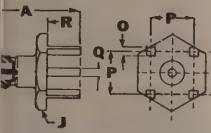
| | **51-010-0000*** | **51-110-0000†** |
|---|---|---|
| A | 7/8‡ | 7/8‡ |
| C | 15/64 hex | 5/16 hex |
| D | 10-32, UNF-2A | 9/32-40, UNS-2A |
| F | .425 | .425 |
| G | 1/4 hex | 3/8 hex |
| H | 10-32, UNF-2A | 5/16-32, UNEF-2A |
| J | 15/64 hex | 11/32 hex |



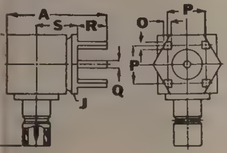
| | **51-075-0000** | **51-175-0000** |
|---|---|---|
| A | .671 | .671 |
| B | .430 | .430 |
| C | 10-32, UNF-2A | 5/16-32, UNEF-2A |
| D | 1/4 hex | 3/8 hex |
| E | 1/4 hex | 3/8 hex |



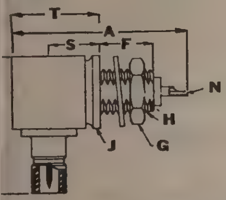
| | **51-011-0000*** | **51-111-0000†** |
|---|---|---|
| A | 19/32 | 11/16 |
| C | 15/64 hex | 5/16 hex |
| D | 10-32, UNF-2A | 9/32-40, UNS-2A |
| J | 15/64 hex | 11/32 hex |
| K | 3/4‡ | 27/32‡ |



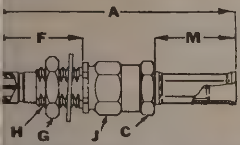
| | **51-051-0000** | **51-151-0000** |
|---|---|---|
| A | .448 | .448 |
| J | 5/16 hex | 3/8 hex |
| O | .040 (typ.) | .040 (typ.) |
| P | .200 | .200 |
| Q | .038 dia. | .038 dia. |
| R | .155 | .155 |



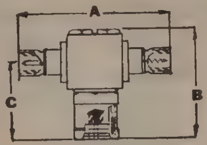
| | **51-053-0000** | **51-153-0000** |
|---|---|---|
| A | 17/32‡ | 19/32‡ |
| J | 5/16 hex | 3/8 hex |
| K | 19/32 | 21/32 |
| O | .040 (typ.) | .040 (typ.) |
| P | .200 | .200 |
| Q | .038 dia. | .038 dia. |
| R | .155 | .155 |
| S | .215 | .247 |



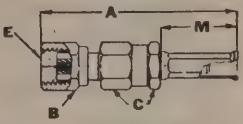
| | **51-047-0000** | **51-147-0000** |
|---|---|---|
| A | 3/4‡ | 13/16‡ |
| F | .228 | .228 |
| G | 1/4 hex | 3/8 hex |
| H | 10-32, UNEF-2A | 5/16-32, UNEF-2A |
| J | 5/16 hex | 3/8 hex |
| K | 19/32 | 21/32 |
| N | .038 O.D. x .025 I.D. x .078 d. | .038 O.D. x .025 I.D. x .078 d. |
| S | .215 | .247 |
| T | .372 | .435 |



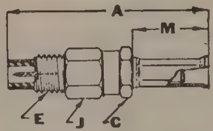
| | **51-027-0000*** | **51-127-0000†** |
|---|---|---|
| A | 1 1/8‡ | 1 5/32‡ |
| C | 7/32 hex | 5/16 hex |
| F | .425 | .425 |
| G | 1/4 hex | 3/8 hex |
| H | 10-32, UNF-2A | 5/16-32, UNEF-2A |
| J | 7/32 hex | 11/32 hex |
| M | 3/8 | 13/32 |



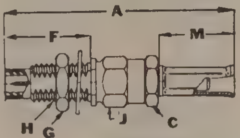
| Dim. | 50-ohm | 75-ohm |
|---|---|---|
| | **51-085-0000** | **51-185-0000** |
| A | .860 | .923 |
| B | 41/64 | 45/64 |
| C | .456 | .488 |



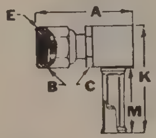
| | **50-024-0000*** | **50-124-0000†** |
|---|---|---|
| A | 1 1/32‡ | 1 1/16‡ |
| B | 15/64 hex | 11/32 hex |
| C | 7/32 hex | 5/16 hex |
| E | 10-32, UNF-2B | 5/16-32, UNEF-2B |
| M | 3/8 | 13/32 |



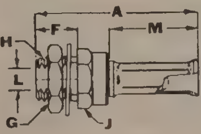
| | **50-025-0000*** | **50-125-0000†** |
|---|---|---|
| A | 63/64‡ | 1 1/64‡ |
| C | 7/32 hex | 5/16 hex |
| E | 10-32, UNF-2A | 5/16-32, UNEF-2A |
| J | 7/32 hex | 5/16 hex |
| M | 3/8 | 13/32 |



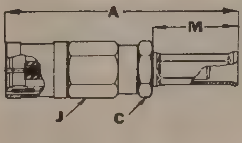
| | **50-027-0000*** | **50-127-0000†** |
|---|---|---|
| A | 1 1/8‡ | 1 5/32‡ |
| C | 7/32 hex | 5/16 hex |
| F | .425 | .425 |
| G | 1/4 hex | 3/8 hex |
| H | 10-32, UNF-2A | 5/16-32, UNEF-2A |
| J | 7/32‡ | 11/32 hex |
| M | 3/8 | 13/32 |



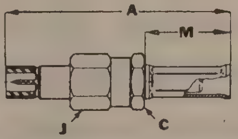
| | **50-028-0000*** | **50-128-0000†** |
|---|---|---|
| A | 39/64‡ | 21/32‡ |
| B | 15/64 hex | 11/32 hex |
| C | 15/64 hex | 11/32 hex |
| E | 10-32, UNF-2B | 5/16-32, UNEF-2B |
| K | 5/8‡ | 23/32‡ |
| M | 3/8 | 13/32 |



| | **55-031-0000*** | **55-131-0000†** |
|---|---|---|
| A | 47/64‡ | 51/64‡ |
| F | .228 | .228 |
| G | 1/4 hex | 3/8 hex |
| H | 10-32, UNF-2A | 5/16-32, UNEF-2A |
| J | 7/32 hex | 11/32 hex |
| L | .067 dia. | .111 dia. |
| M | 3/8 | 13/32 |

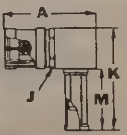


| | **51-024-0000*** | **51-124-0000†** |
|---|---|---|
| A | 1 1/64‡ | 1 3/64‡ |
| C | 7/32 hex | 5/16 hex |
| J | 7/32 hex | 11/32 hex |
| M | 3/8 | 13/32 |



| | **51-025-0000*** | **51-125-0000†** |
|---|---|---|
| A | 63/64‡ | 1 1/64‡ |
| C | 7/32 hex | 5/16 hex |
| J | 7/32 hex | 5/16 hex |
| M | 3/8 | 13/32 |

| | **51-028-0000*** | **51-128-0000†** |
|---|---|---|
| A | 19/32 | 41/64 |
| J | 15/64 hex | 11/32 hex |
| K | 5/8‡ | 23/32‡ |
| M | 3/8 | 13/32 |



*For use with any 50-ohm submin. cable (RG-188/U, RG-174/U, etc.). †For many 75- and 95-ohm subminiature cables. ‡Approx.

## CRIMP-ON ASSEMBLY TOOL

For fast easy assembly of ConheX Crimp-on connectors. Tool will not release until complete crimping operation is completed. Stop tolerance eliminates distortion of cable dielectric. Makes precise assembly with unskilled labor.

**Sealectro No. CT-9 Crimping Tool**—Net Each........................ $103.50

★**Quantity Discount:** 1–9, **Net**; 10–24, **5%**; 25–49, **15%**.

| Model No. | Net* | Model No. | Net* | Model No. | Net* | Model No. | Net* | Model No. | Net* | Model No. | Net* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| -007-0000 | $2.11 | 50-051-0000 | $1.62 | 50-127-0000 | $2.47 | 51-107-0000 | $2.38 | 51-053-0000 | $1.89 | 51-143-0000 | $1.02 |
| -008-0000 | 1.72 | 50-053-0000 | 1.89 | 50-128-0000 | 3.18 | 51-010-0000 | 2.07 | 51-075-0000 | 1.45 | 51-147-0000 | 3.57 |
| -010-0000 | 2.07 | 50-075-0000 | 1.46 | 50-143-0000 | 1.02 | 51-011-0000 | 3.37 | 51-085-0000 | 5.83 | 51-151-0000 | 2.52 |
| -011-0000 | 3.37 | 50-085-0000 | 5.83 | 50-147-0000 | 3.57 | 51-024-0000 | 2.07 | 51-108-0000 | 2.58 | 51-153-0000 | 3.37 |
| -024-0000 | 2.06 | 50-107-0000 | 2.38 | 50-151-0000 | 2.52 | 51-025-0000 | 1.68 | 51-110-0000 | 3.23 | 51-175-0000 | 3.23 |
| -025-0000 | 1.65 | 50-108-0000 | 2.58 | 50-153-0000 | 3.37 | 51-027-0000 | 2.16 | 51-111-0000 | 3.88 | 51-185-0000 | 6.48 |
| -027-0000 | 2.16 | 50-110-0000 | 3.23 | 50-175-0000 | 3.23 | 51-028-0000 | 2.77 | 51-124-0000 | 2.33 | 55-013-0000 | 1.65 |
| -028-0000 | 2.70 | 50-111-0000 | 3.88 | 50-185-0000 | 6.48 | 51-043-0000 | .97 | 51-125-0000 | 2.50 | 55-031-0000 | 1.50 |
| -043-0000 | .97 | 50-124-0000 | 2.33 | 51-007-0000 | 2.11 | 51-047-0000 | 2.28 | 51-127-0000 | 2.47 | 55-113-0000 | 2.28 |
| -047-0000 | 2.28 | 50-125-0000 | 2.52 | 51-008-0000 | 1.72 | 51-051-0000 | 1.62 | 51-128-0000 | 3.26 | 55-131-0000 | 1.79 |

# Sealectro MULTI-FUNCTION TIMER AND SEALECTROBOARDS™

## SEALECTRO LOW-COST MULTI-FUNCTION TIMER

- UL APPROVED
- ECONOMICAL, PRECISE PROGRAMMING
- COMPLETE FIELD ADJUSTABILITY
- SETS UP IN SECONDS WITH 100% REPEATABILITY
- UP TO 60 ON/OFF FUNCTIONS/REVOLUTION
- CONTACTS RATED 15 AMPS

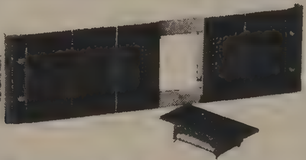
Unique low-cost timer offers complete field adjustability, 100% repeatability, plus multiple on-off functions. Single compact unit has no loose parts, needs no changing of cams. Sixty drum positions are precisely fabricated in at the factory, permitting up to sixty on-off functions in 360°. Indexed drum eliminates set-up guesswork, guarantees 100% repeatability when re-setting to a former program. Actuators are slid in or out of contact actuation area by hand; everything is stored right on the drum. In seconds, a complex timing program with varying time dwells can be set up. Can easily be set up as a pulse generator, supplying precisely timed pulses in various groups. Contacts rated 15 amps. **Size:** $2\frac{1}{8}$" w. x $2\frac{21}{64}$" d. x $3\frac{15}{64}$" h. overall. Four mounting holes, spaced $1\frac{1}{16}$" x $2\frac{5}{64}$".

Standard SealectroTimer has 1 rpm drive. Timers with 1 rph an 1 rpd drives available on special order. **Write for prices.**
**Sealectro No. 095-0166-500**—Single 15-amp SPDT contact wit 1 rpm motor. Net Each ........................... **$14.4**
**Sealectro No. 095-0266-500**—Two 15-amp SPDT contacts wit 1 rpm motor. Net Each ........................... **$20.0**
**Sealectro No. 923-019-5009***—Actuator insertion tool with 10 cam type actuators. Available in black, red, blue, and white. Net Each ........................... **$6.6**
**Sealectro No. 918-090-0059***—Point to point actuators, (no tool) 100 pieces per bag. Available in black, red, blue, and white. Net per 1000 ........................... **$70.0**
*White actuator to be used with the part no. shown.

The SealectroTimer can be used as a clock to pulse a steppin programmer. With 1 rpm drive, a single actuator will pulse th master program 1 step per minute, or 1 revolution per hour If two actuators are placed 180° apart, the pulse rate become two per minute, or one revolution per 30 minutes on the maste programmer. With four actuators, the master is driven at on revolution per 15 minutes. Also, the spacing of the actuator permits variable time dwells on various programs on master unit The two-contact model provides self-homing, whereby the secon contact set is used to control the motor circuit. The program can be set up so the drum can be stopped at any spot, remainin there until an override signal is introduced.

Two types of actuators are available (specify when ordering) **Bridging** type actuator cams the contact between adjacent grooves holding contact closed. For use in circuits requiring an ON position over any time from 1 to 60 seconds (1 rpm drive). May be grouped in various combinations, providing various time dwells within one revolution of the drum. **Non-bridging** actuator permits generation of up to sixty pulses in one revolution, grouped in any manner. Contact drops out between each adjacent drum position.

## SEALECTROBOARD™ PROGRAMMING BOARDS



Build your own programming systems with 'off-the-shelf' standard components. **Size:** $19\frac{1}{4}$" x $5\frac{7}{32}$".

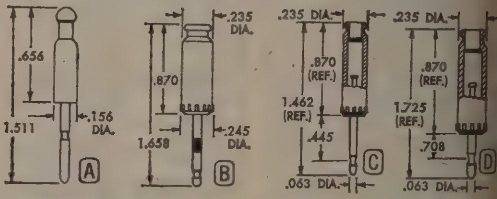
**1. Module Rail:** Designed for mounting on standard 19" relay racks. Offset is provided for flush panel installation. Mounting holes are provided for any combination (up to 6) of blank panels and Sealectroboard modules.
**Sealectro No. 710-2001**—Net Each, Lots 1–24 .......... **$3.88**

**2. Blank Panel:** Fills in unused width. May be used for mounting other components or associated equipment. Blank plastic with white filler for engraving.
**Sealectro No. 780-10600**—Net Each, Lots 1–24 .......... **$1.77**

**3. Side Plate:** Provides end dressing.
**Sealectro No. 708-70005**—Net Each, Lots 1–24 .......... **1.23**

**4. Matrix Module:** 10 x 10 hole Sealectroboard module with bussed upper and lower contacts. Same width as that of blank panels and thus may be added at any time by merely replacing blank panels. Features terminals which are combination solder and clip-on types. Contact strips are silver plated.
**Sealectro No. 0701-0106-00**—Net Each, Lots 1–6 ...... **$25.40**

## SEALECTROBOARD PINS



**Shorting Pins (Fig. A):** Available in 10 standard E.I.A. colors for program or function coding.
**Sealectro No. 0772-002**—Net per 1000, Lots 1–249 ... **$120.00**

**Component Holders (Fig. B):** Accommodate components, such as diodes, resistors, with dimensions not exceeding $\frac{3}{8}$" l. x $\frac{1}{8}$" d. overall and with leads #23 AWG max., 1" min. length. For special applications, units are available to house a variety of components including potentiometers, miniature lamps or relays.
**Sealectro No. 0762-000**—Net per 1000, Lots 1–249 ... **$510.00**

**Wireable Pins:** Provides a means of shorting pin programming with the capacity of connecting external circuitry to Sealectroboards including test equipment and function generators.
**Sealectro No. 0771-005 (Fig. C)**—Net per 1000 ...... **$274.00**
**Sealectro No. 0772-006 (Fig. D)**—Net per 1000 ...... **274.00**

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FOR INDUSTRIAL ELECTRONIC PARTS AND EQUIPMENT.

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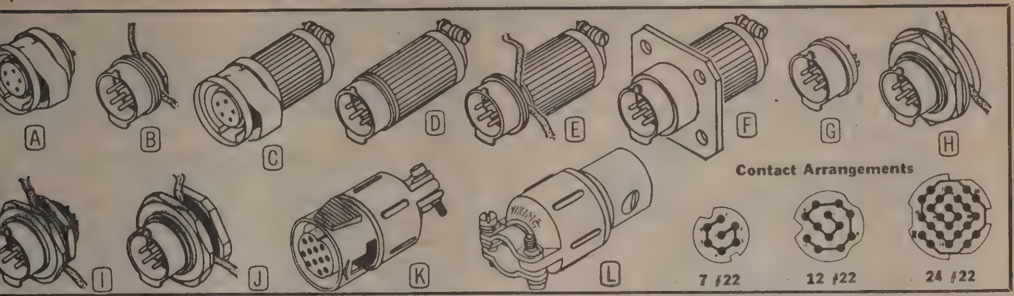
MANUFACTURER-COMPETITIVE PRICING IN MOST INSTANCES.
CALL FOR QUOTATIONS ON YOUR REQUIREMENTS.

**VIKING INDUSTRIES INC.**

# MINIATURE CIRCULAR CONNECTORS AND RECEPTACLES



## SNAP-LOCK NON-ENVIRONMENTAL CONNECTORS

k-disconnect, positive locking connectors with polarized ng. Diallyl phthalate insulators with closed entry socket acts, .00003″ gold plated. Plugs are nickel plated aluminum; ptacles are passivated stainless steel. For plugs that require l or potting sleeve, (see listings). **Current Rating:** 7.5 amps. **e Size:** #18 AWG. **Electrical Continuity:** 5 to 2000 Hz 0G shock. **Mounting:** Plugs are cable type; receptacles are t panel mounting. **Number of Contacts:** Available with 3 to ontacts, solder pot terminals.

### LE MOUNTING PLUGS WITH SOCKET CONTACTS (FIG. A)

| Viking umber | No. Contacts | Dia. | Series | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| /4CE6 | 3 | .56″ | 4A | $ 7.92 | $ 6.02 | $ 5.26 | $4.60 | $4.08 |
| /4CE6 | 5 | .56″ | 4A | 8.50 | 6.46 | 5.64 | 4.94 | 4.38 |
| /4CE6 | 7 | .56″ | 4A | 9.12 | 6.93 | 6.05 | 5.30 | 4.70 |
| /2CE6 | 6 | .81″ | 7 | 9.66 | 7.34 | 6.41 | 5.61 | 4.98 |
| /2CE6 | 9 | .81″ | 7 | 10.24 | 7.78 | 6.79 | 5.95 | 5.28 |
| 3/2CE6 | 13 | 1.06″ | 13 | 15.44 | 11.74 | 10.24 | 8.97 | 7.96 |
| 9/2CE6 | 19 | 1.06″ | 13 | 17.26 | 13.12 | 11.45 | 10.03 | 8.90 |

### NEL MOUNTING RECEPTACLES, PIN CONTACTS (FIG. B)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| /4AB13 | 3 | .50″ | 4A | $ 9.45 | $ 7.19 | $ 6.27 | $5.49 | $4.87 |
| /4AB13 | 5 | .50″ | 4A | 9.87 | 7.50 | 6.54 | 5.73 | 5.09 |
| /4AB13 | 7 | .50″ | 4A | 10.28 | 7.81 | 6.82 | 5.97 | 5.30 |
| /2AA13 | 6 | .72″ | 7 | 11.56 | 8.79 | 7.67 | 6.72 | 5.96 |
| /2AD13 | 9 | .72″ | 7 | 12.18 | 9.26 | 8.08 | 7.08 | 6.28 |
| 13/2AA13 | 13 | .96″ | 13 | 18.17 | 13.81 | 12.05 | 10.56 | 9.37 |
| 19/2AA13 | 19 | .96″ | 19 | 19.41 | 14.75 | 12.87 | 11.28 | 10.01 |

### HOODS WITH CABLE CLAMP (NOT ILLUS.)

kel plated, machined aluminum; for cable plugs.

| Viking Number | Cable Opening | For Series | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|
| /16C6 | .26″ | 4A | $2.31 | $1.75 | $1.53 | $1.34 | $1.19 |
| /23C4 | .38″ | 7 | 3.09 | 2.35 | 2.05 | 1.80 | 1.59 |
| 3/62C5 | .56″ | 13 | 6.89 | 5.24 | 4.57 | 4.00 | 3.55 |

### PLASTIC POTTING HOODS (NOT ILLUS.)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| /16C10-2 | .68″ lg. | 4A | $0.28 | $0.21 | $0.19 | $0.16 | $0.14 |
| /23C6-1 | .81″ lg. | 7 | .28 | .21 | .19 | .16 | .14 |
| 13/62C4-1 | 1.25″ lg. | 13 | .28 | .21 | .19 | .16 | .14 |

## ORKOM COMMERCIAL CIRCULAR CONNECTORS

stic molded circular connector withstands 50G shock. Cable nps are nickel-plated aluminum. Copper alloy reversible conts, .00003″ gold plated; for #22-24 AWG stranded wire and are np, removable. **Current Rating:** 5.0 amps. **Operating Volt.:** 0 V rms at sea level. **Operating Temp.:** −55° C to 135° C.

### PLUG SHELL ASSEMBLY (FIG. K)

ntacts not included; order separately.

| Viking Number | No. Contacts | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 | 500 Up |
|---|---|---|---|---|---|---|---|
| KP7-100* | 7 | $1.88 | $1.46 | $1.27 | $1.17 | $1.08 | $1.00 |
| KP7-101 | 7 | .64 | .50 | .44 | .41 | .38 | .35 |
| KP12-100* | 12 | 1.96 | 1.52 | 1.33 | 1.22 | 1.13 | 1.04 |
| KP12-101 | 12 | 1.06 | .82 | .72 | .66 | .61 | .56 |
| KP24-100* | 24 | 2.76 | 2.13 | 1.85 | 1.69 | 1.56 | 1.44 |
| KP24-101 | 24 | 1.32 | 1.02 | .88 | .81 | .75 | .69 |

### RECEPTACLE SHELL ASSEMBLY (FIG. L)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| KR7-100* | 7 | $2.01 | $1.56 | $1.35 | $1.24 | $1.15 | $1.06 |
| KR7-101 | 7 | .77 | .60 | .52 | .48 | .45 | .41 |
| KR12-100* | 12 | 2.22 | 1.72 | 1.49 | 1.35 | 1.27 | 1.17 |
| KR12-101 | 12 | 1.06 | .82 | .72 | .66 | .61 | .56 |
| KR24-100* | 24 | 2.64 | 2.04 | 1.77 | 1.62 | 1.50 | 1.38 |
| KR24-101 | 24 | 1.19 | .92 | .80 | .73 | .68 | .62 |

ith backshell (plastic molded), all others without backshells.

### CONTACTS

| iking umber | Contacts Type | Net per 1000, Lots of 1000-4999 | 5000-9999 | 10000-24999 | 25000 Up |
|---|---|---|---|---|---|
| P-100 | Pin | $ 77.50 | $ 65.10 | $ 52.70 | $ 50.53 |
| S-100 | Socket | 162.50 | 136.50 | 110.50 | 105.95 |
| D-100 | Dummy | 62.50 | 52.50 | 42.50 | 40.75 |

### CONTACT INSERTION/EXTRACTION TOOL

**king Number TIE-100**—Tips stored in tool handle.
t Each, lot of 1–50 .............................. **$5.91**

## SNAP-E-LOCK ENVIRONMENTAL CONNECTORS

Same as non-environmental connectors, except waterproof at 15 psi pressure. Silicone gasket and grommet provide sealing and environmental class in mated position. Plugs have socket contacts; environmental receptacles and hermetically-sealed receptacles have gold plated pin contacts in three mounting types. Solder pot terminals on all models, except hermetics, are pierced terminals. With grommet, follower, short hood with cable clamp.

### CABLE MOUNTING PLUGS (FIG. C)

| Viking Number | No. Contacts | Dia. | Series | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|---|
| VP3/4CE15 | 3 | .56″ | 4A | $13.33 | $10.14 | $ 8.85 | $ 7.75 | $ 6.87 |
| VP5/4CE15 | 5 | .56″ | 4A | 13.91 | 10.58 | 9.23 | 8.08 | 7.17 |
| VP7/4CE15 | 7 | .56″ | 4A | 14.53 | 11.05 | 9.64 | 8.44 | 7.49 |
| VP6/2CE15 | 6 | .81″ | 7 | 16.39 | 12.46 | 10.87 | 9.52 | 8.45 |
| VP9/2CE15 | 9 | .81″ | 7 | 16.97 | 12.90 | 11.26 | 9.86 | 8.75 |
| VP13/2CE15 | 13 | 1.06″ | 13 | 25.81 | 19.62 | 17.12 | 15.00 | 13.31 |
| VP19/2CE15 | 19 | 1.06″ | 19 | 27.62 | 21.00 | 18.33 | 16.05 | 14.24 |

### CABLE MOUNTING RECEPTACLES (FIG. D)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| VR3/4AB15 | 3 | .50″ | 4A | $14.53 | $11.05 | $ 9.64 | $ 8.44 | $ 7.49 |
| VR5/4AB15 | 5 | .50″ | 4A | 14.95 | 11.36 | 9.91 | 8.68 | 7.71 |
| VR7/4AB15 | 7 | .50″ | 4A | 15.36 | 11.68 | 10.19 | 8.92 | 7.92 |
| VR6/2AA15 | 6 | .72″ | 7 | 17.96 | 13.65 | 11.91 | 10.44 | 9.26 |
| VR9/2AD15 | 9 | .72″ | 7 | 18.58 | 14.13 | 12.33 | 10.80 | 9.58 |
| VR13/2AA15 | 13 | .96″ | 13 | 28.20 | 21.44 | 18.71 | 16.39 | 14.54 |
| VR19/2AA15 | 19 | .96″ | 19 | 29.44 | 22.38 | 19.53 | 17.11 | 15.18 |

### FRONT PANEL MOUNTING RECEPTACLES (FIG. E)

For panels 1/16″ thick.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| VR3/4AB18 | 3 | .50″ | 4A | $15.15 | $11.52 | $10.05 | $ 8.80 | $ 7.81 |
| VR5/4AB18 | 5 | .50″ | 4A | 15.57 | 11.83 | 10.32 | 9.04 | 8.03 |
| VR7/4AB18 | 7 | .50″ | 4A | 15.98 | 12.15 | 10.60 | 9.28 | 8.24 |
| VR6/2AA18 | 6 | .72″ | 7 | 18.58 | 14.13 | 12.33 | 10.80 | 9.58 |
| VR9/2AD18 | 9 | .72″ | 7 | 19.20 | 14.60 | 12.74 | 11.16 | 9.90 |
| VR13/2AA18 | 13 | .96″ | 13 | 28.82 | 21.91 | 19.12 | 16.75 | 14.86 |

### REAR FLANGE MOUNTING RECEPTACLES (FIG. F)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| VR3/4AB25 | 3 | .50″ | 4A | $23.62 | $17.96 | $15.67 | $13.72 | $12.18 |
| VR5/4AB25 | 5 | .50″ | 4A | 24.03 | 18.27 | 15.94 | 13.96 | 12.39 |
| VR7/4AB25 | 7 | .50″ | 4A | 24.44 | 18.58 | 16.22 | 14.20 | 12.60 |
| VR6/2AA25 | 6 | .72″ | 7 | 27.67 | 21.03 | 18.35 | 16.08 | 14.27 |
| VR9/2AD25 | 9 | .72″ | 7 | 28.29 | 21.50 | 18.76 | 16.44 | 14.59 |
| VR13/2AA25 | 13 | .96″ | 13 | 39.77 | 30.23 | 26.38 | 23.11 | 20.51 |
| VR19/2AA25 | 19 | .96″ | 13 | 41.01 | 31.18 | 27.20 | 23.83 | 21.15 |

## SNAP-E-LOCK ENVIRONMENTAL HERMETIC SEAL RECEPTACLES

Pin contacts, for front or rear mounting. All types have inter-face gasket; panel gaskets except Model 15, solder mount.

### FRONT-MOUNTING SOLDER TYPE (FIG. G)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| VR3/4AG15 | 3 | .50″ | 4A | $12.37 | $ 9.42 | $ 8.17 | $ 7.17 | $ 6.33 |
| VR5/4AG15 | 5 | .50″ | 4A | 12.63 | 9.62 | 8.34 | 7.32 | 6.47 |
| VR7/4AG15 | 7 | .50″ | 4A | 12.90 | 9.83 | 8.52 | 7.48 | 6.61 |
| VR6/2AG15 | 6 | .72″ | 7 | 14.59 | 11.11 | 9.64 | 8.46 | 7.47 |
| VR9/2AG15 | 9 | .72″ | 7 | 14.99 | 11.42 | 9.90 | 8.69 | 7.68 |
| VR13/2AG15 | 13 | .96″ | 13 | 21.98 | 16.74 | 14.52 | 12.74 | 11.26 |
| VR19/2AG15 | 19 | .96″ | 13 | 22.78 | 17.35 | 15.05 | 13.20 | 11.67 |

### REAR-MOUNTING TYPE (FIG. H)

Combination screw and/or solder type.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| VR3/4AG11 | 3 | .50″ | 4A | $23.27 | $17.72 | $15.37 | $13.49 | $11.92 |
| VR5/4AG11 | 5 | .50″ | 4A | 23.54 | 17.93 | 15.55 | 13.64 | 12.06 |
| VR7/4AG11 | 7 | .50″ | 4A | 23.80 | 18.13 | 15.72 | 13.80 | 12.19 |
| VR6/2AG11 | 6 | .72″ | 7 | 25.05 | 19.08 | 16.55 | 14.52 | 12.83 |
| VR9/2AG11 | 9 | .72″ | 7 | 25.45 | 19.39 | 16.81 | 14.75 | 13.04 |
| VR13/2AG11 | 13 | .96″ | 13 | 32.97 | 25.11 | 21.78 | 19.11 | 16.89 |
| VR19/2AG11 | 19 | .96″ | 13 | 33.77 | 25.73 | 22.31 | 19.58 | 17.30 |

### FRONT-MOUNTING SCREW TYPE (FIG. I)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| VR3/4AG17 | 3 | .50″ | 4A | $15.39 | $11.62 | $10.08 | $ 8.84 | $ 7.82 |
| VR5/4AG17 | 5 | .50″ | 4A | 15.66 | 11.93 | 10.34 | 9.08 | 8.02 |
| VR7/4AG17 | 7 | .50″ | 4A | 15.93 | 12.13 | 10.52 | 9.23 | 8.16 |
| VR6/2AG17 | 6 | .72″ | 7 | 20.02 | 15.25 | 13.23 | 11.61 | 10.26 |
| VR9/2AG17 | 9 | .72″ | 7 | 20.42 | 15.56 | 13.49 | 11.84 | 10.46 |
| VR13/2AG17 | 13 | .96″ | 13 | 30.92 | 23.56 | 20.43 | 17.93 | 15.84 |
| VR19/2AG17 | 19 | .96″ | 13 | 31.72 | 24.17 | 20.96 | 18.39 | 16.25 |

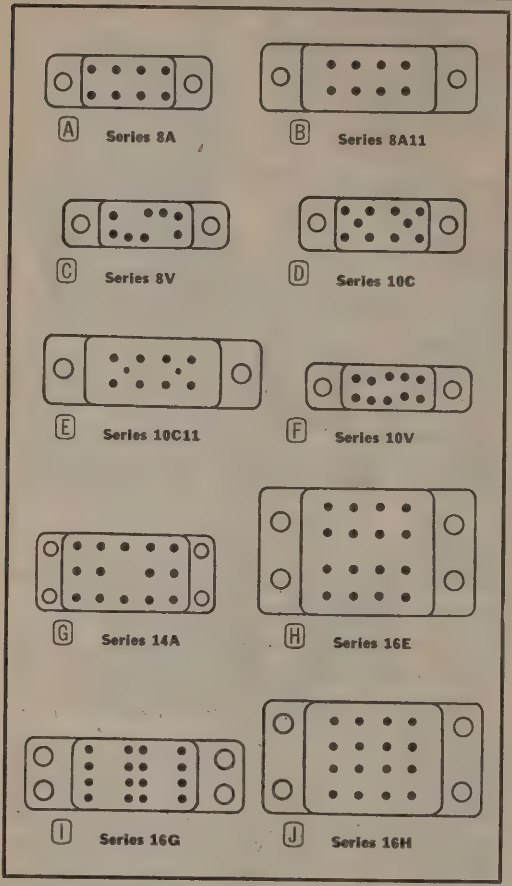
### REAR-MOUNTING SCREW TYPE (FIG. J)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| VR3/4AG19 | 3 | .50″ | 4A | $18.02 | $13.72 | $11.90 | $10.44 | $ 9.23 |
| VR5/4AG19 | 5 | .50″ | 4A | 18.28 | 13.93 | 12.08 | 10.60 | 9.37 |
| VR7/4AG19 | 7 | .50″ | 4A | 18.42 | 14.03 | 12.17 | 10.68 | 9.43 |
| VR6/2AG19 | 6 | .72″ | 7 | 23.40 | 17.83 | 15.46 | 13.57 | 11.99 |
| VR9/2AG19 | 9 | .72″ | 7 | 23.80 | 18.13 | 15.72 | 13.80 | 12.19 |
| VR13/2AG19 | 13 | .96″ | 13 | 33.59 | 25.59 | 22.19 | 19.47 | 17.21 |
| VR19/2AG19 | 19 | .96″ | 13 | 34.39 | 26.20 | 22.72 | 19.94 | 17.62 |

**VIKING INDUSTRIES INC.**

# Miniature Relay Sockets

Military quality relay sockets are available in three mounting styles: Threaded insert for below-chassis mounting; thru-hole for below-chassis mounting; or molded-in threaded insert and stud for above-chassis mounting with flange-mounted relays. Diallyl phthalate insulator for use at voltages up to 180 VDC. Stainless steel hardware; solder pot terminals take #20 AWG thru #16 AWG wire. Available with 8, 10, 14 or 16 contacts in a variety of patterns. Write for information and prices on relay sockets with crimp-removable contacts.



## 8-CONTACT RELAY SOCKETS

### SERIES 8A (FIG. A)

Eight contacts with .200″ grid, 1.062″ mounting centers. Pin diameter, .031″. Stud and insert are #4-40; thru holes are .125″ dia.

| Viking Number | Mounting Type | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|
| VB8/1DA1 | Thd. insert | $3.54 | $2.70 | $2.36 | $2.11 | $1.91 |
| VB8/1DA8 | Insert/stud | 3.88 | 2.96 | 2.59 | 2.31 | 2.10 |
| VB8/1DA3 | Thru-hole | 2.93 | 2.24 | 1.95 | 1.74 | 1.58 |

### SERIES 8A11 (FIG. B)

Eight contacts with .200″ grid, 1.406″ mounting centers. Pin diameter: For .031″, specify **D**; .050″, specify **E** in place of asterisk. Stud and insert are #6-32; thru holes are .150″ dia.

| Viking Number | Mounting Type | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|
| VB8/1*A11-41 | Thd. insert | $3.84 | $2.93 | $2.56 | $2.29 | $2.08 |
| VB8/1*A11-45 | Insert/stud | 4.68 | 3.57 | 3.12 | 2.79 | 2.53 |
| VB8/1*A11-43 | Thru-hole | 2.93 | 2.24 | 1.95 | 1.74 | 1.58 |

### SERIES 8V (FIG. C)

Eight contacts in offset "S" pattern with 1.062″ mounting centers. Pin diameter, .031″ only. Studs and inserts are #4-40 thd.; thru holes are .125″ dia.

| Viking Number | Mounting Type | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|
| VB8/1DV1 | Thd. insert | $3.54 | $2.70 | $2.36 | $2.11 | $1.91 |
| VB8/1DV8 | Insert/stud | 3.88 | 2.96 | 2.59 | 2.31 | 2.10 |
| VB8/1DV3 | Thru-hole | 2.93 | 2.24 | 1.95 | 1.74 | 1.58 |

## 10-CONTACT RELAY SOCKETS

### SERIES 10C (FIG. D)

Ten contacts on .200″ grid with center contacts on diagonals; 1.062″ mounting centers. Pin diameter, .031″ only. Studs and inserts are #4-40 thd.; thru holes are .125″ dia.

| Viking Number | Mounting Type | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|
| VB10/1DC1 | Thd. insert | $4.15 | $3.17 | $2.76 | $2.47 | $2.24 |
| VB10/1DC8 | Insert/stud | 4.49 | 3.43 | 2.99 | 2.67 | 2.43 |
| VB10/1DC3 | Thru-hole | 3.54 | 2.70 | 2.36 | 2.11 | 1.91 |

### SERIES 10C11 (FIG. E)

Ten contacts on .200″ grid with center contacts on diagonals; 1.406″ mounting centers. Eight outside contacts, .050″ diameter; two center contacts, .020″ diameter. Studs and inserts are #6-32 thd.; thru holes are .150″ dia.

| Viking Number | Mounting Type | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|
| VB10/1UWC11-41 | Thd. insert | $4.83 | $3.69 | $3.22 | $2.88 | $2.61 |
| VB10/1UWC11-45 | Insert/stud | 5.67 | 4.33 | 3.78 | 3.38 | 3.06 |
| VB10/1UWC11-43 | Thru-hole | 3.92 | 2.99 | 2.61 | 2.33 | 2.12 |

### SERIES 10V (FIG. F)

Ten contacts in double offset "S" pattern, with 1.062″ mounting centers. Pin diameter, .031″. Studs and inserts are #4-40; thru holes are .125″ dia.

| Viking Number | Mounting Type | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|
| VB10/1DV1 | Thd. insert | $4.15 | $3.17 | $2.76 | $2.47 | $2.24 |
| VB10/1DV8 | Insert/stud | 4.49 | 3.43 | 2.99 | 2.67 | 2.43 |
| VB10/1DV3 | Thru-hole | 3.54 | 2.70 | 2.36 | 2.11 | 1.91 |

## 14-CONTACT RELAY SOCKETS

### SERIES 14A (FIG. G)

Fourteen contacts on .200″ grid, 1.200 x .400″ mounting centers. Pin diameter, .031″. Studs and inserts are #2-56; thru holes are .096″ dia.

| Viking Number | Mounting Type | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|
| VB14/1DA17-21 | Thd. insert | $7.32 | $5.83 | $5.21 | $4.76 | $4.41 |
| VB14/1DA17-57 | Insert/stud | 9.00 | 7.11 | 6.33 | 5.76 | 5.32 |
| VB14/1DA17-23 | Thru-hole | 6.41 | 5.13 | 4.60 | 4.22 | 3.92 |

## 16-CONTACT RELAY SOCKETS

### SERIES 16E (FIG. H)

Sixteen contacts with double .200″ grid, .270″ apart; 1.406 x .500″ mounting centers. Pin diameter, .050″. Studs and inserts are #6-32; thru holes are .150″ dia.

| Viking Number | Mounting Type | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|
| VB16/1UE20-41 | Thd. insert | $ 8.81 | $6.96 | $6.20 | $5.65 | $5.22 |
| VB16/1UE20-45 | Insert/stud | 10.48 | 8.24 | 7.32 | 6.65 | 6.12 |
| VB16/1UE20-43 | Thru-hole | 6.98 | 5.56 | 4.98 | 4.56 | 4.23 |

### SERIES 16G (FIG. I)

Sixteen contacts in two patterns .125 x .300″, .125″ apart. Mounting centers, 1.400 x .300″. Pin diameter, .031″. Studs and inserts are #2-56; thru holes are .096″ dia.

| Viking Number | Mounting Type | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|
| VB16/1DG43-21 | Thd. insert | $7.89 | $6.26 | $5.59 | $5.10 | $4.72 |
| VB16/1DG43-57 | Insert/stud | 9.57 | 7.54 | 6.71 | 6.10 | 5.63 |
| VB16/1DG43-43 | Thru-hole | 6.98 | 5.56 | 4.98 | 4.56 | 4.23 |

### SERIES 16H (FIG. J)

Sixteen contacts with double .200″ grid on .156″ centers; 1.406 x .500″ mounting centers. Pin diameter, .050″. Studs and inserts are #6-32; thru holes are .150″ dia.

| Viking Number | Mounting Type | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|
| VB16/1EH20-41 | Thd. insert | $ 8.81 | $6.96 | $6.20 | $5.65 | $5.22 |
| VB16/1EH20-45 | Insert/stud | 10.48 | 8.24 | 7.32 | 6.65 | 6.12 |
| VB16/1EH20-43 | Thru-hole | 6.98 | 5.56 | 4.98 | 4.56 | 4.23 |

VIKING
INDUSTRIES
INC.

# Printed Circuit Connectors

## PRINTED CIRCUIT EDGE CONNECTORS

itary quality edge-board connectors for use with .062″ printed uit boards. Bifurcated bellows type contacts of beryllium per, plated .00003″ gold over nickel. Diallyl phthalate insu- rs per MIL-C-21097. Available with choice of four contact cings. **Operating Temperature:** To 400° F. **Mounting Holes:** o .125″ dia. **Terminals:** Pierced solder type, "Wire-Wrap", or solder/weld, as indicated.

### CROMINIATURE WITH .050″ CONTACT CENTERS (FIG. K)

rminals can be welded or dip soldered to board. Suffix **Z** indi- es 4 rows of terminals: 2 outer rows .375″ long; 2 inner rows 7″ long. Suffix **ZC** indicates 2 rows of terminals .375″ long. arizing key, No. 091-0042-000, available.

| Viking Number | No. of Terminals | No. of Rows | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|
| 25/1LZ5 | 50 | 4 | $ 7.56 | $ 6.97 | $ 6.55 | $5.20 | $4.62 |
| 40/1LZ5 | 80 | 4 | 9.67 | 8.92 | 8.38 | 6.66 | 5.91 |
| 55/1LZ5 | 110 | 4 | 11.83 | 10.91 | 10.25 | 8.15 | 7.23 |
| 64/1LZ5 | 128 | 4 | 12.96 | 11.95 | 11.23 | 8.92 | 7.67 |
| 25/1LZC5 | 50 | 2 | 7.56 | 6.97 | 6.55 | 5.20 | 4.62 |
| 40/1LZC5 | 80 | 2 | 9.67 | 8.92 | 8.38 | 6.66 | 5.91 |
| 55/1LZC5 | 110 | 2 | 11.83 | 10.91 | 10.25 | 8.15 | 7.23 |
| 64/1LZC5 | 128 | 2 | 12.96 | 11.95 | 11.23 | 8.92 | 7.67 |

### UBLE ROW WITH .100″ CONTACT CENTERS (NOT ILLUS.)

uble row of terminals on .100″ contact centers. Type N pierced minals are .240″ long, take three #26 AWG wires. Type V dip der terminals are .240″ long, fit .040″ min. dia. holes.

| Viking Number | No. of Terminals | Terminal Type | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|
| H10/1JN5 | 20 | Pierced | $3.70 | $2.94 | $2.64 | $2.37 | $2.20 |
| H15/1JN5 | 30 | Pierced | 4.45 | 3.52 | 3.14 | 2.80 | 2.59 |
| H25/1JN5 | 50 | Pierced | 5.99 | 4.69 | 4.16 | 3.70 | 3.41 |
| H30/1JN5 | 60 | Pierced | 6.74 | 5.27 | 4.67 | 4.14 | 3.81 |
| H40/1JN5 | 80 | Pierced | 8.23 | 6.41 | 5.67 | 5.01 | 4.61 |
| H50/1JN5 | 100 | Pierced | 9.73 | 7.55 | 6.67 | 5.89 | 5.40 |
| H10/1JV5 | 20 | Solder | 3.70 | 2.94 | 2.64 | 2.37 | 2.20 |
| H15/1JV5 | 30 | Solder | 4.45 | 3.52 | 3.14 | 2.80 | 2.59 |
| H25/1JV5 | 50 | Solder | 5.99 | 4.69 | 4.16 | 3.70 | 3.41 |
| H30/1JV5 | 60 | Solder | 6.74 | 5.27 | 4.67 | 4.14 | 3.81 |
| H40/1JV5 | 80 | Solder | 8.23 | 6.41 | 5.67 | 5.01 | 4.61 |
| H50/1JV5 | 100 | Solder | 9.73 | 7.55 | 6.67 | 5.89 | 5.40 |

### UBLE ROW WITH .125″ CONTACT CENTERS (NOT ILLUS.)

uble row of terminals with between-contact polarizing slots. pe N pierced terminals are .290″ long, take three #22 AWG res; Type V dip solder terminals are .260″ long. Polarizing key, . 091-0071-000, available.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| H18/1CN5 | 36 | Pierced | $5.82 | $4.57 | $4.05 | $3.61 | $3.32 |
| H22/1CN5 | 44 | Pierced | 6.57 | 5.14 | 4.55 | 4.04 | 3.72 |
| H28/1CN5 | 56 | Pierced | 7.65 | 5.96 | 5.28 | 4.67 | 4.30 |
| H31/1CN5 | 62 | Pierced | 8.15 | 6.35 | 5.61 | 4.97 | 4.56 |
| H36/1CN5 | 72 | Pierced | 9.06 | 7.05 | 6.22 | 5.50 | 5.05 |
| H18/1CV5 | 36 | Solder | 5.99 | 4.69 | 4.16 | 3.70 | 3.41 |
| H22/1CV5 | 44 | Solder | 6.74 | 5.27 | 4.67 | 4.14 | 3.81 |
| H28/1CV5 | 56 | Solder | 7.90 | 6.16 | 5.44 | 4.82 | 4.43 |
| H31/1CV5 | 62 | Solder | 8.44 | 6.57 | 5.80 | 5.14 | 4.72 |
| H36/1CV5 | 72 | Solder | 9.40 | 7.30 | 6.44 | 5.70 | 5.22 |

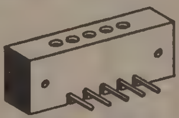
### 00″ CENTERS WITH "WIRE-WRAP" TERMINALS

uble row of terminals on .100″ contact centers with between- ntact polarizing slots. "Wire-Wrap*" terminals are .025″ uare, .660″ long. Polarizing key part number, 091-0060-000, ailable.

| Viking Number | No. of Terminals | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|
| 3VH15/1JND5 | 30 | $2.54 | $2.31 | $2.10 | $1.91 | $1.74 |
| 3VH18/1JND5 | 36 | 2.83 | 2.57 | 2.34 | 2.13 | 1.94 |
| 3VH22/1JND5 | 44 | 3.19 | 2.90 | 2.64 | 2.40 | 2.18 |
| 3VH25/1JND5 | 50 | 3.34 | 3.04 | 2.76 | 2.51 | 2.31 |
| 3VH28/1JND5 | 56 | 3.91 | 3.55 | 3.23 | 2.94 | 2.67 |
| 3VH30/1JND5 | 60 | 4.13 | 3.75 | 3.41 | 3.10 | 2.82 |
| 3VH36/1JND5 | 72 | 4.71 | 4.28 | 3.89 | 3.54 | 3.22 |
| 3VH40/1JND5 | 80 | 5.10 | 4.64 | 4.22 | 3.84 | 3.49 |
| 3VH43/1JND5 | 86 | 5.29 | 4.81 | 4.37 | 3.97 | 3.61 |
| 3VH50/1JND5 | 100 | 6.15 | 5.59 | 5.08 | 4.62 | 4.20 |

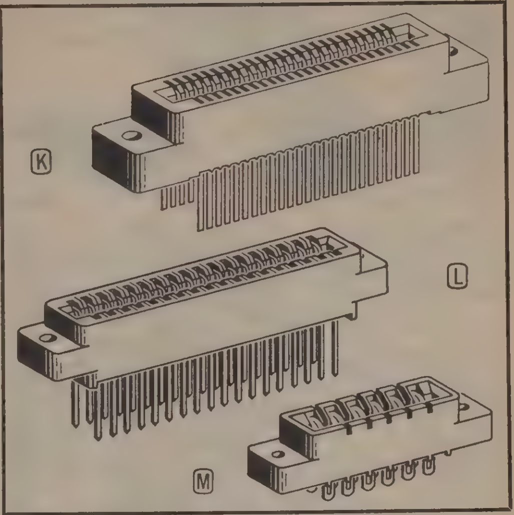
rademark of Gardner-Denver Company.

### TEST POINT CONNECTORS



or .080″ dia. printed circuit st probes. Copper alloy con- cts plated with .00003″ gold. iallyl phthalate insulators er MIL-C-21097.

| Viking Number | No. of Contacts | Contact Center Spacing | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|
| 00400-0080 | 1 | ........ | $ 1.41 | $ 1.08 | $ 0.94 | $ 0.82 | $0.75 |
| 00400-0087 | 5 | .156″ | 2.32 | 1.78 | 1.55 | 1.36 | 1.23 |
| 00400-0100 | 8 | .156″ | 3.20 | 2.44 | 2.14 | 1.87 | 1.70 |
| 00400-0141 | 37 | .100″ | 14.45 | 11.02 | 10.51 | 10.04 | 9.57 |
| 00400-0140 | 41 | .125″ | 18.68 | 14.01 | 12.37 | 10.74 | 9.57 |



### .125″ CENTERS WITH "WIRE-WRAP" TERMINALS (FIG. L)

Double row of terminals on .125″ contact centers with between-contact polarizing slots. "Wire-Wrap*" terminals are .025″ square, .560″ long. Polarizing key part number, 091-0060-000, available.

| Viking Number | No. of Terminals | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|
| 3VH15/1CND5 | 30 | $2.54 | $2.31 | $2.10 | $1.91 | $1.74 |
| 3VH18/1CND5 | 36 | 2.83 | 2.57 | 2.34 | 2.13 | 1.94 |
| 3VH22/1CND5 | 44 | 3.19 | 2.90 | 2.64 | 2.40 | 2.18 |
| 3VH28/1CND5 | 56 | 3.91 | 3.55 | 3.23 | 2.94 | 2.67 |
| 3VH30/1CND5 | 60 | 4.13 | 3.75 | 3.41 | 3.10 | 2.82 |
| 3VH31/1CND5 | 62 | 4.23 | 3.85 | 3.50 | 3.18 | 2.89 |
| 3VH35/1CND5 | 70 | 4.64 | 4.22 | 3.84 | 3.49 | 3.17 |
| 3VH40/1CND5 | 80 | 5.10 | 4.64 | 4.22 | 3.84 | 3.49 |
| 3VH50/1CND5 | 100 | 6.15 | 5.59 | 5.08 | 4.62 | 4.20 |

*Trademark of Gardner-Denver Company.

### SINGLE ROW WITH .156″ CONTACT CENTERS (NOT ILLUS.)

Single row of terminals on .156″ centers with between-contact polarizing slots. Type B pierced terminals are .220″ long, take three #22 AWG wires. Type K dip solder terminals are .220″ long, fit .051″ min. dia. holes. Polarizing key, No. 091-0026-000, available.

| Viking Number | No. of Terminals | Terminal Type | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|
| 2VH6/1AB5 | 6 | Pierced | $2.78 | $2.13 | $1.86 | $1.62 | $1.48 |
| 2VH10/1AB5 | 10 | Pierced | 2.99 | 2.28 | 2.00 | 1.74 | 1.59 |
| 2VH15/1AB5 | 15 | Pierced | 3.45 | 2.63 | 2.30 | 2.01 | 1.83 |
| 2VH18/1AB5 | 18 | Pierced | 4.24 | 3.24 | 2.83 | 2.47 | 2.25 |
| 2VH22/1AB5 | 22 | Pierced | 4.65 | 3.56 | 3.11 | 2.72 | 2.47 |
| 2VH6/1AK5 | 6 | Solder | 2.87 | 2.19 | 1.91 | 1.67 | 1.52 |
| 2VH10/1AK5 | 10 | Solder | 3.12 | 2.38 | 2.08 | 1.82 | 1.65 |
| 2VH15/1AK5 | 15 | Solder | 3.61 | 2.76 | 2.41 | 2.11 | 1.92 |
| 2VH18/1AK5 | 18 | Solder | 4.45 | 3.40 | 2.97 | 2.60 | 2.36 |
| 2VH22/1AK5 | 22 | Solder | 4.90 | 3.75 | 3.28 | 2.86 | 2.60 |

### DOUBLE ROW WITH .156″ CONTACT CENTERS (FIG. M)

Double row of terminals on .156″ contact centers, with between-contact polarizing slots. Type N pierced terminals are .220″ long, hold three #22 AWG wires; Type V dip solder terminals are .375″ long, fit .051″ minimum diameter holes. Polarizing key, No. 091-0024-000, available.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2VH6/1AN5 | 12 | Pierced | $1.87 | $1.43 | $1.25 | $1.09 | $0.99 |
| 2VH10/1AN5 | 20 | Pierced | 2.32 | 1.78 | 1.55 | 1.36 | 1.23 |
| 2VH15/1AN5 | 30 | Pierced | 2.95 | 2.25 | 1.97 | 1.72 | 1.56 |
| 2VH18/1AN5 | 36 | Pierced | 3.66 | 2.79 | 2.44 | 2.13 | 1.94 |
| 2VH22/1AN5 | 44 | Pierced | 3.95 | 3.02 | 2.64 | 2.30 | 2.09 |
| 2VH28/1AN5 | 56 | Pierced | 6.11 | 4.67 | 4.08 | 3.57 | 3.24 |
| 2VH36/1AN5 | 72 | Pierced | 7.98 | 6.10 | 5.33 | 4.66 | 4.24 |
| 2VH6/1AV5 | 12 | Solder | 2.24 | 1.71 | 1.50 | 1.31 | 1.19 |
| 2VH10/1AV5 | 20 | Solder | 2.91 | 2.22 | 1.94 | 1.70 | 1.54 |
| 2VH15/1AV5 | 30 | Solder | 3.70 | 2.83 | 2.47 | 2.16 | 1.96 |
| 2VH18/1AV5 | 36 | Solder | 4.36 | 3.33 | 2.91 | 2.55 | 2.32 |
| 2VH22/1AV5 | 44 | Solder | 4.99 | 3.81 | 3.33 | 2.91 | 2.65 |
| 2VH28/1AV5 | 56 | Solder | 7.40 | 5.66 | 4.94 | 4.32 | 3.93 |
| 2VH36/1AV5 | 72 | Solder | 8.36 | 6.39 | 5.58 | 4.88 | 4.44 |

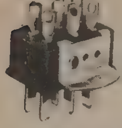
### 86-TERMINAL TYPE WITH .156″ CENTERS (NOT ILLUS.)

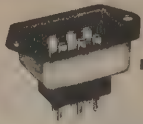
Double row of terminals on .156″ contact centers. Type N pierced terminals are .220″ long, take three #22 AWG wires. Type V dip solder terminals are .375″ long, fit .051″ min. dia. holes.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2VH43/1AN5 | 86 | Pierced | $ 8.81 | $6.74 | $5.89 | $5.15 | $4.68 |
| 2VH43/1AV5 | 86 | Solder | 10.73 | 8.20 | 7.17 | 6.26 | 5.70 |

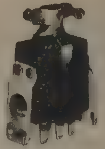
**Vernitron**

# BEAUPLUG® SERIES 3300 PLUGS AND SOCKETS

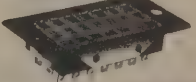

P-3306-8-AB*


P-3306-DB

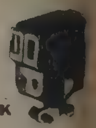
S-3321-CCT


P-3306-CCT-L

S-3306-8-AB*


S-3321-SB

P-3310-CCE


S-3306-CCT-K

Chassis mount and cable mount plugs and sockets, completely interchangeable with "Jones Type" Series 300 connectors. Meet or exceed UL Standard No. 498 with all contacts carrying rated current simultaneously; individual contacts rated 10 amps, 750 V rms. Bodies are molded of high grade phenolic. Male contacts are cadmium plated brass; female contacts are cadmium plated phosphor bronze. Molded black polypropylene backshell resists scuffing, abrasion, most acids and alkalis. Solder terminals are standard; others available. Hardware is bright electroplated steel. Deep and shallow brackets are baked black wrinkle. Contacts are polarized so only common sizes will mate.

### PLUGS WITH ANGLE BRACKETS

| Vernitron No. | Contacts | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
| P-3302-AB | 2 | $0.293 | $0.234 | $0.195 | $0.156 | $0.148 | $0.14 |
| P-3303-AB | 3 | .345 | .276 | .23 | .184 | .175 | .166 |
| P-3304-AB | 4 | .353 | .282 | .235 | .188 | .179 | .169 |
| P-3306-AB | 6 | .435 | .348 | .29 | .232 | .22 | .209 |
| P-3306-8-AB | 6* | .51 | .408 | .34 | .272 | .258 | .245 |
| P-3308-AB | 8 | .51 | .408 | .34 | .272 | .258 | .245 |
| P-3310-AB | 10 | .578 | .462 | .385 | .308 | .293 | .277 |
| P-3312-AB | 12 | .653 | .522 | .435 | .348 | .331 | .313 |
| P-3315-AB | 15 | .908 | .726 | .605 | .484 | .46 | .436 |
| P-3318-AB | 18 | 1.103 | .882 | .735 | .588 | .559 | .529 |
| P-3321-AB | 21 | 1.395 | 1.116 | .93 | .744 | .707 | .67 |
| P-3324-AB | 24 | 1.688 | 1.35 | 1.125 | .90 | .855 | .81 |
| P-3327-AB | 27 | 1.98 | 1.584 | 1.32 | 1.056 | 1.003 | .95 |
| P-3330-AB | 30 | 2.28 | 1.824 | 1.52 | 1.216 | 1.155 | 1.094 |
| P-3333-AB | 33 | 2.565 | 2.052 | 1.71 | 1.368 | 1.30 | 1.231 |

### PLUGS WITH DEEP BRACKETS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| P-3302-DB | 2 | $0.72 | $0.576 | $0.48 | $0.384 | $0.365 | $0.346 |
| P-3303-DB | 3 | .735 | .588 | .49 | .392 | .372 | .353 |
| P-3304-DB | 4 | .75 | .60 | .50 | .40 | .38 | .36 |
| P-3306-DB | 6 | .84 | .672 | .56 | .448 | .426 | .403 |
| P-3306-8-DB | 6* | .908 | .726 | .605 | .484 | .46 | .436 |
| P-3308-DB | 8 | .908 | .726 | .605 | .484 | .46 | .436 |
| P-3312-DB | 12 | 1.103 | .882 | .735 | .588 | .559 | .529 |
| P-3315-DB | 15 | 1.343 | 1.074 | .895 | .716 | .68 | .644 |
| P-3318-DB | 18 | 1.613 | 1.29 | 1.075 | .86 | .817 | .774 |
| P-3321-DB | 21 | 1.95 | 1.56 | 1.30 | 1.04 | .988 | .936 |
| P-3324-DB | 24 | 2.288 | 1.83 | 1.525 | 1.22 | 1.159 | 1.098 |
| P-3327-DB | 27 | 2.603 | 2.082 | 1.735 | 1.388 | 1.319 | 1.249 |
| P-3330-DB | 30 | 2.94 | 2.352 | 1.96 | 1.568 | 1.49 | 1.411 |
| P-3333-DB | 33 | 3.285 | 2.628 | 2.19 | 1.752 | 1.664 | 1.577 |

### PLUGS WITH SHALLOW BRACKETS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| P-3315-SB | 15 | $1.20 | $0.96 | $0.80 | $0.64 | $0.608 | $0.576 |
| P-3318-SB | 18 | 1.478 | 1.182 | .985 | .788 | .749 | .709 |
| P-3321-SB | 21 | 1.793 | 1.434 | 1.195 | .956 | .908 | .86 |
| P-3324-SB | 24 | 2.168 | 1.734 | 1.445 | 1.156 | 1.098 | 1.04 |
| P-3327-SB | 27 | 2.423 | 1.938 | 1.615 | 1.292 | 1.227 | 1.163 |
| P-3330-SB | 30 | 2.775 | 2.22 | 1.85 | 1.48 | 1.406 | 1.332 |
| P-3333-SB | 33 | 3.075 | 2.46 | 2.05 | 1.64 | 1.558 | 1.476 |

### PLUGS WITH CABLE CLAMP AT TOP

For plugs with cable clamp at end, change suffix -CCT to **-CCE**; prices are the same (not available with two contacts).

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| P-3302-CCT | 2 | $0.645 | $0.516 | $0.43 | $0.344 | $0.327 | $0.31 |
| P-3303-CCT | 3 | .683 | .546 | .455 | .364 | .346 | .328 |
| P-3304-CCT | 4 | .698 | .558 | .465 | .372 | .353 | .335 |
| P-3306-CCT | 6 | .78 | .624 | .52 | .416 | .395 | .374 |
| P-3306-8-CCT | 6* | .833 | .666 | .555 | .444 | .422 | .40 |
| P-3308-CCT | 8 | .833 | .666 | .555 | .444 | .422 | .40 |
| P-3310-CCT | 10 | .938 | .75 | .625 | .50 | .475 | .45 |
| P-3312-CCT | 12 | 1.028 | .822 | .685 | .548 | .521 | .493 |
| P-3315-CCT | 15 | 1.35 | 1.08 | .90 | .72 | .684 | .648 |
| P-3318-CCT | 18 | 1.59 | 1.272 | 1.06 | .848 | .806 | .763 |
| P-3321-CCT | 21 | 1.905 | 1.524 | 1.27 | 1.016 | .965 | .914 |
| P-3324-CCT | 24 | 2.22 | 1.776 | 1.48 | 1.184 | 1.125 | 1.066 |
| P-3327-CCT | 27 | 2.535 | 2.028 | 1.69 | 1.352 | 1.284 | 1.217 |
| P-3330-CCT | 30 | 2.91 | 2.328 | 1.94 | 1,552 | 1.474 | 1.397 |
| P-3333-CCT | 33 | 3.248 | 2.598 | 2.165 | 1.732 | 1.645 | 1.559 |

### PLUGS WITH CABLE CLAMP AT TOP, LATCH

For plugs with keeper instead of latch, change suffix -CCT-L to **-CCT-K**; prices are the same. Also available with cable clamp at end (suffix -CCE-K or -CCE-L) except 2-contact; prices the same.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| P-3302-CCT-L | 2 | $0.788 | $0.63 | $0.525 | $0.42 | $0.399 | $0.378 |
| P-3303-CCT-L | 3 | .825 | .66 | .55 | .44 | .418 | .396 |
| P-3304-CCT-L | 4 | .855 | .684 | .57 | .456 | .433 | .41 |
| P-3306-CCT-L | 6 | .93 | .744 | .62 | .496 | .471 | .446 |
| P-3306-8-CCT-L | 6* | .998 | .798 | .665 | .532 | .505 | .479 |
| P-3308-CCT-L | 8 | .998 | .798 | .665 | .532 | .505 | .479 |
| P-3310-CCT-L | 10 | 1.14 | .912 | .76 | .608 | .578 | .547 |
| P-3312-CCT-L | 12 | 1.208 | .966 | .805 | .644 | .612 | .58 |
| P-3315-CCT-L | 15 | 1.538 | 1.23 | 1.025 | .82 | .779 | .738 |
| P-3318-CCT-L | 18 | 1.815 | 1.452 | 1.21 | .968 | .92 | .871 |
| P-3321-CCT-L | 21 | 2.138 | 1.71 | 1.425 | 1.14 | 1.083 | 1.026 |
| P-3324-CCT-L | 24 | 2.498 | 1.998 | 1.665 | 1.332 | 1.265 | 1.199 |
| P-3327-CCT-L | 27 | 2.85 | 2.28 | 1.90 | 1.52 | 1.444 | 1.368 |
| P-3330-CCT-L | 30 | 3.173 | 2.538 | 2.115 | 1.692 | 1.607 | 1.523 |
| P-3333-CCT-L | 33 | 3.51 | 2.808 | 2.34 | 1.872 | 1.778 | 1.685 |

### SOCKETS WITH ANGLE BRACKETS

| Vernitron No. | Contacts | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-999 |
| S-3302-AB | 2 | $0.315 | $0.252 | $0.21 | $0.168 | $0.16 | $0.151 |
| S-3303-AB | 3 | .36 | .288 | .24 | .192 | .182 | .173 |
| S-3304-AB | 4 | .368 | .294 | .245 | .196 | .186 | .176 |
| S-3306-AB | 6 | .465 | .372 | .31 | .248 | .236 | .223 |
| S-3306-8-AB | 6* | .578 | .462 | .385 | .308 | .293 | .277 |
| S-3308-AB | 8 | .578 | .462 | .385 | .308 | .293 | .277 |
| S-3310-AB | 10 | .69 | .552 | .46 | .368 | .35 | .331 |
| S-3312-AB | 12 | .803 | .642 | .535 | .428 | .407 | .385 |
| S-3315-AB | 15 | 1.043 | .834 | .695 | .556 | .528 | .50 |
| S-3318-AB | 18 | 1.238 | .99 | .825 | .66 | .627 | .594 |
| S-3321-AB | 21 | 1.538 | 1.23 | 1.025 | .82 | .779 | .738 |
| S-3324-AB | 24 | 1.868 | 1.494 | 1.245 | .996 | .946 | .896 |
| S-3327-AB | 27 | 2.168 | 1.734 | 1.445 | 1.156 | 1.098 | 1.04 |
| S-3330-AB | 30 | 2.52 | 2.016 | 1.68 | 1.344 | 1.277 | 1.21 |
| S-3333-AB | 33 | 2.738 | 2.19 | 1.825 | 1.46 | 1.387 | 1.314 |

### SOCKETS WITH DEEP BRACKETS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| S-3302-DB | 2 | $0.72 | $0.576 | $0.48 | $0.384 | $0.365 | $0.346 |
| S-3303-DB | 3 | .78 | .624 | .52 | .416 | .395 | .374 |
| S-3304-DB | 4 | .795 | .636 | .53 | .424 | .403 | .382 |
| S-3306-DB | 6 | .893 | .714 | .595 | .476 | .452 | .428 |
| S-3306-8-DB | 6* | 1.005 | .804 | .67 | .536 | .509 | .482 |
| S-3308-DB | 8 | 1.005 | .804 | .67 | .536 | .509 | .482 |
| S-3312-DB | 12 | 1.268 | 1.014 | .845 | .676 | .642 | .608 |
| S-3315-DB | 15 | 1.508 | 1.206 | 1.005 | .804 | .764 | .724 |
| S-3318-DB | 18 | 1.763 | 1.41 | 1.175 | .94 | .893 | .846 |
| S-3321-DB | 21 | 2.093 | 1.674 | 1.395 | 1.116 | 1.06 | 1.004 |
| S-3324-DB | 24 | 2.438 | 1.95 | 1.625 | 1.30 | 1.235 | 1.17 |
| S-3327-DB | 27 | 2.768 | 2.214 | 1.845 | 1.476 | 1.402 | 1.328 |
| S-3330-DB | 30 | 3.113 | 2.49 | 2.075 | 1.66 | 1.577 | 1.494 |
| S-3333-DB | 33 | 3.443 | 2.754 | 2.295 | 1.836 | 1.744 | 1.652 |

### SOCKETS WITH SHALLOW BRACKETS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| S-3315-SB | 15 | $1.373 | $1.098 | $0.915 | $0.732 | $0.695 | $0.659 |
| S-3318-SB | 18 | 1.65 | 1.32 | 1.10 | .88 | .836 | .792 |
| S-3321-SB | 21 | 1.95 | 1.56 | 1.30 | 1.04 | .988 | .936 |
| S-3324-SB | 24 | 2.31 | 1.848 | 1.54 | 1.232 | 1.17 | 1.109 |
| S-3327-SB | 27 | 2.603 | 2.082 | 1.735 | 1.388 | 1.319 | 1.249 |
| S-3330-SB | 30 | 2.948 | 2.358 | 1.965 | 1.572 | 1.493 | 1.415 |
| S-3333-SB | 33 | 3.248 | 2.598 | 2.165 | 1.732 | 1.645 | 1.559 |

### SOCKETS WITH CABLE CLAMP AT TOP

For sockets with cable clamp at end, change suffix -CCT to **-CCE**; prices are the same (not available with two contacts).

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| S-3302-CCT | 2 | $0.668 | $0.534 | $0.445 | $0.356 | $0.338 | $0.32 |
| S-3303-CCT | 3 | .69 | .552 | .46 | .368 | .35 | .331 |
| S-3304-CCT | 4 | .705 | .564 | .47 | .376 | .357 | .338 |
| S-3306-CCT | 6 | .803 | .642 | .535 | .428 | .407 | .385 |
| S-3306-8-CCT | 6* | .938 | .75 | .625 | .50 | .475 | .45 |
| S-3308-CCT | 8 | .938 | .75 | .625 | .50 | .475 | .45 |
| S-3310-CCT | 10 | 1.035 | .828 | .69 | .552 | .524 | .497 |
| S-3312-CCT | 12 | 1.193 | .954 | .795 | .636 | .604 | .572 |
| S-3315-CCT | 15 | 1.493 | 1.194 | .995 | .796 | .756 | .716 |
| S-3318-CCT | 18 | 1.733 | 1.386 | 1.155 | .924 | .878 | .832 |
| S-3321-CCT | 21 | 1.995 | 1.596 | 1.33 | 1.064 | 1.011 | .958 |
| S-3324-CCT | 24 | 2.363 | 1.89 | 1.575 | 1.26 | 1.197 | 1.134 |
| S-3327-CCT | 27 | 2.648 | 2.118 | 1.765 | 1.412 | 1.341 | 1.271 |
| S-3330-CCT | 30 | 3.083 | 2.466 | 2.055 | 1.644 | 1.562 | 1.48 |
| S-3333-CCT | 33 | 3.315 | 2.652 | 2.21 | 1.768 | 1.68 | 1.591 |

### SOCKETS WITH CABLE CLAMP AT TOP, KEEPER

For sockets with latch instead of keeper, change suffix -CCT-K to **-CCT-L**; prices are the same. Also available with cable clamp at end (suffix -CCE-K or -CCE-L) except 2-contact; prices the same.

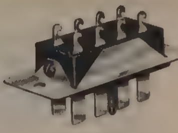
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| S-3302-CCT-K | 2 | $0.818 | $0.654 | $0.545 | $0.436 | $0.414 | $0.392 |
| S-3303-CCT-K | 3 | .848 | .678 | .565 | .452 | .429 | .407 |
| S-3304-CCT-K | 4 | .87 | .696 | .58 | .464 | .441 | .418 |
| S-3306-CCT-K | 6 | .96 | .768 | .64 | .512 | .486 | .461 |
| S-3306-8-CCT-K | 6* | 1.073 | .858 | .715 | .572 | .543 | .515 |
| S-3308-CCT-K | 8 | 1.073 | .858 | .715 | .572 | .543 | .515 |
| S-3310-CCT-K | 10 | 1.208 | .966 | .805 | .644 | .612 | .58 |
| S-3312-CCT-K | 12 | 1.335 | 1.068 | .89 | .712 | .676 | .641 |
| S-3315-CCT-K | 15 | 1.71 | 1.368 | 1.14 | .912 | .866 | .821 |
| S-3318-CCT-K | 18 | 1.958 | 1.566 | 1.305 | 1.044 | .992 | .94 |
| S-3321-CCT-K | 21 | 2.258 | 1.806 | 1.505 | 1.204 | 1.144 | 1.084 |
| S-3324-CCT-K | 24 | 2.603 | 2.082 | 1.735 | 1.388 | 1.319 | 1.249 |
| S-3327-CCT-K | 27 | 2.948 | 2.358 | 1.965 | 1.572 | 1.493 | 1.415 |
| S-3330-CCT-K | 30 | 3.293 | 2.634 | 2.195 | 1.756 | 1.668 | 1.58 |
| S-3333-CCT-K | 33 | 3.615 | 2.892 | 2.41 | 1.928 | 1.832 | 1.735 |

*Contacts have positive orientation to eliminate possibility of mismating.

**Vernitron**

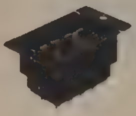
# BEAUPLUG® PLUGS AND SOCKETS, BEAUCAPS

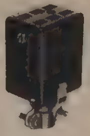
-5408-AB


P-5408-SB

P-5406-CCT

S-5408-AB


P-5408-DB


S-5406-CCT

## BEAUPLUG SERIES 5400 PLUGS AND SOCKETS

assis and cable mount connectors are UL and CSA Listed, with
ividual contacts rated at 15 amps, 1750 V rms. Meet or exceed
Std. No. 498 with all contacts carrying rated current simul-
eously. Mate with "Jones Type" 2400 or 400 series connectors.

### PLUGS WITH ANGLE BRACKETS

| Vernitron No. | Contacts | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
| -5404-AB | 4 | $0.975 | $0.78 | $0.65 | $0.52 | $0.494 |
| -5406-AB | 6 | 1.095 | .876 | .73 | .584 | .555 |
| -5408-AB | 8 | 1.253 | 1.002 | .835 | .668 | .635 |
| -5410-AB | 10 | 1.455 | 1.164 | .97 | .776 | .737 |
| -5412-AB | 12 | 1.635 | 1.308 | 1.09 | .872 | .828 |

### PLUGS WITH DEEP BRACKETS

| | | | | | | |
|---|---|---|---|---|---|---|
| -5404-DB | 4 | $1.17 | $0.936 | $0.78 | $0.624 | $0.593 |
| -5406-DB | 6 | 1.343 | 1.074 | .895 | .716 | .68 |
| -5408-DB | 8 | 1.53 | 1.224 | 1.02 | .816 | .775 |
| -5410-DB | 10 | 1.658 | 1.326 | 1.105 | .884 | .84 |
| -5412-DB | 12 | 1.838 | 1.47 | 1.225 | .98 | .931 |

### PLUGS WITH SHALLOW BRACKETS

| | | | | | | |
|---|---|---|---|---|---|---|
| -5404-SB | 4 | $1.088 | $0.87 | $0.725 | $0.58 | $0.551 |
| -5406-SB | 6 | 1.268 | 1.014 | .845 | .676 | .642 |
| -5408-SB | 8 | 1.388 | 1.11 | .925 | .74 | .703 |
| -5410-SB | 10 | 1.613 | 1.29 | 1.075 | .86 | .817 |
| -5412-SB | 12 | 1.748 | 1.398 | 1.165 | .932 | .885 |

### PLUGS WITH SNAP "C" CLIP

| | | | | | | |
|---|---|---|---|---|---|---|
| -5404-SCC | 4 | $0.975 | $0.78 | $0.65 | $0.52 | $0.494 |
| -5406-SCC | 6 | 1.095 | .876 | .73 | .584 | .555 |
| -5408-SCC | 8 | 1.253 | 1.002 | .835 | .668 | .635 |
| -5410-SCC | 10 | 1.455 | 1.164 | .97 | .776 | .737 |
| -5412-SCC | 12 | 1.635 | 1.308 | 1.09 | .872 | .828 |

### PLUGS WITH CABLE CLAMP AT TOP

r plugs with cable clamp at end, change suffix -CCT to **-CCE**;
ces are the same.

| | | | | | | |
|---|---|---|---|---|---|---|
| -5404-CCT | 4 | $1.478 | $1.182 | $0.985 | $0.788 | $0.749 |
| -5406-CCT | 6 | 1.673 | 1.338 | 1.115 | .892 | .847 |
| -5408-CCT | 8 | 1.763 | 1.41 | 1.175 | .94 | .893 |
| -5410-CCT | 10 | 1.943 | 1.554 | 1.295 | 1.036 | .984 |
| -5412-CCT | 12 | 2.145 | 1.716 | 1.43 | 1.144 | 1.087 |
| -5414-CCT | 14 | 3.81 | 3.048 | 2.54 | 2.032 | 1.93 |
| -5415-CCT | 15 | 4.598 | 3.678 | 3.065 | 2.452 | 2.329 |
| -5416-CCT | 16 | 5.378 | 4.302 | 3.585 | 2.868 | 2.725 |

### PLUGS WITH FLARED HOLE AT TOP

r plugs with flared hole at end, change suffix -FHT to **-FHE**;
ces are the same.

| | | | | | | |
|---|---|---|---|---|---|---|
| -5404-FHT | 4 | $1.20 | $0.96 | $0.80 | $0.64 | $0.608 |
| -5406-FHT | 6 | 1.365 | 1.092 | .91 | .728 | .692 |
| -5408-FHT | 8 | 1.50 | 1.20 | 1.00 | .80 | .76 |
| -5410-FHT | 10 | 1.658 | 1.326 | 1.105 | .884 | .84 |
| -5412-FHT | 12 | 1.853 | 1.482 | 1.235 | .988 | .939 |
| -5414-FHT | 14 | 3.51 | 2.808 | 2.34 | 1.872 | 1.778 |
| -5415-FHT | 15 | 4.29 | 3.432 | 2.86 | 2.288 | 2.174 |
| -5416-FHT | 16 | 5.078 | 4.062 | 3.385 | 2.708 | 2.573 |

Male contacts are cadmium plated brass; double-wiping female contacts are cadmium plated phosphor bronze. Molded black polypropylene resists scuffing, abrasion, most acids and alkalis; non-corrosive. Solder terminals are standard.

### SOCKETS WITH ANGLE BRACKETS

| Vernitron No. | Contacts | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
| S-5404-AB | 4 | $1.095 | $0.876 | $0.73 | $0.584 | $0.555 |
| S-5406-AB | 6 | 1.26 | 1.008 | .84 | .672 | .638 |
| S-5408-AB | 8 | 1.478 | 1.182 | .985 | .788 | .749 |
| S-5410-AB | 10 | 1.575 | 1.26 | 1.05 | .84 | .798 |
| S-5412-AB | 12 | 1.755 | 1.404 | 1.17 | .936 | .889 |

### SOCKETS WITH DEEP BRACKETS

| | | | | | | |
|---|---|---|---|---|---|---|
| S-5404-DB | 4 | $1.283 | $1.026 | $0.855 | $0.684 | $0.65 |
| S-5406-DB | 6 | 1.433 | 1.146 | .955 | .764 | .726 |
| S-5408-DB | 8 | 1.673 | 1.338 | 1.115 | .892 | .847 |
| S-5410-DB | 10 | 1.793 | 1.434 | 1.195 | .956 | .908 |
| S-5412-DB | 12 | 1.98 | 1.584 | 1.32 | 1.056 | 1.003 |

### SOCKETS WITH SHALLOW BRACKETS

| | | | | | | |
|---|---|---|---|---|---|---|
| S-5404-SB | 4 | $1.20 | $0.96 | $0.80 | $0.64 | $0.608 |
| S-5406-SB | 6 | 1.395 | 1.116 | .93 | .744 | .707 |
| S-5408-SB | 8 | 1.62 | 1.296 | 1.08 | .864 | .821 |
| S-5410-SB | 10 | 1.718 | 1.374 | 1.145 | .916 | .87 |
| S-5412-SB | 12 | 1.905 | 1.524 | 1.27 | 1.016 | .965 |

### SOCKETS WITH SNAP "C" CLIP

| | | | | | | |
|---|---|---|---|---|---|---|
| S-5404-SCC | 4 | $1.095 | $0.876 | $0.73 | $0.584 | $0.555 |
| S-5406-SCC | 6 | 1.26 | 1.008 | .84 | .672 | .638 |
| S-5408-SCC | 8 | 1.478 | 1.182 | .985 | .788 | .749 |
| S-5410-SCC | 10 | 1.575 | 1.26 | 1.05 | .84 | .798 |
| S-5412-SCC | 12 | 1.755 | 1.404 | 1.17 | .936 | .889 |

### SOCKETS WITH CABLE CLAMP AT TOP

For sockets with cable clamp at end, change suffix -CCT to **-CCE**; prices are the same.

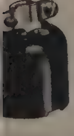
| | | | | | | |
|---|---|---|---|---|---|---|
| S-5404-CCT | 4 | $1.62 | $1.296 | $1.08 | $0.864 | $0.821 |
| S-5406-CCT | 6 | 1.748 | 1.398 | 1.165 | .932 | .885 |
| S-5408-CCT | 8 | 1.973 | 1.578 | 1.315 | 1.052 | .999 |
| S-5410-CCT | 10 | 2.078 | 1.662 | 1.385 | 1.108 | 1.053 |
| S-5412-CCT | 12 | 2.273 | 1.818 | 1.515 | 1.212 | 1.151 |
| S-5414-CCT | 14 | 3.953 | 3.162 | 2.635 | 2.108 | 2.003 |
| S-5415-CCT | 15 | 4.733 | 3.786 | 3.155 | 2.524 | 2.398 |
| S-5416-CCT | 16 | 5.52 | 4.416 | 3.68 | 2.944 | 2.797 |

### SOCKETS WITH FLARED HOLE AT TOP

For sockets with flared hole at end, change suffix -FHT to **-FHE**; prices are the same.

| | | | | | | |
|---|---|---|---|---|---|---|
| S-5404-FHT | 4 | $1.305 | $1.044 | $0.87 | $0.696 | $0.661 |
| S-5406-FHT | 6 | 1.463 | 1.17 | .975 | .78 | .741 |
| S-5408-FHT | 8 | 1.673 | 1.338 | 1.115 | .892 | .847 |
| S-5410-FHT | 10 | 1.793 | 1.434 | 1.195 | .956 | .908 |
| S-5412-FHT | 12 | 1.98 | 1.584 | 1.32 | 1.056 | 1.003 |
| S-5414-FHT | 14 | 3.638 | 2.91 | 2.425 | 1.94 | 1.843 |
| S-5415-FHT | 15 | 4.425 | 3.54 | 2.95 | 2.36 | 2.242 |
| S-5416-FHT | 16 | 5.205 | 4.164 | 3.47 | 2.776 | 2.637 |

## BEAUCAP SERIES 2001 OCTAL PLUG CAPS



Single-piece octal-type plug and socket caps replace standard metal caps with rubber grommets and fishpaper insulation. Offer savings in unit cost and installation time over conventional metal caps and liners. **To Order:** Add suffix to indicate color (**-B**, black; **-R**, red; **-G**, green; **-BL**, blue); add second suffix to indicate cable hole size (**-5**, 5/16"; or **-7**, 7/16"). Example: 2001-2-G-5 is green, with 5/16" hole in end.

| Vernitron No. | Cable Hole | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-24 | 25-49 | 50-99 | 100-249 | 250-499 |
| 2001-1 | None | $0.128 | $0.102 | $0.085 | $0.068 | $0.065 |
| 2001-2 | In end | .143 | .114 | .095 | .076 | .072 |
| 2001-3 | In side | .143 | .114 | .095 | .076 | .072 |
| 2001-4 | In end* | .225 | .18 | .15 | .12 | .114 |

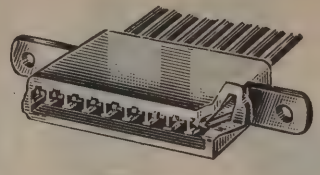
*With cable clamp.

## BEAUPLUG SERIES 3300 AND 5400—OTHER STYLES AVAILABLE

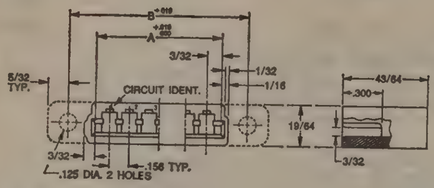
Beauplug series 3300 and 5400 plugs and sockets are available in a wide variety of styles, in addition to those listed on these pages. Series 3300 is available with End Brackets, with Snap "C" Clip, with Flat Plate, with Blank Back Shell, without brackets, with Flared Hole at end or top (with or without latch or keeper). Series 5400 can be ordered without brackets, with Cable Clamp at top or side and Latch or Keeper, with Blank Back Shell, with Flared Hole and Latch or Keeper, with Tapped Angle Bracket, and with up to 16 contacts in any style. Both series are available with gold, silver or rhodium contact plating; with metal backshells; with solderless spade, Wire-Wrap*, or printed circuit terminals. Write or call for full information and prices on all unlisted items.

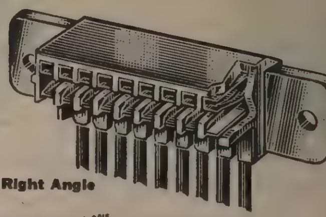
*Reg. Gardner-Denver trademark.

# waldom/molex Connectors

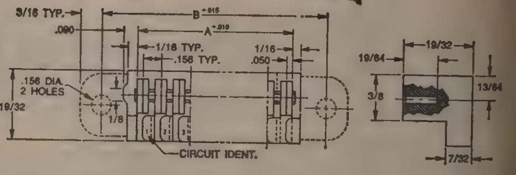


Straight-on





Right Angle



## PC EDGE CONNECTORS

**Straight-on:** Edge connectors are available in 6, 9, 12, 15, 18, 21, 22 and 24 circuit configurations. Bifurcated terminals provide a really solid contact with excellent reliability. Connector can be slipped on and off, time after time, without any damage to the printed circuit. Use of polarizing key when necessary, guarantees positive polarity. Comes with or without mounting flange. **Righ Angle:** Edge connectors are available in 6, 9, 12, 15, 18, 21 and 2 circuit configurations and offer all the advantages of "Straight-on Series plus the added feature of mounting the printed circuit boar at a right angle, requiring minimum space.

### STRAIGHT-ON CONNECTORS

| Waldom/ Molex Number | No. of Cir-cuits | A In. | B* In. | Std. Pkg. |  | Net per 100 |  |
|---|---|---|---|---|---|---|---|
|  |  |  |  | Qty. | Net/ Pkg. | 100-499 | 500 Up |
| 09-01-1061 | 6 | 0.966 | ....... | 5 | $1.75 | $29.55 | $21.85 |
| 09-01-2061 | 6 | ....... | 1.392 | 5 | 1.75 | 29.55 | 21.85 |
| 09-01-1091 | 9 | 1.434 | ....... | 5 | 1.85 | 30.40 | 22.50 |
| 09-01-2091 | 9 | ....... | 1.860 | 5 | 1.85 | 30.40 | 22.50 |
| 09-01-1121 | 12 | 1.902 | ....... | 5 | 1.85 | 31.20 | 28.15 |
| 09-01-2121 | 12 | ....... | 2.328 | 5 | 1.85 | 31.20 | 28.15 |
| 09-01-1151 | 15 | 2.370 | ....... | 5 | 1.90 | 32.10 | 23.70 |
| 09-01-2151 | 15 | ....... | 2.796 | 5 | 1.90 | 32.10 | 23.70 |
| 09-01-1181 | 18 | 2.838 | ....... | 5 | 1.95 | 33.00 | 24.40 |
| 09-01-2181 | 18 | ....... | 3.264 | 5 | 1.95 | 33.00 | 24.40 |
| 09-01-1211 | 21 | 3.306 | ....... | 5 | 2.00 | 33.80 | 25.05 |
| 09-01-2211 | 21 | ....... | 3.732 | 5 | 2.00 | 33.80 | 25.05 |
| 09-01-1221 | 22 | 3.462 | ....... | 5 | 2.05 | 34.10 | 25.25 |
| 09-01-2221 | 22 | ....... | 3.888 | 5 | 2.05 | 34.10 | 25.25 |
| 09-01-1241 | 24 | 3.774 | ....... | 5 | 2.05 | 34.30 | 25.40 |
| 09-01-2241 | 24 | ....... | 4.200 | 5 | 2.05 | 34.30 | 25.40 |
| 15-04-0215 | Polarizing Key |  |  | 10 | .65 | 5.05 | 3.95 |

*With mounting flange. Flange 15/64″ from front and .070″ thick.

### TERMINALS

| Waldom/ Molex Number | Wire Range | Std. Pkg. |  | Net per 1000 |  |  |
|---|---|---|---|---|---|---|
|  |  | Qty. | Net/ Pkg. | 2500-4999 | 5000-9999 | 10,000 Up |
| 08-01-0102 | 18-24 | 100 | $4.70 | $30.30 | $22.75 | $18.00 |
| 08-01-0108 | 24-30 | 100 | 4.70 | 30.30 | 22.75 | 18.00 |

### RIGHT ANGLE CONNECTORS

| Waldom/ Molex Number | No. of Cir-cuits | A In. | B* In. | Std. Pkg. |  | Net per 100 |  |
|---|---|---|---|---|---|---|---|
|  |  |  |  | Qty. | Net/ Pkg. | 100-499 | 500 Up |
| 09-02-1061 | 6† | 0.882 | ....... | 5 | $2.55 | $45.40 | $33.70 |
| 09-02-2061 | 6† | ....... | 1.472 | 5 | 2.55 | 45.40 | 33.70 |
| 09-02-1091 | 9† | 1.350 | ....... | 5 | 2.60 | 46.20 | 34.20 |
| 09-02-2091 | 9 | ....... | 1.940 | 5 | 2.60 | 46.20 | 34.20 |
| 09-02-1121 | 12† | 1.818 | ....... | 5 | 2.70 | 47.10 | 34.95 |
| 09-02-2121 | 12† | ....... | 2.408 | 5 | 2.70 | 47.10 | 34.95 |
| 09-02-1151 | 15† | 2.286 | ....... | 5 | 2.80 | 47.80 | 35.40 |
| 09-02-2151 | 15 | ....... | 2.876 | 5 | 2.80 | 47.80 | 35.40 |
| 09-02-1181 | 18† | 2.754 | ....... | 5 | 2.90 | 48.60 | 36.05 |
| 09-02-2181 | 18 | ....... | 3.344 | 5 | 2.90 | 48.60 | 36.05 |
| 09-02-1211 | 21† | 3.222 | ....... | 5 | 3.00 | 49.40 | 36.60 |
| 09-02-2211 | 21 | ....... | 3.812 | 5 | 3.00 | 49.40 | 36.60 |
| 09-02-1221 | 22† | 3.378 | ....... | 5 | 3.05 | 49.60 | 36.70 |
| 09-02-2221 | 22 | ....... | 3.968 | 5 | 3.05 | 49.60 | 36.70 |
| 15-04-0216 | Polarizing Key |  |  | 10 | .85 | 7.00 | 5.80 |

*With mounting flange. Flange .070″ thick at the end. †Contac us for availability.

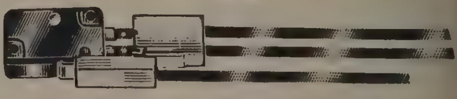
### TERMINALS

| Waldom/ Molex Number | Wire Range | Std. Pkg. |  | Net per 1000 |  |  |
|---|---|---|---|---|---|---|
|  |  | Qty. | Net/ Pkg. | 2500-4999 | 5000-9999 | 10,000 Up |
| 08-30-0102 | 18-24 | 100 | $5.65 | $36.60 | $27.50 | $21.75 |
| 08-30-0104 | 24-30 | 100 | 5.65 | 36.60 | 27.50 | 21.75 |

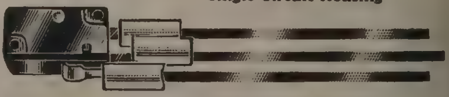
## MICRO SWITCH CONNECTORS, TERMINALS

Single and three circuit series nylon connectors offer low cost and especially the three circuit, a full proof method of making quick connections on micro type switches. Housing accepts crimp-on, snap-in quick disconnect female terminal type No. 05-06-0302, for 14–22 wire range of 05-06-0403 for 22–30 wire range, which fit a standard 3/16″ male tab, .020″ thick. Female quick disconnect terminals are vastly different than the conventional type female quick disconnects. Average insertion force of 2 per term is much lower and smoother, and does not force the switch out of proper adjustment. **Single Circuit:** Single circuit micro switch connector fits any standard 3/16″ (.020″) switch male tab. **Three Circuit:** Single circuit portion is a unique feature of the three-circuit micro switch connector. Purposely sprung to allow easy connections to all micro switches of various manufacturers as their tab locations do vary slightly.

Terminal



Single Circuit Housing



Three Circuit Housing

### SINGLE CIRCUIT NYLON HOUSING

| Waldom/ Molex Number | Std. Pkg. |  | Net per 100 |  |  |
|---|---|---|---|---|---|
|  | Qty. | Net/ Pkg. | 100-499 | 500-999 | 1000 Up |
| 06-02-3011 | 10 | $0.80 | $5.45 | $3.80 | $2.95 |

### THREE CIRCUIT NYLON HOUSING

| | | | | | |
|---|---|---|---|---|---|
| 06-02-3031 | 5 | $1.25 | $17.30 | $12.35 | $9.75 |

### TERMINALS

| Waldom/ Molex Number | Wire Range | Std. Pkg. |  | Net per 1000 |  |  |
|---|---|---|---|---|---|---|
|  |  | Qty. | Net/ Pkg. | 1500-5999 | 6000-11,999 | 12,000 Up |
| 05-06-0302 | 14-22 | 100 | $5.10 | $33.00 | $24.90 | $19.60 |
| 05-06-0403 | 22-30 | 100 | 5.10 | 33.00 | 24.90 | 19.60 |

### PC EDGE AND MICRO SWITCH CONNECTOR TOOLS

| Waldom/ Molex No. | Tool Description | For Use With | Net Each |
|---|---|---|---|
| HTR-2262 | Manual pro- | PC Edge conn., Relay skt. | $75.00 |
| HTR-2090 | duction crimp | Micro Switch connectors | 75.00 |
| HT-1921 | Prototype | PC Edge conn., Relay skt. | 5.95 |
| HT-1919 | crimp | Micro Switch connectors | 5.95 |
| HT-1884 | Extractor | Same as HTR-2262, -2090 | 1.75 |

**Manufactured by Molex Products, these items are made available from electronic distributors through Waldom Electronics, Inc.**

# waldom / molex SOCKETS, TERMINALS AND TOOLS

## IC SOLDERCON TERMINALS SOCKET

vance the state-of-the-art by providing manufacturers with advantage of plug-in packages for connecting integrated cuits at low costs. Soldercons are available in pre-cut strips fit exact IC requirements. Terminals provide excellent electrical itact and sturdy mechanical support. Their use speeds assembly, ting and servicing, and gives new flexibility to entire PC embly. Made of 70/30 spring tempered tin plated brass .010″ ck. Gold plated over nickel; brass or phosphor-bronze available special order.

RMINAL SPECIFICATIONS: **Height:** .180″ above board. **le Required:** Drilled, .032″ to .030″ dia.; punched, .032″ to 0″ dia. with .037″ dia. max. breakout; plated through, .037″ .029″ dia. **Spacing:** .100″ min. on centers per row; .200″ min. v spacing. **Insertion:** 1 oz. min. per terminal. **Withdraw:** ¾ oz. n. per terminal. **Lead Size:** .011″ max. x .030″ max.

### PRICING SCHEDULE

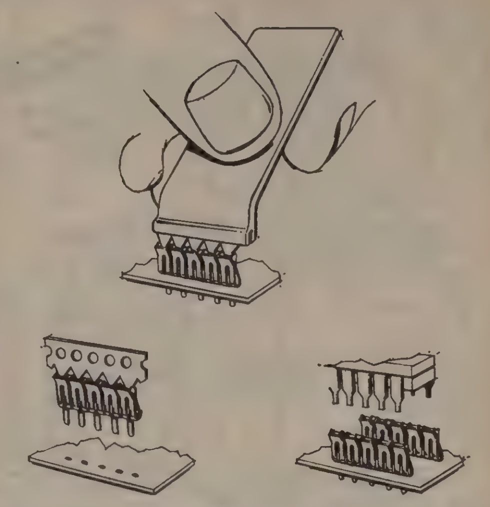
ntinuous length reels.

| Waldom / Molex Number | Net per 1000 Terminals | | | | |
|---|---|---|---|---|---|
| | 2000-9000 | 10M-24M | 25M-49M | 50M-74M | 75M Up |
| 05-30-0001 | $12.75 | $9.10 | $6.67 | $5.63 | $4.94 |

t to length strips.

| aldom / Molex umber | Term. per Strip | Std. Pkg. Qty. | Net per 1000 Strips | | | | |
|---|---|---|---|---|---|---|---|
| | | | 50-250 | 300-1400 | 1450-3550 | 3600-7100 | 7150-10,650* |
| -30-0007 | 7 | 50 | $110.70 | $96.25 | $70.70 | $53.69 | $46.41 |
| | | | 50-250 | 300-1200 | 1250-3100 | 3150-6200 | 6250-9350* |
| -30-0008 | 8 | 50 | $117.30 | $102.00 | $80.80 | $61.36 | $53.04 |
| | | | 50-250 | 300-950 | 1000-2450 | 2500-4950 | 5000-7450* |
| -30-0010 | 10 | 50 | $158.15 | $137.50 | $101.00 | $76.70 | $66.30 |
| | | | 50-250 | 300-800 | 850-2050 | 2100-4150 | 4200-6200* |
| -30-0012 | 12 | 50 | $189.75 | $165.00 | $121.20 | $92.04 | $79.56 |
| | | | 50-250 | 300-700 | 750-1750 | 1800-3550 | 3600-5350* |
| -30-0014 | 14 | 50 | $221.40 | $192.50 | $141.40 | $107.38 | $92.82 |

**arger Quantity Prices on Request.**

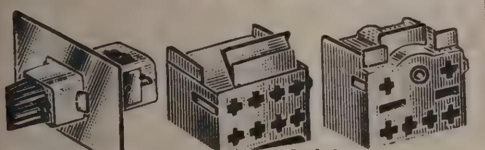


IC Soldercon Terminals Socket

### CARRIER BREAK-OFF TOOLS

**W/M No. HT-2369-1**—For 7–8 terminals/strip. Net.....**$0.90**
**W/M No. HT-2369-2**—For 10–12 terminals/strip. Net... **1.15**
**W/M No. HT-2369-3**—For 14–18 terminals/strip. Net... **1.25**

## RELAY SOCKETS, TERMINAL AND TOOLS



Sockets

ylon relay socket offers a positive, snap-in mounting into the hassis hole without the use of mounting clips or screws. Specially esigned, one side of socket has a slide-in slot while opposite side as a panel mounting ear. Fits into same chassis hole dimensions sed by other socket manufacturers. Inserted into chassis from nderside, permitting the harness to be completely assembled, erminals applied to both ends of the wire before mounting into hassis. Low cost of socket makes it economically feasible to use s a single or double pole socket. Terminals are designed for low nsertion and extraction force. When necessary, more than one ead can be assembled into a single terminal. When the terminal is nserted into the relay socket, it is fully insulated producing a ead back to the socket and eliminating shock hazards and other nsulation requirements. With HT-2215 terminal extraction tool, terminals can be easily removed from the nylon housing. Relay socket is 4 pole, double throw, 14 contacts, 120 volts, 5 amps per circuit. Panel cutout size, 1.015″ x .858″.

### RELAY SOCKET

| Waldom / Molex Number | Type | Std. Pkg. | | Net per 100 | | |
|---|---|---|---|---|---|---|
| | | Qty. | Net / Pkg. | 100-499 | 500-999 | 1000 Up |
| 06-02-3141 | With mtg. ears | 5 | $2.50 | $34.40 | $24.35 | $19.20 |
| 06-02-3142 | Without mtg. ears | 5 | 2.50 | 34.40 | 24.35 | 19.20 |

### TERMINAL

| Waldom / Molex Number | Std. Pkg. | | Net per 1000 | | |
|---|---|---|---|---|---|
| | Qty. | Net / Pkg. | 1000-2999 | 3000-11,999 | 12,000 Up |
| 05-06-0201 | 100 | $4.10 | $38.00 | $26.10 | $18.60 |

### TOOLS

| Waldom/Molex Number | Description | Net Each |
|---|---|---|
| HTR-2262 | Manual production crimp tool | $75.00 |
| HT-1921 | Prototype crimp tool | 5.95 |
| HT-2215 | Extraction tool | 2.50 |

## PRINTED CIRCUIT PHONO SOCKETS

Designed to drop into a PC board, wave soldered and becomes the eceptacle for the male, shielded cable type phono plug. Consists f an outer shell designed with tails to go through the PC board llowing maximum spacing between center hole and the tabs of outer shell preventing solder bridging. Nylon inner shell ideal for high temperatures encountered in wave soldering. Center hole in PC board accommodates various length male phono plugs allowing male pin to protrude thru the PC board. Tails .400″ apart, 1/16″ w.

### PHONO SOCKET RECEPTACLE

| Waldom / Molex Number | Std. Pkg. | | Net per 100 | | |
|---|---|---|---|---|---|
| | Qty. | Net / Pkg. | 100-499 | 500-999 | 1000 Up |
| 15-24-0501 | 10 | $2.35 | $18.80 | $12.55 | $10.00 |

### CONVENTIONAL RCA TYPE PHONO PLUG

Jse on record players, radios, or wherever emergency connections f experimental nature are required. Pin is 1 1/16″ long, ⅛″ diameter. For use with socket listed below.

**Waldom/Molex Number PP-105-C**—Net per 100.......**$7.70**

### FEMALE SOCKET

Ceramic insert mounted on 1/16″ Bakelite® disc, with 1 1/16″ mounting centers. Metal parts are cadmium plated.

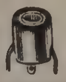
**Waldom/Molex Number PS-105-C**—Net per 100.......**$8.35**

®Registered Bakelite Corp. TM.

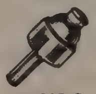
### DELUXE MALE PHONO PLUG

Has additional barrel which can be crimped over wire insulation to provide strain relief and provides extra finger grip for easy removal from socket.

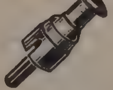
**Waldom/Molex Number PP-1052-C**—Net per 100.....**$10.70**



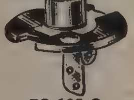
15-24-0501



PP-105-C



PP-1052-C



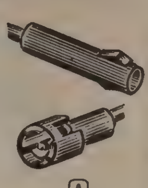
PS-105-C

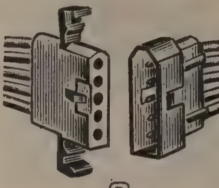
**Manufactured by Molex Products, these items are made available from electronic distributors through Waldom Electronics, Inc.**

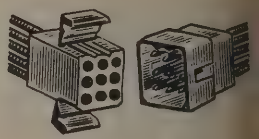
# waldom/molex Connectors

## NYLON CABLE CONNECTORS

Highly reliable, versatile connectors rated 250 volts per circuit. Nylon housings are available in miniature size for .062″ pin terminals, or standard size for .093″ pin terminals (supplied less terminals). Ideal for use in business machines, appliances, communications, instrumentation, and other demanding applications. Available with integrally molded ears for easy panel mounting. All types (except single circuit) are polarized. Both male and female pin terminals of the same mating diameters can be intermixed in the same housing. Terminals can be extracted and easily replaced, using ejector tools. Housings are UL Recognized.


A


B


C

### MINIATURE NYLON PLUG HOUSINGS

Accept .062″ pin terminals, listed at right.

| Waldom/ Molex Number | Fig. | No. of Cir-cuits | Amps per Circ. | Std. Pkg. Qty. | Std. Pkg. Net/ Pkg. | Net per 100 100-499 | Net per 100 500-999 | Net per 100 1000 Up |
|---|---|---|---|---|---|---|---|---|
| 03-06-2011 | A | 1 | 5 | 10 | $0.95 | $ 6.55 | $ 4.55 | $ 3.50 |
| 03-06-2031 | B | 3 | 5* | 10 | 1.65 | 11.05 | 8.15 | 5.85 |
| 03-06-2041 | B | 4 | 5* | 10 | 3.65 | 24.60 | 18.30 | 12.70 |
| 03-06-2054 | B | 5 | 5* | 5 | 1.20 | 16.30 | 12.10 | 8.75 |
| 03-06-2062 | C | 6 | 5* | 5 | 1.15 | 15.70 | 11.40 | 8.55 |
| 03-06-2081 | B | 8 | 5 | 5 | .95 | 13.35 | 9.30 | 7.25 |
| 03-06-2091 | C | 9 | 5* | 5 | 1.25 | 16.90 | 12.10 | 9.20 |
| 03-06-2121 | C | 12 | 5* | 5 | 1.30 | 17.60 | 13.00 | 9.65 |
| 03-06-2151 | C | 15 | 5* | 5 | 2.10 | 28.60 | 20.00 | 15.50 |
| 03-06-2241 | C | 24 | 4* | 5 | 3.15 | 42.40 | 29.50 | 22.85 |
| 03-06-2361 | C | 36 | 4* | 5 | 3.55 | 48.00 | 33.30 | 25.70 |

### STANDARD NYLON PLUG HOUSINGS

Accept .093″ terminals, listed at right.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 03-09-2011 | A | 1 | 12 | 10 | $0.95 | $ 6.45 | $ 4.45 | $ 3.45 |
| 03-09-2021 | B | 2 | 12* | 10 | 1.90 | 12.50 | 9.40 | 6.50 |
| 03-09-2031 | B | 3 | 12* | 10 | 1.60 | 10.95 | 7.60 | 5.85 |
| 03-09-2041 | B | 4 | 9* | 10 | 2.25 | 15.30 | 10.60 | 8.15 |
| 03-09-2052 | B | 5 | 9 | 5 | 1.30 | 17.90 | 12.55 | 9.75 |
| 03-09-2061 | C | 6 | 9* | 5 | 1.45 | 19.70 | 13.10 | 10.05 |
| 03-09-2091 | C | 9 | 9* | 5 | 1.55 | 21.10 | 14.60 | 11.03 |
| 03-09-2121 | C | 12 | 7.5 | 5 | 1.60 | 21.45 | 14.95 | 11.60 |
| 03-09-2151 | C | 15 | 7.5 | 5 | 2.45 | 33.10 | 22.90 | 17.70 |

*With integrally molded mounting ears.

### MINIATURE NYLON RECEPTACLE HOUSINGS

Accept .062″ terminals. With holding tabs and mounting ears.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 03-06-1011 | A | 1 | 5† | 10 | $0.85 | $ 5.65 | $ 3.90 | $ 3.00 |
| 03-06-1031 | B | 3 | 5 | 10 | 1.85 | 12.40 | 9.15 | 6.75 |
| 03-06-1041 | B | 4 | 5 | 10 | 3.60 | 24.30 | 18.30 | 12.50 |
| 03-06-1055 | B | 5 | 5 | 5 | 1.55 | 21.00 | 15.35 | 11.25 |
| 03-06-1061 | C | 6 | 5 | 5 | 1.35 | 18.25 | 12.85 | 9.90 |
| 03-06-1081 | B | 8 | 5 | 5 | 1.20 | 16.40 | 11.40 | 8.85 |
| 03-06-1091 | C | 9 | 5 | 5 | 1.40 | 19.30 | 13.70 | 10.50 |
| 03-06-1121 | C | 12 | 5 | 5 | 1.45 | 20.20 | 14.70 | 11.05 |
| 03-06-1151 | C | 15 | 5 | 5 | 2.40 | 32.60 | 22.70 | 17.65 |
| 03-06-1241 | C | 24 | 5 | 5 | 3.30 | 44.50 | 30.90 | 24.00 |
| 03-06-1361 | C | 36 | 4 | 5 | 3.70 | 50.10 | 34.70 | 26.80 |

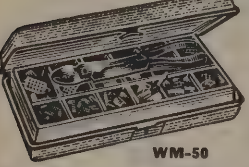
### STANDARD NYLON RECEPTACLE HOUSINGS

Accept .093″ terminals. With holding tabs and mounting ears.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 03-09-1011 | A | 1 | 12† | 10 | $0.80 | $ 5.55 | $ 3.85 | $ 2.95 |
| 03-09-1021 | B | 2 | 12 | 10 | 1.90 | 12.70 | 9.45 | 6.55 |
| 03-09-1031 | B | 3 | 12 | 10 | 1.65 | 11.05 | 7.65 | 5.95 |
| 03-09-1041 | B | 4 | 9 | 10 | 2.30 | 15.60 | 10.80 | 8.35 |
| 03-09-1052 | B | 5 | 9† | 5 | 1.65 | 22.70 | 16.30 | 12.30 |
| 03-09-1061 | C | 6 | 9 | 5 | 1.45 | 19.60 | 13.00 | 9.80 |
| 03-09-1091 | C | 9 | 9 | 5 | 1.65 | 21.90 | 14.80 | 11.50 |
| 03-09-1121 | C | 12 | 7.5 | 5 | 1.75 | 24.00 | 16.70 | 12.95 |
| 03-09-1151 | C | 15 | 7.5 | 5 | 2.80 | 37.55 | 26.00 | 20.00 |

†Holding tabs only.

## CABLE CONNECTOR DESIGNER KITS


WM-50

Ideal for the creative designer, repairman and experimenter. Eliminates need of searching for proper connectors or tools; everything under one lid, covering all circuit capacities with male and female housings, terminals and crimping tool. Separate compartments for connector elements, numbered and described for easy part reordering. **Lightweight, unbreakable case** has snap-lock to avoid spills and mix-ups. **Manual, prototype crimping tool** is specially balanced and weighted for easy operation; made of hardened steel, it provides excellent, uniform crimps every time. Also strips and cuts wire. **An extractor tool** is also provided with each crimping tool to assist in circuit changes or corrections.

**Waldom No. WM-50 Designer Kit**—Same as WM-72, but parts cover from single circuit to 15-circuit designs (250 V and up to 12 amps per circuit); and, totals 45 complete connectors only. All have pin terminal size 0.093″ dia. With crimping tool, pin terminal ejector tool and case. Net Each........................**$24.95**

**Waldom No. WM-72 Designer Kit**—Contains all parts needed to assemble male and female connectors from single circuit to 36-circuit designs (250 V and up to 5 amps per circuit); totals 56 connectors. All have pin terminal size 0.062″ dia. With crimping tool, pin terminal ejector tool and case. Net Each.....**$29.95**

## HOUSING DIMENSIONS

### MINIATURE HOUSINGS FOR .062″ TERMINALS

Plugs are .750″ deep; receptacles, .781″ deep.

| Waldom/ Molex No. 03-06- | Plug Dimensions Overall W. | Plug Dimensions Overall H. | Plug Dimensions Mounting Hole, In. | Receptacle Dimensions Overall W. | Receptacle Dimensions Overall H. | Receptacle Dimensions Mounting Hole, In. |
|---|---|---|---|---|---|---|
| 2011, 1011 | .296″ | dia. | ............ | .203″ | dia. | ............ |
| 2031, 1031 | .281″ | .578″ | .318 x .754 | .203″ | .484″ | .265 x .650 |
| 2041, 1041 | .296″ | .734″ | ............ | .203″ | .625″ | ............ |
| 2054, 1055 | .296″ | .875″ | ............ | .203″ | .781″ | .265 x .940 |
| 2062, 1061 | .578″ | .453″ | ............ | .484″ | .343″ | .552 x .505 |
| 2081, 1081 | .312″ | 1.593″ | ............ | .310″ | 1.500″ | .330 x 1.715 |
| 2091, 1091 | .578″ | .578″ | .615 x .752 | .531″ | .484″ | .552 x .650 |
| 2121, 1121 | .578″ | .718″ | .614 x .903 | .531″ | .625″ | .563 x .795 |
| 2151, 1151 | .593″ | .859″ | .614 x 1.042 | .531″ | .765″ | .563 x .934 |
| 2241, 1241 | .750″ | .930″ | .765 x 1.182 | .750″ | .920″ | .715 x 1.0719 |
| 2361, 1361 | .812″ | 1.640″ | .825 x 1.795 | .859″ | 1.515″ | .707 x 1.677 |

### STANDARD HOUSINGS FOR .093″ TERMINALS

Plugs are .968″ deep; receptacles, 1.000″ deep except 03-09-1031, 03-09-1061 thru 03-09-1151, 1.031″ deep.

| Waldom/ Molex No. 03-09- | Plug Dimensions Overall W. | Plug Dimensions Overall H. | Plug Dimensions Mounting Hole, In. | Receptacle Dimensions Overall W. | Receptacle Dimensions Overall H. | Receptacle Dimensions Mounting Hole, In. |
|---|---|---|---|---|---|---|
| 2011, 1011 | .358″ | dia. | ............ | .234″ | dia. | ............ |
| 2021, 1021 | .352″ | .640″ | .800 x .375 | .250″ | .531″ | .705 x .312 |
| 2031, 1031 | .338″ | .773″ | .933 x .375 | .234″ | .671″ | .840 x .312 |
| 2041, 1041 | .338″ | .968″ | 1.131 x .375 | .236″ | .875″ | 1.038 x .312 |
| 2052, 1052 | .343″ | 1.171″ | ............ | .234″ | 1.062″ | ............ |
| 2061, 1061 | .640″ | .531″ | .750 x .695 | .632″ | .437″ | .718 x .600 |
| 2091, 1091 | .734″ | .765″ | .937 x .725 | .625″ | .671″ | .828 x .725 |
| 2121, 1121 | .734″ | .975″ | 1.155 x .760 | .640″ | .870″ | 1.050 x .655 |
| 2151, 1151 | .734″ | 1.169″ | 1.343 x .760 | .632″ | 1.067″ | 1.240 x .655 |

## PIN TERMINALS FOR NYLON HOUSINGS

Spring tempered tin-plated brass. .093″ dia. types fit standard housings; .062″ dia. types(*) fit miniature housings. Std. pkg., 100. Style **C** in table below is for crimp, **S** for solder, **PC** for printed circuit and **BC** for bead chain.

| Waldom/Molex Number Male | Waldom/Molex Number Female | Style | For Wire Size | Net per 100 | Net per 1000 1000-3999 | Net per 1000 4000-11999 | Net per 1000 12000 Up |
|---|---|---|---|---|---|---|---|
| 02-09-2103 | 02-09-1103 | C | 14–18 | $4.00 | $25.30 | $18.75 | $14.65 |
| 02-09-2118 | 02-09-1118 | C | 18–24 | 4.00 | 25.30 | 18.75 | 14.65 |
| 02-09-2143 | 02-09-1143 | C | 22–30 | 4.00 | 25.30 | 18.75 | 14.65 |
| 02-09-8110 | 02-09-7110 | S | 14–34 | 4.00 | 25.30 | 18.75 | 14.65 |
| | | | | | 1000-4999 | 5000-9999 | 10000 Up |
| 02-09-2133 | 02-09-1133 | PC | ...... | $3.10 | $21.45 | $16.50 | $13.25 |
| R-93-12 | .......... | BC | ...... | 1.80 | 10.30 | 7.00 | 6.30 |
| .......... | M-93-102 | BC | ...... | 1.80 | 10.40 | 7.05 | 6.35 |
| R-93-31 | .......... | BC | ...... | 1.80 | 10.45 | 7.20 | 6.45 |
| .......... | M-118-95A | BC | ...... | 1.85 | 10.80 | 7.45 | 6.70 |
| R-62-3 | .......... | BC* | ...... | 1.80 | 10.70 | 7.40 | 6.65 |
| R-62-4 | .......... | BC* | ...... | 1.85 | 10.95 | 7.70 | 6.90 |
| R-62-5 | .......... | BC* | ...... | 1.80 | 10.70 | 7.40 | 6.65 |
| | | | | | 1000-2999 | 3000-5999 | 6000-11999 |
| 02-06-2103 | 02-06-1103 | C* | 18–22 | $4.40 | $37.50 | $26.20 | $18.20 |
| 02-06-2132 | 02-06-1132 | C* | 22–30 | 4.40 | 37.50 | 26.20 | 18.20 |
| 02-06-8101 | 02-06-7101 | S* | 18–34 | 4.40 | 37.50 | 26.20 | 18.20 |
| | | | | | 4000-7999 | 8000 Up | |
| .......... | 02-08-1101 | C | 16–28 | $4.10 | $26.00 | $19.30 | ...... |
| .......... | 02-05-1105 | C* | 18–22 | 3.75 | 23.50 | 17.45 | ...... |

## CRIMPING TOOLS

| Waldom/ Molex Number | For Pin Size | Description | Net Each |
|---|---|---|---|
| HT-1919 | .093″ | Prototype hand tool for prototype use | $ 5.95 |
| HT-1921 | .062″ | Prototype hand tool for prototype use | 5.95 |
| HTR-1031-C | .093″ | Production hand tool with ratchet | 65.00 |
| HTR-2262 | .062″ | Production hand tool with ratchet | 75.00 |
| HT-2038 | .093″ | Deluxe ejector tool for extracting pins | 6.70 |
| HT-1010-2B2 | ..... | Replacement tip for HT-2038 | 2.50 |
| HT-2285 | .062″ | Deluxe ejector tool for extracting pins | 6.70 |
| HT-1672-3 | ..... | Replacement tip for HT-2285 | 2.50 |
| HT-2054 | .093″ | Econo-extractor tool for extracting pins | 2.25 |
| HT-2023 | .062″ | Econo-extractor tool for extracting pins | 2.25 |
| HT-1353 | .093″ | Insertion tool for inserting pins | 7.50 |
| HT-1807 | .062″ | Insertion tool for inserting pins | 7.50 |

**Manufactured by Molex Products, these items are made available from electronic distributors through Waldom Electronics, Inc.**

# WINCHESTER ELECTRONICS | Connectors
IVISION OF LITTON INDUSTRIES

## PRINTED CIRCUIT EDGE CONNECTORS

### SINGLE ROW .078″ CONTACT CENTERS

ngle row for .062″ PC board. Choose 14 to 44 contact positions.
nnector body .484″ h. x .343″ w.; 44-contact connector is
296″ lg. "Tuning fork" contacts are beryllium copper. In-con-
et polarization available on request. Diallyl phthalate SDG-F
aterial. Eyelet terminals. **Full data and prices on request.**

| Winchester Number | Board Thickness | No. of Contact Positions | Single or Double | Mounting Style |
|---|---|---|---|---|
| KM14S | .062″ | 14 | Single | Clearance Hole |
| KM21S | .062″ | 21 | Single | Clearance Hole |
| KM31S | .062″ | 31 | Single | Clearance Hole |
| KM37S | .062″ | 37 | Single | Clearance Hole |
| KM44S | .062″ | 44 | Single | Clearance Hole |

### DOUBLE ROW .125″ CONTACT CENTERS (FIG. A)

ouble row for .062″ PC board. Choice of 28 to 50 contact posi-
ons. Body .61″ h. x .36″ w. x 7.055″ lg. (50-contact version).
ontacts .025″ sq. for wire-wrapping equipment. Contact ter-
inal posts on .125″ x .250″ grid pattern conforming to Gardner-
enver Co. standards. Connector can be used with equipment
ing rotational position frames. In-contact polarization key
70 available. Made of diallyl phthalate, type SDG-F. **Full
ta and prices on request.**

| | | | | |
|---|---|---|---|---|
| HW28D0* | .062″ | 28 | Double | Clearance Hole |
| HW31D0* | .062″ | 31 | Double | Clearance Hole |
| HW40D0* | .062″ | 40 | Double | Clearance Hole |
| HW49D0* | .062″ | 49 | Double | Clearance Hole |
| HW50D0* | .062″ | 50 | Double | Clearance Hole |
| HW28D2* | .062″ | 28 | Double | Threaded Insert |
| HW31D2* | .062″ | 31 | Double | Threaded Insert |
| HW40D2* | .062″ | 40 | Double | Threaded Insert |
| HW49D2* | .062″ | 49 | Double | Threaded Insert |
| HW50D2* | .062″ | 50 | Double | Threaded Insert |

Final suffix is added here to indicate plating; details on request.

### DOUBLE ROW .125″ CONTACT CENTERS

ouble row for .062″ PC board; 31 contact positions. Body .573″
x .438″ w. x 4.50″ lg. In-contact polarization available on
quest. Made of diallyl phthalate, type SDG-F. Clearance hole
ounting.

**Winchester No. PQD31**—Specify contact termination by suffix
.g., PQD31**S**): **S**, eyelet; **A**, taper socket; **D**, dip solder; **M**,
0° dip solder; or, **W**, wire wrap. **Full data and prices on request.**

### DOUBLE ROW .156″ CONTACT CENTERS, COMMERCIAL (FIG. B)

ouble row for .062″ PC board. Choice of from 6 to 30 contact
ositions. Body .51″ h. x .44″ w. x 5.94″ lg. (30-position version).
n-contact polarization available on request. **Full data and prices
n request.**

| Winchester Number | Board Thickness | No. of Contact Positions | Single or Double | Mounting Style |
|---|---|---|---|---|
| 8BD6* | .062″ | 6 | Double | Clearance Hole |
| 8BD10* | .062″ | 10 | Double | Clearance Hole |
| 8BD12* | .062″ | 12 | Double | Clearance Hole |
| 8BD15* | .062″ | 15 | Double | Clearance Hole |
| 8BD18* | .062″ | 18 | Double | Clearance Hole |
| 8BD22* | .062″ | 22 | Double | Clearance Hole |
| 8BD28* | .062″ | 28 | Double | Clearance Hole |
| 8BD30* | .062″ | 30 | Double | Clearance Hole |

Add suffix (e.g., 8BD6**S**) for contact termination: **S**, eyelet; **A**,
aper socket; **M**, 90° dip solder; **D**, dip solder; **W**, wire wrap.

### SINGLE ROW .156″ CONTACT CENTERS, MIL (FIG. C)

ingle row for .062″ PC board. Choose 6 to 28 contact positions.
ody .44″ h. x .50″ w. x 5.284″ lg. (28-position version). Meets
IIL-C-21097/1 in eyelet termination version. **Full data and
rices on request.**

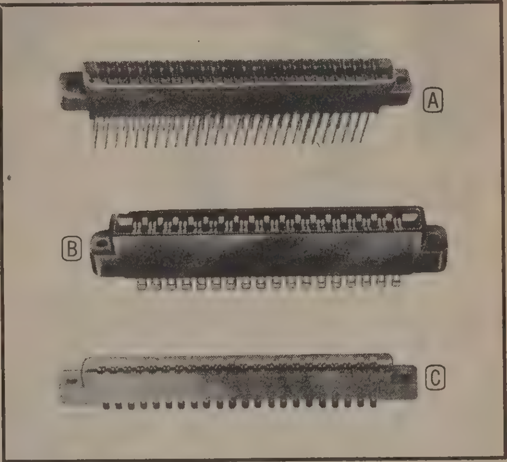
| | | | | |
|---|---|---|---|---|
| HB6S* | .062″ | 6 | Single | Specify by suffix (e.g., HB6S**0**):<br>**0** = Clearance Hole<br>**1** = Floating Bushing<br>**2** = Threaded Insert |
| HB15S* | .062″ | 15 | Single | |
| HB18S* | .062″ | 18 | Single | |
| HB22S* | .062″ | 22 | Single | |
| HB28S* | .062″ | 28 | Single | |
| HB6D* | .062″ | 6 | Single | |
| HB15D* | .062″ | 15 | Single | |
| HB18D* | .062″ | 18 | Single | |
| HB22D* | .062″ | 22 | Single | |
| HB28D* | .062″ | 28 | Single | |

Letter **S** indicates eyelet contact termination; **D**, dip solder.
ee mounting style variants for final suffix.

DO YOU HAVE THE W.E. HANDBOOK?

FREE: TO OEM ENGINEERS AND BUYERS

Kindly Request on Your OEM Company Letterhead, with Your Title



### SINGLE ROW .156″ CONTACT CENTERS, COMMERCIAL

Single row for .062″ PC board. Choose from 6 to 28 contact positions. Body .44″ h. x .50″ w. x 5.284″ lg. (28-position version). Commercial version of MIL-C-21097/1, these connectors available with in-contact polarizing key 109-5535; or, in-between contact polarizing key 109-8225. Clearance hole mounting. **Full specifications and prices on request.**

| Winchester Number | Board Thickness | No. of Contact Positions | Single or Double | Contact Termination |
|---|---|---|---|---|
| HK6S0 | .062″ | 6 | Single | Eyelet |
| HK15S0 | .062″ | 15 | Single | Eyelet |
| HK18S0 | .062″ | 18 | Single | Eyelet |
| HK22S0 | .062″ | 22 | Single | Eyelet |
| HK28S0 | .062″ | 28 | Single | Eyelet |
| HK6D0 | .062″ | 6 | Single | Dip Solder |
| HK15D0 | .062″ | 15 | Single | Dip Solder |
| HK18D0 | .062″ | 18 | Single | Dip Solder |
| HK22D0 | .062″ | 22 | Single | Dip Solder |
| HK28D0 | .062″ | 28 | Single | Dip Solder |

### DOUBLE ROW .156″ CONTACT CENTERS, MIL (FIG. C)

Double row for .062″ PC board. Choose from 15 to 43 contact positions. In eyelet termination version, meets MIL-C-21097/1 specifications. Body .44″ h. x .50″ w. x 7.631″ lg. (43-position version). **Full specifications and prices on request.**

| | | | | |
|---|---|---|---|---|
| HBD10S* | .062″ | 10 | Double | Eyelet |
| HBD15S* | .062″ | 15 | Double | Eyelet |
| HBD18S* | .062″ | 18 | Double | Eyelet |
| HBD22S* | .062″ | 22 | Double | Eyelet |
| HBD36S* | .062″ | 36 | Double | Eyelet |
| HBD43S* | .062″ | 43 | Double | Eyelet |
| HBD15D* | .062″ | 15 | Double | Dip Solder |
| HBD18D* | .062″ | 18 | Double | Dip Solder |
| HBD22D* | .062″ | 22 | Double | Dip Solder |
| HBD43D* | .062″ | 43 | Double | Dip Solder |

*Add suffix (e.g., HBD15S**0**) for mounting style: **0**, clearance hole; **1**, floating bushing; **2**, threaded insert.

### DOUBLE ROW .156″ CONTACT CENTERS, COMMERCIAL

Double row for .062″ PC board. Choose from 15 to 43 contact positions. A commercial version of above series, it is available with in-contact polarizing key 109-5535 or in-between contact polarizing key 109-8225. Same size as MIL version, above. Clearance hole mounting. **Full specifications and prices on request.**

| | | | | |
|---|---|---|---|---|
| HKD15S0 | .062″ | 15 | Double | Eyelet |
| HKD18S0 | .062″ | 18 | Double | Eyelet |
| HKD22S0 | .062″ | 22 | Double | Eyelet |
| HKD43S0 | .062″ | 43 | Double | Eyelet |
| HKD15D0 | .062″ | 15 | Double | Dip Solder |
| HKD18D0 | .062″ | 18 | Double | Dip Solder |
| HKD22D0 | .062″ | 22 | Double | Dip Solder |
| HKD43D0 | .062″ | 43 | Double | Dip Solder |

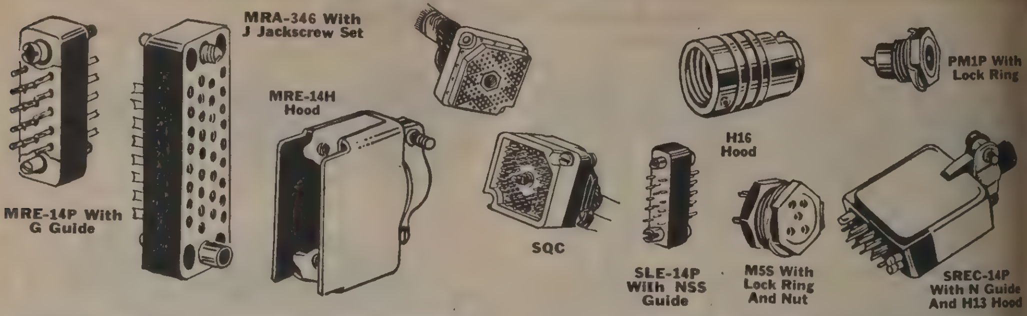
### SINGLE ROW .156 CONTACT CENTERS

Single row for .062″ PC board. Choose from 6 to 22 contact positions. Contacts are "tuning fork" design in beryllium copper; in-contact polarization available on request. Made of diallyl phthalate, type MDG. Body .48″ h. x .34″ w. x 4.28″ lg. (22-position version). Clearance hole mounting. **Full specifications and prices on request.**

| | | | | |
|---|---|---|---|---|
| KKM6S | .062″ | 6 | Single | Eyelet |
| KKM10S | .062″ | 10 | Single | Eyelet |
| KKM12S | .062″ | 12 | Single | Eyelet |
| KKM15S | .062″ | 15 | Single | Eyelet |
| KKM18S | .062″ | 18 | Single | Eyelet |
| KKM22S | .062″ | 22 | Single | Eyelet |

# WINCHESTER ELECTRONICS | Connectors

DIVISION OF LITTON INDUSTRIES


MRA-346 With J Jackscrew Set
MRE-14H Hood
MRE-14P With G Guide
SQC
H16 Hood
PM1P With Lock Ring
SLE-14P With NSS Guide
MSS With Lock Ring And Nut
SREC-14P With N Guide And H13 Hood

## SERIES MRE/MRA MINIATURE RECTANGULAR CONNECTORS—SELF-ALIGNING AND POLARIZED

### SERIES MRE—#20 CONTACTS RATED 7.5 AMPS

The accepted standard for rectangular, miniature internal-type connectors. Feature maximum utility of space while providing optimum number of contacts; very lightweight. Unusually high working voltage and current for size. Ideal for long, trouble-free service in aircraft, instrumentation and portable equipment. **Dielectric Material:** Mineral filled melamine. **Construction:** Monobloc design eliminates internal creepage paths; reduces moisture and dust pockets. **Contacts:** Pin contacts of brass; socket contacts phosphor bronze precision machined and gold plated. Improved plating assures reduced engage-disengage forces; prolongs life. **Hoods and Clamps:** Anodized aluminum; may be applied to either plug or receptacle; choice of top or side opening. **Meet MIL-C-8384 Specifications:** Available in Military version to conform to mechanical and environment requirements. **Full Specifications and Price Information on Request.**

| No. of Contacts* | Connectors§ Winchester No. MRE- | | Aluminum Hoods* Winchester No. MRE- | | Pot. Forms▲ Winchester No. MRE- |
|---|---|---|---|---|---|
| | **Plug** | **Receptacle** | **Top Cable** | **Side Cable** | |
| 7 | 7P-G | 7S-G | 7H | 7H-1 | 7FM |
| 8 | 8P-N♦ | 8S-N♦ | 8H | 8H-1 | 8FM |
| 8† | 5-3P-N♦ | 5-3S-N♦ | 8H | 8H-1 | 8FM |
| 9‡ | 7-2P-G | 7-2S-G | 9H | 9H-1 | 9FM |
| 9 | 9P-G | 9S-G | 9H | 9H-1 | 9FM |
| 11 | 11P-G | 11S-G | ........ | ........ | ........ |
| 14‡ | 12-2P-G | 12-2S-G | 12-2H | 12-2H-1 | ........ |
| 14 | 14P-G | 14S-G | 14H | 14H-1 | 14FM |
| 18 | 18P-G | 18S-G | 18H | 18H-1 | 18FM |
| 20 | 20P-G | 20S-G | 20H | 20H-1 | 20FM |
| 21 | 21P-G | 21S-G | 21H | 21H-1 | 21FM |
| 26 | 26P-G | 26S-G | 26H | 26H-1 | 26FM |
| 34 | 34P-G | 34S-G | 34H | 34H-1 | 34FM |
| 41 | 41P-G | 41S-G | 41H | 41H-1 | 41FM |
| 42 | 42P-G | 42S-G | 42H | 42H-1 | 42FM |
| 50 | 50P-G | 50S-G | 50H | 50H-1 | 50FM |
| 75 | 75P-G | 75S-G | 75H | 75H-1 | 75FM |
| 104 | 104P-JT‡ | 104S-J‡ | 104H■ | 104H-9■ | ........ |

*Standard contacts 7.5 amps for #20 AWG. †Three contacts are special type rated 10 amps for #18 AWG. ‡Two contacts are special type rated 10 amps for #18 AWG. §Suffix **G** indicates standard guide supplied; suffix **N** indicates guide for extra mechanical strength; use suffix **K** to order high electrical conductivity guide. ‡Guides not recommended for these models; suffix **JT** indicates short turning jackscrew set, **J** fixed jackscrew set, **JTC** long turning jackscrews for use with hoods. *Order separately or assembled on connector (add suffix **H** or **H-1** to plug or receptacle number, except **MRA-104H-9** hood available only with large side opening). ▲Potting forms cannot be used with hoods. ■Use prefix **MRA-**, when ordering. ♦Only **K** and **N** guides available.

## TYPE SQC HIGH DENSITY SQUARE CONNECTORS

**100 CONTACTS AND 6 POLARIZATION POSITIONS IN THE SAME MOUNTING AREA (APPROXIMATELY THIS SIZE SQUARE) REQUIRED BY MS SIZE 18 SHELL**

Designed for controlled environmental applications such as in computers, office equipment, commercial and industrial uses. Removable contacts, supplied with connectors, are crimp type and precision machined to assure solid pin and socket reliability; 0.030″ dia. rated 5 amps. Pins are gold-plated leaded bronze; sockets, gold-plated phosphor bronze. Dielectric is gray Noryl*. Integral, polarized shell is tough, durable thermoplastic for long life and minimum weight. Monobloc construction eliminates internal creepage and reduces the number of moisture and dust pockets. Comes with top-opening protective hood with strain relief; made of black Lexan*. Cable clamp is black anodized aluminum. Simplified installation with pretapped mounting plate; requires only a square panel cutout. Center jack screw provides easy assembly and disassembly. Jackscrew, jacksocket and mounting plate are made of passivated stainless steel. Accommodates wire sizes 20 thru 32 AWG. Voltage breakdown, 1850 VAC and 2575 VDC, contact to contact at sea level. **SQC100SM:** Socket contact body with threaded insert and mtg. plate. **SQC100PH:** Pin contact body with long turning jackscrew and hood. **Full Specifications and Prices on Request.**

*G.E. trademark.

## MINIATURE RECTANGULAR CONNECTORS—SELF-ALIGNING AND POLARIZED

### SERIES MRA—#16 CONTACTS RATED 13 AMPS

Identical and interchangeable (but will not mate) with Series MRE connectors, except contacts are rated 13 amps, for #16 AWG wire. Larger barriers between contacts are designed to provide maximum creepage surface somewhat greater than that of Series MRE. Dielectric material, construction, hoods and clamps are similar to Series MRE, except Model MRA-50-8 dielectric is diallyl phthalate SDG-F. Gold plated guides furnished to provide positive polarization and to facilitate engagement. Performance test results show that Series MRA connectors well exceed military standards in the contact millivolt-drop test, voltage breakdown test, altitude test, etc. **Full Specifications and Price Information on Request.**

| No. of Contacts* | Connectors§ Winchester No. MRA- | | Alum. Hoods* Winch. No. MRE- | | Jackscrew Locking Device Suffix▲ |
|---|---|---|---|---|---|
| | **Plug** | **Receptacle** | **Top Cable** | **Side Cable** | |
| 9 | 9P-G | 9S-G | 9H | 9H-1 | J, JT, JTC |
| 14 | 14P-G | 14S-G | 14H | 14H-1 | J, JT, JTC |
| 20 | 20P-G | 20S-G | 20H | 20H-1 | J, JT, JTC |
| 34 | 34P-G | 34S-G | 34H | 34H-1 | J, JT, JTC |
| 41 | 41P-G | 41S-G | 41H | 41H-1 | J, JT, JTC |
| 42 | 42P-G | 42S-G | 42H | 42H-1 | J, JT, JTC |
| 50 | 50P-G | 50S-G | 50H | 50H-1 | J, JT, JTC |
| 58† | 50-8P-G | 50-8S-G | 50-8H‡ | 50-8H-9‡ | J, JT, JTC |
| 66 | 66P-G | 66S-G | 66H | 66H-1 | J, JT, JTC |
| 75 | 75P-G | 75S-G | 75H | 75H-1 | J, JT, JTC |
| 104 | 104P-JT‡ | 104S-J‡ | 104H‡ | 104H-9 | ........JTC |

*Standard contacts 13 amps for #16 AWG. †Eight contacts are special type rated 20 amps for #20 AWG. ‡Drawn aluminum; all others formed. §Suffix **G** indicates standard guide supplied; suffix **N** indicates guide for extra mechanical strength; suffix **K** indicates high electrical conductivity guide. ‡Guides not recommended for these models; supplied with standard jackscrew sets as indicated. *Order separately or assembled on connector (add suffix **H** or **H-1** to plug or receptacle number, except **50-8H-9** and **104H-9** hoods available only with large side opening). ▲Suffix **J** indicates jackscrew set, **JT** short turning jackscrew set, **JTC** long turning jackscrews for use with hoods.

## SERIES SLE/SME/SRE SUBMINIATURE HI-DENSITY RECTANGULAR CONNECTORS

Compact, lightweight; especially suited for aircraft, instrumentation and portable equipment applications. SME and SRE pin contacts are gold-plated brass; SLE pin contacts are gold-plated phosphor bronze. Socket contacts are gold-plated phosphor bronze. Solder cup of .037 dia. accepts up to #22 AWG wire; order No. S45 Solder Cup Adapter for #20 AWG wire. Dielectric is glass-filled diallyl phthalate per MIL-M-14, SDG-F; withstanding voltage is one minute electrification at 1000 VAC. Guides are Type NSS stainless steel, passivated. Jackscrews are stainless steel, passivated. Hoods are anodized aluminum.

| Connectors | | | Jackscrew Locks | |
|---|---|---|---|---|
| **Series** | **Dia., In.** | **Amps** | **Suffix** | **Polarized Screw/Socket** |
| **SLE** | .025 | 3 | **J** | Fixed |
| **SRE** | .030 | 5 | **JT** | Short turning |
| **SME** | .040 | 7½ | **JTU** | Short turning w/round knob |
| | | | **JTC** | Long turning |
| | | | **NSS** | Cylindrical guides |

### CODE ORDERING CHART

Typical No.: SLE-4P-J-H13, 3-amp, .025″ dia., 4-pin contact type connector with fixed polarized screw/socket and top opening hood.

| No. of Contacts | Connectors, Series SLE-, SME-, SRE- | | Jackscrew Locking Device or Guide | Hoods, Top Opening |
|---|---|---|---|---|
| | **Pin** | **Socket** | | |
| 4 | 4P- | 4S- | J-, JT-, JTU-, JTC- or NSS- | H13 |
| 5 | 5P- | 5S- | J-, JT-, JTU-, JTC- or NSS- | ........ |
| 7 | 7P- | 7S- | J-, JT-, JTU-, JTC- or NSS- | H13 |
| 9 | 9P- | 9S- | J-, JT-, JTU-, JTC- or NSS- | ........ |
| 11 | 11P- | 11S- | J-, JT-, JTU-, JTC- or NSS- | H8, H9‡ |
| 14 | 14P- | 14S- | J-, JT-, JTU-, JTC- or NSS- | H13 |
| 20 | 20P- | 20S- | J-, JT-, JTU-, JTC- or NSS- | H13 |
| 26 | 26P- | 26S- | J-, JT-, JTU-, JTC- or NSS- | H13 |
| 29 | 29P- | 29S- | J-, JT-, JTU-, JTC- or NSS- | ........ |
| 34 | 34P- | 34S- | J-, JT-, JTU-, JTC- or NSS- | H13 |
| 44 | 44P- | 44S- | J-, JT-, JTU-, JTC- or NSS- | ........ |
| 50 | 50P- | 50S- | J-, JT-, JTU-, JTC- or NSS- | H8, H9‡ |

‡Side opening for cable.

## ERIES SMRE SUBMINIATURE RECTANGULAR NNECTORS—SELF-ALIGNING AND POLARIZED

ultimate in compact, lightweight performance. Size is kept n absolute minimum for use in airborne and portable equip- t. Unusually high breakdown voltage. Feature Monobloc struction using diallyl phthalate SDG-F per MIL-M-14. tacts, .025″ dia.; solder cup hole, .026″ dia. Construction simi- to MRE Series. Rated 3 amps, 3,500 VDC breakdown at sea l between contacts; 2,500 VDC contacts to ground. For use 1 #26 AWG wire, **Full Specifications and Pricing Information Request.**

| of n- ts* | Connectors§ Winchester No. SMRE- | | Aluminum Hoods* Winchester No. SMRE- | | Jackscrew Lockg. Dev. Suffix† |
|---|---|---|---|---|---|
| | **Plug** | **Receptacle** | **Top Cable** | **Side Cable** | |
| 7 | **7P-G** | **7S-G** | **7H** | .......... | |
| 4 | **14P-G** | **14S-G** | **14H** | **14H-1** | **-J,**<br>**-JT**<br>or<br>**-JTC** |
| ) | **20P-G** | **20S-G** | **20H** | .......... | |
| 6 | **26P-G** | **26S-G** | **26H** | .......... | |
| 9 | **29P-G** | **29S-G** | **29H** | .......... | |
| 4 | **34P-G** | **34S-G** | **34H** | .......... | |

ated 3 amps, for #26 AWG. †Add to plug or receptacle number preassembled connector; **J** indicates fixed jackscrew sets; **JT**, rt turning jackscrew sets; **JTC** long turning jackscrews. asic insert without guide set; add suffix **G** for standard guide; guide with high electrical conductivity. •Order separately or assembled on connector; add suffix **H** (**H-1** for 14P or 14S with e cable opening hood); **H-8** large top cable opening hood also ilable for 14P, 14S, 34P, 34S.

## MINIATURE RECTANGULAR CONNECTORS WITH REMOVABLE CONTACTS

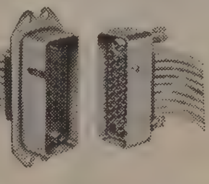
### SERIES MRAC—CRIMP OR SOLDER CONTACTS

nilar to and interchangeable with Series MRA, but plugs and eptacles have removable crimp (or solder-type) contacts and ferent body thickness. Offer substantial savings in time and or, and great flexibility in choice of circuitry. The crimped ntact is easily removed with a hand tool, then replaced by hand with a simple insertion tool (see listing of Winchester tools). onobloc construction. **Dielectric:** Diallyl phthalate per MIL-M- , type SDG-F. **Contacts:** Must be ordered separately. Accom- odate #14 AWG and various smaller wire combinations. **Per- rmance:** Meets high potential performance requirements of IL-C-22857C, Para. 3.6.3. Rated 13 amps max. **Full Specifica- ns and Pricing Information on Request.**

| No. of ontacts | Winch. No. MRAC- | | No. of Contacts | Winch. No. MRAC- | |
|---|---|---|---|---|---|
| | **Plug** | **Recep.** | | **Plug** | **Recep.** |
| 9 | **9P** | **9S** | 41 | **41P** | **41S** |
| 14 | **14P** | **14S** | 42 | **42P** | **42S** |
| 18 | **18P** | **18S** | 50 | **50P** | **50S** |
| 20 | **20P** | **20S** | 66 | **66P** | **66S** |
| 26 | **26P** | **26S** | 75 | **75P** | **75S** |
| 34 | **34P** | **34S** | 104 | **104P** | **104S** |

### SERIES XAC—FOR EXTERNAL MOUNTING

his series is the MRAC removable contact connector equipped ith protective shells for chassis or cable mounting on etal containers, bulkheads or any outside surface equipment. esigned to provide users of AN- pe connectors with sturdy, light- eight, space-saving electrical nnections. Inserts housed in ghtweight, anodized aluminum ells. Screw lock coupling. **Dielec- ic:** Diallyl phthalate. **Contacts:** lust be ordered separately. For 30 to #14 AWG wire. **Perform- nce:** Meets high potential per- rmance requirements of MIL-C- 2857C, Para. 3.6.3. Rated 13 mps. **Full Specifications and ricing Information on Request.**



| No. of Contacts | Winchester No. XAC- | | No. of Contacts | Winchester No. XAC- | |
|---|---|---|---|---|---|
| | **Plug** | **Receptacle** | | **Plug** | **Receptacle** |
| 9 | **9P** | **9S** | 42 | **42P** | **42S** |
| 14 | **14P** | **14S** | 50 | **50P** | **50S** |
| 18 | **18P** | **18S** | 66 | **66P** | **66S** |
| 20 | **20P** | **20S** | 75 | **75P** | **75S** |
| 26 | **26P** | **26S** | 104 | **104P** | **104S** |
| 34 | **34P** | **34S** | | | |

## SERIES SREC SUBMINIATURE RECTANGULAR CONNECTORS—REMOVABLE CRIMP CONTACTS

Self-aligning, polarized, rack-and-panel connectors. Feature .030″ dia. removable contacts with .094″ center-to-center spacing. Precision-machined socket and pin contacts are 4-indent crimp type for extremely easy insertion or removal; accommodate #24, 26 and 28 AWG stranded wire. Rated at 5 amps max., 2,650 VDC breakdown at sea level between contacts; 2,575 VDC contacts to ground. Monobloc construction. Pins are gold-plated, leaded commercial bronze; sockets, gold-plated phospher bronze. Glass-filled diallyl phthalate per MIL-M-14, type SDG-F. **Full Specifications and Pricing Information on Request.**

| No. of Con-tacts* | Connectors§ Winch. No. SREC- | | Hoods* | Jackscrew Locking Dev. Suffix‡ |
|---|---|---|---|---|
| | **Plug** | **Recep.** | **Winch. No. SRE-** | |
| 7 | **7P-N** | **7S-N** | **7H-13** | **-J, -JT** or **-JTC** |
| 14 | **14P-N** | **14S-N** | **14H-13** | **-J, -JT** or **-JTC** |
| 18 | **18P-N** | **18S-N** | .......... | **-J, -JT** or **-JTC** |
| 20 | **20P-N** | **20S-N** | **20H-13** | **-J, -JT** or **-JTC** |
| 26 | **26P-N** | **26S-N** | **26H-13** | **-J, -JT** or **-JTC** |
| 34 | **34P-N** | **34S-N** | **34H-13** | **-J, -JT** or **-JTC** |
| 44 | **44P-N** | **44S-N** | .......... | **-J, -JT** or **-JTC** |
| 50 | **50P-N** | **50S-N** | **50H-8†** | **-J, -JT** or **-JTC** |

*Rated 5 amps max. †Standard **H-8** hood supplied; if large side opening hood desired, substitute suffix **H-9.** ‡Add to plug or receptacle number for preassembled connector; **J** indicates fixed jackscrew sets, **JT** short turning jackscrew sets, **JTC** long turning jackscrew sets. §Suffix **N** indicates guide with high mechanical strength, supplied as standard; use suffix **K** to order high electrical conductivity guide. •Formed aluminum hoods; can be ordered separately or preassembled on connector (suffix **H-8** indicates large top opening, **H-13** higher top opening).

## SERIES M/PM MINIATURE ROUND POLARIZED CONNECTORS—CABLE OR PANEL MOUNTING

Compact polarized connectors for cable or panel mounting. Feature Monobloc construction and molded melamine bodies. Contacts rated 7.5 amps for #20 AWG, with high voltage breakdown points, as indicated. Pins, .040″ dia.; solder cup hole, .048″ dia.

**Series M**—Ideal for such applications as strain gauge, telemetering and pressure pick-up installations in aircraft, portable equipment and instrumentation. Rated 7.5 amps, 2,800 VDC breakdown at sea level between contacts; 3,900 VDC contacts to ground. M types for 1/16″ panel mounting. **Series PM High-Voltage Types**—Offers moderately high voltage ratings for photoflash, aircraft, instrumentation, and communications equipment. When mounted on 3/16″ panel, PM1P has 12,000 VDC and PM1S 10,600 VDC breakdown point at sea level. PM6P and PM6S, six-contact versions of PM1, have 8,200 VDC breakdown at sea level, outer to outer contacts; 6,600 VDC outer contacts to center contact. Cable hoods and clamps are available for all Series M and PM connectors. **Full Specifications and Pricing Information on Request.**

| No. of Con-tacts* | Connectors§ Winchester Number | | No. of Con-tacts* | Connectors§ Winchester Number | |
|---|---|---|---|---|---|
| | **Plug** | **Receptacle** | | **Plug** | **Receptacle** |
| 1 | **PM1P** | **PM1S** | 7 | **M7P** | **M7S** |
| 4 | **M4P†** | **M4S†** | 9 | **M9P** | **M9S** |
| 5 | **M5P** | **M5S** | 10 | **M10P** | **M10S** |
| 6 | **PM6P** | **PM6S** | 12 | **M12P** | **M12S** |

*Rated 7.5 amps for #20 AWG. †Add suffix **G** for ground lug. §Basic connector only; add suffix **LS** for lock spring, **LR** for lock ring, **N** for mounting nut.

### SERIES M CABLE HOODS

For use with either the Series M plug or receptacle, or both, as required. All cable hoods may be used with the standard lock spring or lock ring mechanism available on Series M connectors. Of molded melamine unless otherwise indicated. **Write for Pricing on These and Special and Modified Hoods Also Available for Series M.**

| Winchester No. | Used on Connector Nos. | Winchester No. | Used on Connector Nos. |
|---|---|---|---|
| **H9** | M5, M7, M9, M10 | **H14†** | M4 |
| **H9C*** | M5, M7, M9, M10 | **H16†** | M5, M7, M9, M10 |
| **H10** | M4 | **H19** | M5, M7, M9, M10 |
| **H10C*** | M4 | **H19C*** | M5, M7, M9, M10 |
| **M12H** | M12 | | |

*Supplied with cadmium-plated cable clamp for additional support and strain relief. †Bar aluminum hood with integral cable clamp, polyethylene insulating sleeve, and set screw.

## SERIES 107 HAND TOOLS FOR WINCHESTER CONNECTORS

Iand tools for use with guide sets, and for easy insertion or removal of connector contacts. **Write for Price Information.**

**Vinchester No. 107-0704 Guide Set Tool**—Provides fast, easy nstallation of N guide sets. Screwdriver-type tips are enclosed y cylindrical aligners that hold tips in place in the guide pin and ocket slots to prevent slippage. Tool holds pin and socket in place vhile hex nut is tightened by standard wrench or other means.

**Vinchester No. 107-0701 Guide Set Tool**—Similar to 107-0704, ut for G7 and N7 guide sets.

**Winchester No. 107R-1001 Removal Tool**—For removing Series MRAC contacts. Spring loaded, with rubber handle.

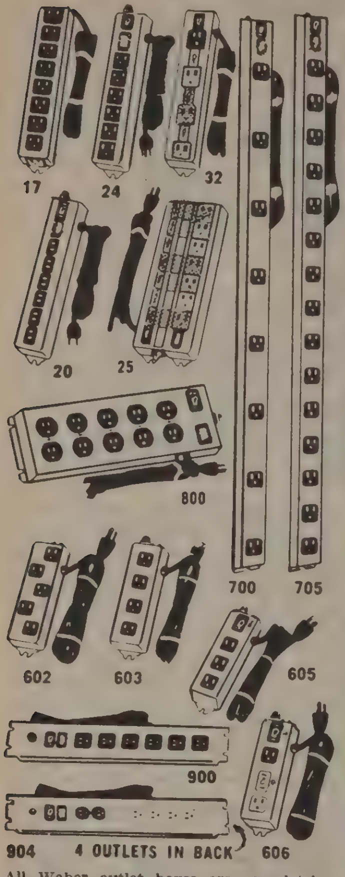
**Winchester No. 107-1001 Removal Tool**—Same as No. 107R-1001, but without rubber tip.

**Winchester No. 107-1012 Removal Tool**—For removing Series SREC contacts.

**Winchester No. 107-1015 Insertion Tool**—For inserting Series MRAC contacts.

# Waber Multiple Outlets

## MASTER POWER CONTROLS FOR INDUSTRY, LABORATORY OR SERVICE SHOP



All Waber outlet boxes are completely wired for instant use. UL Approved components; steel case has silver-gray textured hammertone finish; tough neoprene cord sets. Rated 15 A, 130 V continuous duty. **Modifications Available to Meet Special Requirements.**

### TWO-WIRE OUTLET BOXES

Model 20 has six outlets, pilot light and switch; Model 30, four color-coded outlets and switch.

| Waber Model | Type | Cord Lgth. | Net Each |
|---|---|---|---|
| 20 | Fuse | 10 ft. | $6.20 |
| 20CB | Circuit breaker | 10 ft. | 7.24 |
| 30 | Fuse | 10 ft. | 6.20 |
| 30CB | Circuit breaker | 10 ft. | 7.24 |

### DELUXE OUTLET BOXES

Seven color-coded switch and outlet sets with master switch, pilot light and center "write-on" marking strip. Model 25 has "U" ground outlets; Model 35, two-wire.

| | | | |
|---|---|---|---|
| 25 | Fuse | 6 ft. | $17.04 |
| 25-15 | Fuse | 15 ft. | 18.15 |
| 25CB | Circuit breaker | 6 ft. | 18.15 |
| 25CB-15 | Circuit breaker | 15 ft. | 19.26 |
| 35 | Fuse | 10 ft. | 14.85 |
| 35CB | Circuit breaker | 10 ft. | 15.95 |

### INLINE OUTLET BOXES

Extra outlet on end for series-string wiring. Model 15 has control unit with 7 "U" ground outlets, switch and pilot light; Model 17, slave with 9 outlets only.

| | | | |
|---|---|---|---|
| 15 | Fuse | 6 ft. | $ 9.62 |
| 15-15 | Fuse | 15 ft. | 10.73 |
| 15CB | Circuit breaker | 6 ft. | 10.73 |
| 15CB-15 | Circuit breaker | 15 ft. | 11.84 |
| 17 | Outlets only | 6 ft. | 7.42 |
| 17-15 | Outlets only | 15 ft. | 8.54 |

### "U" GROUND OUTLET BOX WITH AC VOLTMETER

Features one outlet, switch and edgewise-reading, illuminated 0–150 AC voltmeter in handsome, chrome-plated case. Permits continuous monitoring of line voltage.

| Waber Model | Type | Cord Lgth. | Net Each |
|---|---|---|---|
| 230M | Fuse | 6 ft. | $ 8.25 |
| 230M-15 | Fuse | 15 ft. | 9.35 |
| 230MCB | Circuit breaker | 6 ft. | 9.35 |
| 230MCB-15 | Circuit breaker | 15 ft. | 10.44 |

### "U" GROUND OUTLET BOXES

Model 24 has six outlets, pilot light and switch; Model 24M, six outlets, switch and edgewise-reading, illuminated 0–150 AC voltmeter; Model 32, four sets of color-coded outlets and switches.

| | | | |
|---|---|---|---|
| 24 | Fuse | 6 ft. | $ 9.36 |
| 24-15 | Fuse | 15 ft. | 10.44 |
| 24CB | Circuit breaker | 6 ft. | 10.44 |
| 24CB-15 | Circuit breaker | 15 ft. | 11.55 |
| 24M | Fuse | 6 ft. | 11.96 |
| 24M-15 | Fuse | 15 ft. | 12.95 |
| 24MCB | Circuit breaker | 6 ft. | 12.95 |
| 24MCB-15 | Circuit breaker | 15 ft. | 13.95 |
| 32 | Fuse | 6 ft. | 9.35 |
| 32-15 | Fuse | 15 ft. | 10.44 |
| 32CB | Circuit breaker | 6 ft. | 10.44 |
| 32CB-15 | Circuit breaker | 15 ft. | 11.55 |

### 600 SERIES COMPACT "U" GROUND OUTLET BOXES

Model 602 has five outlets; Model 603, four outlets; Model 605, three outlets, pilot light and switch; Model 606, two sets of switch and pilot light outlets; Model 607M, three outlets, switch and edgewise-reading, illuminated AC voltmeter.

| Waber Model | Type | Cord Lgth. | Net Each |
|---|---|---|---|
| 602 | Outlets only | 6 ft. | $ 5.28 |
| 602-15 | Outlets only | 15 ft. | 6.38 |
| 603 | Fuse | 6 ft. | 5.78 |
| 603-15 | Fuse | 15 ft. | 6.87 |
| 603CB | Circuit breaker | 6 ft. | 6.87 |
| 603CB-15 | Circuit breaker | 15 ft. | 7.97 |
| 605 | Fuse | 6 ft. | 6.56 |
| 605-15 | Fuse | 15 ft. | 7.79 |
| 605CB | Circuit breaker | 6 ft. | 7.79 |
| 605CB-15 | Circuit breaker | 15 ft. | 8.76 |
| 606 | Fuse | 6 ft. | 6.56 |
| 606-15 | Fuse | 15 ft. | 7.79 |
| 606CB | Circuit breaker | 6 ft. | 7.79 |
| 606CB-15 | Circuit breaker | 15 ft. | 8.76 |
| 607M | Fuse | 6 ft. | 8.96 |
| 607M-15 | Fuse | 15 ft. | 9.95 |
| 607MCB | Circuit breaker | 6 ft. | 9.95 |
| 607MCB-15 | Circuit breaker | 15 ft. | 10.95 |

### "LONG JOHN" SERIES

**"U" Ground Outlet Types:** Model 700 has 8 outlets, pilot light and switch; Model 705, same but 15 outlets; Model 707, same but 14 outlets. Model 710 has 8 outlets only; Model 711, 14 outlets only; Model 715, 15 outlets only. **Locking Outlet Types:** Model 720 has 14 outlets, switch and pilot light; Model 725 has 14 outlets only. **Crow's Foot Outlet Types:** Model 730 has 14 outlets, switch and pilot light; Model 735 has 14 outlets only.

| | | | |
|---|---|---|---|
| 700 | Fuse | 6 ft. | $16.46 |
| 700-15 | Fuse | 15 ft. | 17.55 |
| 700CB | Circuit breaker | 6 ft. | 17.55 |
| 700CB-15 | Circuit breaker | 15 ft. | 18.65 |
| 705 | Fuse | 6 ft. | 20.84 |
| 705-15 | Fuse | 15 ft. | 21.95 |
| 705CB | Circuit breaker | 6 ft. | 21.95 |
| 705CB-15 | Circuit breaker | 15 ft. | 23.04 |
| 707 | Fuse | 6 ft. | 16.33 |
| 707-15 | Fuse | 15 ft. | 18.42 |
| 707CB | Circuit breaker | 6 ft. | 18.42 |
| 707CB-15 | Circuit breaker | 15 ft. | 19.53 |
| 710 | Outlets only | 6 ft. | 14.25 |
| 710-15 | Outlets only | 15 ft. | 15.35 |
| 711 | Outlets only | 6 ft. | 15.35 |
| 711-15 | Outlets only | 15 ft. | 16.44 |
| 715 | Outlets only | 6 ft. | 18.65 |
| 715-15 | Outlets only | 15 ft. | 19.74 |
| 720 | Fuse | 6 ft. | 28.95 |
| 720-15 | Fuse | 15 ft. | 29.96 |
| 720CB | Circuit breaker | 6 ft. | 29.96 |
| 720CB-15 | Circuit breaker | 15 ft. | 30.95 |
| 725 | Outlets only | 6 ft. | 27.50 |
| 725-15 | Outlets only | 15 ft. | 28.50 |
| 730 | Fuse | 6 ft. | 32.96 |
| 730-15 | Fuse | 15 ft. | 33.95 |
| 730CB | Circuit breaker | 6 ft. | 33.95 |
| 730CB-15 | Circuit breaker | 15 ft. | 34.95 |
| 735 | Outlets only | 6 ft. | 31.95 |
| 735-15 | Outlets only | 15 ft. | 32.96 |

### TEN-SOCKET OUTLET BOXES

Ten outlets with pilot light and switc
Model 800 has "U" ground outlets; Mod
801, locking type outlets; Model 80
crow's foot outlets.

| Waber Model | Type | Cord Lgth. | Net Eac |
|---|---|---|---|
| 800 | Fuse | 6 ft. | $14.8 |
| 800-15 | Fuse | 15 ft. | 15.9 |
| 800CB | Circuit breaker | 6 ft. | 15.9 |
| 800CB-15 | Circuit breaker | 15 ft. | 15.6 |
| 801 | Fuse | 6 ft. | 24.5 |
| 801-15 | Fuse | 15 ft. | 25.5 |
| 801CB | Circuit breaker | 6 ft. | 25.5 |
| 801CB-15 | Circuit breaker | 15 ft. | 26.5 |
| 802 | Fuse | 6 ft. | 34.9 |
| 802-15 | Fuse | 15 ft. | 35.9 |
| 802CB | Circuit breaker | 6 ft. | 35.9 |
| 802CB-15 | Circuit breaker | 15 ft. | 36.9 |

### RACK MOUNT TYPE

All have six outlets, pilot light and switch
Model 900 has front-mounted "U" groun
outlets; 904 same but two in front, four i
rear. Model 905 same as 904, but lockin
outlets; Model 906 same, but crow's foo
outlets and plug.

| | | | |
|---|---|---|---|
| 900 | Fuse | 6 ft. | $12.0 |
| 900-15 | Fuse | 15 ft. | 13.1 |
| 900CB | Circuit breaker | 6 ft. | 13.1 |
| 900CB-15 | Circuit breaker | 15 ft. | 14.2 |
| 904 | Fuse | 6 ft. | 14.2 |
| 904-15 | Fuse | 15 ft. | 15.3 |
| 904CB | Circuit breaker | 6 ft. | 15.3 |
| 904CB-15 | Circuit breaker | 15 ft. | 16.4 |
| 905 | Fuse | 6 ft. | 23.9 |
| 905-15 | Fuse | 15 ft. | 24.9 |
| 905CB | Circuit breaker | 6 ft. | 24.9 |
| 905CB-15 | Circuit breaker | 15 ft. | 25.9 |
| 906 | Fuse | 6 ft. | 24.9 |
| 906-15 | Fuse | 15 ft. | 25.9 |
| 906CB | Circuit breaker | 6 ft. | 25.9 |
| 906CB-15 | Circuit breaker | 15 ft. | 26.9 |

**Dust and Safety Covers**—For above.
**Type DC-1**—For 904 Series. Net. . **$4.00**
**Type DC-5**—For 900 Series. Net. . **4.00**

### "STRING BEAN" SERIES

All have "U" ground outlets. Model 100
has 12 outlets, pilot light and switch
Model 1001 and 1002 same, but 12 outlet
only; Model 1010 has 8 sets of outlets, pilo
lights, and on-off switches plus maste
switch and pilot light.

| | | | |
|---|---|---|---|
| 1000 | Fuse | 6 ft. | $17.54 |
| 1000-15 | Fuse | 15 ft. | 18.65 |
| 1000CB | Circuit breaker | 6 ft. | 18.65 |
| 1000CB-15 | Circuit breaker | 15 ft. | 19.74 |
| 1001 | Fuse | 6 ft. | 16.44 |
| 1001-15 | Fuse | 15 ft. | 17.54 |
| 1001CB | Circuit breaker | 6 ft. | 17.54 |
| 1001CB-15 | Circuit breaker | 15 ft. | 18.65 |
| 1002 | Outlets only | 6 ft. | 15.35 |
| 1002-15 | Outlets only | 15 ft. | 16.43 |
| 1010 | Fuse | 6 ft. | 19.95 |
| 1010-15 | Fuse | 15 ft. | 20.95 |
| 1010CB | Circuit breaker | 6 ft. | 20.95 |
| 1010CB-15 | Circuit breaker | 15 ft. | 21.95 |

### "POWER POINTER" MASTER CONTROL BOXES

Pilot light on each set of color-coded switched outlets; master switch and pilot light. Series 25P and 35P have 7 outlet sets; 30P and 32P, four outlet sets.

| | | | |
|---|---|---|---|
| 25P | Fuse | 6 ft. | $19.50 |
| 25P-15 | Fuse | 15 ft. | 20.52 |
| 25PCB | Circuit breaker | 6 ft. | 20.52 |
| 25PCB-15 | Circuit breaker | 15 ft. | 21.50 |
| 30P | Fuse | 10 ft. | 7.50 |
| 30PCB | Circuit breaker | 10 ft. | 8.52 |
| 32P | Fuse | 6 ft. | 11.55 |
| 32P-15 | Fuse | 15 ft. | 12.21 |
| 32PCB | Circuit breaker | 6 ft. | 12.21 |
| 32PCB-15 | Circuit breaker | 15 ft. | 13.74 |
| 35P | Fuse | 10 ft. | 19.27 |
| 35PCB | Circuit breaker | 10 ft. | 20.34 |

### NEW LINE VOLTAGE CHECKER

Crystal-clear, illuminated 0–150 AC voltmeter in handsome, chrome-plated steel case. Edgewise reading. 6-ft. cord set.
**Model 220M Line Voltage Checker—**
Net Each. . . . . . . . . . . . . . . . . . . . . . . . . **$5.95**

### VARI-FINE CONTROLLER

Solid state device for speed and light control. Provides infinite control of motor speed and light intensity, and the speed of AC/DC universal type motors. Plugs into any wall outlet, fused for circuit protection. Compact and portable; mounting ears provided for fixed installation. Rated 7 amps, 117 volts.
**Model 200 Vari-Fine Controller—**
Net Each. . . . . . . . . . . . . . . . . . . . . . . . . **$14.95**

## INSTANT CONNECTOR/POTTING KIT™

**Problem:** You never have the right connector at the right place at the right time.

**Solution:** Make your own connector in minutes. This Instant Connector/Potting Kit permits making mating connectors in minutes: saves money, time and frustration. Builds a connector for as little as 50c each (as compared to costs ranging up to $100.00 each) for the connectors you now use.

**Result:** A durable, low cost mating connector for such uses as testing, R & D, manufacturing, and field services . . . always instantly available.

### DELUXE MODEL WA3000
### INSTANT CONNECTOR/POTTING KIT

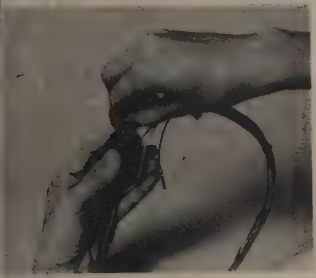
Can make up to 4 million connectors (estimated number of existing connector configurations). Complete with heavy-duty heat gun; ⅛", 3/16" and ¼" dia. nozzles; 48 polyethylene cartridges; 400 contacts (100 each #16 pin, #20 pin, #16 socket and #20 socket); 15 ft. of heat resistant tape; 100 pieces of ½" long heat-shrinkable sleeving; and, 100 pieces of ¾" long heat-shrinkable sleeving.

**Wiring Analyzers, Inc. Model WA3000**—Net Each . . . . **$98.00**

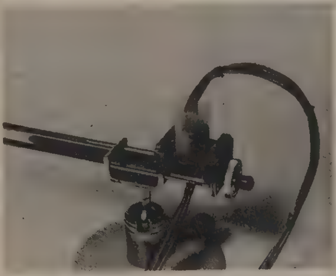
### SPECIFICATIONS

**ctric Heat Gun:** UL Approved. Delivers 350° F to 450° F from ndard 120 VAC, 60 Hz line voltage. Comes with three inter- ingeable nozzles: ⅛", 3/16" and ¼" dia. **Contacts:** Pins are d-plated brass #16 (.0625" dia.) and #20 (.040" dia.). Sockets gold-plated beryllium copper #16 and #20 to mate with pins. **lyethylene Cartridges:** Coefficient of Thermal Expansion, 10–20 (in./in.) (° C x $10^{-5}$). Specific Gravity, 0.910–0.925. Volume Resistivity, $10^{15} - 10^{18}$ ohms/cm. Thermal Conductivity, (S) (cal/cm$^2$) 8: (° C) (cm) x $10^{-4}$. Heat Resistance, +175° F continuous. Dielectric Constant, 2.28 at 60 Hz. Dissipation or Power Factor, 0.006 at 60 Hz. Water Absorption, less than 0.05% in 24 hours. Dielectric Strength, 450–1000 volts/mil for ⅛" thickness.

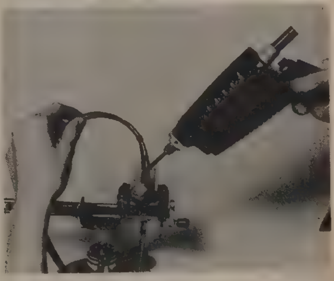
### HOW TO MAKE AN INSTANT CONNECTOR IN 15 MINUTES



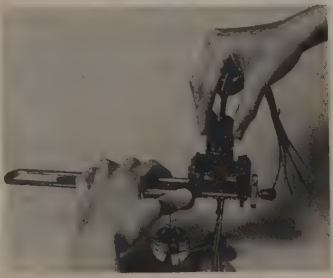
Select appropriate contacts (pin or socket) and insert them into existing connector.



2. Wrap heat resistant tape around existing connector.



3. Fill tape reservoir with polyethylene.



4. This is your Instant Connector.

### KIT REPLACEMENT SUPPLIES

#### CONTACTS (PINS & SOCKETS)

ackaged 100 per bag.

| W.A. Model | Description | Net per 100, Lots 100-1000 | 1100-2500 | 2600-5000 | 5100 Up |
|---|---|---|---|---|---|
| /A2016P | #16 pin (.0625" dia.) | $ 7.00 | $ 6.50 | $ 6.25 | $ 6.00 |
| /A2016S | #16 socket | 15.00 | 14.00 | 13.50 | 13.00 |
| /A2020P | #20 pin (.040" dia.) | 9.25 | 8.75 | 8.50 | 8.25 |
| /A2020S | #20 socket | 19.50 | 18.50 | 18.00 | 17.50 |
| /A2020MP | #20 min. pin (.040" dia.) | 10.50 | 10.00 | 9.75 | 9.50 |
| /A2020MS | #20 min. socket | 22.00 | 21.00 | 20.50 | 20.00 |
| /A2022MP | #22 min. pin (.030" dia.) | 11.50 | 11.00 | 10.75 | 10.50 |
| /A2022MS | #22 min. socket | 24.00 | 23.00 | 22.50 | 22.00 |

#### HEAT SHRINKABLE SLEEVING AND HEAT-RESISTANT TAPE

hrinkable sleeving is packaged 100 pieces (of length shown) er bag.

| | | | | | |
|---|---|---|---|---|---|
| VA2040 | ½" long sleeving | $1.30 | $1.10 | $1.00 | $0.90 |
| VA2041 | ¾" long sleeving | 1.75 | 1.50 | 1.40 | 1.20 |
| VA2030 | 6-ft. heat-resis. tape | .95* | ...... | ...... | ...... |

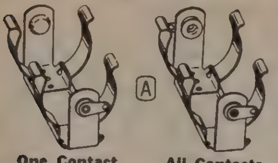
*Net Each, 6-ft. length.

#### POLYETHYLENE CARTRIDGES

Packaged 100 per bag.

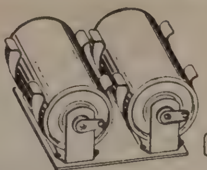
| W.A. Number | Net per Cartridge, Lots of 100 | 200-300 | 400-500 | 600-700 | 800-1000 | 1100 Up |
|---|---|---|---|---|---|---|
| WA2015 | 20c | 17c | 16c | 15c | 14c | 13c |

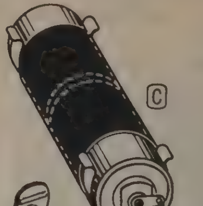
# Keystone STEEL BATTERY HOLDERS

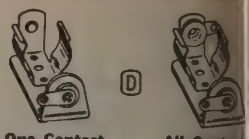


One Contact Insulated

All Contacts Insulated

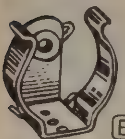


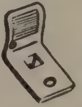


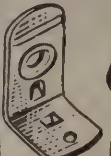


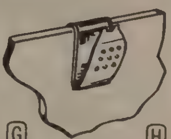
One Contact Insulated

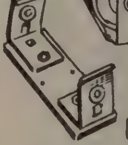
All Contacts Insulated

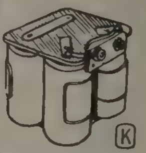


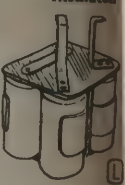












Hold batteries under spring tension at constant pressure assuring low resistance contact. Multi-cell series types have sturdy insulating tube. Ideal for nickel-cadmium, mercury and alkaline cells. Made of SAE 1065 carbon steel to MIL Spec. 17919, heat treated to spring temper and nickel-plated .0002" thick. Contact assembly consists of a stainless steel eyelet, moistureproof vulcoid washers and coated copper solder lug. Nickel-plated carbon steel base ribbed for added support, has two mounting holes. Modifications available: Jumpers, which save wiring; printed circuit solderless connectors or quick disconnect lugs; polarized contacts to insure proper insertion of batteries; or multiple units with any of the foregoing modifications.

## STEEL HOLDERS FOR MERCURY BATTERIES

For single batteries.

| For Mallory Battery | Fig. | One Contact Insulated |  |  | All Contacts Insulated |  |  |
|---|---|---|---|---|---|---|---|
|  |  | Keystone No. | Net Ea., Lots |  | Keystone No. | Net Ea., Lots |  |
|  |  |  | 1-19 | 20-99 |  | 1-19 | 20-99 |
| RM1R | D | 1101 | 39c | 33c | 2101 | 39c | 37c |
| RM3R | D | 1103 | 39c | 33c | 2103 | 39c | 37c |
| RM4R | D | 1104 | 39c | 33c | 2104 | 39c | 37c |
| ZM9 | A | 1139 | 28c | 25c | 2139 | 33c | 29c |
| RM12R | A | 1139 | 28c | 25c | 2139 | 33c | 29c |
| RM42 | A | 1175 | 39c | 33c | 2175 | 39c | 36c |
| TR113 | D | 1113 | 39c | 33c | 2113 | 39c | 37c |
| TR114 | D | 1114 | 39c | 33c | 2114 | 39c | 37c |
| TR115 | D | 1132 | 39c | 33c | 2132 | 39c | 37c |
| TR132 | D | 1132 | 39c | 33c | 2132 | 39c | 37c |
| TR133 | A | 1139 | 28c | 25c | 2139 | 33c | 29c |
| TR134 | A | 1134 | 39c | 33c | 2134 | 39c | 37c |
| TR135 | A | 1135 | 39c | 33c | 2135 | 44c | 41c |
| TR136 | A | 1189 | 44c | 42c | 2189 | 44c | 42c |
| TR137 | A | 1125 | 39c | 33c | 2125 | 39c | 37c |
| TR145 | D | 1145 | 39c | 33c | 2145 | 39c | 37c |
| TR162 | D | 1113 | 39c | 33c | 2113 | 39c | 37c |
| TR163 | D | 1132 | 39c | 33c | 2132 | 39c | 37c |
| TR164 | A | 1109 | 39c | 33c | 2109 | 39c | 37c |
| TR165 | A | 1110 | 39c | 33c | 2110 | 39c | 37c |
| TR169 | A | 1189 | 44c | 42c | 2189 | 44c | 42c |
| TR176 | D | 1132 | 39c | 33c | 2132 | 39c | 37c |
| TR177 | A | 1142 | 28c | 25c | 2142 | 33c | 29c |
| TR233 | A | 1173 | 39c | 33c | 2173 | 39c | 36c |
| TR234 | A | 1144 | 28c | 25c | 2144 | 33c | 29c |
| TR235 | A | 1133 | 44c | 42c | 2133 | 50c | 45c |
| TR236 | A | 1185 | 55c | 50c | 2185 | 55c | 54c |
| RM502 | A | 1139 | 28c | 25c | 2139 | 33c | 29c |
| RM601 | D | 1116 | 39c | 33c | 2116 | 39c | 37c |
| 302351 | A | 1119 | 39c | 33c | 2119 | 39c | 37c |
| 302478 | A | 1120 | 44c | 42c | 2120 | 50c | 45c |
| 302642 | A | 1121 | 44c | 42c | 2121 | 50c | 45c |
| 302437 | A | 1139 | 28c | 25c | 2139 | 33c | 29c |
| 302599 | A | 1173 | 39c | 33c | 2173 | 39c | 36c |

## SPACE SAVER BATTERY CLIPS (FIG. E)

Available with insulated or dimple contacts. Positive contacts grip battery securely. Corrosion-resistant, stainless steel contacts; carbon steel SAE 1065, nickel-plated frame. Copper terminal lugs per QQ-C-576A, cadmium plated per QQ-P-416.

| Keystone No. | Holds Bat. Dia., Inches | For Cells | Height, Inches | Net Ea., Lots of |  |
|---|---|---|---|---|---|
|  |  |  |  | 1-19 | 20-99 |
| 86* | .875 to 1.125 | C | .937 | $0.09 | $0.08 |
| 87 | .875 to 1.125 | C | .937 | .12 | .11 |
| 88 | 1.187 to 1.350 | D | 1.218 | .13 | .12 |
| 89* | 1.187 to 1.350 | D | 1.218 | .10 | .09 |
| 99* | .531 to .650 | AA | .609 | .05 | .04 |
| 100 | .531 to .650 | AA | .609 | .09 | .08 |

*Dimple contact, all others insulated contact.

## PENCELL SNAP-ON CLIPS (FIG. H)

Ideal for molded cases, self anchoring, low cost, snag-free battery insertion. Clips over panels from .060" to .070" thick and is anchored by sharp barbs, eliminating the need for special grooves, slots or holes. External solder ear holes wire for easy soldering. **Size:** 5/16" wide x 7/16" high.

**Keystone No. 209**—Net Each, Lots of 1–19. . **7c**; Lots 20–99. . **6c**

## REPLACE-A-PAK BATTERY HOLDER

Ideal for flashlites and lanterns; holds 4 D cells in limited space. Wired in series for 6 volts. **Size:** 2¾" square base x 2¾" high.

| Keystone No. | Fig. | Type of Contacts | Net Each, Lots of |  |
|---|---|---|---|---|
|  |  |  | 1-19 | 20-99 |
| 215 | L | Brass Leg | $1.35 | $1.21 |
| 216 | K | Snap | 1.50 | 1.35 |

## PENCELL HOLDERS

Hold NEDA battery types 15, 15A, 1103, 1107; Burgess Z, HG9, CD6, 9R, HG12R, H133, HG502R, 920, 930; Eveready E9, E12, E91, E133, E502, N46, 515, 915, 1015; RCA VS034A, VS144, VS149, VS313A, VS334.

| Holds Cells | Fig. No. | One Contact Insulated |  |  | All Contacts Insulated |  |  |
|---|---|---|---|---|---|---|---|
|  |  | Keystone No. | Net Ea., Lots |  | Keystone No. | Net Ea., Lots |  |
|  |  |  | 1-19 | 20-99 |  | 1-19 | 20-99 |
| 1 | A | 1139 | 28c | 25c | 2139 | 33c | 29c |
| 2 | B | ........ | ...... | ...... | 2140* | 50c | 47c |
| 3 | B | ........ | ...... | ...... | 2171* | 77c | 72c |
| 4 | B | ........ | ...... | ...... | 2182* | 88c | 83c |
| 2 | C | 1189 | 44c | 42c | 2189 | 44c | 42c |
| 3 | C | 1191 | 50c | 45c | 2191 | 50c | 44c |
| 4 | C | 1194 | 55c | 53c | 2194 | 61c | 56c |

## "C" CELL HOLDERS

Holds NEDA battery types 14, 1300, 1600; Burgess 1, P6, 120, 130, H233, 302599; Eveready 226, E233, 635, 935; RCA VS035A, VS300, VS335, VS400.

| Holds Cells | Fig. No. | One Contact Insulated |  |  | All Contacts Insulated |  |  |
|---|---|---|---|---|---|---|---|
|  |  | Keystone No. | Net Ea., Lots |  | Keystone No. | Net Ea., Lots |  |
|  |  |  | 1-19 | 20-99 |  | 1-19 | 20-99 |
| 1 | A | 1173 | $0.39 | $0.33 | 2173 | $0.39 | $0.36 |
| 2 | B | ........ | ...... | ...... | 2174* | .66 | .65 |
| 3 | B | ........ | ...... | ...... | 2187* | .88 | .83 |
| 4 | B | ........ | ...... | ...... | 2188* | 1.16 | 1.05 |
| 2 | C | 1185 | .55 | .50 | 2185 | .55 | .54 |
| 3 | C | 1195 | .55 | .53 | 2195 | .61 | .56 |
| 4 | C | 1198 | .61 | .56 | 2198 | .66 | .63 |

## "D" CELL HOLDERS

Hold NEDA battery type 13; Burgess 2, 2R, CD7, 210, 230; Eveready E42, N56, E95, D99, A100, 950, 1050; RCA VS036, VS036A, VS336.

| Holds Cells | Fig. No. | One Contact Insulated |  |  | All Contacts Insulated |  |  |
|---|---|---|---|---|---|---|---|
|  |  | Keystone No. | Net Ea., Lots |  | Keystone No. | Net Ea., Lots |  |
|  |  |  | 1-19 | 20-99 |  | 1-19 | 20-99 |
| 1 | A | 1175 | $0.39 | $0.33 | 2175 | $0.39 | $0.36 |
| 2 | B | ........ | ...... | ...... | 2176* | .66 | .65 |
| 3 | B | ........ | ...... | ...... | 2190* | .94 | .88 |
| 4 | B | ........ | ...... | ...... | 2192* | 1.16 | 1.05 |
| 2 | C | 1186 | .53 | .48 | 2186 | .55 | .54 |
| 3 | C | 1199 | .61 | .56 | 2199 | .66 | .62 |
| 4 | C | 1162 | .66 | .59 | 2162 | .72 | .68 |

Holds NEDA type 927; Eveready E94.

|  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|
| 1 | A | 1179 | 39c | 33c | 2179 | 39c | 37c |

*Clips mounted on Bakelite® 1/16" thick per MIL Spec. 3115C. ®Registered Bakelite Corp. trademark.

## ECONOMY CLIPS

Used with non-metallic bases. Single eyelet mount; non-rotating tab except no. 67; recessed contact holds battery contact firmly.

| Keystone No. | Fig. | For Cells | Dimensions, Inches |  |  | Net Ea., Lots |  |
|---|---|---|---|---|---|---|---|
|  |  |  | Height | Width | Depth | 1-19 | 20-99 |
| 206 | F | AA | .500 | .375 | .609 | $0.04 | $0.03 |
| 207 | G | C | .875 | .687 | .687 | .05 | .04 |
| 208 | G | D | 1.290 | .687 | .765 | .07 | .06 |
| 67* | G | D | 1.290 | .687 | .765 | .05 | .04 |

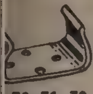
*.156" mounting hole; all others, .128".

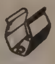
## ECONOMY BATTERY HOLDERS (FIG. J)

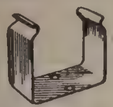
Mounted on a 1/8" thick Masonite base. Set in clip recess; center clip not usually needed. Easy to assemble multiple units, either side by side or in line.

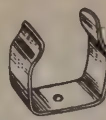
| Keystone No. | For Bat. or Eq. Eveready No. | Dimensions, In. |  |  | Net Ea., Lots |  |
|---|---|---|---|---|---|---|
|  |  | H. | W. | D. | 1-19 | 20-99 |
| 212 | AA, E9, E12, 505, 915 | .500 | .625 | 2.125 | $0.16 | $0.14 |
| 213 | C, 935 | .875 | 1.000 | 2.125 | .18 | .16 |
| 214 | D, 950 | 1.290 | 1.000 | 2.406 | .20 | .17 |

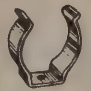
# Keystone ALUMINUM BATTERY HOLDERS, CLIPS AND HARDWARE

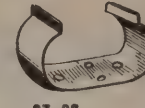

70, 71, 79

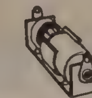

90, 91

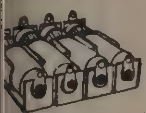

80, 93, 94, 95

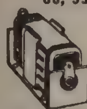

217, 218, 219

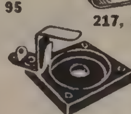

78

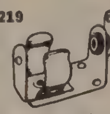

97, 98

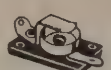

106, 109, 110, 119, 121, 122, 124, 132, 134, 137, 139. 154, 160, 164, 168, 173, 175, 179, 189, 225

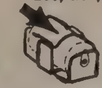

170, 182, 182A

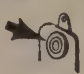

163, 166, 177, 183


101, 103, 104, 111, 118, 126


1113, 1114


112, 117


61, 62, 63, 66


59

stone battery holders feature engineered snap clips, moisture- of fiber washers, spring-temper aluminum alloy, nickel-plated s eyelets. Coated terminals for easy soldering. Mounting holes ll holders.

## STANDARD BATTERY, CELL HOLDERS

**batteries as grouped are similar in size and fit all holders d alongside.**

### MINIATURE CELL HOLDERS

ndard package, 10 pieces.

| y- ne . | Holds Cells | NEDA | Used with Mfr's Types: Eveready | Burgess | RCA | Net Each, Lots of: 1-19 | 20-99 |
|---|---|---|---|---|---|---|---|
| | 1 | 24 | 912 | 7 | VS074 | $0.25 | $0.22 |
| | 2 | | | | | .42 | .37 |
| | 3 | | | | | .61 | .56 |
| | 4 | | | | | .70 | .63 |

### PENCELL HOLDERS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 15<br>15A<br>1103<br>1107 | E9, E12 | Z, CD6 | VS034A<br>VS144<br>VS149<br>VS313A<br>VS334 | $0.25 | $0.22 |
| | 2 | | E91 | 9R | | .40 | .35 |
| | 3 | | E133 | HG9 | | .55 | .50 |
| | 4 | | 333 | HG12R | | .70 | .63 |
| | 2 | | E502 | H133 | | .50 | .40 |
| | 3 | | 515 | HG502 | | .54 | .48 |
| | 4 | | 915, 1015 | 920 | | .70 | .59 |
| | 6 | | N46 | 930 | | 1.02 | .89 |

### "C" CELL HOLDERS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 14<br>1300<br>1600 | 226<br>E233<br>635<br>935 | 1<br>P6<br>120<br>130<br>H233<br>302599 | VS035A<br>VS300<br>VS335<br>VS400 | $0.33 | $0.29 |
| | 2 | | | | | .40 | .35 |
| | 3 | | | | | .65 | .62 |
| | 2 | | | | | .50 | .40 |
| | 3 | | | | | .54 | .48 |
| | 4 | | | | | .70 | .59 |
| | 6 | | | | | 1.02 | .89 |

### "D" CELL HOLDERS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 5 | 1 | 13 | E42<br>E95<br>D99<br>A100<br>N56<br>950<br>1050 | 2<br>2R<br>CD7<br>210<br>230 | VS036A<br>VS036<br>VS336 | $0.33 | $0.29 |
| 6 | 2 | | | | | .40 | .35 |
| 9 | 3 | | | | | .72 | .68 |
| 6 | 2 | | | | | .51 | .41 |
| 9 | 3 | | | | | .55 | .50 |
| 0 | 4 | | | | | .72 | .61 |
| 1 | 6 | | | | | 1.05 | .94 |
| 5 | 6 | | | | | .95 | .85 |

### 1½-VOLT CELL HOLDERS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 4 | 1 | 910 | E340<br>904 | N | VS073 | $0.23 | $0.22 |
| 5 | 2 | | | | | .39 | .35 |
| 6 | 3 | | | | | .54 | .48 |
| 0 | 1 | 20 | 964 | 21R | VS236 | .54 | .48 |
| 9 | 1 | 927 | E94 | ........ | ........ | .33 | .29 |

### 4½-VOLT CELL HOLDER

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 9 | 1 | 1306 | 333 | ........ | VS1149 | $0.25 | $0.22 |

### 9-VOLT CELL HOLDERS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 9A | 1 | 1611 | 206 | ........ | VS327<br>VS323<br>VS300A | $0.29 | $0.26 |
| 3P | 1 | 1604 | 216 | 2U6 | | .48 | .40 |
| 3P | 1 | 1600 | 226 | P6M | | .33 | .32 |

### 15-VOLT BATTERY HOLDERS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 3 | 1 | 224 | 417 | K10 | ........ | $0.33 | $0.29 |
| 1 | 1 | 208 | 411 | U10 | VS083 | .33 | .29 |
| 6 | 1 | | | | | .33 | .29 |
| 7 | 2 | | | | | .42 | .37 |
| 25 | 1 | 220 | 504 | Y10 | ........ | .21 | .20 |
| 26 | 2 | | | | ........ | .35 | .32 |

### 22½-VOLT BATTERY HOLDERS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 64 | 1 | 225 | ........ | K15 | ........ | $0.33 | $0.29 |
| 68 | 1 | ........ | 420 | ........ | ........ | .33 | .29 |
| 77 | 1 | 215 | 412 | U15 | VS084 | .33 | .29 |
| 78 | 2 | | | | | .42 | .37 |
| 39A* | 1 | 221 | 505 | Y15 | ........ | .29 | .26 |
| 40A* | 2 | | | | ........ | .45 | .41 |
| 71A* | 3 | | | | ........ | .57 | .52 |
| 82A* | 4 | | | | ........ | .74 | .66 |

Cannot be polarized.

### 30-VOLT BATTERY HOLDERS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 65 | 1 | 226 | 430 | K20 | ........ | $0.33 | $0.29 |
| 83 | 1 | 210 | 413 | U20 | VS085 | .33 | .29 |
| 84 | 2 | | | | | .42 | .37 |
| 57 | 1 | 223 | 506 | Y20 | ........ | .33 | .29 |
| 34 | 1 | 222 | 507 | Y20S | ........ | .42 | .37 |

### BATTERY AND COMPONENT HOLDERS

Two #40 mtg. holes spaced .437" unless otherwise noted.

| Key-stone No. | Holds Bat. Size, Inches | For Cells† | Dimensions, Inches: Lgth. ±.005" | Width ±.015" | Height ±.015" | Net Each, Lots of: 1-19 | 20-99 |
|---|---|---|---|---|---|---|---|
| 69*‡ | .562 dia. (2) | (2)AA | .625 | 1.125 | .562 | $0.07 | $0.06 |
| 70‡ | .656 dia. (2) | (2)RM12 | .625 | 1.343 | .687 | .09 | .08 |
| 71* | .593 x 1.031 | 2U6 | .625 | 1.031 | .687 | .07 | .06 |
| 78*§ | 1.187 to 1.350 | D | .500 | .562 | 1.218 | .08 | .07 |
| 79*‡ | .650 x 1.280 | T 146 X | .625 | 1.050 | .765 | .07 | .06 |
| 80* | .650 x 1.280 | T 146 X | .625 | .675 | 1.187 | .07 | .06 |
| 90 | .375 to .468 | AAA | .625 | .312 | .453 | .06 | .04 |
| 91 | .531 to .656 | AA | .625 | .406 | .593 | .07 | .05 |
| 93 | .875 to 1.125 | C | .625 | .937 | .921 | .07 | .06 |
| 94 | 1.187 to 1.375 | D | .625 | 1.250 | 1.218 | .08 | .07 |
| 95 | .625 x 1.00 | U-15 | .625 | .656 | 1.125 | .07 | .06 |
| 97 | 1.031 dia. (2) | (2) C | .625 | 2.062 | 1.125 | .09 | .08 |
| 98# | 1.312 dia. (2) | (2) D | 1.000 | 2.656 | 1.437 | .11 | .10 |
| 217*• | 1.375 to 1.500 | NI-CAD | .812 | 1.218 | 1.468 | .18 | .14 |
| 218*• | 1.437 to 1.687 | NI-CAD | .812 | 1.375 | 1.531 | .20 | .15 |
| 219*• | 2.000 to 2.500 | NI-CAD | .812 | 1.687 | 2.156 | .22 | .16 |

*Carbon steel clips, SAE 1065 per MIL-S-17919#4, heat treated to spring temper, nickel-plate finish; all others, aluminum per QQ-A-362, no finish. †Clips can hold batteries or components of similar dia. ‡Four #40 mtg. holes spaced .625" x .437". §Single #29 mtg. hole. #Four #40 mtg. holes spaced 1.125" x .437". •Single #22 mtg. hole.

### MERCURY BATTERY HOLDERS

Aluminum base and clips with copper, cadmium plated terminals. Contact eyelets of brass NP. Resin impregnated fiber insulating washers.

| Key-stone No. | Mallory Batteries | Net Each, Lots of: 1-19 | 20-99 | Key-stone No. | Mallory Batteries | Net Each, Lots of: 1-19 | 20-99 |
|---|---|---|---|---|---|---|---|
| 101* | RM 1R | 39c | 34c | 1132† | TR 176 | 39c | 33c |
| 103* | RM 3R | 41c | 36c | 1142 | TR 177 | 28c | 25c |
| 104* | RM 4R | 42c | 37c | 173 | TR 233 | 33c | 29c |
| 139 | ZM 9 | 25c | 22c | 1144† | TR 234 | 28c | 25c |
| 139 | RM 12R | 25c | 22c | 1133† | TR 235 | 44c | 42c |
| 175 | RM 42 | 33c | 29c | 185 | TR 236 | 50c | 40c |
| 1113† | TR 113 | 39c | 33c | 111* | RM 400 | 39c | 34c |
| 1114† | TR 114 | 39c | 33c | 124 | RM 401 | 25c | 22c |
| 132 | TR 115 | 33c | 29c | 166 | RM 411 | 33c | 29c |
| 139A | TR 126 | 29c | 26c | 177 | RM 412 | 33c | 29c |
| 132 | TR 132 | 33c | 29c | 183 | RM 413 | 33c | 29c |
| 139 | TR 133 | 25c | 22c | 112* | RM 450 | 39c | 34c |
| 134 | TR 134 | 42c | 37c | 139 | RM 502 | 25c | 22c |
| 135 | TR 135 | 42c | 37c | 1116† | RM 601 | 39c | 33c |
| 189 | TR 136 | 50c | 40c | 117* | RM 625 | 39c | 34c |
| 1125† | TR 137 | 39c | 33c | 126* | RM 630 | 39c | 34c |
| 1145† | TR 145 | 39c | 33c | 118* | RM 640 | 39c | 34c |
| 124 | TR 152 | 25c | 22c | 127* | RM 675 | 39c | 34c |
| 106 | TR 153 | 33c | 29c | 119 | 302351 | 42c | 37c |
| 1113† | TR 162 | 39c | 33c | 120 | 302478 | 42c | 37c |
| 132 | TR 163 | 33c | 29c | 121 | 302642 | 42c | 37c |
| 109 | TR 164 | 33c | 29c | 122 | 302435 | 42c | 37c |
| 110 | TR 165 | 42c | 37c | 139 | 302437 | 25c | 22c |
| 189 | TR 169 | 50c | 40c | 173 | 302599 | 33c | 29c |
| 124 | TR 175 | 25c | 22c | | | | |

*Available with phosphor bronze spring, phenolic base only. †Available in steel only.

### RETAINER CLIPS FOR HOLDERS

Made of spring tempered, nickel plated, high carbon steel.

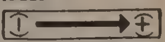
| Keystone No. | Battery Type | Holders | Net Each, Lots of: 1-19 | 20-99 |
|---|---|---|---|---|
| 61 | AA | 91, 92, 95, 99, 100 | 5c | 4c |
| 62 | C | 86, 87, 93 | 5c | 4c |
| 63 | D | 88, 89, 94 | 6c | 5c |
| 66 | Mercury* | 91, 92, 99, 100 | 5c | 4c |

*For use with .650" dia. types.

### INSULATING POLARIZING WASHERS

Precision molded plastic washers prevent short circuits in transistor equipment. The washers hold securely when snapped over the eyelets used on Keystone standardized battery holders.
**Keystone No. 59** (Red) or **No. 60** (Black)—Net Each, Lots of 1-19........................**4c**; 20-99........................**3c**

### POLARITY INDICATING LABELS



Use wherever proper polarity of battery insertion or circuit polarity is to be shown. Two colors: (+) positive side red; arrow and (—) side, blue. No gluing or wetting needed, economical, pressure sensitive adhesive back, and adheres to all surfaces. Size, 1⅜" x ¼".
**Keystone No. 58**—Net per 100........................**90c**

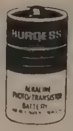
**SPECIAL BATTERY HOLDERS CAN BE BUILT TO YOUR SPECIFICATIONS. WRITE FOR INFORMATION.**

# BURGESS® BATTERIES

2

2U6

530



AL-1

Hg-9

### BATTERIES FOR TRANSISTOR CIRCUITS

| Burgess No. | Volts | Size in Inches, L. x W. x H. | Unit Pkg. | List Price | Net Each* |
|---|---|---|---|---|---|
| 130• | 1½ | 63/64 (dia.) x 1 15/16 | 12 | $0.35 | $0.22¼ |
| 130** | 1½ | 63/64 (dia.) x 1 15/16 | 24# | .70▲ | .455▲ |
| 230• | 1½ | 1 21/64 (dia.) x 2 25/64 | 12 | .35 | .22¼ |
| 230** | 1½ | 1 21/64 (dia.) x 2 25/64 | 24# | .70▲ | .455▲ |
| 930† | 1½ | 35/64 (dia.) x 1 31/32 | 24 | .30 | .19 |
| 930■ | 1½ | 35/64 (dia.) x 1 31/32 | 12# | 1.20▲ | .77▲ |
| NE• | 1½ | 7/16 (dia.) x 1 11/64 | 6 | .15 | .095 |
| D6PI | 3, 6, 9 | 2 19/32 x 1 7/16 x 7 27/32 | 1 | 6.30 | 4.20 |
| A4 | 6 | 1 9/32 x 1 9/32 x 2 11/32 | 1 | 3.95 | 2.75 |
| D5 | 7½ | 2 9/16 x 2 x 2 23/32 | 1 | 3.60 | 2.50 |
| 2MN6§ | 9 | 1 x 39/64 x 1⅞ | 12 | .98 | .65 |
| 2N6 | 9 | 1⅜ x 1⅜ x 2¾ | 1 | 2.25 | 1.50 |
| 2U6• | 9 | 1 x 39/64 x 1⅞ | 12 | .79 | .54 |
| 2U6♦ | 9 | 1 x 39/64 x 1⅞ | 12 | .79 | .55 |
| C6X | 9 | 2 5/16 x 1 1/32 x 6 1/16 | 1 | 3.50 | 2.40 |
| D6 | 9 | 2 9/16 x 2 x 3 5/32 | 1 | 2.50 | 1.67 |
| D6S | 9 | 2¼ x 1¼ x 7 29/32 | 1 | 7.20 | 4.80 |
| L6• | 9 | 47/64 (dia.) x 1 31/32 | 6 | 1.00 | .70 |
| M6 | 9 | 1 13/16 x 1 13/16 x 2 7/16 | 1 | 1.95 | 1.36 |
| P6• | 9 | 1 (dia.) x 1 15/16 | 6 | 1.19 | .79 |
| PM6• | 9 | 1 (dia.) x 1 15/16 | 6 | 1.29 | .88 |
| Y6 | 9 | 3/5 x 3/5 x 1.9 | 1 | 1.20 | .83 |
| XX9 | 9, 13½ | 1 9/32 x 29/32 x 2 17/32 | 1 | 6.00 | 4.20 |
| PM8 | 12 | 1 (dia.) x 2 7/16 | 1 | 1.75 | 1.20 |

### POCKET TAPE RECORDER BATTERIES

| | | | | | |
|---|---|---|---|---|---|
| 2X7 | 10½ | 2½ x 1 25/32 x 2 11/32 | 1 | $7.50 | $5.10 |
| 2VT8 | 12 | 1 5/16 x 1 5/16 x 3 19/32 | 1 | 3.00 | 2.00 |

### RADIO "A" BATTERIES

| | | | | | |
|---|---|---|---|---|---|
| 4D | 1½ | 2⅝ x 2⅝ x 2 13/16 | 1 | $ 2.99 | $2.08 |
| 4F | 1½ | 2⅝ x 2⅝ x 4 3/32 | 1 | 1.65 | 1.15 |
| 20F | 1½ | 7⅝ x 2 9/16 x 6 15/16 | 1 | 10.95 | 7.65 |
| F3 | 4½ | 4 x 1 7/16 x 4⅛ | 1 | 3.75 | 2.50 |
| F4PI | 6 | 2 21/32 x 2 21/32 x 4⅛ | 1 | 1.65 | 1.15 |
| Z4 | 6 | 1 3/16 x 1 3/16 x 2 7/32 | 1 | 3.80 | 2.65 |
| B5 | 7½ | 3 29/32 x ⅞ x 2 27/32 | 1 | 4.30 | 2.85 |
| C5 | 7½ | 2 7/32 x 1 15/16 x 3 1/32 | 1 | 1.90 | 1.35 |

### RADIO "B" BATTERIES

| | | | | | |
|---|---|---|---|---|---|
| 2308PI | 45 | 8 3/32 x 2 31/32 x 7¼ | 1 | $17.90 | $11.98 |
| 2308SC | 45 | 8 3/32 x 2 31/32 x 7¼ | 1 | 15.50 | 10.62 |
| 10308PI | 45 | 8 1/32 x 4 1/32 x 7 3/16 | 1 | 15.50 | 10.62 |
| 10308SC | 45 | 8 1/32 x 4 1/32 x 7 3/16 | 1 | 15.50 | 10.62 |
| U10 | 15 | 1 x 39/64 x 1 7/16 | 1 | 1.50 | 1.03 |
| U15 | 22½ | 1 x 39/64 x 1 31/32 | 1 | 1.75 | 1.17 |
| U20 | 30 | 1 x 39/64 x 2 17/32 | 1 | 1.95 | 1.30 |
| D30 | 45 | 5 1/16 x 2 1/32 x 7 5/16 | 1 | 11.25 | 7.70 |
| M30 | 45 | 3 9/16 x 1¾ x 5½ | 1 | 4.55 | 3.27 |
| U30 | 45 | 1 3/32 x 19/32 x 3 17/32 | 1 | 2.75 | 1.88 |
| XX30 | 45 | 2 17/32 x 31/32 x 3 21/32 | 1 | 3.50 | 2.45 |
| K45 | 67½ | 2 11/16 x 1 5/16 x 2¼ | 1 | 4.25 | 2.97 |
| P45 | 67½ | 1 29/32 x 1 x 5 9/32 | 1 | 4.25 | 3.05 |
| UX45 | 67½ | 1 7/32 x 31/32 x 3 31/32 | 1 | 5.00 | 3.50 |
| V45 | 67½ | 2¾ x 1 11/32 x 3 43/64 | 6 | 4.25 | 2.91 |
| XX45 | 67½ | 2¾ x 1 11/32 x 3 43/64 | 1 | 3.85 | 2.70 |
| XX50 | 75 | 1 27/32 x 1 5/16 x 6 5/16 | 1 | 11.50 | 8.10 |
| N60X | 90 | 1⅞ x 1 11/32 x 7⅛ | 1 | 9.70 | 6.50 |
| P60 | 90 | 1 29/32 x 1 x 7 13/32 | 1 | 6.25 | 4.35 |
| V60 | 90 | 3 23/32 x 1 9/32 x 3 11/16 | 1 | 4.85 | 3.40 |

### RADIO "A AND B" BATTERY

| | | | | | |
|---|---|---|---|---|---|
| 6TA60 | 1½, 90 | 9 31/32 x 2¼ x 4 7/16 | 1 | $16.95 | $11.40 |

### INDUSTRIAL, ELECTRONIC, TRANSISTOR "A" BATTERIES

| | | | | | |
|---|---|---|---|---|---|
| 2F | 1½ | 2 19/32 x 1⅜ x 4¼ | 1 | $1.95 | $1.33 |
| 2FH | 1½ | 2⅝ x 1 11/32 x 4⅛ | 5 | 1.59 | 1.06 |
| 2F2H | 3 | 2⅝ x 2⅝ x 4 1/16 | 5 | 3.95 | 2.70 |
| 422 | 3 | 1 11/32 x 23/32 x 2 5/16 | 1 | 1.90 | 1.30 |
| F2BP | 3 | 2 21/32 x 1⅜ x 4 1/32 | 6 | 2.75 | 1.88 |
| 432 | 4½ | 1 31/32 x 21/32 x 2¼ | 1 | 4.35 | 2.90 |
| 532 | 4½ | 2 15/32 x 13/16 x 2 23/32 | 1 | 2.35 | 1.63 |
| F4BP | 6 | 2⅝ x 2⅝ x 4 | 1 | 1.69 | 1.13 |
| F4BP (Paper) | 6 | 2 9/16 x 2 9/16 x 4⅛ | 1 | 3.60 | 2.40 |

### INDUSTRIAL, ELECTRONIC, TRANSISTOR "B" BATTERIE

| Burgess No. | Volts | Size in Inches, L. x W. x H. | Unit Pkg. | List Price | Net Each |
|---|---|---|---|---|---|
| K10 | 15 | 1¼ x ⅞ x 1 17/32 | 1 | $ 2.50 | $ 1.6 |
| U10 | 15 | 1 x 39/64 x 1 7/16 | 1 | 1.50 | 1.0 |
| Y10 | 15 | 19/32 x 19/32 x 1 23/64 | 1 | 1.50 | 1.0 |
| 4156 | 22½ | 3 17/32 x 2⅛ x 2 29/32 | 1 | 2.75 | 1.8 |
| 5156PI | 22½ | 4 7/64 x 2⅜ x 2 55/64 | 1 | 7.95 | 5.4 |
| 5156SC | 22½ | 4⅛ x 2½ x 2¾ | 5 | 7.95 | 5.4 |
| K15 | 22½ | 1¼ x ⅞ x 2 9/32 | 1 | 2.95 | 2.0 |
| U15 | 22½ | 1 x 39/64 x 1 31/32 | 1 | 1.75 | 1.1 |
| XX15 | 22½ | 1 11/32 x 15/16 x 3⅞ | 1 | 4.50 | 3.0 |
| Y15 | 22½ | 19/32 x 19/32 x 1 31/32 | 1 | 1.75 | 1.1 |
| K20 | 30 | 1¼ x 15/16 x 2 23/32 | 1 | 3.50 | 2.4 |
| U20 | 30 | 1 x 39/64 x 2 17/32 | 1 | 1.95 | 1.3 |
| W20PI | 30 | 1 5/16 x 1 13/16 x 3 7/32 | 1 | 7.35 | 5.1 |
| Y20 | 30 | 1 3/16 x 19/32 x 1 13/32 | 1 | 3.70 | 2.5 |
| Y20S | 30 | 19/32 x 19/32 x 2 9/16 | 1 | 2.25 | 1.5 |
| 5308 | 45 | 4 1/16 x 2 9/16 x 5⅛ | 1 | 5.40 | 3.7 |
| B30 | 45 | 4 1/16 x 2 17/32 x 5 5/16 | 2 | 10.60 | 7.4 |
| W30 | 45 | 3 x 1¼ x 3 25/32 | 1 | 8.40 | 5.9 |
| XX30PI | 45 | 2 17/32 x 31/32 x 4 1/32 | 1 | 4.50 | 3.0 |
| Z30 | 45 | 3 x 2 5/16 x 4 1/16 | 1 | 7.25 | 4.9 |
| Z30NX | 45 | 3 1/32 x 1⅞ x 4 19/32 | 5 | 5.00 | 3.4 |
| XX69 | 103½ | 1 11/32 x 1 11/32 x 11 23/32 | 1 | 7.95 | 5.4 |
| U200 | 300 | 2¾ x 2 9/32 x 3⅞ | 1 | 14.25 | 9.7 |
| V45 | 67½ | 2¾ x 1 11/32 x 3 11/16 | 1 | 4.25 | 2.9 |

### INDUSTRIAL AND ELECTRONIC "C" BATTERIES

| | | | | | |
|---|---|---|---|---|---|
| 2370 | 4½ | 3 15/16 x 1⅜ x 2⅞ | 1 | $3.70 | $2.53 |
| 2370PI | 4½ | 4 1/64 x 1 27/64 x 2 63/64 | 1 | 5.25 | 3.52 |
| 5360 | 4½ | 2 13/32 x 27/32 x 2 21/32 | 1 | 2.70 | 1.79 |
| 5540 | 7½ | 4 x ⅞ x 2¾ | 1 | 3.75 | 2.50 |
| W5BP | 7½ | 2 31/32 x 23/32 x 1¾ | 1 | 8.65 | 5.80 |

### FLASHLIGHT AND LANTERN BATTERIES

| | | | | | |
|---|---|---|---|---|---|
| 1§ | 1½ | 63/64 dia. x 1 15/16 | 24 | $0.30 | $0.19½ |
| 100§ | 1½ | 63/64 dia. x 1 15/16 | 24 | .35 | .22½ |
| 2†‡ | 1½ | 1 21/64 dia. x 2⅜ | 48 | .30 | .19½ |
| 210•‡ | 1½ | 1 21/64 dia. x 2⅜ | 48 | .30 | .20 |
| 200§ | 1½ | 1 21/64 dia. x 2⅜ | 48 | .35 | .22½ |
| 7§ | 1½ | 13/32 dia. x 1¾ | 24 | .25 | .16½ |
| 310■ | 1½ | 7/16 dia. x 1 11/64 | 12# | .60▲ | .40▲ |
| 910§ | 1½ | 35/64 dia. x 1 31/32 | 24 | .25 | .16½ |
| 4F2H | 3 | 3 29/32 x 2 11/16 x 5 13/32 | 1 | 5.75 | 3.85 |
| F4BP | 6 | 2⅝ x 2⅝ x 4 | 1 | 1.69 | 1.13 |
| F4M (Metal) | 6 | 2⅝ x 2⅝ x 4⅜ | 12 | 1.69 | 1.13 |
| F4SC | 6 | 2⅝ x 2⅝ x 4½ | 1 | 2.40 | 1.65 |
| TW1Ɪ | 6 | 5⅜ x 2⅞ x 4 15/16 | 1 | 3.45 | 2.30 |
| TW1-XƗ | 6 | 5⅜ x 2⅞ x 4 15/16 | 1 | 3.95 | 2.64 |
| TW2Ɪ | 12 | 5⅜ x 2⅞ x 4 15/16 | 1 | 3.45 | 2.30 |
| Z46HD‡‡ | 69 | 2 33/64 x 2 3/64 x 8 3/16 | 2 | 5.75 | 3.83 |

### FLASHLIGHT CASES AND LANTERNS

| Burgess No. | Description | Pkg. | List Price | Net Each* |
|---|---|---|---|---|
| 261 | Head-Light | 1 | $3.95 | $2.64 |
| 461 | Battery pouch for Head Light | 1 | 2.00 | 1.35 |
| 563§ | Penlight, size AAA | 12 | 1.39 | .91 |
| 663§ | Penlight, size AA | 12 | 1.39 | .91 |
| 763♦ | Snap-Lite pocket light, size AAA | 12# | 1.79▲ | 1.17 |
| 266 | 2-cell, prefocused, magnet light | 6 | 1.89 | 1.27 |
| 161 | 2-cell, prefocused, magnet light | 6 | 1.99 | 1.33 |
| 167 | Voyager flashlight, 2-cell pref. | 6 | 1.89 | 1.26 |
| 257 | Sat. Torch, 2-cell jr., prefocused | 3 | 1.95 | 1.30 |
| 357 | Satellite Torch, 2-cell prefocused | 6 | 1.95 | 1.30 |
| 361 | 2-cell, prefocused, Escort Light | 6 | .99 | .69 |
| 457 | Satellite Torch, 4-cell prefocused | 1 | 3.65 | 2.45 |
| 459 | Satellite Torch, 3-cell prefocused | 1 | 3.49 | 2.32 |
| 163 | Tuffy plastic, 2-cell prefocused | 12 | 1.19 | .74 |
| 263 | Magnet ind. plastic, 2-cell pref. | 6 | 2.19 | 1.45 |
| 363 | Ind. flashlight, 2-cell pref., plastic | 6 | 1.89 | 1.26 |
| 463 | Same as above, 3-cell, fiber barrel | 6 | 2.29 | 1.53 |
| 453 | 2-cell industrial safety light | 1 | 5.25 | 3.48 |

### SAFARI-LITE, RADAR-LINE LANTERNS AND ACCESSORIES

| | | | | |
|---|---|---|---|---|
| 165/3†† | Safari-Lite fluorescent lantern | 1 | $33.95 | $21.10 |
| TW3* | Radar-Lite spot beam, flasher | 1 | 15.50 | 9.90 |
| TW4* | Radar-Lite spot beam, no flasher | 1 | 13.25 | 8.15 |
| TW5* | Radar-Lite flood beam, flasher | 1 | 15.50 | 9.90 |
| TW6* | Radar-Lite flood, no flasher | 1 | 13.25 | 8.15 |
| TW6E* | Radar-Lite, flood beamƗ | 1 | 23.95 | 16.30 |
| TW7* | Radar-Lamp, chrome finish | 1 | 10.95 | 7.15 |
| TW10* | Panther-Lite spot beam, flasher | 1 | 18.95 | 11.80 |
| TW11* | Radar-Lite, 6 V bulb-reflector | 1 | 10.95 | 7.20 |
| TW12* | Radar-Lite 12 V lantern | 1 | 12.95 | 8.00 |
| TW34 | Radar-Flash | 1 | 4.50 | 2.90 |
| RL11 | Radar-, Aqua-Lite lens guard | | 1.95 | 1.16 |
| RL22 | Radar-Lite storage bracket | | 2.75 | 1.73 |
| RL33 | Radar-Lite bracket hanger | | 1.50 | 1.00 |
| RL55 | Radar-, Aqua-Lite web carrying strap | | 1.98 | 1.32 |

*In unit package quantities; add 10% for less than standard package quantities. †Dispenser, also available in 4-pack; ‡50 bulk-pack; §Dispenser, also available in Blister-pack; prices on request. #Cards. •Dispenser. ▲Per card. ■Blister-pack of 4. ♦Blister-pack. ⱢFor use with Radar-Lites. ƗPower failure operated. *With batteries. **Blister-pack of 2. ††Specify 165/3 **GY** (gray case) or 165/3 **GN** (green case); with batteries. ‡‡For use with Safari-Lite.

# URGESS® BATTERIES

## IGNITION AND TELEPHONE BATTERIES

| urgess No. | Volts | Size in Inches, L. x W. x H. | Unit Pkg. | List Price | Net Each* |
|---|---|---|---|---|---|
| I | 1 1/2 | 2 5/8 x 2 5/8 x 4 | 12 | $1.59 | $1.06 |
| (4FM) | 1 1/2 | 2 5/8 x 2 5/8 x 4 | 12 | 1.59 | 1.06 |
| n.** | 1 1/2 | 2 1/2 dia. x 6 5/8 | 12 | 1.69 | 1.13 |
| d. | 1 1/2 | 2 1/2 dia. x 6 5/8 | 12 | 1.69 | 1.13 |
| el.** | 1 1/2 | 2 1/2 dia. x 6 5/8 | 12 | 1.69 | 1.13 |
| H | 3 | 3 29/32 x 2 11/16 x 5 13/32 | 1 | 5.75 | 3.85 |
| H | 6 | 8 5/16 x 2 13/16 x 5 13/16 | 1 | 6.50 | 4.34 |
| 1 | 6 | 10 1/2 x 2 3/4 x 7 13/32 | 4 | 5.98 | 3.98 |
| H | 7 1/2 | 7 3/16 x 3 31/32 x 5 13/16 | 1 | 7.90 | 5.30 |
| H | 9 | 8 1/2 x 3 31/32 x 5 13/16 | 1 | 8.95 | 5.97 |
| H | 12 | 8 5/16 x 2 13/16 x 5 13/16 | 1 | 6.35 | 4.25 |
| 8H | 12 | 10 1/2 x 2 3/4 x 7 13/32 | 1 | 7.95 | 5.32 |

## PHOTOFLASH BATTERIES

| | | | | | |
|---|---|---|---|---|---|
| †† | 1 1/2 | 1 dia. x 1 15/16 | 12 | $ 0.35 | $ 0.22 1/4 |
| †† | 1 1/2 | 1 1/32 dia. x 2 25/64 | 12 | .35 | .22 1/4 |
| †† | 1 1/2 | 13/32 dia. x 1 3/4 | 24 | .30 | .19 1/2 |
| †† | 1 1/2 | 35/64 dia. x 1 31/32 | 24 | .30 | .19 1/2 |
| 0 | 15 | 1 x 39/64 x 1 7/16 | 1 | 1.50 | 1.03 |
| 0 | 15 | 19/32 x 19/32 x 1 23/64 | 1 | 1.50 | 1.03 |
| 5 | 22 1/2 | 31/32 x 9/16 x 1 31/32 | 1 | 1.75 | 1.17 |
| 5 | 22 1/2 | 19/32 x 19/32 x 1 31/32 | 1 | 1.75 | 1.17 |
| 0 | 30 | 1 x 39/64 x 2 17/32 | 1 | 1.95 | 1.30 |
| 30 | 45 | 3 9/16 x 1 3/4 x 5 1/2 | 1 | 4.55 | 3.27 |
| 5 | 67 1/2 | 2 11/16 x 1 5/16 x 2 1/4 | 1 | 4.25 | 2.97 |
| 0 | 90 | 3 23/32 x 1 9/32 x 3 11/16 | 1 | 4.85 | 3.40 |
| (150 | 225 | 4 1/4 x 2 5/8 x 4 1/4 | 1 | 10.95 | 7.67 |
| 60 | 240 | 2 9/16 x 1 5/16 x 4 13/32 | 1 | 10.25 | 7.20 |
| 20 | 510 | 2 15/16 x 1 17/32 x 5 7/16 | 1 | 18.50 | 13.00 |

## MERCURY BATTERIES

at terminals except H146X, H177, H286 and H289 which are ap type.

| urgess No. | Volts | Size in Inches, Dia. x H. | Unit Pkg. | List Price | Net Each* |
|---|---|---|---|---|---|
| -1R | 1.35 | 5/8 x 21/32 | 4 | $1.25 | $0.83 |
| -3R | 1.35 | 1 x 21/32 | 4 | 1.95 | 1.30 |
| -4R | 1.35 | 1 13/64 x 21/32 | 4 | 2.50 | 1.67 |
| -12R | 1.35 | 5/8 x 2 | 2 | 1.95 | 1.30 |
| -42R | 1.35 | 1 13/64 x 2 3/8 | 1 | 5.50 | 3.67 |
| -400R | 1.35 | 29/64 x 9/64 | 6 | 1.00 | .67 |
| -401R | 1.35 | 29/64 x 1 1/8 | 2 | 1.25 | .83 |
| -450R | 1.35 | 29/64 x 9/16 | 4 | 1.25 | .83 |
| -502R | 1.35 | 17/32 x 1 31/32 | 2 | 1.75 | 1.17 |
| -601R | 1.35 | 5/8 x 1 9/64 | 2 | 1.75 | 1.17 |
| -625R | 1.35 | 5/8 x 1/4 | 4 | .95 | .63 |
| -630R | 1.35 | 5/8 x 1/4 | 4 | .95 | .63 |
| -640R | 1.35 | 5/8 x 7/16 | 4 | .95 | .63 |
| PX-13 | 1.35 | 5/8 x 1/4 | 1§§ | 4.00 | 2.68 |
| -1 | 1.4 | 5/8 x 21/32 | 4 | 1.00 | .67 |
| -9‡‡ | 1.4 | 17/32 x 1 31/32 | 4 | 1.00 | .67 |
| -12 | 1.4 | 5/8 x 2 | 2 | 1.75 | 1.14 |
| -42 | 1.4 | 1 13/64 x 2 3/8 | 1 | 5.00 | 3.33 |
| -312 | 1.4 | 5/16 x 9/64 | 6 | .40 | .27 |
| -400 | 1.4 | 29/64 x 9/64 | 6 | .75 | .50 |
| -401 | 1.4 | 29/64 x 1 1/8 | 3 | 1.00 | .67 |
| -520 | 1.4 | 1/2 x 9/32 | 6 | .40 | .27 |
| -575 | 1.4 | 29/64 x 1/8 | 6 | .45 | .30 |
| -625 | 1.4 | 5/8 x 1/4 | 4 | 1.00 | .67 |
| -630 | 1.4 | 5/8 x 1/4 | 4 | .95 | .63 |
| -640 | 1.4 | 5/8 x 7/16 | 4 | .95 | .63 |
| -675 | 1.4 | 29/64 x 13/64 | 6 | .75 | .50 |
| 132R | 2.7 | 43/64 x 1 5/16 | 2 | 1.95 | 1.30 |
| 152R | 2.7 | 31/32 x 1 9/64 | 2 | 1.95 | 1.30 |
| 162R | 2.7 | 43/64 x 57/64 | 2 | 1.95 | 1.30 |
| PX-14 | 2.7 | 21/32 x 5/8 | 4 | 2.00 | 1.34 |
| 132 | 2.8 | 21/32 x 1 5/16 | 2 | 1.95 | 1.27 |
| 112R | 2.7 | 21/32 x 19/32 | 2 | 2.50 | 1.67 |
| 113R | 4.05 | 43/64 x 27/32 | 2 | 2.95 | 1.97 |
| 133R | 4.05 | 21/32 x 2 | 2 | 2.50 | 1.67 |
| 153R | 4.05 | 31/32 x 1 45/64 | 2 | 2.50 | 1.67 |
| 163R | 4.05 | 21/32 x 1 5/16 | 2 | 2.75 | 1.83 |
| 133‡‡ | 4.2 | 21/32 x 2 | 6 | 2.50 | 1.67 |
| 163 | 4.2 | 21/32 x 1 5/16 | 2 | 2.75 | 1.84 |
| 233 | 4.2 | 1 1/64 x 1 31/32 | 1 | 4.50 | 3.00 |
| 114R | 5.4 | 43/64 x 1 3/32 | 2 | 3.25 | 2.17 |
| 134R | 5.4 | 43/64 x 2 5/8 | 2 | 2.95 | 1.97 |
| 164R | 5.4 | 21/32 x 1 3/4 | 2 | 2.75 | 1.83 |
| 164 | 5.6 | 21/32 x 1 3/4 | 6 | 2.50 | 1.67 |
| PX-4 | 5.6 | 21/32 x 1 61/64 | 1 | 2.95 | 1.98 |
| 115R | 6.75 | 43/64 x 1 21/64 | 2 | 3.75 | 2.50 |
| 135R | 6.75 | 43/64 x 3 9/32 | 2 | 3.50 | 2.34 |
| 165R | 6.75 | 21/32 x 2 13/64 | 2 | 3.25 | 2.17 |
| 145 | 7.0 | 21/32 x 1 13/64 | 2 | 2.50 | 1.74 |
| 165 | 7.0 | 21/32 x 2 13/64 | 2 | 3.25 | 2.17 |
| 136R | 8.1 | 43/64 x 3 15/16 | 2 | 3.95 | 2.63 |
| 126 | 8.4 | 47/64 x 2 | 6 | 2.50 | 1.67 |
| 146X‡‡ | 8.4 | 1 1/32 x 21/32 x 1 3/4 | 6 | 1.95 | 1.30 |
| 286 | 8.4 | 1 x 1 15/16 | 6 | 2.50 | 1.67 |
| PX-6 | 8.4 | 21/32 x 4 3/32 | 1 | 4.50 | 3.00 |
| 137R | 9.45 | 43/64 x 4 19/32 | 1 | 4.50 | 3.00 |
| 177 | 9.8 | 35/64 x 1 29/32 | 6 | 2.50 | 1.67 |
| 169 | 12.6 | 43/64 x 3 63/64 | 1 | 5.50 | 3.67 |
| 289 | 12.6 | 1 x 2 25/64 | 6 | 5.00 | 3.35 |

## INDUSTRIAL MERCURY BATTERIES

| Burgess No. | Volts | Cap., mAH | T I | Size in Inches, L. x W. x H. | Wt., Lbs. | Net Each |
|---|---|---|---|---|---|---|
| 302157 | 1.35 | 28,000 | ‡ | 2 7/16 x 1 5/16 x 4 3/16 | .844 | $12.50 |
| 302651 | 1.35 | 14,000 | ■ | 1 1/4 dia. x 2 3/8 | .388 | 4.80 |
| 302702 | 2.7 | 2,200 | ♯ | 1 1/16 dia. x 1 19/32 | .125 | 4.00 |
| 303236 | 4.2 | 1,000 | † | 5/8 dia. x 1 15/16 | .080 | 1.31 |
| 302351 | 5.4 | 2,200 | † | 1 1/32 dia. x 2 9/16 | .281 | 6.55 |
| 302904 | 5.4 | 3,400 | ♯ | 1 9/32 dia. x 2 29/32 | .418 | 7.40 |
| 302435 | 6.75 | 250 | † | 21/32 dia. x 1 15/32 | .045 | 3.46 |
| 302497 | 6.75 | 2,200 | ▴ | 1 1/32 dia. x 3 11/16 | .375 | 9.35 |
| 302642 | 6.75 | 2,400 | † | 1 1/4 dia. x 2 9/16 | .394 | 5.35 |
| 302905 | 6.75 | 3,400 | ♯ | 1 9/32 dia. x 3 17/32 | .522 | 8.50 |
| 303145 | 8.4 | 2,400 | ♦ | 2 3/16 x 27/32 x 4 9/16 | .551 | 6.75 |
| 302250 | 9.45 | 250 | § | 21/32 dia. x 1 7/8 | .062 | 3.10 |
| 302907 | 9.45 | 3,400 | ♯ | 1 9/32 dia. x 2 27/32 | .728 | 10.70 |
| 302478 | 9.8 | 2,400 | † | 1 1/4 dia. x 3 9/16 | .556 | 6.90 |
| 303219 | 9.8 | 160 | • | 1/2 dia. x 1 9/16 | .030 | 2.06 |
| 302358 | 10.8 | 250 | ♯ | 11/16 dia. x 2 1/8 | .055 | 4.10 |
| 302908 | 10.8 | 3,400 | ♯ | 1 9/32 dia. x 5 1/2 | .831 | 12.00 |
| 303394 | 11.2 | 3,600 | ♦ | 2 1/2 x 1 3/4 x 2 3/16 | .750 | 11.30 |
| 302362 | 16.2 | 250 | ♯ | 11/16 dia. x 3 3/32 | .076 | 5.60 |
| 303314 | 16.8 | 2,400 | † | 2 7/8 x 1 13/16 x 1 5/16 | .800 | 11.20 |
| 302580 | 27 | 3,400 | ‡ | 2 21/32 x 2 21/32 x 3 27/32 | 2.010 | 33.60 |
| 302579 | 29.7 | 250 | ♯ | 1 11/32 x 11/16 x 3 1/8 | .312 | 12.50 |
| 302465 | 47.25 | 1,000 | ♯ | 2 1/16 dia. x 3 5/8 | 1.062 | 22.50 |
| 302462 | 97.2 | 1,000 | ♯ | 2 3/4 x 1 15/32 x 6 11/32 | 2.000 | 40.00 |

## ALKALINE BATTERIES

| Burgess No. | Volts | Size in Inches, Dia. x H. | Unit Pkg. | List Price | Net Each* |
|---|---|---|---|---|---|
| AL-1‡‡ | 1 1/2 | 63/64 x 1 15/16 | 6 | $0.80 | $0.52 |
| AL-2 | 1 1/2 | 1 21/64 x 2 13/32 | 6 | 1.00 | .65 |
| AL-7‡‡ | 1 1/2 | 13/32 x 1 3/4 | 24 | .70 | .455 |
| AL-9‡‡ | 1 1/2 | 17/32 x 1 31/32 | 24 | .70 | .455 |
| AL-N‡‡ | 1 1/2 | 29/64 x 1 1/8 | 2 | .60 | .39 |
| APX-24 | 3 | 21/32 x 2 | 2 | 1.75 | 1.14 |
| AL-133‡‡ | 4 1/2 | 21/32 x 2 | 6 | 1.95 | 1.27 |
| APX-19 | 4 1/2 | 21/32 x 2 13/32 | 2 | 1.95 | 1.27 |
| APX-21 | 4 1/2 | 21/32 x 2 1/32 | 2 | 1.95 | 1.27 |

## NICKEL-CADMIUM CELLS AND BATTERIES

Types with suffix **L** have solder lugs for terminals.

| Burgess No. | Volts | Size in Inches, L. x W. x H. | Unit Pkg. | List Price | Net Each* |
|---|---|---|---|---|---|
| CD1 | 1.25 | .460 dia. x .225 | 1 | $ 2.00 | $ 1.40 |
| CD2 | 1.25 | .610 dia. x .236 | 1 | 1.50 | 1.06 |
| CD3 | 1.25 | .984 dia. x .275 | 1 | 1.70 | 1.18 |
| CD3L | 1.25 | .984 dia. x .300 | 1 | 1.95 | 1.38 |
| CD4 | 1.25 | .984 dia, x .350 | 1 | 1.75 | 1.21 |
| CD4L | 1.25 | .984 dia. x .375 | 1 | 2.00 | 1.41 |
| CD5 | 1.25 | 1.700 dia. x .300 | 1 | 2.60 | 1.83 |
| CD5L | 1.25 | 1.700 dia. x .325 | 1 | 2.85 | 1.99 |
| CD6 (AA) | 1.25 | .560 dia. x 1.950 | 1 | 3.05 | 2.14 |
| CD6L (AA) | 1.25 | .560 dia. x 2.275 | 1 | 3.25 | 2.27 |
| CD8 | 1.25 | .984 dia. x .232 | 1 | 1.65 | 1.16 |
| CD8L | 1.25 | .984 dia. x .257 | 1 | 1.90 | 1.31 |
| CD9 | 1.25 | .550 dia. x 3.680 | 1 | 6.25 | 4.36 |
| CD10 (D) | 1.25 | 1.300 dia. x 2.425 | 1 | 10.20 | 7.13 |
| CD10L (D) | 1.25 | 1.300 dia. x 2.775 | 1 | 10.40 | 7.26 |
| CD12♯♯ | 1.25 | .876 dia. x 1.672 | 1 | 4.25 | 2.96 |
| CD12L♯♯ | 1.25 | .876 dia. x 1.672 | 1 | 4.45 | 3.10 |
| CD13•• | 1.25 | 1.273 dia. x 1.440 | 1 | 9.75 | 6.83 |
| CD13L•• | 1.25 | 1.273 dia. x 1.440 | 1 | 9.95 | 6.96 |
| CD14 (C) | 1.25 | 1.010 dia. x 1.945 | 1 | 5.60 | 3.90 |
| CD16 | 1.25 | 1.300 dia. x 2.425 | 1§§ | 8.95 | 6.20 |
| CD100 | 1.25 | 1.36 x .75 x 3.36 | 1 | 13.60 | 10.24 |
| CD101 | 1.25 | 1.36 x 1.36 x 2.40 | 1 | 11.90 | 8.33 |
| CD102 | 1.25 | 1.36 x 1.36 x 3.36 | 1 | 14.00 | 9.79 |
| CD107 | 1.25 | 1.93 x 1.67 x 4.25 | 1 | 21.95 | 15.36 |
| CD108 | 1.25 | 3.56 x 1.05 x 4.90 | 1 | 25.50 | 17.68 |
| CD109 | 1.25 | 3.56 x 1.34 x 4.90 | 1 | 30.00 | 21.23 |
| CD110 | 1.25 | 3.56 x 1.66 x 4.90 | 1 | 39.05 | 27.32 |
| CD111 | 1.25 | 3.56 x 1.97 x 4.90 | 1 | 42.00 | 29.48 |
| CD21 | 6 | 1.065 dia. x 1.525 | 1 | 12.00 | 8.40 |
| CD22 | 6 | 1.065 dia. x 1.975 | 1 | 12.60 | 8.80 |
| CD23 | 6 | 1.800 dia. x 1.725 | 1 | 19.05 | 13.32 |
| CD30 | 6 | 1 1/2 x 1 1/2 x 3 13/16 | 1 | 39.20 | 27.45 |
| CD31 | 6 | 3 13/16 x 1 17/32 x 3 5/8 | 1 | 47.25 | 32.99 |
| CD33 | 6 | 5 3/8 x 2 7/8 x 4 15/16 | 1 | 43.45 | 30.47 |
| CD200 | 6 | 5.0 x 1.0 x 1.813 | 1 | 30.60 | 21.43 |
| CD207 | 6 | 7.031 x 1.406 x 2.594 | 1 | 58.15 | 40.71 |
| CD24 | 9.6 | 1.065 dia. x 2.650 | 1 | 18.10 | 12.67 |
| CD25 | 9.6 | 1.065 dia. x 3.200 | 1 | 18.25 | 12.80 |
| CD25L | 9.6 | 1.065 dia. x 3.200 | 1 | 18.25 | 12.86 |
| CD26 | 9.6 | 1.800 dia. x 2.575 | 1 | 30.50 | 21.34 |
| CD27 | 12 | 1.065 dia. x 2.925 | 1 | 21.70 | 15.17 |
| CD28 | 12 | 1.065 dia. x 3.600 | 1 | 23.25 | 16.25 |
| CD29 | 12 | 1.800 dia. x 3.100 | 1 | 36.15 | 25.20 |
| CD201 | 12 | 5.0 x 2.0 x 1.813 | 1 | 48.30 | 33.60 |
| CD202 | 12 | 10.0 x 1.0 x 1.813 | 1 | 50.00 | 35.00 |
| CD208 | 12 | 7.031 x 2.813 x 2.594 | 1 | 106.55 | 74.55 |
| CD209 | 12 | 14.063 x 1.406 x 2.594 | 1 | 108.70 | 76.13 |
| CD204 | 24 | 5.0 x 4.0 x 1.813 | 1 | 88.75 | 62.14 |
| CD205 | 24 | 10.0 x 2.0 x 1.813 | 1 | 88.25 | 61.79 |
| CD211 | 24 | 7.031 x 5.625 x 2.594 | 1 | 204.75 | 142.80 |
| CD212 | 24 | 14.063 x 2.813 x 2.594 | 1 | 204.75 | 142.80 |

In unit package quantities; add 10% for less than standard pkg. quantities. ITerminals: †Flat; ‡Socket; §Tabs; ♯Leads; •Button; Posts; ■Special leads; ♦Snap. ǂHobby type. **Specify screw or spring clip terminals. ††Display. ‡‡Available in blister-pack; price on equest. §§Per card. ♯♯Short C. ••Half D.

# LITTELFUSE CIRCUIT BREAKERS, MOUNTINGS, CLIPS AND MILITARY FUSES

### 8AG INSTRUMENT FUSES

**Blow Time:** 100%, 4-hour min.; 200%, 5-sec. max. Length 1", dia. ¼".

| L.F. No. | Amp Rating | Net per 5 | Net per 100: 100 | Net per 100: 500 |
|---|---|---|---|---|
| 361.002 | 1/500 | $6.75 | $112.50 | $90.00 |
| 361.005 | 1/200 | 2.88 | 48.00 | 38.40 |
| 361.010 | 1/100 | 2.49 | 41.50 | 33.20 |
| 361.031 | 1/32 | 2.19 | 36.50 | 29.20 |
| 361.062 | 1/16 | 1.38 | 23.00 | 18.40 |
| 361.100 | 1/10 | .99 | 16.50 | 13.20 |
| 361.125 | 1/8 | .99 | 16.50 | 13.20 |
| 361.187 | 3/16 | .99 | 16.50 | 13.20 |
| 361.200 | 2/10 | .99 | 16.50 | 13.20 |
| 361.250 | 1/4 | .63 | 10.50 | 8.40 |
| 361.375 | 3/8 | .63 | 10.50 | 8.40 |
| 361.400 | 4/10 | .63 | 10.50 | 8.40 |
| 361.500 | 1/2 | .63 | 10.50 | 8.40 |
| 361.750 | 3/4 | .63 | 10.50 | 8.40 |
| 361001 | 1 | .45 | 7.50 | 6.00 |
| 36101.5 | 1-1/2 | .45 | 7.50 | 6.00 |
| 361002 | 2 | .45 | 7.50 | 6.00 |
| 361003 | 3 | .45 | 7.50 | 6.00 |
| 361004 | 4 | .45 | 7.50 | 6.00 |
| 361005 | 5 | .45 | 7.50 | 6.00 |

### 8AG FUSES

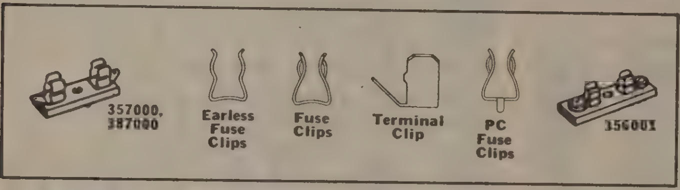
**Blow Time:** 110%, 4-hour min.; 135%, 1 hour max.; 200%, 10-sec. max. Length 1", dia. ¼". UL Listed thru 5 amps.

| L.F. No. | Amp Rating | Net per 5 | Net per 100: 100 | Net per 100: 500 |
|---|---|---|---|---|
| 362.125 | 1/8 | $0.99 | $16.50 | $13.20 |
| 362.250 | 1/4 | .63 | 10.50 | 8.40 |
| 362.375 | 3/8 | .63 | 10.50 | 8.40 |
| 362.500 | 1/2 | .63 | 10.50 | 8.40 |
| 362.750 | 3/4 | .63 | 10.50 | 8.40 |
| 362001 | 1 | .45 | 7.50 | 6.00 |
| 36201.5 | 1-1/2 | .45 | 7.50 | 6.00 |
| 362002 | 2 | .45 | 7.50 | 6.00 |
| 36202.5 | 2-1/2 | .45 | 7.50 | 6.00 |
| 362003 | 3 | .45 | 7.50 | 6.00 |
| 362005 | 5 | .33 | 5.50 | 4.40 |
| 362006 | 6 | .33 | 5.50 | 4.40 |
| 362008 | 8 | .33 | 5.50 | 4.40 |
| 362010 | 10 | .33 | 5.50 | 4.40 |
| 362012 | 12 | .33 | 5.50 | 4.40 |
| 362015 | 15 | .33 | 5.50 | 4.40 |
| 362020 | 20 | .33 | 5.50 | 4.40 |
| 362025 | 25 | .33 | 5.50 | 4.40 |
| 362030 | 30 | .33 | 5.50 | 4.40 |

## MOUNTINGS AND FUSE CLIPS

### MOUNTINGS FOR RECTIFIERS

| L.F. No. | Description | Net Each, Lots of 5 | Net per 100: 100 | Net per 100: 500 |
|---|---|---|---|---|
| 099062 | Single pole, ³⁄₁₆" base | $0.22 | $18.00 | $14.40 |
| 099063 | Double pole, ³⁄₁₆" base | .40 | 33.00 | 26.20 |
| 099065 | Double pole, ¹⁄₁₆" base | .28 | 23.00 | 18.40 |
| 099065-3 | ¹⁄₁₆" Bakelite insulator | .03 | 2.20 | 1.80 |
| 099067 | Single pole ¹⁄₁₆" base | .13 | 11.00 | 8.80 |
| 099067-3 | ¹⁄₁₆" Bakelite insulator | .02 | 1.50 | 1.20 |



### STANDARD FUSE CLIPS (PHOSPHOR BRONZE, NICKEL PLATED)

| L.F. No. | Fuse Adaptation | Type | Net Each, Lots of 5 | Net per 100: 100 | Net per 100: 500 |
|---|---|---|---|---|---|
| 101001 | SFE, 3AG, 8AG, 3AB | Ear | $0.03 | $ 2.65 | $ 2.12 |
| 101002 | SFE, 3AG, 8AG, 3AB | Earless | .04 | 3.00 | 2.40 |
| 101003* | SFE, 3AG, 8AG, 3AB | Lug | .04 | 3.50 | 2.80 |
| 103001 | 4AG, 4AB | Ear | .05 | 4.45 | 3.56 |
| 104002 | 4AG, 4AB | Earless | .05 | 4.45 | 3.56 |
| 105001 | 5AG | Ear | .07 | 5.50 | 4.40 |
| 105002 | 5AG | Earless | .05 | 4.45 | 3.56 |
| 107001 | ⁹⁄₁₆" dia. | Ear | .08 | 7.00 | 5.60 |
| 107002 | ⁹⁄₁₆" dia. | Earless | .09 | 7.50 | 6.00 |
| 109001 | ¹³⁄₁₆" dia. | Ear | .32 | 27.00 | 21.60 |
| 109002 | ¹³⁄₁₆" dia. | Earless | .32 | 27.00 | 21.60 |

*Unplated, bright dip.

### STANDARD FUSE CLIPS (BERYLLIUM COPPER, SILVER PLATED)

| L.F. No. | Fuse Adaptation | Type | Net Each, Lots of 5 | Net per 100: 100 | Net per 100: 500 |
|---|---|---|---|---|---|
| 121001 | SFE, 3AG, 8AG, 3AB | Ear | $0.06 | $ 5.00 | $ 4.00 |
| 121002 | SFE, 3AG, 8AG, 3AB | Earless | .07 | 6.00 | 4.80 |
| 121004 | SFE, 3AG, 8AG, 3AB | Lug | .19 | 15.50 | 12.40 |
| 123001 | 4AG, 4AB | Ear | .11 | 9.00 | 7.20 |
| 123002 | 4AG, 4AB | Earless | .11 | 9.00 | 7.20 |
| 125001 | 5AG, hi-volt | Ear | .16 | 13.50 | 10.80 |
| 125002 | 5AG, hi-volt | Earless | .16 | 13.50 | 10.80 |
| 127001 | ⁹⁄₁₆" dia. | Ear | .40 | 33.50 | 26.80 |
| 127002 | ⁹⁄₁₆" dia. | Earless | .40 | 33.50 | 26.80 |
| 129001 | ¹³⁄₁₆" dia. | Ear | .94 | 78.50 | 62.80 |
| 129002 | ¹³⁄₁₆" dia. | Earless | .94 | 78.50 | 62.80 |

### PC BOARD FUSE CLIPS (SPRING BRONZE)

| L.F. No. | Fuse Adaptation | Type | Net Each, Lots of 5 | Net per 100: 100 | Net per 100: 500 |
|---|---|---|---|---|---|
| 102068 | 1AG, 3AG, 8AG | Ear | $0.05 | $4.50 | $3.60 |
| 102069 | 1AG, 3AG, 8AG | Earless | .05 | 4.50 | 3.60 |

### MANUAL RESET CIRCUIT BREAKERS

**UL Recognized**

815000 Series
LITTELFUSE INC
815/ SERIES PAT #3038047

Exact replacement protector for TV circuits. Ideal for current overload protection for model railroads, toy transformers, hair dryers, small appliances, tools, wiring, etc. For 125 VAC. Size, 1¾" x 1³⁄₁₆" x ½".

Net Each, Skin Pack*............ $0.84

Bulk Pkg., Box of 5............ 3.90

| L.F. No.* | Trip Rating Amps |
|---|---|
| 815.650 | .650 |
| 815.800 | .800 |
| 815001 | 1 |
| 8151.25 | 1.25 |
| 81501.5 | 1.5 |
| 8151.75† | 1.75 |
| 815002† | 2 |
| 8152.25† | 2.25 |
| 81502.5† | 2.5 |
| 8152.75† | 2.75 |
| 815003† | 3 |
| 8153.25† | 3.25 |
| 81503.5 | 3.5 |
| 8153.75 | 3.75 |
| 815004† | 4 |
| 81504.5† | 4.5 |
| 851005 | 5 |
| 815006 | 6 |
| 815007† | 7 |

*Add **C** to L.F. No. for Skin Pack (815002**C**).

**L.F. No. 815(000) PA-Circuit Breaker Adapter Plate**—Net Each **$0.18**; 100 Net: **$15.00** ($100 lots); **$12.00** ($500 lots).

### 3AG MOUNTINGS WITH SCREW TERMINALS—TYPE T

| L.F. No. | Description | Net Ea. Lots of 5 | Net per 100: 100 | Net per 100: 500 |
|---|---|---|---|---|
| 356001 | 1 pole | $0.42 | $ 35.00 | $ 28.00 |
| 356002 | 2 pole | .82 | 68.00 | 54.40 |
| 356003 | 3 pole | 1.23 | 102.50 | 82.00 |
| 356004 | 4 pole | 1.69 | 141.00 | 112.80 |
| 356005 | 5 pole | 2.11 | 176.00 | 140.80 |
| 356006 | 6 pole | 2.53 | 211.00 | 168.80 |
| 356007 | 7 pole | 2.94 | 245.00 | 196.00 |
| 356008 | 8 pole | 3.38 | 282.00 | 225.60 |
| 356009 | 9 pole | 3.80 | 317.00 | 253.60 |
| 356010 | 10 pole | 4.21 | 351.00 | 280.80 |
| 356011 | 11 pole | 4.63 | 386.00 | 308.80 |
| 356012 | 12 pole | 5.05 | 421.00 | 336.80 |

### 3AG MOUNTINGS WITH SOLDER TERMINALS—TYPE S

| L.F. No. | Description | Net Ea. Lots of 5 | Net per 100: 100 | Net per 100: 500 |
|---|---|---|---|---|
| 357001 | 1 pole | $0.22 | $ 18.00 | $ 14.40 |
| 357002 | 2 pole | .40 | 33.00 | 26.40 |
| 357003 | 3 pole | .62 | 51.50 | 41.20 |
| 357004 | 4 pole | .78 | 65.00 | 52.00 |
| 357005 | 5 pole | .96 | 80.00 | 64.00 |
| 357006 | 6 pole | 1.12 | 93.00 | 74.40 |
| 357007 | 7 pole | 1.27 | 106.00 | 84.80 |
| 357008 | 8 pole | 1.44 | 120.00 | 96.00 |
| 357009 | 9 pole | 1.63 | 136.00 | 108.80 |
| 357010 | 10 pole | 1.81 | 151.00 | 120.80 |
| 357011 | 11 pole | 1.99 | 166.00 | 132.80 |
| 357012 | 12 pole | 2.17 | 181.00 | 144.80 |

### 8AG MOUNTINGS WITH SOLDER TERMINALS—TYPE S

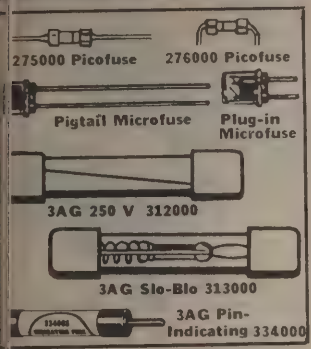
| L.F. No. | Description | Net Ea. Lots of 5 | Net per 100: 100 | Net per 100: 500 |
|---|---|---|---|---|
| 387001 | 1 pole | $0.22 | $ 18.00 | $ 14.40 |
| 387002 | 2 pole | .40 | 33.00 | 26.40 |
| 387003 | 3 pole | .62 | 51.50 | 41.20 |
| 387004 | 4 pole | .78 | 65.00 | 52.00 |
| 387005 | 5 pole | .96 | 80.00 | 64.00 |
| 387006 | 6 pole | 1.12 | 93.00 | 74.40 |
| 387007 | 7 pole | 1.27 | 106.00 | 84.80 |
| 387008 | 8 pole | 1.44 | 120.00 | 96.00 |
| 387009 | 9 pole | 1.63 | 136.00 | 108.80 |
| 387010 | 10 pole | 1.81 | 151.00 | 120.80 |
| 387011 | 11 pole | 1.99 | 166.00 | 132.80 |
| 387012 | 12 pole | 2.17 | 181.00 | 144.80 |

## MICROFUSES TO MILITARY SPECIFICATION MIL-F-23419/2

| Type Designation MIL-F-23419/2 | Nearest Comm. Equiv. | L.F. Catalog No. | Net per 1000, Lots of: 1-99 | Net per 1000, Lots of: 100-499 | Net per 1000, Lots of: 500-999 |
|---|---|---|---|---|---|
| FM02 125V 2MA (1/500A) | 273000 Series | 274.002 | $1500.00 | $1250.00 | $1000.00 |
| FM02 125V 5MA (1/200A) | | 274.005 | 1500.00 | 1250.00 | 1000.00 |
| FM02 125V 10MA (1/100A) | | 274.010 | 1500.00 | 1250.00 | 1000.00 |
| FM02 125V 15MA (1/64A) | | 274.015 | 1500.00 | 1250.00 | 1000.00 |
| FM02 125V 31MA (1/32A) | | 274.031 | 1500.00 | 1250.00 | 1000.00 |
| FM02 125V 62MA (1/16A) | | 274.062 | 1290.00 | 1080.00 | 860.00 |
| FM02 125V 1/10A | | 274.100 | 1290.00 | 1080.00 | 860.00 |
| FM02 125V 1/8A | | 274.125 | 1290.00 | 1080.00 | 860.00 |
| FM02 125V 2/10A | | 274.200 | 1290.00 | 1080.00 | 860.00 |
| FM02 125V 1/4A | | 274.250 | 1290.00 | 1080.00 | 860.00 |
| FM02 125V 3/10A | | 274.300 | 1290.00 | 1080.00 | 860.00 |
| FM02 125V 4/10A | 273000 Series | 274.400 | $1290.00 | $1080.00 | $860.00 |
| FM02 125V 1/2A | | 274.500 | 1290.00 | 1080.00 | 860.00 |
| FM02 125V 6/10A | | 274.600 | 1290.00 | 1080.00 | 860.00 |
| FM02 125V 3/4A | | 274.750 | 1290.00 | 1080.00 | 860.00 |
| FM02 125V 1A | | 274001 | 1290.00 | 1080.00 | 860.00 |
| FM02 125V 1½A | | 27401.5 | 1290.00 | 1080.00 | 860.00 |
| FM02 125V 2A | | 274002 | 1290.00 | 1080.00 | 860.00 |
| FM02 125V 3A | | 274003 | 1290.00 | 1080.00 | 860.00 |
| FM02 125V 4A | | 274004 | 1290.00 | 1080.00 | 860.00 |
| FM02 125V 5A | | 274005 | 1290.00 | 1080.00 | 860.00 |

**Picofuses to Military Specifications MIL-F-23419/4 also available; write for full information and pricing.**

# ITTELFUSE Quality Fuses



## HIGH RELIABILITY MICROFUSES

zero defect programs. Hermetically ed; gold-plated terminals for soldered lug-in connections. Fuse rating identi- on each fuse. Test data and traceability ords are supplied and maintained. ing 125 V, blow time same as 273 series; e/current characteristics certified to AQL per MIL-Std-105, Inspection vel II. Short circuit interrupting capac- at 125 V, 10,000 amps DC. **Size:** Fuse and body, .290″ lg., leads for 262 "plug- series .170″. Pigtail on 268 series 1.0″. prefix **268** for pigtail type (e.g., **268.002**).

per 5 . . . . . . . . . . . . . . . . . . . . . . **$ 15.00**

per 100: 100 . . **$300.00**; 500 . . **300.00**

| ug-In F. No. | Amp Rating | Plug-In L.F. No. | Amp Rating |
|---|---|---|---|
| 2.002 | 1/500 | 262.400 | 4/10 |
| 2.005 | 1/200 | 262.500 | 1/2 |
| 2.010 | 1/100 | 262.600 | 6/10 |
| 2.015 | 1/64 | 262.700 | 7/10 |
| 2.031 | 1/32 | 262.750 | 3/4 |
| 2.050 | 1/20 | 262.800 | 8/10 |
| 2.062 | 1/16 | 262001 | 1 |
| 2.100 | 1/10 | 26201.5 | 1-1/2 |
| 2.125 | 1/8 | 262002 | 2 |
| 2.200 | 2/10 | 262003 | 3 |
| 2.250 | 1/4 | 262004 | 4 |
| 2.300 | 3/10 | 262005 | 5 |

## HIGH RELIABILITY PICOFUSES

r soldering into circuits or insertion into de type clips and mtgs. Fuses rated at 5 V or less and will interrupt short circuit rrents to 300 amps at 125 VDC. Non- groscopic ceramic bodies. Withstands 5- axial pull test. Blow time 4 hours min., 0% rating; 5 secs. max., 200% rating. In- ation resistance is 1 meg min. measured th 100 V supply. **Size:** Body 7/32″ lg., .078″ . Leads are .025″ dia., 1 9/16″ lg., gold- ated copper.

t per 5 . . . . . . . . . . . . . . . . . . . . . . **$ 15.00**

t per 100: 100 . . **$300.00**; 500 . . **300.00**

| .F. No. | Amp Rating | L.F. No. | Amp Rating |
|---|---|---|---|
| 265.125 | 1/8 | 265002 | 2 |
| 265.250 | 1/4 | 265003 | 3 |
| 265.375 | 3/8 | 265004 | 4 |
| 265.500 | 1/2 | 265005 | 5 |
| 265.750 | 3/4 | 265007 | 7 |
| 265001 | 1 | 265010 | 10 |
| 26501.5 | 1-1/2 | 265015 | 15 |

## UBMINIATURE PICOFUSES (125 V)

gh accuracy in blowing time at 300% of ting and higher is ideal for sequential itching or in circuits requiring redun- ncy. Blow time 4 hours min. at 100% of ting; 5 secs. max. at 200%. Amperage inted on body; can be color-coded at ditional cost. Ceramic body only 7/32″ lg. 5/64″ dia.; tin-coated copper leads .025″ a. Order **275** (prefix) for axial leads 1 9/16″ ng for diode clip or in-circuit mounting; 6 for radial leads 1 3/8″ long for use in inted circuits or receptacles.

**5.062** thru **275.500**—Net per 5 . . . **$ 2.34**

et per 100: 100 . . . **$39.00**; 500 . . . . **31.20**

**5.750** thru **275010**—Net per 5 . . . **2.07**

et per 100: 100 . . . **$34.50**; 500 . . . . **27.60**

**5015**—Net per 5 . . . . . . . . . . . . . . **2.46**

et per 100: 100 . . . **$41.00**; 500 . . . . **32.80**

| L.F. No. | Amp Rtg. | L.F. No. | Amp Rtg. | L.F. No. | Amp Rtg. |
|---|---|---|---|---|---|
| 5.062 | 1/16 | 275001 | 1 | 275005 | 5 |
| 5.125 | 1/8 | 27501.5 | 1-1/2 | 275007 | 7 |
| 5.250 | 1/4 | 275002 | 2 | 275010 | 10 |
| 5.375 | 3/8 | 275003 | 3 | 275015 | 15 |
| 5.500 | 1/2 | 27503.5 | 3-1/2 | | |
| 5.750 | 3/4 | 275004 | 4 | | |

## MICROFUSE SUBMINIATURE FUSES

For PC and other min. space uses. Plug-in types use holder (listed on another page); pigtail types for soldering. Short circuit interrupting capacity 125 V, 10,000 amps DC. **Blow Specs:** 100%, 4-hour min.; 200%, 5-sec. max. **Size:** 1/4″ dia. x 1 1/32″ (fuse body). Plug-in, transparent cap type listed. Use prefix **272** for plug-in, metal cap; prefix **279** for pigtail, transparent cap; prefix **278** for pigtail, metal cap.

| Plug-In L.F. No. | Amp Rating | Net per 5 | Net per 100 100 | Net per 100 500 |
|---|---|---|---|---|
| 273.002 | 1/500 | $5.13 | $85.50 | $68.40 |
| 273.005 | 1/200 | 5.13 | 85.50 | 68.40 |
| 273.010 | 1/100 | 5.13 | 85.50 | 68.40 |
| 273.015 | 1/64 | 5.13 | 85.50 | 68.40 |
| 273.031 | 1/32 | 5.13 | 85.50 | 68.40 |
| 273.050 | 1/20 | 4.29 | 71.50 | 57.20 |
| 273.062 | 1/16 | 4.29 | 71.50 | 57.20 |
| 273.100 | 1/10 | 4.29 | 71.50 | 57.20 |
| 273.125 | 1/8 | 4.29 | 71.50 | 57.20 |
| 273.200 | 2/10 | 4.29 | 71.50 | 57.20 |
| 273.250 | 1/4 | 4.29 | 71.50 | 57.20 |
| 273.300 | 3/10 | 4.29 | 71.50 | 57.20 |
| 273.400 | 4/10 | 4.29 | 71.50 | 57.20 |
| 273.500 | 1/2 | 4.29 | 71.50 | 57.20 |
| 273.600 | 6/10 | 4.29 | 71.50 | 57.20 |
| 273.700 | 7/10 | 4.29 | 71.50 | 57.20 |
| 273.750 | 3/4 | 4.29 | 71.50 | 57.20 |
| 273.800 | 8/10 | 4.29 | 71.50 | 57.20 |
| 273001 | 1 | 4.29 | 71.50 | 57.20 |
| 27301.5 | 1-1/2 | 4.29 | 71.50 | 57.20 |
| 273002 | 2 | 4.29 | 71.50 | 57.20 |
| 273003 | 3 | 4.29 | 71.50 | 57.20 |
| 273004 | 4 | 4.29 | 71.50 | 57.20 |
| 273005 | 5 | 4.29 | 71.50 | 57.20 |

## 3AB TINY MIGHTY (250 V OR LESS)

**Blow Time:** 110%, 4-hour min.; 135%, 1 hour max.; 200%, 30-sec. max. Length 1 1/4″, dia. 1/4″. UL Listed thru 15 A.

| | | | | |
|---|---|---|---|---|
| 314.125 | 1/8 | $0.87 | $14.50 | $11.60 |
| 314.250 | 1/4 | .87 | 14.50 | 11.60 |
| 314.375 | 3/8 | .87 | 14.50 | 11.60 |
| 314.500 | 1/2 | .87 | 14.50 | 11.60 |
| 314.750 | 3/4 | .87 | 14.50 | 11.60 |
| 314001 | 1 | .87 | 14.50 | 11.60 |
| 314002 | 2 | .87 | 14.50 | 11.60 |
| 314003 | 3 | .87 | 14.50 | 11.60 |
| 314004 | 4 | .87 | 14.50 | 11.60 |
| 314005 | 5 | .78 | 13.00 | 10.40 |
| 314006 | 6 | .78 | 13.00 | 10.40 |
| 314007 | 7 | .78 | 13.00 | 10.40 |
| 314008 | 8 | .78 | 13.00 | 10.40 |
| 314010 | 10 | .78 | 13.00 | 10.40 |
| 314012 | 12 | .87 | 14.50 | 11.60 |
| 314015 | 15 | .87 | 14.50 | 11.60 |
| 314020 | 20 | .87 | 14.50 | 11.60 |
| 314025 | 25 | 1.08 | 18.00 | 14.40 |
| 314030 | 30 | 1.08 | 18.00 | 14.40 |

## 3AB SLO BLO FUSES (250 V) CERAMIC

**Blow Time:** 110%, 4-hr. min.; 135%, 1 hr. max.; 200%, 5-sec. min. Lg., 1 1/4″, dia., 1/4″.

| L.F. No. | Amp Rating | Net per 5 | Net per 100 100 | Net per 100 500 |
|---|---|---|---|---|
| 323.010 | 1/100 | $2.40 | $40.00 | $32.00 |
| 323.031 | 1/32 | 2.40 | 40.00 | 32.00 |
| 323.062 | 1/16 | 1.98 | 33.00 | 26.40 |
| 323.100 | 1/10 | 1.98 | 33.00 | 26.40 |
| 323.125 | 1/8 | 1.98 | 33.00 | 26.40 |
| 323.150 | 15/100 | 1.98 | 33.00 | 26.40 |
| 323.175 | .175 | 1.98 | 33.00 | 26.40 |
| 323.187 | 3/16 | 1.98 | 33.00 | 26.40 |
| 323.200 | 2/10 | 1.98 | 33.00 | 26.40 |
| 323.250 | 1/4 | 1.98 | 33.00 | 26.40 |
| 323.300 | 3/10 | 1.98 | 33.00 | 26.40 |
| 323.375 | 3/8 | 1.98 | 33.00 | 26.40 |
| 323.400 | 4/10 | 1.98 | 33.00 | 26.40 |
| 323.500 | 1/2 | 1.98 | 33.00 | 26.40 |
| 323.600 | 6/10 | 1.98 | 33.00 | 26.40 |
| 323.700 | 7/10 | 1.98 | 33.00 | 26.40 |
| 323.750 | 3/4 | 1.98 | 33.00 | 26.40 |
| 323.800 | 8/10 | 1.98 | 33.00 | 26.40 |
| 323.001 | 1 | 1.98 | 33.00 | 26.40 |
| 32301.2 | 1-2/10 | 1.98 | 33.00 | 26.40 |
| 3231.25 | 1-1/4 | 1.98 | 33.00 | 26.40 |
| 32301.5 | 1-1/2 | 1.98 | 33.00 | 26.40 |
| 32301.6 | 1-6/10 | 1.98 | 33.00 | 26.40 |
| 323002 | 2 | 1.98 | 33.00 | 26.40 |
| 32302.8 | 2-8/10 | 1.38 | 23.00 | 18.40 |
| 323003 | 3 | 1.38 | 23.00 | 18.40 |
| 32303.2 | 3-2/10 * | 1.38 | 23.00 | 18.40 |
| 323004 | 4* | 1.38 | 23.00 | 18.40 |
| 323005 | 5* | 1.38 | 23.00 | 18.40 |
| 3236.25 | 6-1/4* | 1.38 | 23.00 | 18.40 |
| 323007 | 7* | 1.38 | 23.00 | 18.40 |
| 323008 | 8† | 1.38 | 23.00 | 18.40 |
| 323010 | 10† | 1.38 | 23.00 | 18.40 |
| 323015 | 15† | 1.38 | 23.00 | 18.40 |
| 323020 | 20† | 1.38 | 23.00 | 18.40 |
| 323025 | 25† | 1.38 | 23.00 | 18.40 |
| 323030 | 30† | 1.38 | 23.00 | 18.40 |

*125 volt; †32 volt.

**Ask for Series 336000 with red indicating pin; also available.**

## 3AG INDICATING FUSES (125 V)

**Blow Time:** 110%, 4-hour min.; 135%, 1 hour max. Length 1 1/4″. dia. 1/4″.

| L.F. No. | Amp Rating | Net per 5 | Net per 100 100 | Net per 100 500 |
|---|---|---|---|---|
| 334.750 | 3/4 | $2.67 | $44.50 | $35.60 |
| 334001 | 1 | 2.10 | 35.00 | 28.00 |
| 33401.5 | 1-1/2 | 2.10 | 35.00 | 28.00 |
| 334002 | 2 | 2.10 | 35.00 | 28.00 |
| 334003 | 3 | 2.10 | 35.00 | 28.00 |
| 334004 | 4 | 2.10 | 35.00 | 28.00 |
| 334005 | 5 | 2.10 | 35.00 | 28.00 |
| 334006 | 6* | 2.88 | 48.00 | 38.40 |
| 334008 | 8* | 2.88 | 48.00 | 38.40 |
| 334010 | 10* | 2.88 | 48.00 | 38.40 |
| 334012 | 12* | 2.88 | 48.00 | 38.40 |
| 334015 | 15* | 2.88 | 48.00 | 38.40 |
| 334020 | 20* | 2.88 | 48.00 | 38.40 |

*32 volt.

## 3AG FUSES (32 V OR LESS)

**Blow Time:** 110%, 4-hour min.; 135%, 1 hour max.; 200%, 20-sec. max. Length 1 1/4″, dia. 1/4″.

| | | | | |
|---|---|---|---|---|
| 311004 | 4 | $0.45 | $7.50 | $6.00 |
| 311005 | 5 | .33 | 5.50 | 4.40 |
| 311006 | 6 | .33 | 5.50 | 4.40 |
| 31107.5 | 7-1/2 | .33 | 5.50 | 4.40 |
| 311008 | 8 | .33 | 5.50 | 4.40 |
| 311010 | 10 | .33 | 5.50 | 4.40 |
| 311015 | 15 | .33 | 5.50 | 4.40 |
| 311025 | 25 | .33 | 5.50 | 4.40 |
| 311030 | 30 | .33 | 5.50 | 4.40 |
| 311035 | 35 | .45 | 7.50 | 6.00 |

## 3AG FUSES (250 V OR LESS)

**Blow Time:** 110%, 4-hour min.; 135%, 1 hour max.; 200%, 10-sec. max. Length 1 1/4″, dia. 1/4″. UL Listed thru 8 amps.

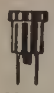
| | | | | |
|---|---|---|---|---|
| 312.010 | 1/100 | $2.49 | $41.50 | $33.20 |
| 312.031 | 1/32 | 2.19 | 36.50 | 29.20 |
| 312.062 | 1/16 | .99 | 16.50 | 13.20 |
| 312.100 | 1/10 | .99 | 16.50 | 13.20 |
| 312.125 | 1/8 | .99 | 16.50 | 13.20 |
| 312.150 | 15/100 | .99 | 16.50 | 13.20 |
| 312.175 | .175 | .99 | 16.50 | 13.20 |
| 312.187 | 3/16 | .99 | 16.50 | 13.20 |
| 312.200 | 2/10 | .99 | 16.50 | 13.20 |
| 312.250 | 1/4 | .63 | 10.50 | 8.40 |
| 312.300 | 3/10 | .63 | 10.50 | 8.40 |
| 312.375 | 3/8 | .63 | 10.50 | 8.40 |
| 312.500 | 1/2 | .63 | 10.50 | 8.40 |
| 312.600 | 6/10 | .63 | 10.50 | 8.40 |
| 312.750 | 3/4 | .63 | 10.50 | 8.40 |
| 312001 | 1 | .45 | 7.50 | 6.00 |
| 3121.25 | 1-1/4 | .45 | 7.50 | 6.00 |
| 31201.5 | 1-1/2 | .45 | 7.50 | 6.00 |
| 31201.6 | 1-6/10 | .45 | 7.50 | 6.00 |
| 312002 | 2 | .45 | 7.50 | 6.00 |
| 31202.5 | 2-1/2 | .45 | 7.50 | 6.00 |
| 312003 | 3 | .45 | 7.50 | 6.00 |
| 312004 | 4 | .54 | 9.00 | 7.20 |
| 312005 | 5 | .54 | 9.00 | 7.20 |
| 312006 | 6 | .54 | 9.00 | 7.20 |
| 312007 | 7 | .54 | 9.00 | 7.20 |
| 312008 | 8 | .81 | 13.50 | 10.80 |
| 312010 | 10 | .81 | 13.50 | 10.80 |

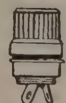
## 3AG SLO BLO FUSES

**Blow Time:** 110%, 4-hour min.; 135%, 1 hour max.; 200%, 5-sec. min. Length 1 1/4″, dia. 1/4″. UL Listed thru 5 amps.

| | | | | |
|---|---|---|---|---|
| 313.010 | 1/100 | $1.89 | $31.50 | $25.20 |
| 313.031 | 1/32 | 1.89 | 31.50 | 25.20 |
| 313.062 | 1/16 | 1.38 | 23.00 | 18.40 |
| 313.100 | 1/10 | 1.38 | 23.00 | 18.40 |
| 313.125 | 1/8 | 1.38 | 23.00 | 18.40 |
| 313.150 | 15/100 | 1.38 | 23.00 | 18.40 |
| 313.175 | .175 | 1.38 | 23.00 | 18.40 |
| 313.187 | 3/16 | 1.38 | 23.00 | 18.40 |
| 313.200 | 2/10 | 1.38 | 23.00 | 18.40 |
| 313.250 | 1/4 | 1.38 | 23.00 | 18.40 |
| 313.300 | 3/10 | 1.38 | 23.00 | 18.40 |
| 313.375 | 3/8 | 1.38 | 23.00 | 18.40 |
| 313.400 | 4/10 | 1.38 | 23.00 | 18.40 |
| 313.500 | 1/2 | 1.38 | 23.00 | 18.40 |
| 313.600 | 6/10 | 1.38 | 23.00 | 18.40 |
| 313.700 | 7/10 | 1.38 | 23.00 | 18.40 |
| 313.750 | 3/4 | 1.38 | 23.00 | 18.40 |
| 313.800 | 8/10 | 1.38 | 23.00 | 18.40 |
| 313001 | 1 | 1.38 | 23.00 | 18.40 |
| 31301.2 | 1-2/10 | 1.29 | 21.50 | 17.20 |
| 3131.25 | 1-1/4 | 1.29 | 21.50 | 17.20 |
| 31301.5 | 1-1/2 | 1.29 | 21.50 | 17.20 |
| 31301.6 | 1-6/10 | 1.29 | 21.50 | 17.20 |
| 313002 | 2 | 1.29 | 21.50 | 17.20 |
| 31302.5 | 2-1/2 | .99 | 16.50 | 13.20 |
| 31302.8 | 2-8/10 | .99 | 16.50 | 13.20 |
| 313003 | 3 | .99 | 16.50 | 13.20 |
| 31303.2 | 3-2/10 | .99 | 16.50 | 13.20 |
| 313004 | 4 | .99 | 16.50 | 13.20 |
| 313005 | 5 | .99 | 16.50 | 13.20 |
| 3136.25 | 6-1/4 | .99 | 16.50 | 13.20 |
| 313007 | 7 | .99 | 16.50 | 13.20 |
| 313008 | 8 | .99 | 16.50 | 13.20 |
| 313010 | 10 | .99 | 16.50 | 13.20 |
| 313015 | 15 | .99 | 16.50 | 13.20 |
| 313020 | 20 | .99 | 16.50 | 13.20 |
| 313025 | 25 | .99 | 16.50 | 13.20 |
| 313030 | 30 | .99 | 16.50 | 13.20 |

# LITTELFUSE FUSES AND FUSEHOLDERS


281001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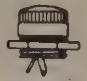
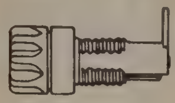
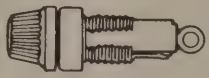
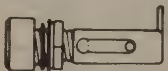
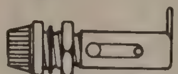
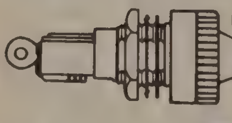

284000
Indicating

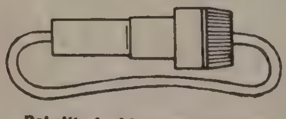

3AG Fuse
Extractor Post
342004


3AG Fuse
Extractor
Post
342012


8AG Fuse
Extractor Post
371001


8AG Fuse
Extractor Post
372001


Indicating
Fuse
Post
344000


Bakelite In-Line Fuse Retainer
Assembled With Lead

### UNIVERSAL FUSE RETAINER

Comes with three different length springs for fuse sizes 7½ SFE thru 3AG.
**L.F. No. 150145**—Net Each........ **46c**
Net 100..**$38.00**; Lots 500, Net 100.**$30.40**

### BAKELITE® IN-LINE FUSE RETAINERS ASSEMBLED WITH 19" LEAD

| L.F. No. | Use with Fuses | Net Ea., Lots of 5 | Net per 100<br>100 | <br>500 |
|---|---|---|---|---|
| 155004A | SFE 4, 1AG | $0.46 | $38.00 | $30.40 |
| 155006A | SFE 6 | .46 | 38.00 | 30.40 |
| 15507.5A | SFE 7½ | .46 | 38.00 | 30.40 |
| 155009A | SFE 9, 7AG | .46 | 38.00 | 30.40 |
| 155014A | SFE 14 | .46 | 38.00 | 30.40 |
| 155020A | SFE 20, 3AG | .46 | 38.00 | 30.40 |

®Bakelite Corp.

## FUSE HOLDERS, RETAINERS

### MICROFUSE HOLDERS

For mounting of 273000 Series Microfuse. Type 281002 is front panel mounting; 281001 ideal PC board mtg.; 284000 Series front panel mtg. with indicator bulb.

| L.F. No. | Voltage Range | Net Each | Net per 100<br>100 | <br>500 |
|---|---|---|---|---|
| 281001 | .......... | $0.29 | $ 24.00 | $ 19.20 |
| 281002 | .......... | .82 | 68.00 | 51.40 |
| 282001 | .......... | 1.31 | 109.00 | 87.20 |
| 282002 | .......... | 1.24 | 103.00 | 82.40 |
| 284004 | 2½–7 | 2.21 | 184.00 | 147.20 |
| 284005 | 7–16 | 2.21 | 184.00 | 147.20 |
| 284006 | 16–32 | 2.21 | 184.00 | 147.20 |
| 284003 | 100–125 | 1.55 | 129.00 | 103.20 |

### MICROFUSE INDICATING HOLDERS—RF SHIELDED

| L.F. No. | Voltage Range | Net Each | Net per 100<br>100 | <br>500 |
|---|---|---|---|---|
| 284107 | 12–22 V | $7.82 | $651.50 | $521.20 |
| 284108 | 23–33 V | 8.83 | 735.50 | 588.40 |
| 284109 | 34–45 V | 8.83 | 735.50 | 588.40 |
| 284110 | 46–60 V | 8.83 | 735.50 | 588.40 |
| 284111 | 61–80 V | 8.83 | 735.50 | 588.40 |
| 284112 | 81–90 V | 8.83 | 735.50 | 588.40 |
| 284113 | 90–125 V | 6.07 | 505.50 | 404.40 |

### 3AG FUSE EXTRACTOR POSTS

| L.F. No. | Type | Net Each | Net per 100<br>100 | <br>500 |
|---|---|---|---|---|
| 340255A | R/F shld'd (FHN26G2) | $5.35 | $445.50 | $356.40 |
| 340256A | R/F shld'd (FHN20G) | 5.35 | 445.50 | 356.40 |
| 341001A | Screw | .64 | 53.00 | 42.40 |
| 342001A | Finger | .64 | 53.00 | 42.40 |
| 342004A | Miniature | .53 | 44.50 | 35.60 |
| 342005A | Miniature* | .64 | 53.00 | 42.40 |
| 342006 | Watertight | 2.60 | 216.50 | 173.20 |
| 342012A | Miniature | .46 | 38.00 | 30.40 |
| 342013A | Miniature* | .54 | 45.00 | 36.00 |
| 342014A | Miniature | .46 | 38.00 | 30.40 |
| 342015A | Miniature* | .54 | 45.00 | 36.00 |
| 342021A | FHN 26W | 3.20 | 266.50 | 213.20 |
| 342022A | Miniature | .53 | 44.50 | 35.60 |
| 342023A | Miniature* | .64 | 53.00 | 42.40 |
| 342024A | FHN 26G2 | 1.32 | 110.00 | 88.00 |
| 342025A | FHN 20G | 1.36 | 113.50 | 90.80 |

*Dust-proof.

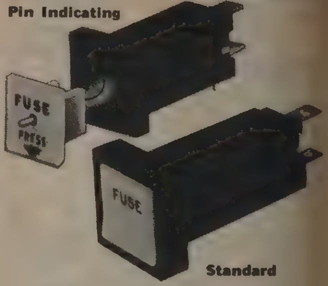
### 3AG QUICK-CONNECT POSTS

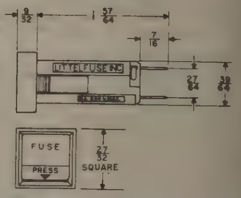
| L.F. No. | Description | Net Each | Net per 100<br>100 | <br>500 |
|---|---|---|---|---|
| 342028A | 3⁄16" terminals | $0.53 | $44.50 | $35.60 |
| 342038A | 3⁄16" terminals | .53 | 44.50 | 35.60 |
| 342048A | 3⁄16" terminals | .53 | 44.50 | 35.60 |
| 342058A | 3⁄16" terminals | .53 | 44.50 | 35.60 |

### 3AG INDICATING FUSE POSTS

| L.F. No. | Voltage | Net Each | Net per 100<br>100 | <br>500 |
|---|---|---|---|---|
| 344006A | 2½–7 V | $3.14 | $261.50 | $209.20 |
| 344012A | 7–16 V | 3.14 | 261.50 | 209.20 |
| 344024A | 16–32 V | 3.14 | 261.50 | 209.20 |
| 344125A | 100–125 V | 1.93 | 160.50 | 128.40 |
| 344250A | 200–250 V | 1.93 | 160.50 | 128.40 |

## LOW PROFILE FUSE HOLDERS





Low profile fuseholders ideal for front or rear panel installation on computers, photocopying and business equipment, aircraft and marine equipment. No mounting hardware required, snap-on the terminals and snap-in the holder. Available for 3AG standard or pin indicating fuses and 8AG standard fuses. Molded phenolic resin body with high temperature thermo-plastic color-coded caps. Quick-connect solder type terminals are one piece brass electrotin plated; available in two widths. Dielectric withstanding voltage between terminals and terminals to ground at room temperature and 90% R.H. exceeds 1500 volts. Withstands 10–55 Hz at 0.06" double amplitude vibrations; withstands 50G for 11 millisec vibration. Rated 15 amps at any voltage to 250 volts. **Size:** 1 57⁄64" lg. x 39⁄64" sq. body; 27⁄32" sq. x 9⁄32" d. cap. Mounts in 0.625" sq. hole 1⁄32"–1⁄8" thk. chassis panel.

### BODY ASSEMBLY FOR 3AG FUSE

| L.F. No. | Terminal | Net Each | Net per 100<br>100 | <br>500 |
|---|---|---|---|---|
| 3486*0 | 3⁄16" | $0.42 | $35.00 | $28.00 |
| 3488*0 | 1⁄4" | .42 | 35.00 | 28.00 |

### BODY ASSEMBLY FOR 8AG FUSE

| L.F. No. | Terminal | Net Each | Net per 100<br>100 | <br>500 |
|---|---|---|---|---|
| 3786*0 | 3⁄16" | $0.42 | $35.00 | $28.00 |
| 3788*0 | 1⁄4" | .42 | 35.00 | 28.00 |

*Body color, black. Bezel color specify—**1**, red; **2**, green; **3**, yellow; **4**, blue; **5**, white; **7**, black; **9**, gray. (378630 for yellow bezel.)

### CAPS FOR 3AG AND 8AG FUSE

| L.F. No. | Description | Net Each | Net per 100<br>100 | <br>500 |
|---|---|---|---|---|
| 34800* | Standard | $0.144 | $12.00 | $ 9.60 |
| 34700* | Pin ind. | .16 | 14.00 | 11.20 |

*Specify cap color—**1**, red; **2**, green; **3**, yellow; **4**, blue; **5**, white; **7**, black; **9**, gray (e.g., 347004 for blue cap).

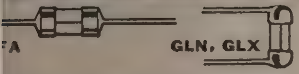
## FUSEHOLDERS TO MILITARY SPECIFICATION MIL-F-19207

| Type Designation MIL-F-19207 | Description | Littelfuse Catalog No. | Nearest Comm. Equiv. | Net per 1000, Lots of<br>1-99 | <br>100-499 | <br>500-999 |
|---|---|---|---|---|---|---|
| **FHL 17G2** | 90–300V Indicating | 349250 | 344125 | $2214.00 | $1845.00 | $1476.00 |
| **FHL 18G2-1** | 12– 22V Indicating | 349012 | 344024 | 3324.00 | 2770.00 | 2216.00 |
| **FHL 18G2-2** | 23– 33V Indicating | 349023 | 344024 | 3324.00 | 2770.00 | 2216.00 |
| **FHL 18G2-3** | 34– 45V Indicating | 349034 | .............. | 3324.00 | 2770.00 | 2216.00 |
| **FHL 18G2-4** | 46– 60V Indicating | 349046 | .............. | 3324.00 | 2770.00 | 2216.00 |
| **FHL 18G2-5** | 61– 80V Indicating | 349061 | .............. | 3324.00 | 2770.00 | 2216.00 |
| **FHL 18G2-6** | 81– 90V Indicating | 349081 | .............. | 3324.00 | 2770.00 | 2216.00 |
| **FHL 18G2-7** | 2.5–4 V Indicating | 349002 | .............. | 3324.00 | 2770.00 | 2216.00 |
| **FHL 18G2-8** | 5–7 V Indicating | 349005 | .............. | 3324.00 | 2770.00 | 2216.00 |
| **FHL 18G2-9** | 8–12 V Indicating | 349008 | .............. | 3324.00 | 2770.00 | 2216.00 |
| **FHL 44G-1** | Microfuse-Ind. 12– 22 V | 284007 | 284006 | 3210.00 | 2675.00 | 2140.00 |
| **FHL 44G-2** | Microfuse-Ind. 23– 33 V | 284008 | 284006 | 3642.00 | 3035.00 | 2428.00 |
| **FHL 44G-3** | Microfuse-Ind. 34– 45 V | 284009 | .............. | 3642.00 | 3035.00 | 2428.00 |
| **FHL 44G-4** | Microfuse-Ind. 46– 60 V | 284010 | .............. | 3660.00 | 3050.00 | 2440.00 |
| **FHL 44G-5** | Microfuse-Ind. 61– 80 V | 284011 | .............. | 3660.00 | 3050.00 | 2440.00 |
| **FHL 44G-6** | Microfuse-Ind. 81– 90 V | 284012 | .............. | 3660.00 | 3050.00 | 2440.00 |
| **FHL 45G** | Microfuse-Ind. 90–125 V | 284013 | 284003 | 2502.00 | 2085.00 | 1668.00 |
| **FHN 20G** | 3AG Miniature | 342025 | 342004 | 1362.00 | 1135.00 | 908.00 |
| **FHN 26G2** | 3AG Miniature | 342024 | 342012 | 1320.00 | 1100.00 | 880.00 |
| **FHN 31G2** | 8AG Extractor | 372003 | 372001 | 2652.00 | 2210.00 | 1768.00 |
| **FHN 19W** | 4AG Watertight | 442008 | 442006 | 3198.00 | 2665.00 | 2132.00 |
| **FHN 26W** | 3AG Watertight | 342021 | 342006 | 3198.00 | 2665.00 | 2132.00 |

Suffix **W** to Type Designation indicates watertight; suffix **G**, drip-proof.

# Buss® and Fusetron® Fuses, Holders

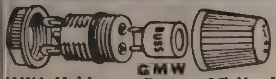
## ON SUBMINIATURE PIG-TAIL FUSES



s-tube construction with 1½″ leads of tinned copper for 1/100–5 amp ratings, tinned copper for 7–15 amp ratings. metically sealed. Color coded to indi- amp ratings. For circuits with fault ent of 50 amps or less (1/100–5 amps 125 V or less, 7–15 amps for 32 V or . GLN, GLX body size, .140″ x .3″; body size, .145″ x .3″.

| | Amperes | Net Price For Ten | 100 |
|---|---|---|---|
| | 1/100 | $13.90 | $116.00 |
| | 1/32, 1/20, 1/16, 1/10, 1/8, 3/10, 4/10, 7, 8, 15 | 11.70 | 98.00 |
| K | 15/100, 2/10, 1/4, 1/2, 6/10, 3/4, 1, 1½, 2, 3, 4, 5 | 15.10 | 126.00 |
| | 1/100, 1/32, 1/20, 1/16, 1/10, 1/8, 15/100, 2/10, 1/4, 3/10, 4/10, 1/2, 6/10, | 5.00 | 42.00 |
| | 3/4, 1, 1½, 2, 3, 4, 5, 7, 8, 15 | 4.40 | 37.00 |

## UBMINIATURE PRONG TYPE UNIT



ed 125 V or less, faulty current not 300 amps; open at 200% within 10 sec. ss. Use AF knob for waterproof. Size, dia., ¼″ lg. (body).

| | Amperes | Net Price for Ten | 100 |
|---|---|---|---|
| W | 1/200, 1/100, 1/64, 1/32, 1/16 | $8.30 | $70.00 |
| W | 1/10, 2/10, ¼, 3/10, 4/10, ½, 6/10, ¾, 1, 1½, 2, 3, 4, 5 | 6.40 | 53.00 |
| A* | Holder, fits all GMW | 8.10 | 68.50 |
| A† | Holder, fits all GMW | 7.10 | 60.00 |
| | Knob only, fits HWA | 1.10 | 8.50 |

h AF knob. †Without AF knob.

## 13/64 x 45/64 inch FUSES

**(5 mm X 20 mm)**

ection of miniaturized circuits com- ly used in foreign equipment. Carry open at 200% in 10 sec.

| | Amperes | Net Price for Five | 100 |
|---|---|---|---|
| | ⅛ | $1.90 | $32.00 |
| | ¼, ½, 7/10 | 1.50 | 25.00 |
| | 1, 1-2/10, 1½, 2, 3, 4, 5, 6, 10 | 1.20 | 20.00 |

## 1/4 x 5/8 inch FUSES

**FAST ACTING FUSES**

s tube, ¼″ x ⅝″. Rated 32 V, carry , open at 135% in 1 hour.

| | | | |
|---|---|---|---|
| | 1, 1½, 2, 2½, 3 | $0.45 | $8.00 |
| | 5, 6, 7½, 10, 15, 20, 25, 30 | .35 | 6.00 |

## 1/4 x 7/8 inch FUSES

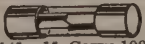
**FAST ACTING FUSES**

s tube, rated 32 V; carry 110%, open 5% in 1 hour.

| | | | |
|---|---|---|---|
| | 1, 2½, 3, 4 | $0.45 | $8.00 |
| | 5, 6, 7½, 15, 20, 30 | .35 | 6.00 |

## 1/4 x 1 inch FUSES

**FAST ACTING FUSES**



Glass tube, ¼″ x 1″. Carry 100%, open at 200% in 5 seconds. 1/500 to ⅛ amp sizes have bridge construction; all others straight-through element. UL Recognized.

| Buss No. | Amperes | Volts | Net Price For Five | 100 |
|---|---|---|---|---|
| AGX | 1/500 | 250 | $6.75 | $113.00 |
| AGX | 1/200 | 250 | 2.90 | 48.00 |
| AGX | 1/100 | 250 | 2.50 | 42.00 |
| AGX | 1/32 | 250 | 2.20 | 37.00 |
| AGX | 1/16 | 250 | 1.40 | 23.00 |
| AGX | 1/10, ⅛, 3/16, 2/10 | 250 | 1.00 | 17.00 |
| AGX | ¼, ⅜, 4/10, ½, ¾ | 250 | .65 | 11.00 |
| AGX | 1, 1½, 2, 3, 4 | 125* | .45 | 8.00 |
| AGX | 5, 8, 10, 15, 20 | 32† | .35 | 6.00 |
| AGX | 25, 30 | 32 | .35 | 6.00 |
| AGX | 35 | 32 | .45 | 8.00 |

*1A, 250. †5A, 125.

## 1/4 x 1-1/4 inch FUSES

**FAST ACTING FUSES**

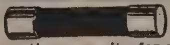
Glass tube, ¼″ x 1¼″. Carry 110%, open at 135% in 1 hour or less. 1/500 to 2 amp sizes will open at 200% in 5 seconds or less. 1/500 to 1/32 amp have bridge construction; all others straight-through element. UL Recognized.

| | | | | |
|---|---|---|---|---|
| AGC | 1/500 | 250 | $6.75 | $113.00 |
| AGC | 1/200 | 250 | 2.90 | 48.00 |
| AGC | 1/100 | 250 | 2.50 | 42.00 |
| AGC | 1/32 | 250 | 2.20 | 37.00 |
| AGC | 1/16, ⅛, 15/100, 175/1000, 3/16, 1/10, 2/10 | 250 | 1.00 | 17.00 |
| AGC | ¼, 3/10, ⅜, 45/100, ½, 6/10, ¾ | 250 | .65 | 11.00 |
| AGC | 1, 1¼, 1½, 1-6/10, 2 | 250 | .45 | 8.00 |
| AGC | 2½, 3 | 250 | .45 | 8.00 |
| AGC | 4 | 32‡ | .45 | 8.00 |
| MTH | 4, 5, 6 | 250 | .55 | 9.00 |
| AGC | 5, 6, 7½, 8, 10, 15 | 32‡ | .35 | 6.00 |
| AGC | 20, 25, 30 | 32‡ | .35 | 6.00 |
| AGC | 35 | 32‡ | .45 | 8.00 |

‡Not UL Recognized.

## 1/4 x 1-1/4 inch FUSES

**CERAMIC TUBE FUSES**

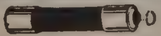


High interrupting capacity for use on circuit delivering as high as 25,000 amps at 125 V, or 10,000 amps at 250 V. ¼″ x 1¼″. Carry 110%, open at 135% in 1 hour. Up to 15 amp size. UL Recognized.

| | | | | |
|---|---|---|---|---|
| ABC | ¼ | 250 | $0.85 | $15.00 |
| ABC | 1, 2, 3 | 250 | .85 | 15.00 |
| ABC | 5, 6, 8, 10 | 250 | .75 | 13.00 |
| ABC | 12, 15, 20 | 250 | .85 | 15.00 |
| ABC | 25, 30 | 125 | 1.10 | 18.00 |

## 1/4 x 1-1/4 inch FUSES

**VISUAL INDICATING FUSES**



For use with HLD fuseholder. Bright red dot on indicating pin extends from end of fuse when fuse is open even after power is off. Rated 125 V or less, carries 110%, opens at 135% in 1 hour or less. Only ¼″ x 1¼″.

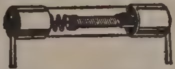
| Buss No. | Amperes | Net Price For Five | 100 |
|---|---|---|---|
| GBA | ¾ | $2.90 | $48.00 |
| GBA | 1, 1½, 2, 3, 4, 5 | 2.20 | 37.00 |

Fiber tube with silver plated indicating pin which extends when fuse is blown. May be used to actuate a signal when used in HKA fuseholder or Signal Fuse Block. Dual tube construction in sizes larger than 5 amps (cannot be used in HKA fuseholder). Voltage, 125 volts, except 8 amp and over which are 32 volts. Size, ¼″ x 1¼″.

| | | | |
|---|---|---|---|
| GLD | ¾ | $2.65 | $45.00 |
| | 1, 1½, 2, 3, 4, 5 | 2.10 | 35.00 |
| | 6, 8, 10, 12, 15, 20 | 2.90 | 48.00 |

## 1/4 x 1-1/4 inch FUSES

**FUSETRON PIG-TAIL FUSES**



Body ¼″ x 1¼″, #20 tinned leads, 1¼″. 1/100 to 2-8/10 same as MDL type; 3 to 7 amps same as MDX type. UL Recognized.

| Buss No. | Amperes | Volts | Net Price For Five | 100 |
|---|---|---|---|---|
| MDV | 1/100, 1/32 | 250 | $2.30 | $38.00 |
| MDV | 1/16, 1/10, ⅛, 15/100, 175/1000, 3/16, 2/10, ¼, 3/10, ⅜, 4/10, ½, 6/10, ¾, 8/10, 1 | 250 | 1.70 | 28.00 |
| MDV | 1¼, 1½, 1-6/10, 1-8/10, 2, 2¼ | 125 | 1.60 | 27.00 |
| MDV | 2½, 2-8/10, 3, 3-2/10, 4, 5, 6¼, 7 | 125 | 1.40 | 23.00 |

**PIG-TAIL FUSES**

Glass tube ¼″ x 1¼″ with 1¼″ leads of #20 tinned wire. Carry 110%, open 135% in 1 hour. 250 V. UL Recognized.

| Buss No. | Amperes | Net Price For Five | 100 |
|---|---|---|---|
| GJV | 1/16 | $1.70 | $28.00 |
| GJV | ⅛ | 1.30 | 22.00 |
| GJV | ¼, 3/10, ⅜, ½, ¾ | 1.00 | 17.00 |
| GJV | 1, 1½, 1¾, 2, 3 | .80 | 14.00 |
| GJV | 4, 5, 6, 7 | .85 | 14.00 |

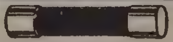
## 1/4 x 1-1/4 inch FUSES

**FUSETRON GLASS TUBE FUSES**

Dual-element slow-blowing type, ¼″ x 1¼″. Fuse link operates only on very high overloads or short-circuits; thermal cutout functions on low overloads (cannot operate quickly on any load, thus providing long time-lag). Carry 110%, open at 135% in 1 hour. MDL 1/100 to 2-8/10 amp and MDX 3 to 7 amp sizes. UL Recognized. MDL type has longer time-lag than MDX type.

| Buss No. | Amperes | Volts | Net Price For Five | 100 |
|---|---|---|---|---|
| MDL | 1/100, 1/32 | 250 | $1.90 | $32.00 |
| MDL | 1/16, 1/10, ⅛, 15/100, 175/1000, 3/16, 2/10, ¼, 3/10, ⅜, 4/10, ½, 6/10, 7/10, ¾, 8/10, 1 | | 1.40 | 23.00 |
| MDX | 1¼, 1½, 1-6/10, 2 | 250 | 1.50 | 25.00 |
| MDL | 1-2/10, 1¼, 1½, 1-6/10, 1-8/10, 2 | 125 | 1.30 | 22.00 |
| MDL | 2½, 2-8/10 | 125 | 1.00 | 17.00 |
| MDX | 3, 3-2/10, 4, 5 | 125 | 1.00 | 17.00 |
| MDX | 6¼, 7 | 125 | 1.20 | 20.00 |
| MDL | 3, 3-2/10, 4, 5, 6¼, 8, 10, 15, 20, 25, 30 | 32 | 1.00 | 17.00 |

## 1/4 x 1-1/4 inch FUSES



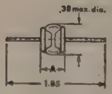
Fusetron dual-element fuse, slow-blowing type, ceramic tube. Carry 110%, open at 135% in one hour.

| | | | | |
|---|---|---|---|---|
| MDA | 1/100, 1/32 | 250 | $2.40 | $40.00 |
| MDA | 1/16, 1/10, ⅛, 15/100, 175/1000, 3/16, 2/10, ¼, 3/10, ⅜, 4/10, ½, 6/10, ¾, 8/10, 1, 1¼, 1½, 1-6/10, 2 | 250 | 2.00 | 33.00 |
| MDA | 2½, 2-8/10, 3, 3-2/10, 4, 5, 6¼, 7, 8, 10, 15, 20 | 250 | 1.40 | 23.00 |
| MDA | 25, 30 | 125 | 1.40 | 23.00 |

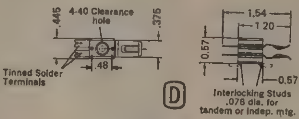
# SVP™ GAS-FILLED SURGE VOLTAGE PROTECTORS

## FOR PROTECTION AGAINST LIGHTNING AND OTHER TRANSIENTS

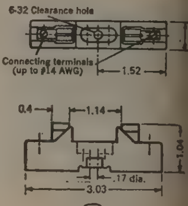
**Button Type**



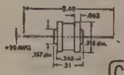
A



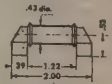
D



E



C



B

SVP tubes consist of two main electrodes, properly spaced by a glass or ceramic insulator. The main electrodes are bonded to the insulator and form a hermetically sealed discharge chamber which contains an inert gas. Provides effective protection against over-voltage transients, increasing reliability and reducing maintenance and down-time costs. Features fast response time in the nanosecond range, high current carrying capability, accurate breakdown voltage, low capacitance (2 to 6.8 pF depending upon type) and high insulation resistance (greater than $10^{10}$ ohms). Should be used in all types of electronic equipment where solid-state devices or other sensitive components are used, such as: instrumentation, communications, data processing, electric and electronic counters. Button Type is for transient protection in most applications. Power Type is for applications where especially severe current surges are anticipated. Fail-Safe Type is for applications where protection of equipment and personnel against over-voltage surges is essential and where reliable and uninterrupted protection under the most severe conditions is required; the Fail-Safe protector instantly goes into a permanent short circuit if its discharge capability is ever exceeded.

### SPECIFICATIONS

**Rated Surge Discharge Current:** Peak value of a current pulse with 8 µsec rise time and 20 µsec decay to half value, to which the protector will be subjected 10 times at intervals of 30 seconds, is 5000 amps except for type KA6 which is 2,500 amps; power types, 20,000 amps; fail-safe type B3-C350, 10,000 amps (fail-safe type rated for 50 discharges). **Capacitance:** Less than 2 pF between main electrodes except type L2-A230, less than 6.8 pF; L2-A350 and L2-A600; less than 4.5 pF.

### BUTTON TYPE WITH WIRE LEADS (FIG. A)

Size, .38″ dia. x 1.85″ long (including leads).

| Siemens Number | DC Striking Volts* | Dim. "A" | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| **B1-C90/20** | 90 (±20%) | .272 | $3.00 | $2.35 | $1.95 | $1.60 | $1.43 |
| **B1-F90** | 90<br>(+40, −0 V) | .272 | 2.95 | 2.25 | 1.82 | 1.50 | 1.32 |
| **B1-C145** | 145 (±20%) | .272 | 2.95 | 2.25 | 1.82 | 1.50 | 1.32 |
| **B1-A230** | 230 (±15%) | .238 | 2.40 | 1.85 | 1.46 | 1.20 | 1.08 |
| **B1-A350** | 350 (±15%) | .238 | 2.40 | 1.85 | 1.46 | 1.20 | 1.08 |
| **B2-B470** | 470 (±15%) | .295 | 2.40 | 1.85 | 1.46 | 1.30 | 1.17 |
| **B2-B800** | 800 (±15%) | .335 | 2.40 | 1.85 | 1.46 | 1.30 | 1.17 |
| **B2-H10** | 1000 (±15%) | .276 | 2.40 | 1.85 | 1.46 | 1.30 | 1.17 |
| **B2-H25** | 2500 (±20%) | .433 | 2.95 | 2.25 | 1.82 | 1.50 | 1.32 |
| **KA6** | 6500–9500 | .378 | 2.40 | 1.85 | 1.46 | 1.30 | 1.17 |

*Voltage at which the protector will ignite if subjected to a slowly rising DC voltage (less than 100 V/second).

### BUTTON TYPE WITHOUT LEADS

Size, .38″ dia.; length (A) shown in table below:

| Siemens Number | DC Striking Volts* | Dim. "A" | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| **A1-F90** | 90<br>(+40, −0 V) | .272 | $2.75 | $2.10 | $1.70 | $1.35 | $1.20 |
| **A1-C145** | 145 (±20%) | .272 | 2.75 | 2.10 | 1.70 | 1.35 | 1.20 |
| **A1-A230** | 230 (±15%) | .238 | 2.20 | 1.70 | 1.35 | 1.05 | .95 |
| **A1-A350** | 350 (±15%) | .238 | 2.20 | 1.70 | 1.35 | 1.05 | .95 |
| **A2-B470** | 470 (±15%) | .295 | 2.25 | 1.70 | 1.35 | 1.16 | 1.05 |

### POWER TYPE (FIG. B)

Knife blade contacts. Size, .43″ dia. x 2.00″ overall.

| Siemens Number | DC Striking Volts* | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|
| **L2-A230** | 230 (±15%) | $4.55 | $3.75 | $2.90 | $2.75 | $2.60 |
| **L2-A350** | 350 (±15%) | 4.00 | 3.30 | 2.65 | 2.35 | 2.25 |
| **L2-A600** | 600 (±15%) | 4.00 | 3.30 | 2.65 | 2.35 | 2.25 |

*Voltage at which the protector will ignite if subjected to a slowly rising DC voltage (less than 100 V/second).

### FAIL-SAFE TYPE

DC striking voltage, 200–400 volts. Size shown above.

| Siemens Number | Fig. | Terminals | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| **B3-C350** | C | Wire leads | $3.70 | $2.85 | $2.25 | $2.00 | $1.83 |

### HOLDERS

| Siemens Number | Fig. | For Protector Type | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-499 | 500-999 |
|---|---|---|---|---|---|---|---|
| **A1-A1** | D | Button | $0.90 | $0.70 | $0.55 | $0.45 | $0.38 |
| **A2-L1** | E | Power | 1.90 | 1.50 | 1.35 | 1.20 | 1.10 |

# PROGRAMING SWITCHES FOR PC BOARDS

Low profile switch for printed circuit boards consists of two rows of 10 in-line terminals, on 0.1″ x 0.2″ grid spacing, connected by double-spring gold-plated contacts. Replaces the function of up to three rotary or slide switches, saving space and permitting economical dense packaging. Eliminates the labor of cross wiring where occasional changes in operating conditions are required. A rotor is turned by a small screwdriver, 180° sequentially from one detented position to another. Overall mounting area is less than .350 sq. in.; housing is only .35″ high x .295″ wide x 1.19″ long. Snap-open dust cover has engraved position numbers. Materials are not affected by immersion in cleaning solutions such as Freon TE, alcohol, or soap and water.

| Siemens Number | Rotors | Mounting | Net Each, Lots of 1-9 | 10-49 | 50-99 | 100-249 | 250-499 |
|---|---|---|---|---|---|---|---|
| **C42315-A61-A1** | 1 | Straight pin | $4.00 | $3.10 | $2.50 | $2.20 | $1.95 |
| **C42315-A61-A2** | 2 | Straight pin | 4.90 | 3.80 | 3.05 | 2.70 | 2.40 |
| **C42315-A61-A3** | 3 | Straight pin | 5.80 | 4.50 | 3.60 | 3.20 | 2.85 |
| **C42315-A61-A9** | Stop* | ........... | .15 | .12 | .10 | .09 | .08 |

*When using more than one rotor, a stop is needed between each rotor to prevent contacts from shorting each other.

### SPECIFICATIONS

**Voltage:** 60 volts maximum, AC/DC. **Current:** Switching, 0.5 amp maximum; carrying, 1 amp maximum. **Operating Temperature:** −40° to +85° C. **Contact Resistance:** Less than 50 milliohms. **Dielectric:** 500 volts rms. **Capacitance:** 0.3 pF between contacts. **Contacts:** Non-shorting gold plated. **Terminals:** Gold plated.

# WOOD ELECTRIC Circuit Breakers

od Electric circuit breakers are precision calibrated and
ected by X-ray to insure uniform and reliable performance.
rate at full capacity under extreme conditions of shock, vibra-
and humidity. On overload, breakers will open and remain
n until manually reset. If dangerous overload remains, con-
s cannot be held closed even manually. Varied selection of
lels to meet all requirements: thermal and magnetic types;
, two and three-pole; 1.0 through 50 amp ratings; slow and
isecond tripping; military types; miniature sizes; economy
lels; toggle or pushbutton actuators. **Dielectric Strength:**
r 1500 V rms. **Reset Time:** Thermal, to 10 sec; magnetic,
antaneous.

507

109, 111

112

374, 375

## SINGLE-POLE THERMAL CIRCUIT BREAKERS

### SERIES 109

Single pole, push/pull, except Model 112 toggle type, with models available in ratings from 1 to 50 amps. **Endurance Cycling:** Over 5000 operations at 100% of rating or 10,000 mechanical cycles. **Vibration:** Up to 10 G at 10–55 Hz. **Shock:** Model 111 withstands up to 15 G; all others to 25 G. **Maximum Voltage:** 250 VAC to 400 hertz; 32 VDC. **Interruption Capacity:** For Models 109 and 112, over 3500 A at 120 VAC; 5000 A at 32 VDC. For Model 507, over 3000 A at 115/200 VAC, 400 hertz; 5000 A at 32 VDC. For Model 111, over 100 A at 120 VAC; 150 A at 32 VDC.

### MODELS 374 AND 375

Low cost, commercial circuit breaker employs Taylor bimetal blade for assured repeatability within close operating tolerances. Heater wire in Model 374 assists on low ratings. **Vibration:** Up to 10 G at 10–55 Hz. **Endurance:** Over 1000 cy. at 200% of rated load. **Shock:** Withstands up to 10 G. **Maximum Voltage:** 250 VAC up to 400 hertz; 32 VDC. **Interruption Capacity:** Over 2000% of rated load, Model 374; 300 amps min., Model 375.

### AMPERE RATINGS AND SUFFIXES

| Amperes | Suffix | Amperes | Suffix | Amperes | Suffix |
|---|---|---|---|---|---|
| 1 | 201 | 7 | 207 | 25 | 225 |
| 2 | 202 | 7.5 | 507 | 30 | 230 |
| 3 | 203 | 10 | 210 | 35 | 235 |
| 4 | 204 | 15 | 215 | 40 | 240 |
| 5 | 205 | 20 | 220 | 50 | 250 |

### ORDERING INFORMATION

**To Order:** Select model number and note amperes available column in table below; add suffix for desired amperage from table above. Example: 507-**205** indicates Model 507 rated at 5 amps.

### MODELS, RATINGS AND PRICES

| ood odel† | MS No. | Ampere Ratings Available† | Calibration, % Rated Load: Continuous | Calibration, % Rated Load: Ultim. Trip‡ | Trip Time, Sec.* | Size, Inches W. x D. x H. | Wt. Less Than, Oz. | Net Each, Lots of 1-9 | 10-24 | 25-99 | 100-249 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 07- | MS25244 | 5, 7.5–50 | 115% | 138% | 20–70 | 1 13/16 x 3/4 x 1 3/32 | 2 | $8.10 | $6.75 | $5.85 | $5.18 |
| 09- | .......... | 5, 7.5–35, 50 | 100% | 135% | 8–20 | 2 1/32 x 1 1/16 x 1 3/8 | 2 | 4.41 | 3.68 | 3.19 | 2.83 |
| 11- | .......... | 1–4 | 100% | 135% | .3–3.5 | 2 1/32 x 1 1/16 x 1 3/8 | 2 | 9.50 | 7.92 | 6.86 | 6.07 |
| 12- | .......... | 5, 7.5–50 | 100% | 135% | 8–20 | 2 1/32 x 11/16 x 1 3/8 | 2 | 4.68 | 3.90 | 3.38 | 2.99 |
| 74- | .......... | 1–4 | 100% | 145% | 15–40 | 1 3/8 x 11/16 x 1 3/8 | 1.5 | 2.77 | 2.31 | 2.00 | 1.77 |
| 75- | .......... | 5, 7, 10–20 | 100% | 145% | 8–25 | 1 3/8 x 11/16 x 1 3/8 | 1.5 | 1.71 | 1.43 | 1.24 | 1.09 |

200% rated load. †See table, above, for ordering suffix. ‡At 25° C.

## MAGNETIC CIRCUIT BREAKERS

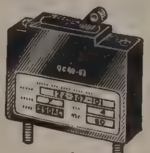
, two and three-pole models rated from 1.0 to 50 amps, for
and DC. Carry continuously 100% of rated load with ultimate
at 125% except Model 130, ultimate trip at 120%. **Interrup-**
**Capacity:** 3000 amps at 32 VDC; 2000 amps at 50 VDC or 125
C, 60 Hz; 1000 amps at 250 VAC, 60 Hz. **Operating Tempera-**
: 55° F to 185° F. **Shock:** Up to 25 G. **Vibration:** Up to 10 G,
55 Hz. **Explosion:** Per Procedure 11 of MIL-E-5272. **Fungus**
**Moisture Resistance:** Fungus per MIL-E-5272; moisture per
cedure 1, MIL-E-5272.

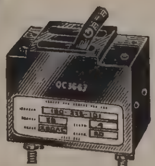
### ORDERING INFORMATION

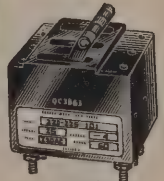
order, use model number (see table below) followed by a
ix number to indicate amperage desired (see amperage table,
w). **Example:** 122-**201** indicates Model 122 rated 1-amp.

### AMPERE RATINGS AND SUFFIXES

| peres | Suffix | Amperes | Suffix | Amperes | Suffix |
|---|---|---|---|---|---|
| 1 | 201 | 7 | 207 | 30 | 230 |
| 2 | 202 | 10 | 210 | 35 | 235 |
| 3 | 203 | 15 | 215 | 40 | 240 |
| 4 | 204 | 20 | 220 | 50 | 250 |
| 5 | 205 | 25 | 225 | | |


1-Pole


2-Pole


3-Pole

### MODELS, RATINGS AND PRICES

| Vood odel† | Ampere Ratings Available† | Voltage, Maximum | Poles | Trip Time at 200% Load | Size, Inches W. x D. x H. | Net Each, Lots of 1-9 | 10-24 | 25-99 | 100-249 |
|---|---|---|---|---|---|---|---|---|---|
| 122- | 1–50 | 250 VAC* | 1 | 3–10 sec. | 3/4 x 2 x 2 1/2 | $ 7.20 | $ 6.00 | $ 5.20 | $ 4.60 |
| 130- | 1–50 | 50 VDC | 1‡ | .009–.04 sec. | 3/4 x 2 x 2 1/2 | 9.38 | 7.82 | 6.77 | 5.99 |
| 190- | 1–50 | 250 VAC* | 2 | 3–10 sec. | 1 1/2 x 2 x 2 1/2 | 18.63 | 15.53 | 13.46 | 11.90 |
| 220- | 1–50 | 250 VAC* | 3 | 3–10 sec. | 2 9/32 x 2 x 2 1/2 | 28.71 | 23.93 | 20.74 | 18.34 |

Hz. †See table, above, for ordering suffix. ‡Has special switch for auxiliary circuit.

**UARANTEE:** Wood circuit breakers are guaranteed against defective material and workmanship for a period of one year from
ate of shipment. The guarantee is limited to the repair or replacement at the Wood factory. All circuit breakers are factory
librated, adjusted and sealed. Unauthorized breaking of seals voids the above guarantee. This guarantee is based on more than
) years experience in the production of fine quality circuit breakers, known throughout the industry for quality, reliability and
eative engineering.

# alpha ALPHA WIRE FIT® Shrinkable Tubing

## FIT-105 POLYVINYLCHLORIDE TUBING

Extra-flexible tubing, ideal for cable jackets. Conforms to MIL-I-23053/2. High flexibility, strength and 50% shrinkage make it suitable for insulating components and cables with wide shape and size variations. **Shrinkage Temp.:** Approx. 347° F (175° C). **Operating Temp.:** 105° C, continuous. **Tensile Strength:** 1800 psi, min. **Elongation:** 200% ultimate min. **Low Temp. Flexibility:** −20° F. **Dielectric Strength:** 750 V/mil, minimum. **Longitudinal Shrinkage:** 10%. **Environment Resistance:** Inert to fungus; excellent resistance to fuel, oil, hydraulic fluid, solvents, acids and alkalis. Self-extinguishing to flame; non-corrosive. Poor resistance to soldering irons. **Standard Put-Up:** Continuous lengths and 6" lengths. **Color:** Black.

| Alphlex No. FIT- | Size, Inches Min. I.D.* | Recov. I.D.† | Wall Thk. | Net Price per Pkg. of 25′ | 100′ | 200′ |
|---|---|---|---|---|---|---|
| 105-3/64" | .046 | .023 | .020 | $ 2.84 | $11.34 | $56.70‡ |
| 105-1/16" | .062 | .031 | .020 | 3.05 | 12.08 | 60.38‡ |
| 105-3/32" | .093 | .046 | .020 | 3.47 | 13.81 | 27.62 |
| 105-1/8" | .125 | .062 | .025 | 3.68 | 14.60 | 29.19 |
| 105-3/16" | .187 | .093 | .025 | 4.46 | 17.85 | 35.70 |
| 105-1/4" | .250 | .125 | .025 | 5.67 | 22.58 | 45.15 |
| 105-3/8" | .375 | .187 | .030 | 6.25 | 24.89 | 49.77 |
| 105-1/2" | .500 | .250 | .030 | 7.09 | 28.30 | ....... |
| 105-3/4" | .775 | .375 | .035 | 9.45 | 37.85 | ....... |
| 105-1" | 1.000 | .500 | .040 | 13.65 | 54.50 | ....... |
| 105-1½" | 1.500 | .750 | .045 | 23.52 | 93.92 | ....... |
| 105-2" | 2.000 | 1.000 | .050 | 34.65§ | 69.25# | ....... |

*Before shrinking. †After shrinking. ‡Pkg. of 500′. §Pkg. of 10 available at $13.86. #Pkg. of 50.

### PACKAGED ASSORTMENTS IN 6" LENGTHS

| Alphlex No. | Size Range | No. Lengths/Box | Net/Box |
|---|---|---|---|
| FIT-105-MS1 | 3/64"–1/4" (6 sizes) | 10 per size (60 total) | $4.84 |
| FIT-105-MS2 | 3/8"–1" (4 sizes) | 10 per size (40 total) | 9.67 |
| FIT-105-MS3 | 1½" and 2" only | 7 per size (14 total). | 8.45 |

## FIT-221 IRRADIATED POLYOLEFIN TUBING

Simple-to-use, all-purpose extruded tubing gives tight mechanical bond with thermal stability. Controlled shrinkage to correct predetermined size occurs in 7 seconds at 275° to 300° F, beginning at a slower rate at 235° F. Shrinks 50% (2:1 ratio) with only 5% maximum longitudinal shrinkage. Will not cold-flow or melt, but retains form stability throughout its temperature range. Clear tubing remains transparent over its full operating range, −67° F to 275° F. Though high temperature, material is flammable; will not burn, however, when shrunk over flame-resistant on non-flammable components. **Operating Temperature:** −55° C to +135° C continuous. **Tensile Strength:** 2000 psi min. **Elongation:** 200% min., ultimate. **Dielectric Strength:** 500 volts/mil, min. **Dielectric Constant:** 2.9 max. **Environment Resistance:** Will not support fungus. Non-corrosive. Max water absorption, 0.6%. Excellent resistance to fuel, oil, acids, alkalis and solvents. (Tested to Bell Labs tests.) **Colors:** Specify clear, black, white, red, yellow or blue when ordering.

| Alphlex No. FIT- | Size, Inches Min. I.D.* | Recov. I.D.† | Wall Thk. | 4 Ft. Lengths Std. Pkg. | Pkg. Net | 6" Lengths Std. Pkg. | Pkg. Net |
|---|---|---|---|---|---|---|---|
| 221-3/64" | .046 | .023 | .016 | 100′ | $18.50 | 20′ | $4.12 |
| 221-1/16" | .063 | .031 | .017 | 100′ | 19.43 | 18′ | 4.12 |
| 221-3/32" | .093 | .046 | .020 | 100′ | 22.45 | 16′ | 4.12 |
| 221-1/8" | .125 | .062 | .020 | 100′ | 24.00 | 14′ | 4.12 |
| 221-3/16" | .187 | .093 | .020 | 100′ | 29.25 | 12′ | 4.12 |
| 221-1/4" | .250 | .125 | .025 | 100′ | 36.70 | 10′ | 4.12 |
| 221-3/8" | .375 | .187 | .025 | 100′ | 40.65 | 8′ | 4.12 |
| 221-1/2" | .500 | .250 | .025 | 20′ | 9.24 | 7′ | 4.12 |
| 221-3/4" | .750 | .375 | .030 | 20′ | 12.32 | 6′ | 4.12 |
| 221-1" | 1.000 | .500 | .035 | 20′ | 17.25 | 4′ | 4.12 |
| 221-1½" | 1.500 | .750 | .040 | 20′ | 27.14 | 2.5′ | 4.12 |
| 221-2" | 2.000 | 1.000 | .045 | 20′ | 37.48 | 1.5′ | 4.12 |
| 221-3" | 3.000 | 1.500 | .050 | 8′ | 23.78 | 1′ | 4.12 |
| 221-4" | 4.000 | 2.000 | .055 | 8′ | 34.64 | .5′ | 4.12 |

### PACKAGED ASSORTMENTS IN 6" LENGTHS

Assorted, standard colors and sizes in 6" lengths, all identified.

| Alphlex No. | Size Range | No. Lengths/Box | Net/Box |
|---|---|---|---|
| FIT-221-MS1 | 3/64" thru 3/16" (5 sizes) | 6 per size (30 total) | $4.61 |
| FIT-221-MS2 | 1/4" thru 3/4" (4 sizes) | 4 per size (16 total) | 9.21 |
| FIT-221-MS3 | 1" thru 4" (5 sizes) | 2 per size (10 total) | 8.05 |

## FIT-350 IRRADIATED KYNAR‡ TUBING

High-temperature, thin-wall tubing with excellent cut-through and abrasion resistance. Semi-rigid, polyvinylidene fluoride. Non-flammable; shrinkage ratio, 2:1 (50%); high dielectric strength. Supplied in clear only. Shrinks to half size at 175°C; forms permanent mechanical bond. Operates at temperatures from −55° C to +175° C; withstands intermittent heat shock to 350° C.

| Alpha No. FIT- | Dimensions, Inches Min. I.D.* | Recov. I.D.† | Wall Th. | 4 Ft. Lengths Std. Pkg. | Pkg. Net | 6 In. Lengths Std. Pkg. | Pkg. Net |
|---|---|---|---|---|---|---|---|
| 350-3/64" | .046 | .023 | .010 | 100′ | $26.75 | 16′ | $4.80 |
| 350-1/16" | .063 | .031 | .010 | 100′ | 29.30 | 14′ | 4.80 |
| 350-3/32" | .093 | .046 | .010 | 100′ | 34.90 | 12′ | 4.80 |
| 350-1/8" | .125 | .062 | .010 | 100′ | 38.35 | 10′ | 4.80 |
| 350-3/16" | .187 | .093 | .010 | 100′ | 59.65 | 8′ | 4.80 |
| 350-1/4" | .250 | .125 | .012 | 100′ | 74.80 | 6′ | 4.80 |
| 350-3/8" | .375 | .187 | .012 | 100′ | 98.65 | 4′ | 4.80 |
| 350-1/2" | .500 | .250 | .012 | 20′ | 29.35 | 2′ | 4.80 |
| 350-3/4" | .750 | .375 | .017 | 20′ | 53.95 | 1′ | 4.80 |
| 350-1" | 1.000 | .500 | .019 | 20′ | 99.20 | .5′ | 4.80 |

### —WHAT IS ALPHA FIT TUBING?—

This concept in insulating and jacketing saves time and money and insures a better job. The user simply fits an expanded piece of FIT Tubing over the wire, cable, component or termination to be insulated, then uses heat to shrink it down to form a permanent, form-fitting seal. This expanded FIT Tubing eliminates forcing, covers irregular shapes and forms a skin-tight band. The irradiation process improves the properties of polymer tubing: Irradiated, cross-linked polymers will not flow at elevated temperatures; they are more resistant to chemical action; they are completely stress-crack resistant; longitudinal shrinkage is controlled and never exceeds 10%.

## FIT-295 POLYOLEFIN SEMI-RIGID TUBING

Maximum strength at stress points; extremely strong, abrasion-resistant extruded tubing with heavy wall; good stability. Shrinkage 2:1 (50%) gives wide versatility. High temperature capability, though inflammable. **Shrinkage Temp.:** Approx. 275° F (135° C). **Operating Temp.:** 135° C, continuous. **Tensile Strength:** 2500 PSI, min. **Elongation:** 200% ultimate min. **Low Temp. Flexibility:** −67° F. **Dielectric Strength:** 500 V/mil, min. **Dielectric Constant:** 2.7. **Volume Resistance:** $10^{16}$ ohm/cm. **Environment Resistance:** Inert to fungus. Excellent resistance to fuel, oil, hydraulic fluid, solvents, acids and alkalis. Non-corrosive. Excellent resistance to soldering irons. No cracks or splits with heat aging 175° C (347° F) for 168 hours. **Standard Put-Up:** 4 ft. (prices given are per 100′) and 6" lengths. **Colors:** Available in clear (specify) or color as indicated in table below.

| Alphlex No. FIT- | Clear or Color | Size, Inches Min. I.D.* | Recov. I.D.† | Wall Thk. | 4 Ft. Lgths. Std. Pkg. | Pkg. Net | 6" Lengths Std. Pkg. | Pkg. Net |
|---|---|---|---|---|---|---|---|---|
| 295-3/64" | Yellow | .046 | .023 | .020 | 100′ | $19.40 | 20′ | $4.68 |
| 295-1/16" | White | .063 | .032 | .020 | 100′ | 20.40 | 18′ | 4.68 |
| 295-3/32" | Blue | .093 | .045 | .020 | 100′ | 23.55 | 16′ | 4.68 |
| 295-1/8" | Red | .125 | .063 | .020 | 100′ | 25.20 | 14′ | 4.68 |
| 295-3/16" | Green | .187 | .093 | .025 | 100′ | 30.65 | 12′ | 4.68 |
| 295-1/4" | Slate | .250 | .125 | .025 | 100′ | 38.50 | 10′ | 4.68 |
| 295-3/8" | Brown | .375 | .187 | .030 | 100′ | 42.65 | 8′ | 4.68 |
| 295-1/2" | White | .500 | .250 | .030 | 20′ | 9.70 | 7′ | 4.68 |

### PACKAGED ASSORTMENT IN 6" LENGTHS

| Alphlex No. | Size Range | No. Lengths/Box | Net/Box |
|---|---|---|---|
| FIT-295-MS1 | 3/64"–1/2" (8 sizes) | (40 total) | $4.68 |

## FIT-300 IRRADIATED POLYOLEFIN TUBING

### OUTER WALL SHRINKS . . . INNER WALL MELTS

Surface irradiated tubing has been developed to answer the need for easy-to-use, permanent encapsulation and jacketing material. Because only the outer wall of this tubing is irradiated, when heat is applied, only this outer wall shrinks. The inner wall, instead of shrinking, melts and the viscous plastic released by the heat, encapsulates the wire or component placed in the tubing. The pressure created by the outer wall shrinkage forces the melted plastic into every orifice, eliminating voids and resulting, when cooled, in a solid, homogenous molding. Alpha HG-1 hot air gun is recommended for heating tubing. However, excellent results may be achieved by use of an oven, hot liquids, soldering iron or even the flame of a match. **Shrinking and Melting Temperature:** 275° F (135° C). **Operating Temperature:** −55° C to +110° C. **Tensile Strength:** 2000 psi. **Elongation:** 400%. **Dielectric Strength:** 1100 V/mil. **Volume Resistance:** $10^{16}$ ohm/cm.

| Alphlex No. FIT- | Stock Color | Size, Inches Min. I.D.* | Recov. I.D.† | Wall Thk. | 4 Ft. Lgths. Std. Net | Pkg. Net | 6" Lgth. Std. Pkg. | Pkg. Net |
|---|---|---|---|---|---|---|---|---|
| 300-1/8" | Brown | .125 | .023 | .038 | 100′ | $ 51.00 | 7′ | $4.68 |
| 300-3/16" | Gray | .187 | .060 | .043 | 100′ | 62.30 | 6′ | 4.68 |
| 300-1/4" | White | .250 | .080 | .047 | 100′ | 77.70 | 5′ | 4.68 |
| 300-3/8" | Red | .375 | .135 | .050 | 100′ | 86.60 | 4′ | 4.68 |
| 300-1/2" | Blue | .500 | .195 | .055 | 20′ | 20.40 | 3′ | 4.68 |
| 300-3/4" | Yellow | .750 | .313 | .065 | 20′ | 31.50 | 2′ | 4.68 |
| 300-3/10"§ | Blue | .300 | .050 | 1.00 | 100′ | 177.30 | 2′ | 4.68 |

## FIT-500 SHRINKABLE TEFLON TUBING

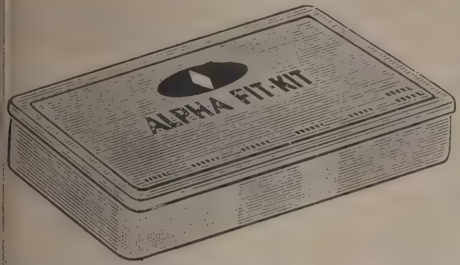
FIT-500 shrinkable tubing forms a tight, flexible protective covering for wires and electronic components; it is recommended for use as a mechanical shield and for friction-proofing. Resists chemical and corrosive agents; is non-burning, non-corrosive. Electrical characteristics remain stable throughout electrical range. It shrinks to approximately 65% of its supplied dia. at a temperature of 327° C; longitudinal shrinkage is less than 10%. **Operating Temperature:** −67° C to +250° C.

| Alphlex No. FIT- | Size, Inches Min. I.D.* | Recov. I.D.† | Wall Thk. | 2 Ft. Lengths Std. Pkg. | Pkg. Net |
|---|---|---|---|---|---|
| 500-30 | .030 | .022 | .009 | 100′ | $29.16 |
| 500-28 | .035 | .025 | .009 | 100′ | 30.42 |
| 500-26 | .040 | .028 | .010 | 100′ | 33.06 |
| 500-24 | .050 | .032 | .010 | 100′ | 41.10 |
| 500-22 | .055 | .037 | .010 | 100′ | 44.10 |
| 500-20 | .060 | .044 | .012 | 100′ | 55.14 |
| 500-18 | .076 | .052 | .012 | 100′ | 60.60 |
| 500-16 | .093 | .063 | .012 | 100′ | 69.95 |
| 500-14 | .121 | .078 | .012 | 100′ | 78.60 |
| 500-12 | .153 | .096 | .012 | 50′ | 45.93 |
| 500-10 | .191 | .116 | .012 | 50′ | 52.98 |
| 500-8 | .240 | .144 | .015 | 50′ | 79.17 |
| 500-6 | .302 | .178 | .015 | 20′ | 37.93 |
| 500-4 | .370 | .224 | .015 | 20′ | 45.89 |
| 500-2 | .430 | .278 | .015 | 20′ | 56.11 |
| 500-0 | .470 | .347 | .015 | 20′ | 68.29 |

*Before shrinking. †After shrinking. ‡Pennsalt trademark. §Heavy walled tubing for use where a large volume of meltable material is needed.

# FIT® TUBING ACCESSORIES, CAPS AND SOLDERING SLEEVES

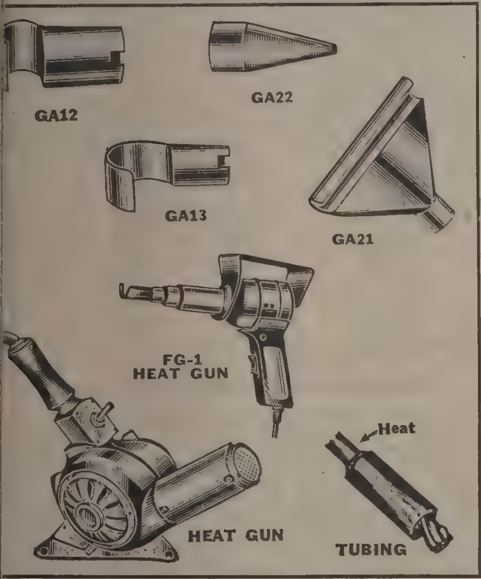
## ALPHA FIT-KIT



perfect engineering or prototype sampler. A variety of sizes colors of all FIT tubing types (except FIT-500 Series), FIT and FIT markers. Packaged in a handy plastic case com-mented and labeled for your convenience.

**ıa FIT Kit**—Net Each........................ **$11⁰⁰**

## HEAT GUNS AND ACCESSORIES



### MINIATURE FIT GUN

shrinking all FIT tubing and FIT sleeves. Durable, electric :or driven unit delivers a high volume of air to the nozzle. htweight, for bench or hand use. Easily replaceable heat nents; 3-position rocker switch. Rated 7 amps, 115 VAC. ludes tubing reflector and FIT sleeve reflector; stand for tical or horizontal use. **Typical Temperatures:** 347° F without pter; 401° F with adapter only; 446° F with tubing reflector; ° F with FIT sleeve reflector.

**ha Gun FG-1 FIT Gun**—Net Each................ **$39.00**

### HEAT GUNS

e recommended tool for shrinking FIT tubing. A flameless, et-operating hot air torch that may be used for portable rations or secured permanently to a bench by means of a unting bracket. Heavy-duty construction. Adjustable turbo air intake to control temperature and a double jacketed housing diecast aluminum. With neoprene-jacketed 3-wire cord and g and adapter for 2-prong receptacle. Motor for 115 VAC/DC. ıgth, 11″ overall.

**ha No. HG-1 Heat Gun**—Temperature up to 500° F.
t Each........................................ **$53.05**

**ha No. HG-2 Heat Gun**—Temperature, 750°–1000° F.
t Each........................................ **$63.10**

### ADAPTER NOZZLE

ncentrates heat and allows use of baffle accessories.

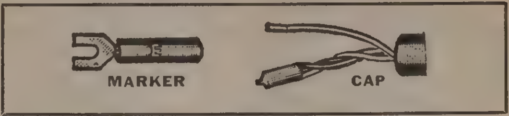
**ha No. AN-1 Adapter Nozzle**—Net Each............ **$2.66**

### BAFFLES

signed to concentrate heat in a confined working area. To be d with AN-1 Adapter Nozzle.

**ha No. GA-12 Baffle**—For small size cables. Net Ea.... **$2.99**
**ha No. GA-13 Baffle**—For larger sizes of cable. Net.... **4.99**
**ha No. GA-21 Baffle**—For larger cables in long lengths.
t Each........................................ **$23.16**
**ha No. GA-22 Baffle**—Pointed design for spot shrinking.
t Each........................................ **$15.50**

## FIT-MARKERS AND FIT-CAPS



### FIT-MARKERS—SHRINKABLE WIRE MARKERS

Pre-printed lengths of flexible black polyolefin tubing for permanent wire and cable identification. Printed in white type by hot stamping foil process; assures permanence even when subjected to a high degree of abrasion or certain chemical solvents. For numerical markers (two each 1–50) add suffix **NS** (example, MRK-B-**NS**); for alphabetical markers (4 each A–Z) add suffix **LS** (example, MRK-B-**LS**) to numbers below.

| Alpha No. | Wire O.D., In. | Min. I.D.*, In. | Recov. I.D.†, In. | Marker Lgth., In. | Wall Th., In. | Net Pkg. 100 |
|---|---|---|---|---|---|---|
| **MRK-A** | .049–.065 | .098 | .049 | ¾ | .016 | **$3.40** |
| **MRK-B** | .066–.095 | .122 | .061 | ¾ | .016 | **3.40** |
| **MRK-C** | .096–.150 | .178 | .089 | ¾ | .016 | **3.40** |

### FIT-CAPS

**Shrinkable Polyolefin Wire Termination Caps**—Semi-rigid tubing sealed on one end and specifically designed to act as termination caps over wire, cable and splices. Shrinkage ratio. 2:1.

| Alpha No. | Color | Dimensions, Inches | | | | Net per Standard Package Put-Up | |
|---|---|---|---|---|---|---|---|
| | | Min. I.D.* | Recov. I.D.† | Wall Thk. | Nom. Lgth. | 1000* | 100 |
| **CAP-1** | White | .063 | .025 | .016 | ¾ | **$ 38.84** | **$ 4.19** |
| **CAP-2** | Red | .125 | .050 | .020 | 1 | **49.38** | **5.25** |
| **CAP-3** | Slate | .250 | .100 | .025 | 1¼ | **67.76** | **7.09** |
| **CAP-5** | Brown | .350 | .175 | .035 | 1⅓ | **86.08** | **8.93** |
| **CAP-4** | Black | .500 | .250 | .040 | 1½ | **204.09** | **20.73** |

**Self-Encapsulating Molded Caps**—Molded, heat shrinkable, cross-linked polyolefin with two inserts: One at closed end of cap melts and flows between the splice forming a moisture-proof encapsulation; insert near open end acts as a dam. Cap shrinks and melts at 275° F. Black only.

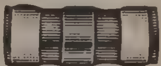
| Alpha No. | Size, Inches | | | Nom. Wall Thk., Inch | | Net per Pkg.* | |
|---|---|---|---|---|---|---|---|
| | Min. I.D.* | Recov. I.D.† | Nom. Lgth. | Inner | Outer | Pkg. of 10 | Pkg. fo 25 |
| **CAP-11** | .160 | .080 | 1.12 | .013 | .040 | **$ 9.20** | **$22.87** |
| **CAP-12** | .250 | .120 | 1.25 | .020 | .050 | **10.50** | **26.25** |
| **CAP-15** | .360 | .180 | 1.50 | .030 | .060 | **11.85** | **29.62** |

**Molded Polyolefin Caps**—Shrinks when heated (275° F) to a predetermined size and shape. Shrinkage ratio, 2:1. Black only.

| Alpha No. | Dimensions, Inches | | | | Net per Pkg* | |
|---|---|---|---|---|---|---|
| | Min. I.D.* | Recov. I.D.† | Wall Thk. | Nom. Lgth. | Pkg. of 10 | Pkg. of 25 |
| **CAP-21** | .16 | .08 | .04 | 1.12 | **$ 3.96** | **$ 9.90** |
| **CAP-22** | .25 | .12 | .05 | 1.15 | **4.90** | **11.97** |
| **CAP-23** | .36 | .18 | .06 | 1.40 | **6.27** | **15.68** |
| **CAP-24** | .50 | .25 | .07 | 1.87 | **8.25** | **20.63** |
| **CAP-25** | .75 | .37 | .08 | 2.70 | **12.21** | **30.53** |
| **CAP-26** | 1.00 | .50 | .09 | 3.50 | **16.34** | **40.85** |
| **CAP-27** | 1.50 | .75 | .10 | 4.00 | **21.45** | **53.65** |
| **CAP-28** | 2.00 | 1.00 | .11 | 4.50 | **26.40** | **66.00** |

*Before shrinking. †After shrinking. *Larger quantity prices on request.

## FIT SOLDERING SLEEVES



Pre-packaged soldering device insulates, encapsulates and prepares a reliable, uniform solder joint for wire splicing and shield grounding. Meets performance requirements of MIL-F-21608A and MIL-T-7928. Sleeve consists of an irradiated, heat-shrinkable, polyolefin sleeve containing a preform of fluxed solder at the center and a thermoplastic sealing ring on each end. When placed over a cable shield and ground lead or splice, and briefly heated, the outer sleeve shrinks and the solder and thermoplastic inserts melt to form an insulated, encapsulated, soldered termination. Provides built-in stress relief by shrinkage of sleeving, for long life and great flexibility. Excellent moisture and environmental resistance. Can be used in shield ground applications, as junctions, or as a stub splice. Model FG-1 heat gun (at left) is recommended. **Type FSL** sleeves contain a solder alloy of 51.2% tin, 30.6% lead, 18.2% cadmium to MIL-F-14245; for use on vinyl, vinyl-nylon and other thermoplastic insulations. **Type FSH** sleeves contain an Sn63 solder preform to QQ-S-571, coated with activated resin to MIL-F-14256; for Teflon®, high temp., irradiated insulations.

| Alpha No. | For Use as Shield Term., Diameter | | Circular Mil Area | | | | Net per Pkg. of | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Two Wires | | Lap Splice, 3–4 Wires | | | | |
| | Max. | Min. | Min. | Max. | Min. | Max. | 1000 | 100 | 25 |
| **FSL-1** | .125″ | .055″ | 2000 | 4000 | 1400 | 2800 | **$131.60** | **$14.83** | **$4.16** |
| **FSH-1** | .125″ | .055″ | 2000 | 4000 | 1400 | 2800 | **131.60** | **14.83** | **4.16** |
| **FSL-2** | .200″ | .100″ | 4000 | 5000 | 2800 | 7700 | **137.62** | **15.48** | **4.33** |
| **FSH-2** | .200″ | .100″ | 4000 | 5000 | 2800 | 7700 | **137.62** | **15.48** | **4.33** |
| **FSL-3** | .300″ | .160″ | ...... | ...... | ...... | ...... | **192.15** | **21.49** | **5.91** |
| **FSH-3** | .300″ | .160″ | ...... | ...... | ...... | ...... | **192.15** | **21.49** | **5.91** |

®Registered DuPont trademark.

ALPHA WIRE

# PVC, ZIPPER, FIBERGLASS AND TEFLON TUBING

## ALPHLEX® POLYVINYLCHLORIDE PVC-105 MIL-I-631D PLASTIC TUBING

All-purpose, economical tubing is compounded with first quality, non-migratory resinous type plasticizers; designed to counteract chemical and environmental degradation. Rated for temperatures as high as 105° C with high dielectric strength. No loss in tensile strength or flexibility; resistant to abrasion. Retains its flexibility which permits it to cling to and protect irregular shapes. Meets MIL-I-631D, Type F, Form U, Grade C, Class I, Category 1. **Dielectric Strength:** 800 V/mil. **Tensile Strength:** 2700–3300 psi. **Min. Volume Resis.:** $10^{11}$ ohm/cm. **Low Temperature Flexibility:** −20° C. **Specify Color:** #24 thru #2: Clear, black, white, yellow, red or green; #1 thru 1″: Clear, black or white; 1⅛″ thru 2½″: Clear or black. **To Order:** Add gauge size to prefix **PVC-105/**, e.g., **PVC-105/24**.

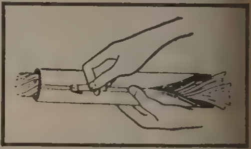
| Ga. Size | Nom. I.D., In. | Net per Spool of 100′ | 500′ | 1000′ |
|---|---|---|---|---|
| 24 | .022 | $2.43 | $ 8.80 | $13.00 |
| 22 | .027 | 2.44 | 8.85 | 13.10 |
| 20 | .034 | 2.49 | 9.05 | 13.50 |
| 19 | .038 | 2.55 | 9.30 | 13.50 |
| 18 | .042 | 2.58 | 9.40 | 13.80 |
| 17 | .047 | 2.61 | 9.55 | 14.00 |
| 16 | .053 | 2.72 | 10.00 | 14.60 |
| 15 | .059 | 2.80 | 10.35 | 14.90 |
| 14 | .066 | 2.89 | 9.95 | ........ |
| 13 | .076 | 2.94 | 10.20 | ........ |
| 12 | .085 | 3.07 | 10.70 | ........ |
| 11 | .095 | 3.15 | 11.05 | ........ |
| 10 | .106 | 3.27 | 11.55 | ........ |
| 9 | .118 | 4.27 | 15.70 | ........ |

| Ga. Size | Nom. I.D., In. | Net Price per Put-Up* Coil of 25′ | Coil of 100′ | Coil of 250′ | Spool of 500′ |
|---|---|---|---|---|---|
| 8 | .133 | ...... | $ 4.57† | ....... | $16.95 |
| 7 | .148 | ...... | 4.84† | ....... | 18.10 |
| 6 | .166 | ...... | 5.19† | ....... | 19.55 |
| 5 | .186 | ...... | 5.58† | ....... | 21.15 |
| 4 | .208 | ...... | 6.00 | $13.75 | ....... |
| 3 | .234 | ...... | 6.38 | 14.70 | ....... |
| 2 | .263 | ...... | 6.91 | 16.03 | ....... |
| 1 | .294 | ...... | 7.42 | 17.30 | ....... |
| 0 | .330 | ...... | 7.98 | 18.70 | ....... |
| 5/16″ | .312 | $2.48 | 9.42 | 22.30 | ....... |
| ⅜″ | .375 | 2.83 | 10.81 | 25.78 | ....... |
| 7/16″ | .438 | 3.15 | 11.58 | ....... | ....... |
| ½″ | .500 | 3.44 | 12.77 | ....... | ....... |

| Ga. Size | Nom. I.D., In. | Net Price per Put-Up* Coil of 25′ | Coil of 50′ | Coil of 100′ |
|---|---|---|---|---|
| 9/16″ | .562 | $ 4.50 | ....... | $17.00 |
| ⅝″ | .625 | 4.85 | ....... | 18.38 |
| ¾″ | .750 | 6.59 | $12.67 | ....... |
| ⅞″ | .875 | 7.37 | 14.25 | ....... |
| 1″ | 1.000 | 8.21 | 15.92 | ....... |
| 1⅛″ | 1.125 | 10.69 | 20.88 | ....... |
| 1¼″ | 1.250 | 11.28 | 22.07 | ....... |
| 1⅜″ | 1.375 | 12.04 | 23.59 | ....... |
| 1½″ | 1.500 | 14.55 | 28.60 | ....... |
| 1¾″ | 1.750 | 18.08 | 35.66 | ....... |
| 2″ | 2.000 | 24.75 | 49.00 | ....... |
| 2¼″ | 2.250 | 29.38 | 58.26 | ....... |
| 2½″ | 2.500 | 34.79 | 69.07 | ....... |

*Larger put-ups available. †On spool.

## ALPHLEX POLYVINYLCHLORIDE ZIPPER TUBING



All-purpose, easy-to-use jacketing material; zips on in seconds without disconnecting or disturbing connection. Track thickness (when closed), .095″; dielectric strength, 759 V/mil; tensile strength, 3,810 psi; ultimate elongation, 255%; operating temperature, upper limit, +106° C; lower limit, −86° C; fungus proof; self-extinguishing; lateral pull strength (permanently sealed) 59.8 #/in. One metal slider supplied with every 25 feet; additional sliders, AB-295, may be ordered at **5c** each. **ZIP-31M Type:** MIL-I-631D, Grade C materials. Temp., −20° C to +105° C. Wall thickness, .040″; for heavy duty construction. Clear or black. **ZIP-50 Type:** Aluminum foil laminated between two sheets of polyvinyl. Wall thickness, .040″. Silver-gray color. **ZIP-31 Type:** MIL-I-631D, Grade C materials. All-purpose type. Wall thickness, .020″. Temp., −20° C to +105° C. Clear or black.

| Alphlex No. | Net 100′* | Alphlex No. | Net 100′* | Alphlex No. | Net 25′ | Net 50′ | Net 100′* |
|---|---|---|---|---|---|---|---|
| ZIP-31M-¼″* | $50.40 | ZIP-50-¼″* | $ 57.00 | ZIP-31-¼″* | $11.10 | $21.90 | $43.20 |
| ZIP-31M-⅜″* | 51.00 | ZIP-50-⅜″* | 57.60 | ZIP-31-⅜″* | 11.40 | 22.50 | 44.40 |
| ZIP-31M-½″ | 51.60 | ZIP-50-½″ | 59.40 | ZIP-31-½″ | 11.56 | 22.80 | 45.00 |
| ZIP-31M-⅝″ | 52.20 | ZIP-50-⅝″ | 62.40 | ZIP-31-⅝″ | 11.70 | 23.10 | 45.60 |
| ZIP-31M-¾″ | 52.80 | ZIP-50-¾″ | 66.00 | ZIP-31-¾″ | 11.86 | 23.40 | 46.20 |
| ZIP-31M-⅞″ | 53.40 | ZIP-50-⅞″ | 70.80 | ZIP-31-⅞″ | 12.16 | 24.00 | 47.40 |
| ZIP-31M-1″ | 54.60 | ZIP-50-1″ | 74.40 | ZIP-31-1″ | 12.30 | 24.20 | 48.00 |
| ZIP-31M-1⅛″ | 56.40 | ZIP-50-1⅛″ | 78.00 | ZIP-31-1⅛″ | 12.76 | 25.20 | 49.80 |
| ZIP-31M-1¼″ | 57.60 | ZIP-50-1¼″ | 81.00 | ZIP-31-1¼″ | 12.90 | 25.50 | 50.40 |
| ZIP-31M-1½″ | 59.40 | ZIP-50-1½″ | 87.60 | ZIP-31-1½″ | 13.36 | 26.40 | 52.20 |
| ZIP-31M-1¾″ | 61.20 | ZIP-50-1¾″ | 94.20 | ZIP-31-1¾″ | 13.80 | 27.30 | 54.00 |
| ZIP-31M-2″ | 62.40 | ZIP-50-2″ | 100.80 | ZIP-31-2″ | 14.10 | 27.90 | 55.20 |

*Write for prices on larger put-ups. *Cannot be closed with slider; must be done manually.

## ALPHLEX FIBERGLASS TUBING

PIF-130 is the toughest and most pliable of insulating materials and is formulated to provide the maximum in electrical characteristics, chemical resistance, heat stability and abrasion resistance. Conforms to MIL-I-3190B, Class B, Grade B; ASTM-D372; NEMA-VS-1; MIL-I-21557. Tubing is constructed from an inorganic fiberglass base sleeving coated with heat-resistant, extremely flexible, tough plastic insulation. Ends will not fray when cut; tubing will not support combustion. **Max. Operating Temp.:** −20° C to +130° C. **Dielectric Strength:** 4000 V/mil. **Tensile Strength:** 1500–2000 psi. **Ultimate Elongation:** 300–400%. **Min. Volume Resis.:** $10^7$ ohm/cm. **Color:** Black.

| Alphlex No. | Size | Wall Thk. In. Max. | Min. | Net per Put-Up Spool of 100′ | Spool of 250′ | Spool of 500′ | Spool of 1000′ |
|---|---|---|---|---|---|---|---|
| PIF-130/24 | 24 | .022 | .016 | $ 4.50 | ....... | $19.50 | $36.00 |
| PIF-130/22 | 22 | .022 | .016 | 4.50 | ....... | 19.80 | 36.75 |
| PIF-130/20 | 20 | .022 | .016 | 4.58 | ....... | 19.88 | 37.50 |
| PIF-130/18 | 18 | .022 | .016 | 4.65 | ....... | 19.50 | 39.00 |
| PIF-130/16 | 16 | .028 | .020 | 4.80 | ....... | 20.63 | 40.50 |
| PIF-130/14 | 14 | .028 | .020 | 5.10 | ....... | 21.75 | ....... |
| PIF-130/12 | 12 | .028 | .020 | 5.25 | ....... | 23.25 | ....... |
| PIF-130/10 | 10 | .028 | .020 | 5.70 | ....... | 25.50 | ....... |
| PIF-130/8 | 8 | .028 | .020 | 6.38 | ....... | 28.50 | ....... |
| PIF-130/6 | 6 | .028 | .020 | 7.35 | 16.50 | ....... | ....... |
| PIF-130/4 | 4 | .036 | .026 | 8.10 | 19.50 | ....... | ....... |
| PIF-130/2 | 2 | .036 | .026 | 10.20 | 24.75 | ....... | ....... |
| PIF-130/0 | 0 | .042 | .030 | 13.80* | ....... | ....... | ....... |
| PIF-130/⅜″ | ⅜″ | .042 | .030 | 17.55* | ....... | ....... | ....... |
| PIF-130/7/16″ | 7/16″ | .042 | .030 | 23.25* | ....... | ....... | ....... |
| PIF-130/½″ | ½″ | .042 | .030 | 29.25* | ....... | ....... | ....... |
| PIF-130/⅝″ | ⅝″ | .042 | .030 | 34.88* | ....... | ....... | ....... |
| PIF-130/¾″ | ¾″ | .042 | .030 | 43.50* | ....... | ....... | ....... |
| PIF-130/⅞″ | ⅞″ | .042 | .030 | 52.50* | ....... | ....... | ....... |
| PIF-130/1″ | 1″ | .042 | .030 | 63.00* | ....... | ....... | ....... |

*On coils, not on spools.

## ALPHLEX TEFLON EXTRUDED TUBING

A thin, flexible insulation, Teflon• tubing permits compactness never before possible. Unmatched for use in electrical applications at high frequencies and temperatures. Rated for continuous operations at 250° C while it retains its toughness and flexibility. Will not shrink back during soldering. Chemically inert; has zero moisture absorption; non-flammable. TFT-250 conforms to MIL-I-22129C. **Max. Operating Temp.:** −90° C to +250° C. **Dielectric Strength:** 1400 V/mil. **Tensile Strength:** 5000–7500 psi. **Ultimate Elongation:** 300–500%. **Min. Volume Resis.:** $10^{17}$ ohm/cm. **Specify Color:** TFT-200: **#30** thru **#8:** Natural or black; #7 thru #0: Natural only. TFT-250: Natural only. TFT-250 is similar characteristically to TFT-200, but is recommended for use where additional dielectric values and mechanical strength are necessary. **To Order:** Add gauge size to **TFT-200/** or **TFT-250/** prefix, e.g., **TFT-200/30**.

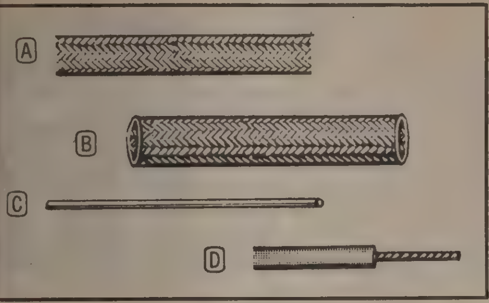
### THIN WALL TUBING
### Alphlex No. TFT-200/

| Ga. Size | Nom. Dim., In. I.D. | Wall Thk. | Net/Spool of 100′ |
|---|---|---|---|
| 30 | .012 | .009 | $ 9.00 |
| 28 | .015 | .009 | 8.00 |
| 26 | .018 | .010 | 7.70 |
| 24 | .022 | .010 | 7.70 |
| 22 | .027 | .010 | 9.50 |
| 20 | .034 | .012 | 12.00 |
| 19 | .038 | .012 | 12.50 |
| 18 | .042 | .012 | 12.98 |
| 17 | .047 | .012 | 14.18 |
| 16 | .053 | .012 | 14.53 |
| 15 | .059 | .012 | 14.58 |
| 14 | .066 | .012 | 16.04 |
| 13 | .076 | .012 | 17.17 |
| 12 | .085 | .012 | 18.48 |
| 11 | .095 | .012 | 20.45 |
| 10 | .106 | .012 | 22.04 |
| 9 | .118 | .015 | 24.95* |
| 8 | .133 | .015 | 17.52* |
| 7 | .148 | .015 | 29.45* |
| 6 | .166 | .015 | 31.82* |
| 5 | .186 | .015 | 34.85* |
| 4 | .208 | .015 | 38.10* |
| 3 | .234 | .015 | 41.74* |
| 2 | .263 | .015 | 48.13* |
| 1 | .294 | .015 | 52.71* |
| 0 | .330 | .015 | 59.14* |

### STANDARD WALL TUBING
### Alphlex No. TFT-250/

| Ga. Size | Nom. Dim., In. I.D. | Wall Thk. | Net/Spool of 100′ |
|---|---|---|---|
| 24 | .022 | .012 | $10.01 |
| 22 | .027 | .012 | 11.23 |
| 20 | .034 | .016 | 15.19 |
| 19 | .038 | .016 | 16.31 |
| 18 | .042 | .016 | 18.70 |
| 17 | .047 | .016 | 20.39 |
| 16 | .053 | .016 | 21.78 |
| 15 | .059 | .016 | 22.26 |
| 14 | .066 | .016 | 24.03 |
| 13 | .076 | .016 | 25.33 |
| 12 | .085 | .016 | 27.41 |
| 11 | .095 | .016 | 30.43 |
| 10 | .106 | .016 | 33.02 |
| 9 | .118 | .020 | 45.86* |
| 8 | .133 | .020 | 47.43* |
| 7 | .148 | .020 | 49.56* |
| 6 | .166 | .020 | 53.55* |
| 5 | .186 | .020 | 58.99* |
| 4 | .208 | .020 | 64.09* |
| 3 | .234 | .020 | 70.89* |
| 2 | .263 | .020 | 73.14* |
| 1 | .294 | .020 | 81.26* |
| 0 | .330 | .020 | 91.38* |

*Random lengths packed in 100′ coils. •Registered DuPont Corp. trademark.



## SHIELDING AND BRAIDING

### FLAT BRAID TINNED COPPER (FIG. A)

r shielding insulated wire and cable, bonding and ground straps. r applications requiring extreme flexibility (pigtails, component ds, connecting moving parts, etc). Very fine, soft annealed tin-d copper wires, braided and rolled flat. Strand size, 36, except s. 1239 thru 1242/4 which are 30 AWG. Also available in spool 500′ except: 1240–1242/4; prices on request.

| idth In. | Alpha No. | Net, Spool 1000′ | Net, Spool 100′ | Width In. | Alpha No. | Net per Spool 1000′ | Net per Spool 100′ |
|---|---|---|---|---|---|---|---|
| 025 | 1221 | $ 45.12 | $ 5.43 | 5/8 | 1233 | $235.79 | $ 24.50 |
| 1/32 | 1222 | 48.27 | 5.84 | 3/4 | 1234 | 542.51 | 56.15 |
| 3/64 | 1223 | 51.51 | 6.15 | 1 | 1235 | 581.97 | 60.09 |
| 3/32 | 1224 | 60.48 | 6.86 | 1 3/8 | 1239 | 662.37 | 68.12 |
| 1/8 | 1229 | 67.58 | 7.73 | 1 1/2 | 1240 | ........ | 95.46 |
| 3/16 | 1230 | 75.21 | 8.43 | 1 3/4 | 1241 | ........ | 190.89 |
| 1/4 | 1231 | 104.97 | 11.42 | 2 | 1242 | ........ | 239.57 |
| 3/8 | 1232 | 173.10 | 18.27 | 3 | 1242/4 | ........ | 462.18 |
| 1/2 | 1233/2 | 223.19 | 23.16 | | | | |

### TINNED COPPER TUBULAR BRAID (FIG. B)

### TO MIL SPEC QQ-B-575

aximum shielding against electrostatic interference for wires, oles, etc. Woven, tinned copper braid fully round per MIL ec QQ-B-575. Each strand is soft, drawn, tinned copper wire, AWG except as noted. Self-supporting to maintain the round ape. Shielding coverage 95%.

| om. .D. | Alpha No. | Net, Spool 250′ | Net, Spool 100′ | Nom. I.D. | Alpha No. | Net, Spool 100′ | Net, Spool 50′ |
|---|---|---|---|---|---|---|---|
| /32″ | 2160 | $ 9.08 | $ 4.20 | 1/4″ | 2171 | $ 34.50 | ...... |
| /16″ | 2162 | 18.75 | 8.85 | 9/32″ | 2171/1† | 36.00 | ...... |
| /64″ | 2163 | 22.20 | 10.28 | 3/8″ | 2172 | 35.55 | ...... |
| /64″ | 2164 | 29.85 | 13.80 | 7/16″ | 2173† | 58.65 | ...... |
| 1/8″ | 2166 | 32.25 | 14.40 | 1/2″ | 2174 | 48.75 | ...... |
| /32″ | 2167 | 57.75 | 23.40 | 9/16″ | 2175† | 90.00 | ...... |
| /64″ | 2168 | 41.55 | 18.00 | 21/32″ | 2175/1† | 138.00 | ...... |
| /64″ | 2170* | ........ | 25.50 | 25/32″ | 2176 | 66.00 | ...... |

raid 34 AWG. †Braid 30 AWG.

### KTRA LARGE TINNED COPPER TUBULAR BRAID (FIG. B)

bular braids manufactured to standards of QQ-B-575 although se sizes are not listed in the specification. Each strand 30 AWG.

| m. D. | Alpha No. | Net, Spool 100′ | Net, Spool 50′ | Nom. I.D. | Alpha No. | Net, Spool 100′ | Net, Spool 50′ |
|---|---|---|---|---|---|---|---|
| 7/8″ | 2177 | $ 94.55 | $48.27 | 1 1/4″ | 2180 | $125.49 | $63.78 |
| | 2178 | 106.68 | 54.29 | 1 3/8″ | 2181 | 145.70 | 73.85 |
| /8″ | 2179 | 111.80 | 57.84 | 1 1/2″ | 2182 | 156.68 | 79.20 |

## OVAL COMMERCIAL BRAID (FIG. B)

oven, tinned copper braid manufactured to a specific inside meter but, due to its extreme flexibility, cannot maintain its npletely round shape and becomes oval. Used as an electro-tic shield to cover a conductor, a series of conductors, cable etc. ecifically constructed and left in its tubular or oval form so that an easily be slipped over wire, cable, or other components for ich shielding is required. Each strand 34 AWG.

| om. .D. | Nominal Circ., Mil | Alpha No. | Net per Spool 1000′ | Net per Spool 500′ | Net per Spool 100′ |
|---|---|---|---|---|---|
| 1/16″ | 1192 | 2132 | $ 49.77 | $24.26 | $ 5.43 |
| 1/64″ | 4770 | 2138 | 124.98 | 63.48 | 13.71 |
| 3/16″ | 5724 | 2140 | ............ | 70.17 | 14.97 |
| 1/4″ | 6678 | 2142 | ............ | 84.27 | 17.81 |
| 3/8″ | 7632 | 2144 | ............ | 96.39 | 20.24 |
| 1/2″ | 13356 | 2146 | ............ | .......... | 38.36 |
| 5/8″ | 14264 | 2148 | ............ | .......... | 41.75 |
| 1/16″ | 19080 | 2150 | ............ | .......... | 51.51 |
| 5/32″ | 20988 | 2152 | ............ | .......... | 56.31 |

## UNINSULATED TINNED COPPER WIRE (FIG. C)

Solid wire for winding of coils, antennas, point-to-point wiring, bus-bar, component leads, ground wire. Pure electrolytic soft, drawn, solid copper annealed and tinned for quick soldering. MIL-W-3861 Type S, QQ-W-343 Type S and ASTM-B-33 specifications.

| Cond. Size | Circ. Mil Area | Nom. O.D. | Alpha Number | Net per Spool 1000′ | Net per Spool 100′ |
|---|---|---|---|---|---|
| 30AWG | 100.5 | .010″ | 299/3 | $ 4.59 | $ 0.96 |
| 28AWG | 159.8 | .013″ | 299/2 | 4.70 | .96 |
| 26AWG | 254.1 | .016″ | 299/1 | 4.79 | .98 |
| 24AWG | 404.0 | .020″ | 299 | 5.58 | 1.05 |
| 22AWG | 642.4 | .025″ | 298 | 6.38 | 1.14 |
| 20AWG | 1022 | .033″ | 297 | 9.56 | 1.46 |
| 18AWG | 1642 | .040″ | 296 | 15.14 | 2.10 |
| 16AWG | 2583 | .051″ | 295 | 19.53 | 2.51 |
| 14AWG | 4107 | .065″ | 286 | 30.48 | 4.10 |
| 12AWG | 6530 | .082″ | 289 | 46.83 | 5.69 |
| 10AWG | 10380 | .103″ | 292 | 111.57 | 11.30 |
| 8AWG | 16510 | .129″ | 292/8 | 173.33 | 19.32 |
| 6AWG | 26250 | .162″ | 292/6 | 278.94 | 29.90 |

## POPULAR PRICED UL HOOK-UP WIRE (FIG. D)

Stranded tinned copper, color coded polyvinylchloride insulation. Resistant to acids, alkalis, oil, flame, moisture and fungus.

### 300 V 80° C—STYLE NO. 1007

**Temp.:** −10° C to +80° C. **Wall Thickness:** .016″ nom. **Colors:** 1–19 per Color Table*.

| Conductor Size | Conductor Strand | Nom. O.D. | Alpha No. | Net per Spool 1000′ | Net per Spool 500′ | Net per Spool 100′ |
|---|---|---|---|---|---|---|
| 24 | 7/32 | .057″ | 3050 | $ 9.72 | .......... | $2.43 |
| 22 | 7/30 | .065″ | 3051 | 12.12 | .......... | 2.85 |
| 20 | 10/30 | .071″ | 3053 | 12.77 | .......... | 2.91 |
| 18 | 16/30 | .080″ | 3055 | 17.45 | .......... | 3.38 |
| 16 | 26/30 | .095″ | 3057 | 27.33 | .......... | 4.13 |

### 600 V 105° C—STYLE NO. 1015

**Temp.:** −10° C to +105° C. **Wall Thickness:** .032″ nom. **Colors:** 1–10 per Color Table*. CSA Approved 600 V 90° C Type TR-32.

| Conductor Size | Conductor Strand | Nom. O.D. | Alpha No. | Net per Spool 1000′ | Net per Spool 500′ | Net per Spool 100′ |
|---|---|---|---|---|---|---|
| 22 | 7/30 | .095″ | 3071 | $12.60 | .......... | $1.82 |
| 20 | 10/30 | .102″ | 3073 | 15.98 | .......... | 2.13 |
| 18 | 16/30 | .112″ | 3075 | 20.25 | .......... | 2.64 |
| 16 | 26/30 | .125″ | 3077 | 29.40 | .......... | 3.51 |
| 14 | 41/30 | .142″ | 3079 | 40.20 | .......... | 4.73 |

## SERIES "5000"‡ HOOK-UP WIRE (FIG. D)

### TEFLON-TYPE E EXTRUDED TEFLON PER MIL-W-16878D

Stranded silver-plated copper conductor, extruded TFE Teflon§ .010″ thick. **Temperature:** −65° C to +200° C. **Rated:** 600 V. Put-up on spools. **Colors:** 1–19 per Color Table*.

| MIL-W Type | Conductor Size | Conductor Strand | Nom. O.D. | Alpha No. | Net per Spool† 1000′ | Net per Spool† 100′ | Net per Spool† 25′ |
|---|---|---|---|---|---|---|---|
| E-30 | 30 | 7/32 | .028″ | 5851 | $22.94 | $ 4.08 | $1.23 |
| E-28 | 28 | 7/36 | .031″ | 5852 | 24.17 | 4.28 | 1.29 |
| E-26 | 26 | 7/34 | .035″ | 5853 | 27.50 | 4.62 | 1.38 |
| E-24 | 24 | 19/36 | .040″ | 5854 | 36.99 | 5.64 | 1.70 |
| E-24 | 24 | 7/32 | .039″ | 5854/7 | 29.06 | 4.89 | 1.47 |
| E-22 | 22 | 19/34 | .046″ | 5855 | 40.19 | 6.18 | 1.86 |
| E-22 | 22 | 7/30 | .045″ | 5855/7 | 35.40 | 5.64 | 1.70 |
| E-20 | 20 | 19/32 | .054″ | 5856 | 48.06 | 7.13 | 2.15 |
| E-20 | 20 | 7/28 | .053″ | 5856/7 | 46.29 | 6.72 | 2.01 |
| E-18 | 18 | 19/30 | .064″ | 5857 | 68.88 | 9.57 | 2.87 |
| E-16 | 16 | 19/29 | .073″ | 5858 | .86.48 | 11.67 | 3.50 |

†Also available to order cut, marked and stripped.

‡**"5000"**—Alpha's trade name for its popularly priced line of wire and cable, produced in full accordance with military specifications.

§Registered DuPont trademark.

## *STOCK COLORS

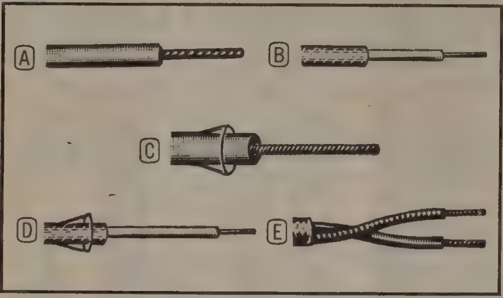
Prices listed are for solid colors only, specify. **Striping Charges:** Following striping charges apply for either one, two or three spiral tracers per item in any standard put-up. Plastic and nylon jacketed wire, **$1.50** per 1000′; Teflon wire, **$10.50** per 1000′. Other tracer colors available at extra cost. Write for information.

| No. | Color | No. | Color | No. | Color |
|---|---|---|---|---|---|
| 1 | White | 8 | Orange | 15 | White/Blue |
| 2 | Black | 9 | Gray | 16 | White/Brown |
| 3 | Red | 10 | Violet | 17 | White/Orange |
| 4 | Green | 11 | White/Black | 18 | White/Gray |
| 5 | Yellow | 12 | White/Red | 19 | White/Violet |
| 6 | Lt. Blue | 13 | White/Green | | |
| 7 | Brown | 14 | White/Yellow | | |

alpha ALPHA WIRE

# Military Hook-Up Wire

## SPECIFICATION MIL-W-76B PLASTIC HOOK-UP WIRE



### TYPE MW (MEDIUM WALL) PLASTIC (FIG. A)

Single conductor stranded or solid tinned copper, polyvinylchloride insulation .016″ th. Rated 1000 volts. Temp., −40° C to +80° C.

#### STRANDED

| Type MW-C | Conductor |  | Nom. O.D. | Colors‡ | Alpha No. | Net per Spool |  |
|---|---|---|---|---|---|---|---|
|  | Size | Strand |  |  |  | 1000′ | 100′ |
| 24(7)U | 24 | 7/32 | .059″ | 1-19 | 1550 | $ 9.14 | $1.40 |
| 22(7)U | 22 | 7/30 | .064″ | 1-27 | 1551 | 10.71 | 1.56 |
| 20(10)U | 20 | 10/30 | .073″ | 1-27 | 1553 | 12.08 | 1.79 |
| 18(16)U | 18 | 16/30 | .084″ | 1-27 | 1555 | 15.78 | 2.25 |
| 16(26)U | 16 | 26/30 | .095″ | 1-19 | 1557 | 23.09 | 2.99 |
| 14(41)U | 14 | 41/30 | .110″ | 1-10 | 1559 | 36.15 | 4.19 |
| 12(65)U | 12 | 65/30 | .125″ | 1-10 | 1560 | 50.93 | 6.21 |

#### SOLID

| Type MW-C | Conductor |  | Nom. O.D. | Colors‡ | Alpha No. | Net per Spool |  |
|---|---|---|---|---|---|---|---|
|  | Size | Strand |  |  |  | 1000′ | 100′ |
| 24(1)U | 24 | 1 | .055″ | 1-10 | 1561/24 | $ 7.50 | $1.35 |
| 22(1)U | 22 | 1 | .060″ | 1-19 | 1561 | 8.48 | 1.31 |
| 20(1)U | 20 | 1 | .066″ | 1-19 | 1563 | 10.40 | 1.55 |
| 18(1)U | 18 | 1 | .074″ | 1-10 | 1565 | 13.23 | 1.98 |

### TYPE MW (MEDIUM WALL) PLASTIC, SHIELDED (FIG. B)

Single conductor stranded tinned copper, polyvinylchloride insulation, tinned copper shield overall. Nominal insulation, .016″. Voltage rating, 1000 volts. Temp., −40° C to +80° C.

| Type MW-C | Conductor |  | Nom. O.D. | Colors* | Alpha No. | Net per Spool |  |
|---|---|---|---|---|---|---|---|
|  | Size | Strand |  |  |  | 1000′ | 100′ |
| 24(7)S | 24 | 7/32 | .075″ | 1 | 1350 | $37.44 | $4.26 |
| 22(7)S | 22 | 7/30 | .085″ | 1 | 1351 | 38.40 | 4.35 |
| 20(10)S | 20 | 10/30 | .095″ | 1 | 1352 | 45.66 | 5.25 |

### TYPE MW (MED. WALL) PLASTIC, NYLON JACKET (FIG. C)

Single conductor stranded tinned copper; polyvinylchloride insulation, nylon jacket overall. Nominal insulation, .016″. Voltage rating, 1000 volts. Temp., −40° C to +90° C.

| Tpye MW-C | Conductor |  | Nom. O.D. | Colors‡ | Alpha No. | Net per Spool |  |
|---|---|---|---|---|---|---|---|
|  | Size | Strand |  |  |  | 1000′ | 100′ |
| 22(7)J | 22 | 7/30 | .072″ | 1-3 | 1504 | $16.35 | $2.37 |
| 20(10)J | 20 | 10/30 | .079″ | 1 | 1505 | 19.05 | 2.52 |
| 18(16)J | 18 | 16/30 | .090″ | 1 | 1506 | 25.05 | 3.51 |
| 16(26)J | 16 | 26/30 | .103″ | 1 | 1507 | 36.56 | 4.49 |
| 14(41)J | 14 | 41/30 | .118″ | 1 | 1508 | 52.07 | 6.00 |
| 12(65)J | 12 | 65/30 | .135″ | 1 | 1509 | 74.97 | 8.37 |

### TYPE MW (MEDIUM WALL) PLASTIC, SHIELDED, NYLON JACKET (FIG. D)

Single conductor stranded tinned copper, white polyvinylchloride insulation, braided tinned copper shield, clear nylon jacket overall. Insul., .016″ th. Rated 1000 V. Temp., −40° C to +90° C.

| Type MW-C | Conductor |  | Nom. O.D. | Colors* | Alpha No. | Net per Spool |  |
|---|---|---|---|---|---|---|---|
|  | Size | Strand |  |  |  | 1000′ | 100′ |
| 24(7)SJ | 24 | 7/32 | .085″ | 1 | 1370 | $48.51 | $5.72 |
| 22(7)SJ | 22 | 7/30 | .092″ | 1 | 1371 | 50.76 | 5.98 |
| 20(7)SJ | 20 | 7/28 | .100″ | 1 | 1372 | 58.22 | 6.68 |
| 18(19)SJ | 18 | 19/30 | .110″ | 1 | 1373 | 66.02 | 7.46 |
| 16(19)SJ | 16 | 19/29 | .120″ | 1 | 1374 | 86.07 | 9.45 |

### TYPE HW (HEAVY WALL) PLASTIC (FIG. A)

Single conductor stranded tinned copper; heavy wall polyvin chloride insulation. Nominal insulation .032″ for 22-16 cond. siz .045″, all other sizes. Voltage rating, 2500 V 22-16 cond. siz 600 V, all other sizes. Temp., −40° C to +80° C.

| Type HW-C | Conductor |  | Nom. O.D. | Colors* | Alpha No. | Net per Spool |  |
|---|---|---|---|---|---|---|---|
|  | Size | Strand |  |  |  | 1000′ | 100′ |
| 22(7)U | 22 | 7/30 | .092″ | 1-6 | 1571 | $ 14.58 | $ 1.8 |
| 20(10)U | 20 | 10/30 | .100″ | 1-6 | 1573 | 17.64 | 2.2 |
| 18(16)U | 18 | 16/30 | .112″ | 1-6 | 1575 | 22.50 | 3.0 |
| 16(26)U | 16 | 26/30 | .126″ | 1-3 | 1577 | 29.03 | 3.7 |
| 14(41)U | 14 | 41/30 | .170″ | 1-2 | 1579 | 50.48 | 6.3 |
| 10(105)U | 10 | 105/30 | .210″ | 1-2 | 1653 | 119.55† | 12.3 |
| 8(133)U | 8 | 133/29 | .260″ | 1-2 | 1655 | 270.00† | 28.6 |

### TYPE LW (LIGHT WALL) PLASTIC (FIG. A) WITH REGULAR TINNED CONDUCTOR

Single conductor stranded tinned copper; light wall polyviny chloride insulation .010″ th. Rated 300 volts. Temp., −40° C +80° C.

| Type LW-C | Conductor |  | Nom. O.D. | Colors‡ | Alpha No. | Net per Spool |  |
|---|---|---|---|---|---|---|---|
|  | Size | Strand |  |  |  | 1000′ | 100′ |
| 30(7)U | 30 | 7/38 | .033″ | 1-3 | 1685 | $ 7.16 | $1.0 |
| 28(7)U | 28 | 7/36 | .035″ | 1-10 | 1686 | 7.16 | 1.0 |
| 26(7)U | 26 | 7/34 | .038″ | 1-10 | 1687 | 7.34 | 1.1 |
| 24(7)U | 24 | 7/32 | .043″ | 1-10 | 1688 | 7.74 | 1.3 |
| 22(7)U | 22 | 7/30 | .049″ | 1-10 | 1689 | 8.88 | 1.3 |
| 20(7)U | 20 | 7/28 | .060″ | 1-10 | 1690 | 11.40 | 1.6 |

### TYPE LW (LIGHT WALL) PLASTIC, NYLON JACKET (FIG.

Single conductor stranded tinned copper, light wall polyvinyl chloride insulation, clear nylon jacket overall. Insulation .010 nominal. Rated 300 volts. Temp., −40° C to +90° C.

| Type LW-C | Conductor |  | Nom. O.D. | Colors‡ | Alpha No. | Net per Spool |  |
|---|---|---|---|---|---|---|---|
|  | Size | Strand |  |  |  | 1000′ | 100′ |
| 26(7)J | 26 | 7/34 | .042″ | 1-3 | 1677 | $11.49 | $1.79 |
| 24(7)J | 24 | 7/32 | .047″ | 1-3 | 1678 | 11.87 | 1.83 |
| 22(7)J | 22 | 7/30 | .053″ | 1-3 | 1679 | 12.90 | 1.97 |
| 20(7)J | 20 | 7/28 | .065″ | 1-3 | 1680 | 16.16 | 2.39 |

### TEFLON® SHIELDED CABLES (FIG. E)

Each conductor stranded silver-plated copper, Type E, .010 extruded Teflon insulation per MIL-W-16878D. Rated 600 volts When shielded, a closely woven silver-plated copper shield i braided over the conductor(s). When braided, a "Teflon" impreg nated fiberglass yarn is woven over the shield. Where indicated "fused", a sintered, wrapped white Teflon tape jacket is fused over the shield. Temp., −65° C to +200° C. Colors 1–4*.

®Reg. DuPont trademark

| Conductor |  | Outer Cover | Single Conductor |  | Two Conductor |  |
|---|---|---|---|---|---|---|
| Size | Strand |  | Alpha | 100′▲ | Alpha | 100′▲ |
| 24 | 19/36 | Shield | 2809 | $22.53 | 2809/2 | $38.12 |
| 24 | 19/36 | Braid | 2811 | 27.38 | 2811/2 | 37.94 |
| 24 | 19/36 | Fused | 2821 | 31.19 | 2821/2 | 44.70 |
| 22 | 19/34 | Shield | 2812 | 22.53 | 2812/2 | 35.21 |
| 22 | 19/34 | Braid | 2814 | 28.41 | 2814/2 | 41.24 |
| 22 | 19/34 | Fused | 2824 | 31.71 | 2824/2 | 47.30 |
| 20 | 19/32 | Shield | 2815 | 25.28 | 2815/2 | 36.69 |
| 20 | 19/32 | Braid | 2817 | 30.41 | 2817/2 | 46.08 |
| 20 | 19/32 | Fused | 2827 | 34.65 | 2827/2 | 52.16 |
| 18 | 19/30 | Shield | 2818 | 33.95 | 2818/2 | 56.31 |
| 18 | 19/30 | Braid | 2819 | 41.06 | 2819/2 | 62.19 |
| 18 | 19/30 | Fused | 2829 | 44.18 | 2829/2 | 70.17 |
| 16 | 19/29 | Shield | 2807 | 33.78 | 2807/2 | 70.32 |
| 16 | 19/29 | Fused | 2826 | 49.73 | 2826/2 | 85.94 |
|  |  |  | Three Conductor |  | Four Conductor |  |
| 24 | 19/36 | Shield | 2809/3 | $47.49 | 2809/4 | $ 62.06 |
| 24 | 19/36 | Braid | 2811/3 | 55.10 | 2811/4 | 68.96 |
| 24 | 19/36 | Fused | 2821/3 | 60.47 | 2821/4 | 76.58 |
| 22 | 19/34 | Shield | 2812/3 | 54.42 | 2812/4 | 69.15 |
| 22 | 19/34 | Braid | 2814/3 | 60.99 | 2814/4 | 75.89 |
| 22 | 19/34 | Fused | 2824/3 | 68.96 | 2824/4 | 83.34 |
| 20 | 19/32 | Shield | 2815/3 | 60.65 | 2815/4 | 75.77 |
| 20 | 19/32 | Braid | 2817/3 | 68.09 | 2817/4 | 83.85 |
| 20 | 19/32 | Fused | 2827/3 | 75.02 | 2827/4 | 92.87 |
| 18 | 19/30 | Shield | 2818/3 | 76.23 | 2818/4 | 107.58 |
| 18 | 19/30 | Braid | 2819/3 | 81.60 | 2819/4 | 116.94 |
| 18 | 19/30 | Fused | 2829/3 | 89.57 | 2829/4 | 128.73 |

*‡See following page for colors. †Spool of 500′ also available prices on request. Also available to order: Cut, stripped and tinned. ▲Spool of 1000′ also available; prices on request.

# lpha ALPHA WIRE Military Wire, Cable

## SPECIFICATION MIL-W-16878D HOOK-UP WIRE

### TYPE B UNCOVERED PLASTIC (FIG. A)

gle conductor stranded tinned copper, .010″ polyvinylchloride ılation. Rated 600 volts. Temp., −55° C to +105° C.

| -W | Conductor | | Nom. | Col- | Alpha | Net per Spool | |
|---|---|---|---|---|---|---|---|
| pe | Size | Strand | O.D. | ors‡ | No. | 1000′ | 100′ |
| 32 | 32 | 7/40 | .028″ | 1-3 | 1850 | $12.47 | $2.16 |
| 30 | 30 | 7/38 | .032″ | 1-3 | 1851 | 10.02 | 1.64 |
| 28 | 28 | 7/36 | .034″ | 1-10 | 1852 | 9.11 | 1.64 |
| 26 | 26 | 7/34 | .038″ | 1-10 | 1853 | 10.32 | 1.47 |
| 24 | 24 | 7/32 | .043″ | 1-10 | 1854 | 9.62 | 1.47 |
| 24 | 24 | 19/36 | .043″ | 1-10 | 1854/19 | 11.30 | 1.91 |
| 22 | 22 | 7/30 | .050″ | 1-10 | 1855 | 10.47 | 1.76 |
| -22 | 22 | 19/34 | .050″ | 1-10 | 1855/19 | 12.02 | 2.09 |
| -20 | 20 | 7/28 | .058″ | 1-10 | 1856 | 12.47 | 1.91 |
| -20 | 20 | 19/32 | .058″ | 1-10 | 1856/19 | 14.81 | 2.22 |
| -18 | 18 | 7/26 | .068″ | 1-10 | 1857 | 15.80 | 2.10 |
| -18 | 18 | 19/30 | .068″ | 1-10 | 1857/19 | 16.82 | 2.34 |
| -16 | 16 | 19/29 | .077″ | 1-10 | 1858/19 | 20.73 | 2.69 |
| -14 | 14 | 19/27 | .091″ | 1-10 | 1859/19 | 36.12 | 4.88 |

### TYPE B NYLON JACKET (FIG. C)

ne as above, but clear nylon jacket overall; 115° C.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| -26 | 26 | 7/34 | .044″ | 1-3 | 1863 | $14.05 | $1.95 |
| -24 | 24 | 7/32 | .049″ | 1-3 | 1864 | 13.16 | 1.88 |
| -24 | 24 | 19/36 | .049″ | 1-3 | 1864/19 | 15.54 | 2.09 |
| -22 | 22 | 7/30 | .056″ | 1-3 | 1865 | 14.99 | 2.07 |
| -22 | 22 | 19/34 | .056″ | 1-3 | 1865/19 | 17.81 | 2.61 |
| -20 | 20 | 7/28 | .064″ | 1-3 | 1866 | 17.64 | 2.27 |
| -20 | 20 | 19/32 | .064″ | 1-3 | 1866/19 | 19.19 | 2.78 |
| -18 | 18 | 7/26 | .074″ | 1-3 | 1867 | 21.09 | 2.76 |
| -18 | 18 | 19/30 | .074″ | 1-3 | 1867/19 | 24.35 | 3.42 |
| -16 | 16 | 19/29 | .085″ | 1-3 | 1868/19 | 27.45 | 3.32 |
| -14 | 14 | 19/27 | .099″ | 1-3 | 1869/19 | 49.72 | 6.00 |

### TYPE B, PRE-BONDED, UNCOVERED PLASTIC (FIG. A)

ch strand is double tinned and then heated to bond the strands ether for easy stripping. Insulation per MIL-W-16878D, .010″ yvinylchloride. Rated 600 volts. Temp., −55° C to +105° C.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| -24 | 24 | 7/32 | .044″ | 1-19 | 3154 | $12.51 | $2.72 |
| -22 | 22 | 7/30 | .051″ | 1-19 | 3155 | 15.75 | 3.09 |
| -20 | 20 | 7/28 | .059″ | 1-3 | 3156 | 20.46 | 3.51 |
| -18 | 18 | 7/26 | .070″ | 1-3 | 3157 | 28.83 | 4.37 |

### TYPE C UNCOVERED PLASTIC (FIG. A)

ıgle conductor stranded tinned copper; .016″ polyvinylchloride ulation. Rated 1000 volts. Temp., −55° C to +105° C.

| L-W | Conductor | | Nom. | Col- | Alpha | Net per Spool | |
|---|---|---|---|---|---|---|---|
| ype | Size | Strand | O.D. | ors‡ | No. | 1000′ | 100′ |
| -24 | 24 | 7/32 | .058″ | 1-10 | 1830 | $12.56 | $1.74 |
| -22 | 22 | 7/30 | .064″ | 1-10 | 1831 | 13.79 | 1.89 |
| -20 | 20 | 7/28 | .072″ | 1-10 | 1832 | 16.73 | 2.18 |
| -18 | 18 | 7/26 | .082″ | 1-10 | 1833 | 20.18 | 2.55 |
| -16 | 16 | 19/29 | .091″ | 1 | 1834 | 27.47 | 3.26 |
| -14 | 14 | 19/27 | .105″ | 1 | 1835 | 39.96 | 4.97 |
| -12 | 12 | 19/25 | .124″ | 1 | 1836 | 68.27 | 8.01 |

### TYPE C NYLON JACKET (FIG. C)

me as above, but clear nylon jacket overall; 115° C.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| -22 | 22 | 7/30 | .072″ | 1-3 | 1841 | $18.62 | $2.57 |
| -20 | 20 | 7/28 | .079″ | 1 | 1842 | 22.26 | 2.78 |
| -18 | 18 | 7/26 | .090″ | 1 | 1843 | 25.89 | 3.14 |
| -16 | 16 | 19/29 | .099″ | 1 | 1844 | 34.34 | 3.74 |
| -14 | 14 | 19/27 | .114″ | 1 | 1845 | 47.06 | 5.19 |
| -12 | 12 | 19/25 | .135″ | 1 | 1846 | 80.81 | 9.00 |

### TYPE C SHIELDED NYLON JACKET (FIG. D)

ielded version of above. Single stranded tinned copper conctor. White .016″ polyvinylchloride insulation. Braided, tinned pper shield, 90% coverage. Clear nylon jacket. Rated −55° C to 115° C. Voltage rating, 1000 volts.

| IL-W | Conductor | | Nom. | Col- | Alpha | Net per Spool | |
|---|---|---|---|---|---|---|---|
| ype | Size | Strand | O.D. | ors* | No. | 1000′ | 100′ |
| -24 | 24 | 7/32 | .091″ | 1 | 1470 | $60.53 | $ 7.41 |
| -22 | 22 | 7/30 | .098″ | 1 | 1471 | 64.49 | 7.80 |
| -20 | 20 | 7/28 | .105″ | 1 | 1472 | 70.29 | 8.43 |
| -18 | 18 | 19/30 | .115″ | 1 | 1473 | 76.58 | 8.90 |
| -16 | 16 | 19/29 | .125″ | 1 | 1474 | 97.22 | 10.98 |

### TYPE EE TEFLON® WIRE (FIG. A)

me as Type E, but .014″ thick extruded. TFE Teflon insulation. ated 1000 volts. Temperature, −65° C to +200° C.

| IL-W | Conductor | | Nom. | | Alpha | Spool of |
|---|---|---|---|---|---|---|
| Type | Size | Strand | O.D. | Colors‡ | No. | 100′▲ |
| E-24 | 24 | 19/36 | .055″ | 1-19 | 2874 | $ 11.27 |
| E-22 | 22 | 19/34 | .062″ | 1-19 | 2875 | 13.08 |
| E-20 | 20 | 19/32 | .070″ | 1-19 | 2876 | 16.94 |
| E-18 | 18 | 19/30 | .080″ | 1-19 | 2877 | 19.70 |
| E-16 | 16 | 19/29 | .089″ | 1, 11-19 | 2878 | 26.31 |
| E-14 | 14 | 19/27 | .106″ | 1, 11-19 | 2879§ | 36.23 |
| E-12 | 12 | 19/25 | .124″ | 1, 11-19 | 2879/12§ | 53.55 |
| E-10 | 10 | 37/26 | .145″ | 1, 11-19 | 2879/10§ | 89.78 |
| E-8 | 8 | 133/29 | .210″ | 1 | 2879/8# | 182.70 |

nsul., .017″ thick. #Insul., .020″ thick.

### TYPE D UNCOVERED PLASTIC (FIG. A)

Single conductor stranded tinned copper; .032″ polyvinylchloride insulation. Rated 3000 volts. Temp., −55° C to +105° C.

| MIL-W | Conductor | | Nom. | Col- | Alpha | Net per Spool | |
|---|---|---|---|---|---|---|---|
| Type | Size | Strand | O.D. | ors‡ | No. | 1000′ | 100′ |
| D-22 | 22 | 7/30 | .088″ | 1 | 1871 | $ 21.15 | $ 2.70 |
| D-20 | 20 | 7/28 | .096″ | 1 | 1872 | 25.35 | 3.18 |
| D-18 | 18 | 7/26 | .106″ | 1 | 1873 | 30.90 | 3.51 |
| D-16 | 16 | 19/29 | .115″ | 1 | 1874 | 45.75 | 4.95 |
| D-14 | 14 | 19/27 | .129″ | 1 | 1875 | 50.40 | 5.13 |
| D-12 | 12 | 19/25 | .158″ | 1 | 1876 | 81.75 | 8.19 |
| D-10 | 10 | 37/26 | .185″ | 1 | 1877 | 108.75 | 10.95 |

### TYPE E TEFLON® WIRE (FIG. A)

Single conductor stranded, silver-plated copper, extruded TFE Teflon insulation .010″ thick. Temp., −65° C to +200° C. Rated 600 volts. Put-up on spools.

| MIL-W Type | Cond. Strd. | Nom. O.D. | Colors‡ | Alpha No. | Spool of 100′▲ |
|---|---|---|---|---|---|
| E-32 | 7/40 | .029″ | 1-19 | 2850 | $ 8.58 |
| E-30 | 7/38 | .032″ | 1-19 | 2851 | 8.36 |
| E-28 | 7/36 | .036″ | 1-19 | 2852 | 8.90 |
| E-26 | 7/34 | .040″ | 1-19 | 2853 | 9.30 |
| E-24 | 19/36 | .045″ | 1-19 | 2854 | 10.56 |
| E-24 | 7/32 | .044″ | 1-19 | 2854/7 | 9.21 |
| E-22 | 19/34 | .051″ | 1-19 | 2855 | 11.73 |
| E-22 | 7/30 | .050″ | 1-19 | 2855/7 | 10.79 |
| E-20 | 19/32 | .059″ | 1-19 | 2856 | 14.97 |
| E-20 | 7/28 | .058″ | 1-19 | 2856/7 | 13.31 |
| E-18 | 19/30 | .070″ | 1-19 | 2857 | 17.40 |
| E-16 | 19/29 | .077″ | 1-19 | 2858 | 22.92 |
| E-14 | 19/27 | .094″ | 1-6, 11-19 | 2859§ | 30.41 |
| E-12 | 19/25 | .113″ | 1, 11-19 | 2859/12§ | 44.90 |
| E-10 | 37/26 | .134″ | 1, 11-19 | 2859/10§ | 75.60 |

§Insul., .012″ th.

### TYPE ET EXTRUDED TEFLON® WIRE (FIG. A)

Single conductor stranded, silver-plated copper; extruded TFE Teflon insulation, .006″ thick. Rated 250 volts. Temperature, −65° C to +200° C.

| MIL-W | Conductor | | Nom. | Col- | Alpha | Net per Spool | |
|---|---|---|---|---|---|---|---|
| Type | Size | Strand | O.D. | ors‡ | No. | 1000′ | 100′ |
| ET-32 | 32 | 7/40 | .021″ | 1-10 | 2840/7 | $25.20 | $3.27 |
| ET-30 | 30 | 7/38 | .024″ | 1-10 | 2841/7 | 25.20 | 3.27 |
| ET-28 | 28 | 7/36 | .027″ | 1-10 | 2842/7 | 24.60 | 3.21 |
| ET-28 | 28 | 19/40 | .027″ | 1-10 | 2842/19 | 26.40 | 3.39 |
| ET-26 | 26 | 7/34 | .031″ | 1-10 | 2843/7 | 28.65 | 3.62 |
| ET-26 | 26 | 19/38 | .032″ | 1-10 | 2843/19 | 31.58 | 3.92 |
| ET-24 | 24 | 7/32 | .036″ | 1-10 | 2844/7 | 30.45 | 3.80 |
| ET-24 | 24 | 19/36 | .037″ | 1-10 | 2844/19 | 35.25 | 4.28 |
| ET-22 | 22 | 7/30 | .042″ | 1-10 | 2845/7 | 34.65 | 4.22 |
| ET-22 | 22 | 19/34 | .044″ | 1-10 | 2845/19 | 37.35 | 4.49 |
| ....... | 30† | Solid | .022″ | 1-10 | 2841/1 | 23.40 | 3.09 |
| ....... | 28† | Solid | .025″ | 1-10 | 2842/1 | 23.10 | 3.06 |
| ....... | 26† | Solid | .028″ | 1-10 | 2843/1 | 26.48 | 3.41 |
| ....... | 24† | Solid | .032″ | 1-10 | 2844/1 | 27.60 | 3.51 |

†Solid silver plated copper conductor.

### TYPE E TEFLON® SOLID-CONDUCTOR WIRE (FIG. A)

Single solid silver-plated copper conductor; extruded TFE Teflon insulation. Rated 600 V. Temp., −65° C to +200° C.

| MIL-W | Conductor | | Nom. | Col- | Alpha | Net per Spool | |
|---|---|---|---|---|---|---|---|
| Type | Size | Strand | O.D. | ors‡ | No. | 1000′ | 100′ |
| E-26 | 26 | Solid | .036″ | 1-10 | 5853/1 | $22.85 | $3.03 |
| E-24 | 24 | Solid | .040″ | 1-10 | 5854/1 | 26.13 | 3.36 |
| E-22 | 22 | Solid | .045″ | 1-10 | 5855/1 | 31.92 | 3.95 |
| E-20 | 20 | Solid | .052″ | 1-10 | 5856/1 | 40.38 | 4.79 |
| E-18 | 18 | Solid | .060″ | 1-10 | 5857/1 | 53.84 | 6.14 |

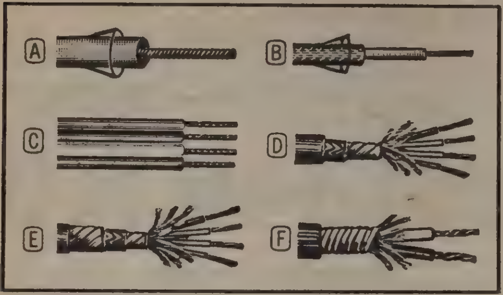
### STOCK COLORS

*Specify color. ‡Prices shown are for solid colors only. Following striping charges apply for either one, two or three spiral tracers per item in any standard put-up. Plastic and nylon jacketed wire, **$1.50** per 1000′; Teflon® wire, **$10.50** per 1000′. Other tracer colors available at extra cost. Write for information.

| No. | Color | No. | Color | No. | Color |
|---|---|---|---|---|---|
| 1 | White | 10 | Violet | 19 | White/Violet |
| 2 | Black | 11 | White/Black | 20 | White/Black/Red |
| 3 | Red | 12 | White/Red | 21 | White/Black/Green |
| 4 | Green | 13 | White/Green | 22 | White/Black/Yellow |
| 5 | Yellow | 14 | White/Yellow | 23 | White/Black/Blue |
| 6 | Lt. Blue | 15 | White/Blue | 24 | White/Black/Brown |
| 7 | Brown | 16 | White/Brown | 25 | White/Black/Orange |
| 8 | Orange | 17 | White/Orange | 26 | White/Black/Gray |
| 9 | Gray | 18 | White/Gray | 27 | White/Black/Violet |

▲Spool of 1000′ also available; prices on request. Also available to order: Cut, stripped and tinned.

®DuPont trademark.



## MIL-W-5086A AND MIL-C-7078A AIRCRAFT HOOK-UP WIRE

Single conductor. Rated 600 volts. Temp., −55° C to +105° C. Resists water, oil, fuels, alcohol, acids, alkalis, fungus and abrasion.

### UNSHIELDED MIL-W-5086A (FIG. B)

**Type 1:** Single, stranded tinned copper conductor; white PVC insulation; clear nylon jacket overall. **Type 2:** Single, stranded tinned copper conductor; white PVC insulation; white glass braid; and, clear nylon jacket (AN-22—AN-12) or flame retardant nylon lacquered nylon braid (AN-10—AN-0000) overall.

| MIL Type | Spec. Type | Conductor | | Nom. O.D. | Alpha No. | Net per Spool | |
|---|---|---|---|---|---|---|---|
| | | Size | Strand | | | 1000′ | 100′ |
| AN-22 | 1 | 22 | 19/34 | .068″ | 1381* | $ 28.50 | $ 3.74 |
| AN-20 | 1 | 20 | 19/32 | .078″ | 1382* | 33.21 | 4.17 |
| AN-18 | 1 | 18 | 19/30 | .088″ | 1383* | 41.03 | 5.00 |
| AN-16 | 1 | 16 | 19/29 | .098″ | 1384* | 45.02 | 5.45 |
| AN-14 | 1 | 14 | 19/27 | .117″ | 1385* | 62.63 | 7.19 |
| AN-12 | 1 | 12 | 19/25 | .137″ | 1386* | 91.67 | 10.08 |
| AN-22 | 2 | 22 | 19/34 | .075″ | 1341 | 37.58 | 4.17 |
| AN-20 | 2 | 20 | 19/32 | .085″ | 1342 | 44.28 | 4.82 |
| AN-18 | 2 | 18 | 19/30 | .095″ | 1343 | 53.55 | 5.81 |
| AN-16 | 2 | 16 | 19/29 | .105″ | 1344 | 61.35 | 7.08 |
| AN-14 | 2 | 14 | 19/27 | .125″ | 1345 | 85.13 | 9.44 |
| AN-12 | 2 | 12 | 19/25 | .143″ | 1346 | 117.08 | 12.63 |
| AN-10 | 2 | 10 | 49/27 | .189″ | 1387 | 172.43 | 18.15 |
| AN-8 | 2 | 8 | 133/29 | .240″ | 1388 | 326.70 | 34.49 |
| AN-6 | 2 | 6 | 133/27 | .293″ | 1389 | 471.90 | 49.01 |
| AN-4 | 2 | 4 | 133/25 | .355″ | 1389/4 | 680.63 | 69.89 |
| AN-2 | 2 | 2 | 665/30 | .425″ | 1389/2 | 1016.40 | 103.46 |
| AN-0 | 2 | 0 | 1045/30 | .525″ | 1389/0 | 1615.35 | 166.98 |
| AN-00 | 2 | 00 | 1330/30 | .590″ | 1389/00 | 2032.80 | 208.73 |

*Fig. A.

## FLAT RIBBON MULTI-CONDUCTOR PER MIL-W-16878D, TYPE C (FIG. C)

Saves time, weight and space on circuit connections, wiring harnesses, etc. Each conductor color-coded and easily separated for neat terminations. Stranded, tinned copper conductors; color-coded .016″ thick PVC insulation; conductors bonded together to form flat ribbon. Rated 1000 volts. Temp., −55° C to +105° C. **Conductors' Color-Code:** 3 thru 16 per color code table* below; 17 = White/Orange; 18 = White/Gray; 19 = White/Violet; 20 = White/Black/Red; 1 = White; 2 = Black.

| Conductors | | | Nom. Size W. x Th. | Alpha No. | Net per Spool§ | |
|---|---|---|---|---|---|---|
| No. | Size | Strand | | | 1000′ | 100′ |
| 4 | 22 | 7/30 | .260″ x .065″ | 3504 | $164.60 | $16.17 |
| 8 | 22 | 7/30 | .520″ x .065″ | 3508 | 274.56 | 28.71 |
| 12 | 22 | 7/30 | .780″ x .065″ | 3512 | 453.15 | 46.53 |
| 16 | 22 | 7/30 | 1.040″ x .065″ | 3516 | 623.37 | 63.69 |
| 20 | 22 | 7/30 | 1.300″ x .065″ | 3520 | 771.21 | 78.38 |

§Spool of 500′ also available; prices on request.

## *MULTI-CONDUCTORS' COLOR CODE

| No. | Color | No. | Color | No. | Color |
|---|---|---|---|---|---|
| 1 | Black | 8 | Orange | 15 | White/Blue |
| 2 | White | 9 | Gray (Slate) | 16 | White/Brown |
| 3 | Red | 10 | Violet (Purple) | 17 | White/Purple |
| 4 | Green | 11 | White/Black | 18 | White/Slate |
| 5 | Yellow | 12 | White/Red | 19 | Black/Red |
| 6 | Blue | 13 | White/Green | 20 | Black/Yellow |
| 7 | Brown | 14 | White/Yellow | | |

## MULTI-CONDUCTOR CONTROL CABLE

Spool of 500′ also available; prices on request.

### SHIELDED GENERAL PURPOSE PLASTIC JACKET (FIG. D)

Each conductor, stranded tinned copper with color-coded polyethylene insulation .015″ thick, cabled with fillers where necessary; rayon wrap; braided, tinned copper shield; chrome gray polyvinylchloride jacket overall. Rated 600 volts. Temp., −20° C to +60° C. **Conductors' Color Code:** 1 thru 20, per color code table* below.

| Conductors | | | Nom. Jacket | | Alpha No. | Net per Spool§ | |
|---|---|---|---|---|---|---|---|
| No. | Size | Strand | Th. | O.D. | | 1000′ | 100′ |
| 2 | 20 | 26/34 | .030″ | .245″ | 1712 | $ 141.65 | $ 14.69 |
| 3 | 20 | 26/34 | .035″ | .250″ | 1713 | 131.85 | 13.16 |
| 4 | 20 | 26/34 | .035″ | .260″ | 1715 | 146.87 | 15.98 |
| 5 | 20 | 26/34 | .035″ | .275″ | 1716 | 173.66 | 17.34 |
| 6 | 20 | 26/34 | .035″ | .300″ | 1717 | 351.50 | 36.51 |
| 8 | 20 | 26/34 | .035″ | .330″ | 1719 | 454.29 | 46.79 |
| 10 | 20 | 26/34 | .035″ | .375″ | 1721 | 558.78 | 57.06 |
| 12 | 20 | 26/34 | .035″ | .380″ | 1723 | 883.23 | 89.48 |
| 15 | 20 | 26/34 | .035″ | .410″ | 1726 | 1369.88 | 137.96 |
| 20 | 20 | 26/34 | .035″ | .455″ | 1728 | 1794.45 | 179.84 |

### SHIELDED, RUBBER INSULATED, RUBBER JACKET (FIG. E)

Each conductor stranded tinned copper with color-coded rubber insulation .020″ thick, cabled with fillers where necessary; cotton wrap; braided tinned copper shield; cotton wrap; tough black rubber jacket overall. Extra flexible for control, video and audio uses. Temp., −20° C to +60° C. **Conductors' Color Code:** 1 thru 20, per color code table* below.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2 | 18 | 41/34 | .035″ | .295″ | 1250/18 | $ 249.80 | $ 25.92 |
| 2 | 20 | 26/34 | .035″ | .270″ | 1250 | 150.81 | 15.98 |
| 3 | 20 | 26/34 | .035″ | .285″ | 1251 | 168.06 | 17.73 |
| 4 | 20 | 26/34 | .035″ | .305″ | 1252 | 190.97 | 20.04 |
| 5 | 20 | 26/34 | .035″ | .330″ | 1253 | 249.80 | 25.92 |
| 6 | 20 | 26/34 | .035″ | .345″ | 1254 | 301.14 | 31.97 |
| 8 | 20 | 26/34 | .035″ | .385″ | 1255/8 | 376.44 | 39.51 |
| 10 | 20 | 26/34 | .035″ | .440″ | 1255/10 | 795.57 | 85.35 |
| 12 | 20 | 26/34 | .065″ | .525″ | 1255/12 | 1125.44 | 118.35 |
| 15 | 20 | 26/34 | .065″ | .595″ | 1255/15 | 1474.20 | 153.30 |
| 20 | 20 | 26/34 | .065″ | .660″ | 1255/20 | 1843.38 | 190.17 |

### UNSHIELDED, RUBBER INSULATED, RUBBER JACKET (FIG. F)

Each conductor stranded, tinned copper with color-coded rubber insulation .020″ thick, cabled with fillers where necessary; cotton wrap; tough black rubber jacket overall. Temp., −20° C to +60° C. **Conductors' Color Code:** 1 thru 20, per color code table* below.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2 | 20 | 26/34 | .035″ | .240″ | 1244 | $ 145.74 | $ 15.50 |
| 3 | 20 | 26/34 | .035″ | .255″ | 1245 | 160.34 | 16.97 |
| 4 | 20 | 26/34 | .035″ | .275″ | 1246 | 182.09 | 19.10 |
| 5 | 20 | 26/34 | .035″ | .300″ | 1247 | 182.09 | 25.61 |
| 6 | 20 | 26/34 | .035″ | .315″ | 1247/6 | 292.92 | 31.14 |
| 8 | 20 | 26/34 | .035″ | .360″ | 1247/8 | 373.73 | 39.24 |
| 10 | 20 | 26/34 | .035″ | .410″ | 1247/10 | 585.18 | 64.20 |
| 12 | 20 | 26/34 | .035″ | .435″ | 1247/12 | 833.40 | 89.16 |
| 15 | 20 | 26/34 | .035″ | .505″ | 1247/15 | 1191.87 | 125.03 |
| 20 | 20 | 26/34 | .035″ | .570″ | 1247/20 | 1589.19 | 168.60 |

§Spool of 500′ also available; prices on request.

### SHIELDED, HEAVY DUTY NEOPRENE JACKET (FIG. E)

Each conductor stranded tinned copper; color-coded rubber insulation (.020″ th., 18 ga. cables; .025″ th., 16 ga. cables; .030″ th., all others), cabled with fillers where necessary; cotton wrap; braided tinned copper shield; cotton wrap and black neoprene jacket overall. Temp., −20° C to +60° C. **Conductors' Color Code:** 1 thru 20, per color code table* below.

| Conductors | | | Nom. Jacket | | Alpha No. | Net per Spool | |
|---|---|---|---|---|---|---|---|
| No. | Size | Strand | Th. | O.D. | | 1000′ | 100′ |
| 2 | 18 | 41/34 | .035″ | .295″ | 1450 | $ 274.73 | $ 28.34 |
| 3 | 18 | 41/34 | .035″ | .305″ | 1451 | 470.46 | 52.40 |
| 4 | 18 | 41/34 | .035″ | .330″ | 1452 | 588.06 | 64.16 |
| 6 | 18 | 41/34 | .035″ | .370″ | 1454 | 917.40 | 97.61 |
| 8 | 18 | 41/34 | .035″ | .420″ | 1456 | 1225.13 | 128.39 |
| 10 | 18 | 41/34 | .035″ | .480″ | 1458 | 1513.25 | 157.22 |
| 12 | 18 | 41/34 | .065″ | .555″ | 1459 | 2054.33 | 215.63 |
| 15 | 18 | 41/34 | .065″ | .640″ | 1459/15 | 2587.47 | 268.59 |
| 20 | 18 | 41/34 | .065″ | .730″ | 1459/20 | 2920.70 | 301.89 |
| 2 | 16 | 65/34 | .035″ | .335″ | 1450/16 | 491.84 | 54.53 |
| 3 | 16 | 65/34 | .035″ | .355″ | 1451/16 | 602.31 | 65.58 |
| 4 | 16 | 65/34 | .035″ | .385″ | 1452/16 | 693.20 | 74.67 |
| 2 | 14 | 41/30 | .040″ | .395″ | 1400 | 627.9 | 64.62 |
| 3 | 14 | 41/30 | .040″ | .425″ | 1401 | 762.30 | 81.68 |
| 2 | 12 | 65/30 | .040″ | .440″ | 1410 | 1052.70 | 110.72 |

alpha ALPHA WIRE

# Mike and Audio Cable

## SHIELDED MICROPHONE CABLE

### STANDARD DUTY, PLASTIC JACKET (FIG. A)

. 1702–1706: Single stranded tinned copper conductor with te polyethylene insulation; braided or spiral-wrapped tinned per shield and gray PVC jacket overall. For all high imped- e mikes or for hi-fi interconnection. **Nos. 1709–1712:** Each ductor stranded tinned copper with color-coded (1 = White, Black) polyethylene insulation, cabled with fillers, textile wrap, ded or spiral-wrapped tinned copper shield and gray poly- ylchloride jacket overall. For all low impedance mikes. Temp., 0° C to +60° C. Rated 1000 volts except 1703, 3500 volts; 4, 5000 volts; 1706, 4000 volts; 1712, 600 volts.

| Conductors | | pF/ ft.* | Nom. O.D. | Alpha No. | Net per Spool* | |
|---|---|---|---|---|---|---|
| Size | Strand | | | | 1000′ | 100′ |
| 26 | 7/34† | 38 | .110″ | 1702‡ | $ 48.98 | $ 6.32 |
| 24 | 10/34 | 35 | .145″ | 1703 | 47.82 | 5.46 |
| 24 | 10/34 | 23 | .190″ | 1704 | 60.30 | 7.10 |
| 24 | 10/34 | 45 | .110″ | 1705‡ | 57.65 | 7.17 |
| 20 | 26/34 | 36 | .175″ | 1706 | 96.41 | 11.00 |
| 24 | 10/34 | 38 | .190″ | 1709‡ | 94.23 | 10.77 |
| 22 | 16/34 | 31 | .230″ | 1710 | 91.73 | 10.38 |
| 20 | 26/34 | 45 | .245″ | 1712 | 141.65 | 14.69 |

### RUBBER AND NEOPRENE JACKETS (FIG. B)

h conductor stranded tinned copper with color-coded (1 = ck, 2 = White) rubber insulation, cotton wrap; braided tinned per shield, copper wrap and tough black rubber or neoprene ket overall. Rubber jacket type suited for standard-duty indoor ; neoprene type for heavy-duty outdoor use and direct burial. np., −20° C to +60° C. **Nos. 1248–1449:** For high impedance e, studio and audio use. **Nos. 1250–1450/16:** For low imped- e mike, circuit control, power and audio interconnection.

| | | | | | | |
|---|---|---|---|---|---|---|
| 20 | 26/34 | 97 | .190″ | 1248§ | $143.85 | $15.30 |
| 20 | 26/34 | 60 | .230″ | 1249 | 146.66 | 15.57 |
| 18 | 41/34 | 69 | .240″ | 1249/18 | 207.63 | 21.71 |
| 18 | 41/34 | 69 | .240″ | 1449# | 206.72 | 21.56 |
| 20 | 26/34 | 68 | .270″ | 1250 | 150.81 | 15.98 |
| 18 | 41/34 | 78 | .295″ | 1250/18 | 249.80 | 25.92 |
| 18 | 41/34 | 78 | .295″ | 1450# | 274.43 | 28.34 |
| 16 | 65/34 | 82 | .335″ | 1450/16# | 491.84 | 54.53 |

om. capacitance between one conductor and remaining ones nected to shield. †Three strands tinned copper; 4 strands ied Copperweld®. ‡Spiral-wrapped shield; all others braided. ylar® wrap under tinned copper shield. #Neoprene jacket; all ers rubber.

## PLASTIC INTERCOMMUNICATION CABLE

balanced intercom systems, annunciators, telephones. Suit- for outdoor installation. Each conductor 22 AWG tinned per; color-coded PVC insulation; conductors twisted into pairs; polyvinylchloride jacket overall. Rated 200 volts. Temp., 0° C to +60° C. Conductors' Color Code available on request.

### SOLID CONDUCTORS (FIG. C)

| onductor | Nominal | | | Alpha No. | Net per Spool* | |
|---|---|---|---|---|---|---|
| Strand | Wall | Jacket | O.D. | | 1000′ | 100′ |
| Solid | .010″ | .025″ | .140″ | 1300 | $ 25.71 | $ 3.63 |
| Solid | .010″ | .025″ | .208″ | 1302 | 48.39 | 6.05 |
| Solid | .010″ | .025″ | .220″ | 1304 | 68.06 | 7.94 |
| Solid | .010″ | .025″ | .275″ | 1307 | 116.96 | 12.68 |
| Solid | .010″ | .025″ | .320″ | 1307/9 | 169.49 | 18.12 |
| Solid | .010″ | .030″ | .370″ | 1309 | 229.40 | 23.82 |
| Solid | .010″ | .030″ | .393″ | 1309/15 | 269.90 | 29.16 |
| Solid | .010″ | .030″ | .411″ | 1310 | [illegible] | 29.97 |
| Solid | .010″ | .040″ | .521″ | 1313 | 494.34 | 50.70 |

### STRANDED CONDUCTORS (FIG. C)

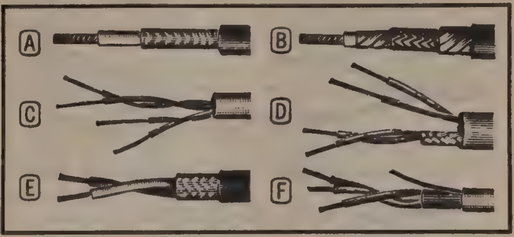
| | | | | | | |
|---|---|---|---|---|---|---|
| 7/30 | .010″ | .025″ | .150″ | 1316 | $ 38.33 | $ 5.03 |
| 7/30 | .010″ | .025″ | .225″ | 1317 | 77.09 | 8.82 |
| 7/30 | .010″ | .025″ | .238″ | 1318 | 101.18 | 11.22 |
| 7/30 | .010″ | .025″ | .260″ | 1319 | 113.84 | 12.65 |
| 7/30 | .010″ | .025″ | .290″ | 1320 | 125.40 | 13.74 |
| 7/30 | .010″ | .035″ | .320″ | 1322 | 131.70 | 14.43 |
| 7/30 | .010″ | .035″ | .370″ | 1323 | 204.72 | 21.77 |
| 7/30 | .010″ | .035″ | .400″ | 1324 | 295.17 | 30.63 |
| 7/30 | .010″ | .040″ | .450″ | 1327 | 343.62 | 35.64 |
| 7/30 | .010″ | .040″ | .480″ | 1327/19 | 641.66 | 65.40 |
| 7/30 | .010″ | .040″ | .570″ | 1329 | 664.98 | 67.79 |
| 7/30 | .010″ | .040″ | .708″ | 1329/41 | 1853.72 | 186.62 |

### INTERMIX SHIELDED AND UNSHIELDED PLASTIC INTERCOM CABLE (FIG. D)

nded tinned copper conductors polyvinylchloride insulated. h braided tinned copper shield over one, two or three conduc- ; other conductors unshielded and paired. Chrome polyvinyl- ride jacket overall. Conductors 22 AWG, 7/30 stranded. Nom- wall, .016″ thick; jacket .030″ except 1243, .025″. Rated 350 s. Temperature, −20° C to +60° C.

| iductors | Nom. O.D. | Color-Coded | | Alpha No. | Net per Spool* | |
|---|---|---|---|---|---|---|
| No. Shielded | | In Shield | Not Shielded | | 1000′ | 100′ |
| 1 | .200″ | White | Blk., Rd. | 1243 | $ 60.30 | $7.13 |
| 2 | † | Blk., Wh. | Blk., Rd. | 1243/4 | 76.80 | 8.97 |
| 4 | § | Blk., Wh./Blk., Red# | | 1243/6 | 132.48 | 14.58 |

al: .285″ x .180″. §Oval, .180″ x .315″. #2 pairs, both shielded.



## SHIELDED PLASTIC JACKET CABLE

### BRAIDED COPPER SHIELD (FIG. E)

Tinned copper, stranded or solid conductor with color-coded polyvinylchloride insulation. Conductors twisted with braided copper shield and gray polyvinylchloride jacket overall. Shield permits pigtail soldering. Strong and flexible for PA, sound, studio, amateur and similar applications. Shield coverage, 75%. Jacket .020″ thick, nom. Temp., −20° C to +60° C. **Conductors' Color Code:** 1 = Black; 2 = Red; 3 = White; 4 = Green; 5 = Yellow; 6 = Blue.

| Conductors | | | Work'g Volts | Nom. O.D. | Alpha No. | Net per Spool* | |
|---|---|---|---|---|---|---|---|
| No. | Size | Strand | | | | 1000′ | 100′ |
| 2 | 22 | 7/30 | 350 | .197″ | 1736 | $ 72.62 | $ 8.67 |
| 3 | 22 | 7/30 | 350 | .207″ | 1737 | 84.23 | 11.18 |
| 4 | 22 | 7/30 | 350 | .223″ | 1738 | 155.85 | 16.86 |
| 2 | 20 | 7/28 | 350 | .213″ | 1741 | 109.62 | 12.21 |
| 3 | 20 | 7/28 | 350 | .224″ | 1742 | 138.58 | 14.34 |
| 2 | 18 | 7/26 | 350 | .250″ | 1746 | 136.88 | 14.97 |
| 3 | 18 | 7/26 | 350 | .273″ | 1747 | 200.03 | 21.27 |
| 2 | 16 | 19/29 | 350 | .290″ | 1748 | 197.99 | 21.03 |
| 2 | 14 | 19/27 | 450 | .355″ | 1750 | 252.71 | 26.54 |
| 3 | 14 | 19/27 | 450 | .375″ | 1751 | 413.99 | 40.01 |
| 2 | 12 | 19/25 | 450 | .423″ | 1760 | 410.61 | 42.29 |
| 2 | 22 | Solid | 350 | .190″ | 1775† | 62.43 | 7.31 |

### SPIRAL WRAPPED COPPER SHIELD

Same as above, but shield is spiral wrapped copper for 100% shield coverage for audio and RF frequencies.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 22 | 7/30 | 350 | .125″ | 2254/1 | $ 43.95 | $ 5.17 |
| 2 | 22 | 7/30 | 350 | .187″ | 2254 | 49.95 | 6.23 |
| 3 | 22 | 7/30 | 350 | .197″ | 2254/3 | 85.88 | 9.87 |
| 4 | 22 | 7/30 | 350 | .203″ | 2254/4 | 145.35 | 15.72 |
| 6 | 22 | 7/30 | 350 | .251″ | 2254/6 | 201.59 | 21.35 |
| 1 | 20 | 7/28 | 350 | .133″ | 2256/1 | 55.85 | 6.87 |
| 2 | 20 | 7/28 | 350 | .195″ | 2256 | 58.95 | 7.22 |
| 3 | 20 | 7/28 | 350 | .214″ | 2256/3 | 98.72 | 11.16 |
| 4 | 20 | 7/28 | 350 | .232″ | 2256/4 | 201.75 | 21.42 |
| 6 | 20 | 7/28 | 350 | .275″ | 2256/6 | 262.02 | 27.45 |
| 1 | 18 | 7/26 | 350 | .150″ | 2258/1 | 64.37 | 7.71 |
| 2 | 18 | 7/26 | 350 | .250″ | 2258 | 76.80 | 9.08 |
| 3 | 18 | 7/26 | 350 | .263″ | 2258/3 | 97.50 | 11.63 |
| 4 | 18 | 7/26 | 350 | .265″ | 2258/4 | 210.26 | 22.31 |
| 2 | 16 | 19/29 | 350 | .280″ | 2260 | 99.00 | 11.40 |
| 3 | 16 | 19/29 | 350 | .295″ | 2260/3 | 231.77 | 24.48 |
| 2 | 14 | 19/27 | 450 | .345″* | 2265 | 227.43 | 24.08 |

*Nom. walls, .020″ thick; all others, .016″ thick. †With 22 AWG solid tinned copper ground wire under braided copper shield.

### MYLAR SUPPORTED ALUMINUM FOIL SHIELD (FIG. F)

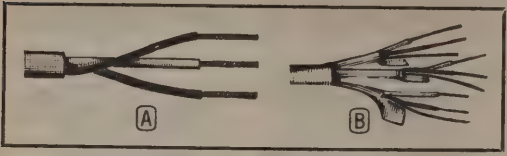
Each conductor stranded tinned copper with color-coded polyethylene insulation; cabled and wrapped Mylar supported aluminum foil shield (100% coverage) with drain wire laid parallel; aluminum foil faces outward for maximum grounding contact; chrome gray polyvinylchloride jacket overall. Lightweight; reduced cable diameter; quick, easy termination to ground. Temp., −20° C to +60° C. Jacket, .025″ thick; wall .016″ thick, nom. **Conductors' Color Code:** 1 = Black; 2 = Red; 3 = White; 4 = Green.

| Conductors | | | Work'g Volts | Nom. O.D. | Alpha No. | Net per Spool* | |
|---|---|---|---|---|---|---|---|
| No. | Size | Strand | | | | 1000′ | 100′ |
| 2 | 22 | 7/30 | 400 | .195″ | 2402 | $ 42.14 | $ 5.63 |
| 3 | 22 | 7/30 | 400 | .210″ | 2403 | 51.90 | 6.08 |
| 4 | 22 | 7/30 | 400 | .225″ | 2404 | 109.53 | 12.21 |
| 2 | 20 | 7/28 | 400 | .210″ | 2412 | 54.26 | 7.47 |
| 3 | 20 | 7/28 | 400 | .225″ | 2413 | 66.75 | 7.65 |
| 4 | 20 | 7/28 | 400 | .240″ | 2414 | 117.66 | 12.99 |
| 2 | 18 | 16/30 | 400 | .230″ | 2422 | 66.99 | 7.85 |
| 3 | 18 | 16/30 | 400 | .245″ | 2423 | 82.80 | 9.15 |
| 4 | 18 | 16/30 | 400 | .265″ | 2424 | 140.60 | 15.26 |
| 2 | 16 | 19/29 | 400 | .274″ | 2432 | 107.25 | 11.55 |
| 3 | 16 | 19/29 | 400 | .300″ | 2433 | 121.80 | 13.65 |

*Also available in spool of 500′, prices on request.
®TM: Copperweld of Copperweld Steel Co.; Mylar of DuPont.

# alpha ALPHA WIRE Audio Cable

## MULTI-CONDUCTOR AUDIO CABLE



### UNSHIELDED WITH PLASTIC JACKET (FIG. A)

Tinned copper conductors with color-coded polyvinylchloride insulation, twisted, with gray polyvinylchloride jacket overall. Rated 350 volts except as otherwise noted. Temperature, −20° C to +60° C. **Conductors' Color Code:** 1 thru 4, per Color Code Table One* below.

| Conductor | | | Nominal | | Alpha No. | Net per Spool‡ | |
|---|---|---|---|---|---|---|---|
| No. | Size | Strand | Wall | O.D. | | 1000′ | 100′ |
| 2 | 22 | Solid | .010″ | .140″ | **1793†** | $ 25.62 | $ 3.54 |
| 3 | 22 | Solid | .010″ | .147″ | **1794†** | 48.83 | 6.21 |
| 2 | 20 | Solid | .016″ | .178″ | **1795** | 61.25 | 7.43 |
| 2 | 18 | Solid | .016″ | .194″ | **1797** | 68.66 | 8.37 |
| 2 | 22 | 7/30 | .010″ | .150″ | **1893†** | 27.74 | 4.02 |
| 3 | 22 | 7/30 | .010″ | .158″ | **1894†** | 35.63 | 4.46 |
| 4 | 22 | 7/30 | .010″ | .170″ | **1894/4†** | 47.10 | 5.93 |
| 2 | 20 | 7/28 | .016″ | .190″ | **1895** | 44.40 | 5.70 |
| 3 | 20 | 7/28 | .016″ | .200″ | **1896** | 85.83 | 9.93 |
| 4 | 20 | 7/28 | .016″ | .220″ | **1896/4** | 103.17 | 11.51 |
| 2 | 18 | 16/30 | .018″ | .210″ | **1897§** | 63.23 | 7.50 |
| 3 | 18 | 16/30 | .018″ | .235″ | **1898** | 107.58 | 12.36 |
| 4 | 18 | 16/30 | .018″ | .245″ | **1898/4** | 145.43 | 15.68 |
| 6 | 18 | 16/30 | .018″ | .315″ | **1898/6** | 232.32 | 24.50 |
| 8 | 18 | 16/30 | .018″ | .340″ | **1898/8** | 310.67 | 32.45 |
| 2 | 16 | 19/29 | .023″ | .265″ | **1899** | 91.95 | 10.43 |
| 2 | 14 | 19/27 | .030″ | .330″ | **1891** | 169.16 | 18.12 |
| 3 | 14 | 19/27 | .030″ | .350″ | **1891/3** | 229.88 | 24.11 |

†Rated 200 volts. §Black or white only.

### *MULTI-CONDUCTORS' COLOR CODE

#### TABLE ONE

| No. | Color | No. | Color |
|---|---|---|---|
| 1 | Black | 31 | White/Black/Slate |
| 2 | Red | 32 | White/Black/Purple |
| 3 | White | 33 | White/Black/Black |
| 4 | Green | 34 | White/Red/Black |
| 5 | Orange | 35 | White/Red/Red |
| 6 | Blue | 36 | White/Red/Green |
| 7 | Brown | 37 | White/Red/Blue |
| 8 | Yellow | 38 | White/Red/Brown |
| 9 | Purple | 39 | White/Red/Purple |
| 10 | Slate | 40 | White/Green/Black |
| 11 | Pink | 41 | White/Green/Red |
| 12 | Tan | 42 | White/Green/Green |
| 13 | Red/Green | 43 | White/Green/Blue |
| 14 | Red/Yellow | 44 | White/Green/Brown |
| 15 | Red/Black | 45 | White/Green/Purple |
| 16 | White/Black | 46 | White/Blue/Black |
| 17 | White/Red | 47 | White/Blue/Red |
| 18 | White/Green | 48 | White/Blue/Green |
| 19 | White/Yellow | 49 | White/Blue/Blue |
| 20 | White/Blue | 50 | White/Blue/Brown |
| 21 | White/Brown | 51 | White/Blue/Purple |
| 22 | White/Orange | 52 | White/Brown/Black |
| 23 | White/Gray | 53 | White/Brown/Red |
| 24 | White/Violet | 54 | White/Brown/Green |
| 25 | White/Black/Red | 55 | White/Brown/Blue |
| 26 | White/Black/Green | 56 | White/Brown/Brown |
| 27 | White/Black/Yellow | 57 | White/Brown/Purple |
| 28 | White/Black/Blue | 58 | White/Purple/Red |
| 29 | White/Black/Brown | 59 | White/Purple/Green |
| 30 | White/Black/Orange | 60 | White/Purple/Blue |

#### TABLE TWO

| No. | Colors‡ | No. | Colors‡ | No. | Colors‡ |
|---|---|---|---|---|---|
| 1 | Black/Red | 10 | Red/Blue | 19 | White/Blue |
| 2 | Black/White | 11 | Red/Yellow | 20 | White/Brown |
| 3 | Black/Green | 12 | Red/Brown | 21 | White/Orange |
| 4 | Black/Blue | 13 | Red/Orange | 22 | White/Yellow |
| 5 | Black/Brown | 14 | Green/Blue | 23 | Blue/Brown |
| 6 | Black/Yellow | 15 | Green/White | 24 | Blue/Orange |
| 7 | Black/Orange | 16 | Green/Brown | 25 | Blue/Yellow |
| 8 | Red/Green | 17 | Green/Orange | 26 | Brown/Orange |
| 9 | Red/White | 18 | Green/Yellow | 27 | Brown/Yellow |

‡Color combination of pairs.

### FLEXIBLE CABLE
### WITH OUTER PLASTIC JACKET (FIG. A)

For unbalanced intercom systems, low voltage relay control cable, PA systems, signal systems, electronic computors. Each conductor suitable for outdoor use. 22 AWG stranded tinned copper; color-coded polyvinylchloride insulation; conductors twisted; gray PVC jacket overall. Rated 200 volts. Temp., −20° C to +60° C. **Conductors' Color Code:** 1 thru 60 per Color Code Table One* below, left.

| Conductor | | Nominal | | | Alpha No. | Net per Spool‡ | |
|---|---|---|---|---|---|---|---|
| No. | Strand | Wall | Jacket | O.D. | | 1000′ | 100 |
| 2 | 7/30 | .010″ | .025″ | .150″ | **1172** | $ 27.74 | $ 4.02 |
| 3 | 7/30 | .010″ | .025″ | .158″ | **1173** | 35.63 | 4.46 |
| 4 | 7/30 | .010″ | .025″ | .172″ | **1174** | 47.10 | 5.93 |
| 5 | 7/30 | .010″ | .025″ | .186″ | **1175** | 59.57 | 6.93 |
| 6 | 7/30 | .010″ | .025″ | .200″ | **1176** | 87.11 | 9.84 |
| 7 | 7/30 | .010″ | .025″ | .200″ | **1177** | 98.60 | 11.10 |
| 8 | 7/30 | .010″ | .025″ | .217″ | **1178** | 105.45 | 11.66 |
| 9 | 7/30 | .010″ | .030″ | .239″ | **1179** | 115.46 | 12.92 |
| 10 | 7/30 | .010″ | .030″ | .260″ | **1180** | 117.38 | 12.73 |
| 12 | 7/30 | .010″ | .030″ | .268″ | **1181** | 132.30 | 14.18 |
| 15 | 7/30 | .010″ | .040″ | .310″ | **1181/15** | 217.50 | 22.95 |
| 20 | 7/30 | .010″ | .040″ | .343″ | **1181/20** | 334.49 | 34.74 |
| 25 | 7/30 | .010″ | .040″ | .380″ | **1181/25** | 345.00 | 37.05 |
| 30 | 7/30 | .010″ | .040″ | .402″ | **1181/30** | 790.61 | 80.55 |
| 40 | 7/30 | .010″ | .045″ | .459″ | **1181/40** | 1211.46 | 122.48 |
| 50 | 7/30 | .010″ | .045″ | .501″ | **1181/50** | 1505.12 | 152.13 |
| 60 | 7/30 | .010″ | .045″ | .542″ | **1181/60** | 1815.63 | 183.45 |

### SHIELDED AUDIO AND DATA CABLE
### WITH PLASTIC JACKET (FIG. B)

Tinned-copper conductors with color-coded polyethylene insulation, twisted into pairs. Tinned-copper 22-gauge drain wire with Mylar®-supported aluminum foil shield, aluminum facing inward. Chrome PVC jacket overall. Capacitance: Between conductors of a pair, 25 pF/ft; conductor to shield, 45 pF/ft. For audio, RF and pulse applications requiring superior circuit isolation. **Conductors' Color Code:** Combinations 1 thru 27 per Color Code Table Two* below, left.

| Conductor | | | Nominal | | | Alpha No. | Net per Spool‡ | |
|---|---|---|---|---|---|---|---|---|
| Pairs | No. | Strand | Wall | Jacket | O.D. | | 1000′ | 100′ |
| 6 | 12 | Solid | .010″ | .030″ | .318″ | **6002** | $ 255.84 | $ 26.73 |
| 9 | 18 | Solid | .010″ | .030″ | .371″ | **6004** | 352.50 | 36.45 |
| 3 | 6 | 7/30 | .010″ | .025″ | .252″ | **6010** | 161.30 | 17.34 |
| 6 | 12 | 7/30 | .010″ | .030″ | .342″ | **6012** | 270.00 | 28.88 |
| 9 | 18 | 7/30 | .010″ | .035″ | .410″ | **6014** | 421.43 | 43.50 |
| 11 | 22 | 7/30 | .010″ | .040″ | .457″ | **6016** | 502.26 | 51.24 |
| 15 | 30 | 7/30 | .010″ | .040″ | .523″ | **6018** | 667.43 | 67.82 |
| 19 | 38 | 7/30 | .010″ | .050″ | .570″ | **6020** | 922.19 | 93.39 |
| 27 | 54 | 7/30 | .010″ | .055″ | .687″ | **6022** | 1273.50 | 129.00 |

®Registered DuPont Corp. trademark.

## ALPHA LACING CORDS AND TAPES

### NYLON TWISTED CORD—MIL-T-713A

| Alpha No. | Class | Tensile Strength | Nom. O.D. | Alphlex No. | Class | Tensile Strength | Nom. O.D. |
|---|---|---|---|---|---|---|---|
| **LC-113** | I | 70 lbs. | .050″ | **LC-115** | III | 32 lbs. | .030″ |
| **LC-114** | II | 48 lbs. | .035″ | (Both Nos. P Twine Type) | | | |

### FLAT BRAIDED TAPE (LC-132—LC-162)

**Nom. Thick.:** .014″ (LC-134 is .010″, LC-158 and LC-162 are .012″). **Nom. Width:** 3/32″ (LC-134 is 1/16″). **Tensile Strength:** 50 lbs. (LC-134 is 30 lbs.). **Material:** Nylon (LC-158 and LC-162 are Dacron). **Finish:** Per MIL-T-713A except: LC-132 and LC-158, synthetic rubber-like resin, melting point over 190° F; LC-140, non-slip fungistatic synthetic rubber; LC-143, "wax free" thermoplastic synthetic resin, melting point over 350° F. LC-136 meets MIL-T-713A, Type P, Class II.

| Alpha No. | Color | Standard Put-Up | Net per Put-Up |
|---|---|---|---|
| **LC-113** (Nylon) | White | ½ lb. on spool | **$4.73** |
| | Black | ½ lb. on spool | **5.51** |
| **LC-114** (Nylon) | White | ½ lb. on spool | **4.73** |
| | Black | ½ lb. on spool | **5.51** |
| **LC-115** (Nylon) | White | ½ lb. on spool | **4.73** |
| | Black | ½ lb. on spool | **5.51** |
| **LC-132** (Nylon) | White | 500 yds. on tube | **8.45** |
| | Black | 500 yds. on tube | **9.14** |
| **LC-134** (Nylon) | White | 500 yds. on spool | **5.41** |
| | Black | 500 yds. on spool | **6.09** |
| **LC-136** (Nylon) | White | 500 yds. on spool | **8.45** |
| | Black | 500 yds. on spool | **9.14** |
| **LC-140** (Nylon) | White | 500 yds. on spool | **8.45** |
| | Black | 500 yds. on spool | **9.14** |
| **LC-143** (Nylon) | White | 500 yds. on spool | **8.45** |
| | Black | 500 yds. on spool | **9.14** |
| **LC-158** (Dacron) | White | 500 yds. on tube | **8.45** |
| | Black | 500 yds. on tube | **9.14** |
| **LC-162** (Dacron) | White | 500 yds. on spool | **8.45** |
| | Black | 500 yds. on spool | **9.14** |

# RETRACTILE COIL CORDS; LAMP, REPLACEMENT & EXTENSION CORDS

## RETRACTILE COIL POWER CORDS

prene jacket. Long extension. UL Approved.

### RETRACTED LENGTHS 2 AND 4 FEET

lity multi-conductor has stranded tinned copper conductors, ber insulation and weather-resistant neoprene jacket, overall. racted length 2 ft. has extended length 12 ft.; retracted length . has extended length 25 ft. Temp., −20° C to +60° C. **Con-tors' Color Code:** 1 = Black; 2 = White: 3 = Green; 4 = Red.

| Conductor | | UL | Rating | | Alpha | Net Ea., Lgth· | |
|---|---|---|---|---|---|---|---|
| Size | Strand | Type | Amps | Volts | No.† | 2 Ft. | 4 Ft. |
| 18 | 41/34 | SVO | 7 | 300 | 660/2 | $ 5.72 | $10.29 |
| 18 | 41/34 | SVO | 7 | 300 | 760/4 | ........ | 15.62 |
| 18 | 41/34 | SJO | 7 | 300 | 661/2 | 6.26 | 11.39 |
| 18 | 41/34 | SJO | 7 | 300 | 662/2 | 8.00 | 14.88 |
| 18 | 41/34 | SJO | 5.6* | 300 | 663/2 | 9.38 | 17.61 |
| 16 | 65/34 | SJO | 10 | 300 | 664/2 | 7.80 | 14.52 |
| 16 | 65/34 | SJO | 10 | 300 | 665/2 | 10.11 | 19.10 |
| 16 | 65/34 | SJO | 8* | 300 | 666/2 | 12.48 | 23.13 |
| 16 | 41/34 | SO | 10 | 600 | 670/2 | 13.97 | 26.07 |
| 16 | 65/34 | SO | 8* | 600 | 671/2 | 15.42 | 29.03 |
| 14 | 41/30 | SO | 15 | 600 | 673/2 | 17.27 | 32.69 |
| 14 | 41/30 | SO | 12* | 600 | 674/2 | 20.66 | 37.65 |

r 4 conductors carrying current; if one lead is used as ground, rating is same as 2- and 3-conductor cords. †No. shown is for . length; for 4-ft. length change suffix to /4 (example: 660/4).

## POWER CORD SETS

ne as above, but with sturdy, molded male plug on one end; pped on other end. All are 18″ long, retracted; 7½ ft. long, ended. Rated 300 volts. **Conductors' Color Code:** 1 = Black; White; 3 = Green.

| Conductor | | | UL | Coil | Alpha | Net |
|---|---|---|---|---|---|---|
| lo. | Size | Strand | Type | O.D., In. | Number | Each |
| 2 | 18 | 41/34 | SVO | ⅞ | 654 | $ 5.13 |
| 3 | 18 | 41/34 | SJO | 1⅛ | 656 | 9.75 |
| 2 | 16 | 65/34 | SJO | 1⅜ | 657 | 6.98 |
| 3 | 16 | 65/34 | SJO | 1 7/16 | 658 | 10.29 |

## RETRACTILE TEST LEAD WIRE

h grade rubber insulated for maximum flex life. Single con-tor, extra flexible tinned copper. Retracted length, 12″ with straight lead on each end; extends to 6 ft. No. 20 conductor 36 stranded. Rated 4 amps, 5,000 volts. Coil ¾″ O.D.

**ha No. 650 Retractile 12″ Test Lead**—Specify black red. Net Each.................................... $1.47

## E-Z-STRIP LAMP CORDS

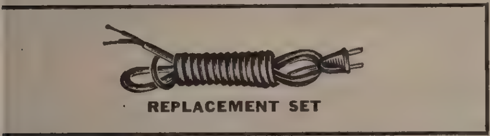
allel conductors, stranded extra flexible bare copper, color-ed insulation. Slit in jacket permits "E-Z" separation. For all instruments and appliances. **Temperature:** −20° C to 0° C. **Rating:** 300 V. UL Approved.

| Conductor | | Insul. | UL | Nominal | | Alpha |
|---|---|---|---|---|---|---|
| Size | Strand | Type | Type | Wall | O.D. | No. |
| 18 | 41/34 | Plastic | **SPT-1** | .032″ | .215″ x .115″ | 1977 |
| 18 | 41/34 | Plastic | **SPT-2** | .045″ | .285″ x .150″ | 1978 |
| 18 | 41/34 | Plastic | **SPT-1** | .032″ | .215″ x .115″ | 1979 |

| lpha No. | Stock Colors* | Net per Spool | | | |
|---|---|---|---|---|---|
| | | 100 Ft. | 250 Ft. | 500 Ft. | 1000 Ft. |
| 1977 | A, B, C, D, E | $5.04 | $12.60 | $24.02 | $46.47 |
| 1978 | Brown only | 7.88 | 18.51 | 37.02 | 70.88 |
| 1979 | Clear only | 6.06 | 14.18 | 27.17 | 52.77 |

ecify color: A, Brown; B, Black; C, White; D, Gray; E, Tan.

## REPLACEMENT CORD SETS


REPLACEMENT SET

### TWO-CONDUCTOR SETS

en end cord replacements. Flexible 2-conductor, black rubber d with molded, black straight plastic plug on one end; other stripped for easy termination. UL and CSA Approved. Plugs ed 15 amps, 125 volts. Set rated 300 volts, 7 amps.

| Conductor | | | UL | Nom. | Lgth., | Alpha | Net |
|---|---|---|---|---|---|---|---|
| o. | Size | Strand | Type | O.D. | Ft. | No. | Each |
| | 18 | 41/34 | SV | .245″ | 6 | 600 | $1.04 |
| | 18 | 41/34 | SV | .245″ | 9 | 602 | 1.23 |

### THREE-CONDUCTOR SETS

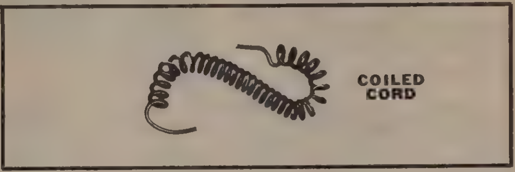
ne, but with extra conductor and grounding plug.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 18 | 16/30 | SJ | .330″ | 6 | 615 | $1.32 |
| | 18 | 16/30 | SJ | .330″ | 9 | 616 | 1.52 |
| | 16 | 26/30 | SJ | .365″ | 6 | 618* | 1.89 |

ated 10 amps; all others, 7 amps.

## RETRACTILE COIL COMMUNICATION CORDS

Neoprene jacket. Long extension.



### RETRACTED LENGTHS 2 AND 4 FEET

Multi-conductor with extra flexible, tinned, soft cadmium copper with high flex life. Rated 1 amp, 120 volts. Units 2 ft. retracted are 12 ft. extended; 4 ft. retracted, 25 ft. extended. Some types (see table) have cadmium copper shield over individual conductors (rated 75 volts); shield can be pigtailed for direct solder connection. **Conductors' Color Code:** 1 = Black; 2 = White; 3 = Red; 4 = Green; 5 = Blue; 6 = Yellow; 7 = Brown.

| Conductor | | | Shielded | Coil | Alpha | Net Ea., Lgth. | |
|---|---|---|---|---|---|---|---|
| No. | Size | Strand | Cond. | O.D., In. | No.* | 2 Ft. | 4 Ft. |
| 2 | 23 | 21/36 | No | ¾ | 680/2 | $ 5.06 | $ 9.02 |
| 3 | 23 | 21/36 | No | 13/16 | 681/2 | 6.26 | 10.65 |
| 4 | 23 | 21/36 | No | 15/16 | 682/2 | 7.07 | 12.30 |
| 5 | 23 | 21/36 | No | 1 1/16 | 683/2 | 9.62 | 16.53 |
| 6 | 23 | 21/36 | No | 1⅛ | 684/2 | 11.39 | 21.74 |
| 7 | 23 | 21/36 | No | 1¼ | 685/2 | 12.41 | 23.54 |
| 1 | 24 | 41/40 | Yes† | ⅝ | 690/2 | 7.79 | 10.97 |
| 2 | 1–23<br>1–24 | 21/36<br>41/40 | No‡<br>Yes† | ⅞ | 692/2 | 10.58 | 19.32 |
| 3 | 2–23<br>1–24 | 21/36<br>41/40 | No§<br>Yes† | ⅞ | 694/2 | 14.94 | 28.14 |
| 4 | 2–23<br>2–24 | 21/36<br>41/40 | No§<br>Yes# | 1 | 696/2 | 16.91 | 31.97 |

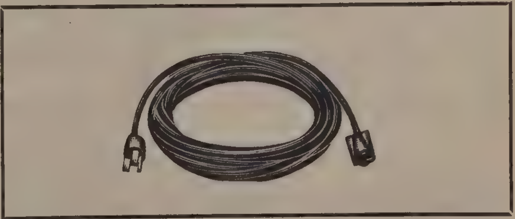
*Number shown is for 2-ft. length; for 4-ft., change suffix to /4 (i.e., 680/4). **Conductors' Color Code:** †White; ‡Black; §Black. Red; #White, Green.

## MINIATURE COMMUNICATION COIL CORDS

Small diameter plastic cord with stranded tinned copper conductors for maximum flexibility. PVC insulated and jacketed. For low voltage power and communication equipment with space and weight limitations. Rated ½ amp, 100 volts. Retracted length, 2 ft.; extends approx. 10 ft. With 6″ straight lead on each end. **Conductors' Color Code:** 1 = Black; 2 = White; 3 = Green; 4 = Red.

| Conductor | | | | Coil | Alpha | Net |
|---|---|---|---|---|---|---|
| No. | Size | Strand | Shielded | O.D., In. | No. | Each |
| 2 | 28 | 19/40 | No | ½ | 651 | $5.01 |
| 4 | 28 | 19/40 | No | ½ | 652 | 5.88 |

## EXTENSION CORD SETS

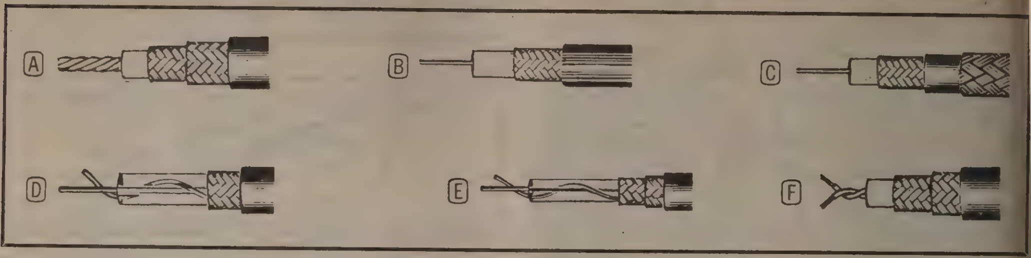


Flexible multi-conductor, black rubber cord with black molded plastic male and female plug on either end. Three-conductor type for use where one conductor requires grounding. UL and CSA Approved.

| Conductor | | | UL | Nom. | Lgth., | Alpha | Net |
|---|---|---|---|---|---|---|---|
| No. | Size | Strand | Type | O.D. | Ft. | No. | Each |
| 2 | 18 | 41/34 | SV | .245″ | 6 | 620 | $ 1.14 |
| 2 | 16 | 26/30 | SJ | .325″ | 10 | 628* | 1.74 |
| 3 | 18 | 16/30 | SJ | .330″ | 10 | 636 | 2.12 |
| 3 | 18 | 16/30 | SJ | .330″ | 25 | 638 | 4.13 |
| 3 | 16 | 26/30 | SJ | .365″ | 15 | 640 | 3.87 |
| 3 | 16 | 26/30 | SJ | .365″ | 25 | 642 | 7.44 |
| 3 | 16 | 26/30 | SJ | .365″ | 50 | 644 | 11.58 |

*Rated 10 amps; all others, 7 amps.

# **alpha** ALPHA WIRE RG/U Coaxial Cable



## POLYETHYLENE DIELECTRIC RG/U COAXIAL CABLES

Manufactured in accordance with the latest military specification MIL-C-17. Factory tested to assure physical and electrical performance. Production runs are subjected to electrical property tests to determine capacitance, impedance and attenuation. Further tests are made for corona extinction and physical properties. Dielectrics and insulating jackets are subjected to aging and flow tests in a special forced-draft oven; plus, exposure to extreme low temperatures in sub-zero environmental chamber to determine cold-bend properties. All have solid polyethylene dielectric (VP, 65.9%) except as noted. Dimensions shown are max.

| Alpha No. | MIL No. RG- | Fig. | Center Conductor | | | Shields* | | Jacket | | Oper. Volts rms | Nom. Imped. Ohms | Cap., pF/ft. | Net Price per Put-Up | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Mat.* | Strand | O.D., In. | 1st | 2nd | Mat.* | O.D., In. | | | | 100′ Put-Up | 500′ Put-Up | 1000′ Put-Up |
| 9006A | 6A/U | A | CW | 1 | .0285 | SC | C | NCV | .336 | 2700 | 75 | 20 | $ 31.80 | $155.18 | $310.28 |
| 9008♦ | 8/U | B | C | 7/.0285 | .086 | C | ..... | V | .415 | 5000 | 52 | 29.5 | 15.75 | 64.50 | 129.00 |
| 9008A♦ | 8A/U | B | C | 7/.0285 | .086 | C | ..... | NCV | .415 | 5000 | 52 | 29.5 | 16.20 | 73.50 | 147.00 |
| 9009B | 9B/U | A | SC | 7/.0285 | .086 | SC | SC | NCV | .430 | 5000 | 50 | 30 | 51.75 | 253.80 | 507.00 |
| 9011 | 11/U | B | TC | 7/.0159 | .048 | C | ..... | V | .415 | 5000 | 75 | 20.5 | 13.88 | 55.50 | 110.85 |
| 9011A♦ | 11A/U | B | TC | 7/.0159 | .048 | C | ..... | NCV | .412 | 5000 | 75 | 20.5 | 14.63 | 64.88 | 129.75 |
| 9012A‡ | 12A/U | C | TC | 7/.0159 | .048 | C | ..... | NCV | .412 | 5000 | 75 | 20.5 | 24.75 | 115.50 | 231.00 |
| 9014A | 14A/U | A | C | 1 | .102 | C | C | NCV | .558 | 7000 | 52 | 29.5 | 34.50 | 168.00 | 336.00 |
| 9017A | 17A/U | B | C | 1 | .188 | C | ..... | NCV | .885 | 11000 | 52 | 29.5 | 67.50 | 328.50 | 657.00 |
| 9019A | 19A/U | B | C | 1 | .250 | C | ..... | NCV | 1.135 | 14000 | 52 | 29.5 | 112.50 | 545.00 | 1050.00 |
| 9022B⌶ | 22B/U | F | C | 2-7/.0152 | .047 | TC | TC | NCV | .430 | 1000 | 95 | 16 | ......... | ......... | ......... |
| 9055 | 55/U | A | C | 1 | .032 | TC | TC | NP | .206 | 1900 | 53.5 | 28.5 | 8.85 | 40.65 | 81.23 |
| 9055B | 55B/U | A | SC | 1 | .032 | TC | TC | BP | .206 | 1900 | 53.5 | 28.5 | 9.60 | 45.45 | 90.77 |
| 9058♦ | 58/U | B | C | 1 | .032 | TC | ..... | V | .200 | 1900 | 53.5 | 28.5 | 5.63 | 20.63 | 41.25 |
| 9058A | 58A/U | B | TC | 19/.0071 | .0375 | TC | ..... | V | .199 | 1900 | 50 | 29.5 | 6.38 | 23.63 | 47.25 |
| 9058C | 58C/U | B | TC | 19/.0071 | .0375 | TC | ..... | NCV | .199 | 1900 | 50 | 29.5 | 6.98 | 26.40 | 52.65 |
| 9059♦ | 59/U | B | CW | 1 | .0253 | C | ..... | V | .250 | 2300 | 73 | 21 | 6.75 | 24.00 | 53.70‡ |
| 9059B♦ | 59B/U | B | CW | 1 | .023 | C | ..... | NCV | .246 | 2300 | 75 | 20.5 | 6.38 | 28.73 | 57.30 |
| 9062•♦ | 62/U | D | CW | 1 | .025 | C | ..... | V | .250 | 750 | 93 | 13.5 | 7.20 | 27.23 | 54.23 |
| 9062A• | 62A/U | D | CW | 1 | .025 | C | ..... | NCV | .249 | 750 | 93 | 13.5 | 6.60 | 28.80 | 57.60 |
| 9062B•♦ | 62B/U | D | CW | 1 | .025 | TC | TC | BP | .250 | 750 | 93 | 13.5 | 7.88 | 34.27 | 68.55 |
| 9063B• | 63B/U | D | CW | 1 | .0253 | C | ..... | NCV | .415 | 1000 | 125 | 10 | 15.00 | 72.00 | 143.70 |
| 9071B•♦ | 71B/U | E | CW | 1 | .025 | C | TC | BP | .250 | 750 | 93 | 13.5 | 10.50 | 46.50 | 93.00 |
| 9174 | 174/U | B | CW | 7/.0063 | .019 | TC | ..... | V | .105 | 1500 | 50 | 30 | 4.73 | 16.65 | 33.23 |
| 9212 | 212/U | A | SC | 1 | .056 | SC | SC | NCV | .336 | 3000 | 50 | 29.5 | 43.50 | 202.50 | 405.00 |
| 9213♦ | 213/U | B | C | 7/.0296 | .090 | C | ..... | NCV | .412 | 5000 | 50 | 30.5 | 15.15 | 70.50 | 140.55 |
| 9214 | 214/U | A | SC | 7/.0296 | .090 | SC | SC | NCV | .432 | 5000 | 50 | 30.5 | 54.00 | 238.50 | 476.25 |
| 9215‡ | 215/U | C | C | 7/.0296 | .090 | C | ..... | NCV | .412 | 5000 | 50 | 30.5 | 25.50 | 120.75 | 240.00 |
| 9217 | 217/U | A | C | 1 | .106 | C | C | NCV | .555 | 7000 | 50 | 30 | 39.75 | 187.50 | 375.00 |
| 9218 | 218/U | B | C | 1 | .195 | C | ..... | NCV | .880 | 11000 | 50 | 30 | 72.75 | 352.50 | 705.00 |
| 9219§ | 219/U | C | C | 1 | .195 | C | ..... | NCV | .880 | 11000 | 50 | 30 | 99.00 | 487.50 | 973.50 |
| 9223♦ | 223/U | A | SC | 1 | .036 | SC | SC | NCV | .216 | 1900 | 50 | 30 | 24.00 | 109.50 | 217.50 |

## ECONOMY 9800 SERIES COAXIAL CABLES

High quality coaxial cable does not meet MIL standards; but similar to RG-59/U type. Each reel is swept through 20–220 MHz range to guarantee uniform attenuation. Designed for general communications, CATV, MATV and commercial applications. No. 9830 has solid polyethylene dielectric and PVC jacket, bare Copperweld conductor. No. 9840 has unicellular foamed polyethylene dielectric and PVC jacket, bare Copperweld conductor. **Impedance:** 75 ohms. **Color:** Black.

| Alpha No. | MIL No. RG- | Fig. | Center Conductor | | | Shields* | | Jacket | | Oper. Volts rms | Nom. Imped. Ohms | Cap., pF/ft. | Net Price per Put-Up | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Mat.* | Strand | O.D., In. | 1st | 2nd | Mat.* | O.D., In. | | | | 100′ Put-Up | 500′ Put-Up | 1000′ Put-Up |
| 9830 | 59/U | B | CW | 1 | .0253 | C | ..... | V | .242 | ....... | 75 | ...... | $5.40 | $21.75 | $42.75 |
| 9840 | 59/U | B | CW | 1 | .0253 | C | ..... | V | .242 | ....... | 75 | ...... | 5.55 | 22.50 | 44.25 |

## MINIATURE TEFLON® COAXIAL CABLES

Temp., −65° C to +200° C except RG-161/U, −55° C to +105° C.

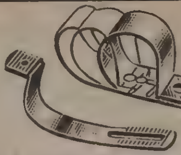
| Alpha No. | MIL No. RG- | Fig. | Center Conductor | | | Shields* | | Jacket | | Oper. Volts rms | Nom. Imped. Ohms | Cap., pF/ft. | Net Price per Put-Up | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Mat.* | Strand | O.D., In. | 1st | 2nd | Mat.* | O.D., In. | | | | 100′ Put-Up | 500′ Put-Up | 1000′ Put-Up |
| 9178B | 178B/U | B | SCW | 7/.004 | ....... | SC | ..... | FEP | .075 | 1000 | 50 ± 2 | 27.9 | $15.00 | $ 63.75 | $127.50 |
| 9179B | 179B/U | B | SCW | 7/.004 | ....... | SC | ..... | FEP | .105 | 1200 | 75 ± 3 | 20.4 | 27.00 | 111.38 | 222.75 |
| 9180B | 180B/U | B | SCW | 7/.004 | ....... | SC | ..... | FEP | .145 | 850 | 93 ± 2 | 15.3 | 36.00 | 163.50 | 326.25 |
| 9187A | 187A/U | B | SCW | 7/.004 | ....... | SC | ..... | TFE | .110 | 1200 | 75 ± 3 | 19.5 | 24.75 | 112.50 | 224.70 |
| 9188A | 188A/U | B | SCW | 7/.0067 | ....... | SC | ..... | TFE | .110 | 1200 | 50 ± 2 | 27.5 | 24.75 | 108.75 | 217.50 |
| 9195A | 195A/U | B | SCW | 7/.004 | ....... | SC | ..... | TFE | .155 | 1500 | 95 ± 3 | 14.5 | 49.50 | 235.50 | 471.00 |
| 9196A | 196A/U | B | SCW | 7/.004 | ....... | SC | ..... | TFE | .080 | 1000 | 50 ± 2 | 28.5 | 19.50 | 79.50 | 159.00 |

*Materials—Conductors and Shields: C, copper; CW, copper-covered steel; SC, silver-covered copper; SCC, silver-coated cadmium bronze; SCW, silver-plated, Copperweld®; TC, tinned copper. Jackets: BP, black polyethylene, Type IIIA; FEP, extruded FEP Teflon; NCV, non-contaminating polyvinylchloride, Type IIA; NP, natural polyethylene, Type III; NY, nylon; PE, solid polyethylene; TFE, fused TFE Teflon tape; V, polyvinylchloride, Type I. ‡Armor .475″ O.D. alum. wire. §Armor .945″ O.D. alum. wire. •Dielectric is SPP (semi-solid polyethylene), 84% VP. ® Reg. TM's: Teflon of DuPont; Copperweld of Copperweld Steel Corp. ♦Available in 1000-ft. put-ups with max. of 3 lengths per put-up, where continuous lengths are not necessary; to order, add prefix **L** (e.g., **L**9608A) and **deduct 10% from 1000′ put-up price shown.** ⌶Write for prices, non-stock item. ‡2500′ put-up, **$118.50.**

# ELECTROVERT INC WIRE/CABLE HARNESSING, PVC WIRE DUCT

COMPONENTS DIVISION

## ADJUSTABLE P-CLIPS



- TENSION CONTROL
- SIMPLIFIES CHANGES IN BUNDLE MAKE-UP

Designed with adjustable feature to accommodate a wide range f bundle diameters. Ratchet teeth provide positive locking action o prevent slipping even under conditions of vibration and shock. Virgin nylon construction provides light weight, abrasion resistance, high tensile strength, exceptional dielectric properties, esilience and minimum absorption rate with chemical resistance o common solvents, alkalies, dilute acids, oils and grease. **Tensile Strength:** 11,000 psi. **Melting Point:** 482–500° F, self extinguish-ng. **Endurance Limit:** 3000 psi; no failures to 2 million cycles.

| Electrovert No. | Bundle Dia., In. Min. | Bundle Dia., In. Max. | Width, In. | Screw Size | Net per 100† | Std. Pkg. | Net per 1000* |
|---|---|---|---|---|---|---|---|
| AP-0 | ⅛ | 3⁄16 | .250 | #4 | $ 2.75 | 500 | $24.70 |
| AP-1 | 3⁄16 | ¼ | .250 | #4 | 2.85 | 500 | 25.70 |
| AP-2 | ¼ | ⅜ | .312 | #6 | 3.00 | 500 | 27.00 |
| AP-3 | ⅜ | 9⁄16 | .375 | #6 | 3.65 | 500 | 32.80 |
| AP-4 | 9⁄16 | ⅞ | .500 | #6 | 4.75 | 200 | 38.50 |
| AP-5 | ⅞ | 1 3⁄16 | .550 | #10 | 6.25 | 200 | 50.60 |
| AP-6 | 1 3⁄16 | 1½ | .560 | #10 | 7.75 | 100 | 62.80 |
| AP-7 | 1½ | 1¾ | .560 | #10 | 10.75 | 100 | 77.40 |
| AP-8 | 1¾ | 2 | .560 | #10 | 11.15 | 100 | 80.10 |

*Sizes may be combined for quantity prices. †Std. pkg. 100.

## SPIROBAND SPIRAL WRAPPING

For electric harness and cables. Slightly flexible; retains shape indefinitely. Permits lead-offs or additions at any point. Handles easily without special tools or skills. Available in a variety of materials, including nylon and Teflon* for high-temperature applications (nylon to 250° F, Teflon to 500° F). Available in colors; write for prices. Also available on reels of 500 ft. for ⅛ and ¼, and 250 ft. for ⅜ and ½ in polyethylene only.

### NATURAL POLYETHYLENE

| Electrovert No. | Bundle Dia., In. Min. | Bundle Dia., In. Max. | Std. Coil, Feet | Net per 100 feet |
|---|---|---|---|---|
| SP 1/8 CP | 1⁄16 | ½ | 100 | $ 3.10 |
| SP 1/4 CP | 3⁄16 | 2 | 100 | 5.15 |
| SP 3/8 CP | 5⁄16 | 3 | 50 | 7.80 |
| SP 1/2 CP | ⅜ | 4 | 25 | 14.20 |

### NYLON (TO 250° F)

| Electrovert No. | Bundle Dia., In. Min. | Bundle Dia., In. Max. | Std. Coil, Feet | Net per 100 feet |
|---|---|---|---|---|
| SP 1/8 NN | 1⁄16 | ½ | 100 | $ 9.95 |
| SP 1/4 NN | 3⁄16 | 2 | 100 | 17.95 |
| SP 3/8 NN | 5⁄16 | 3 | 50 | 52.10 |
| SP 1/2 NN | ⅜ | 4 | 25 | 54.75 |

### TEFLON SPIROBAND WRAPPING (TO 500° F)

| Electrovert No. | Bundle Dia., In. Min. | Bundle Dia., In. Max. | Std. Coil, Feet | Net per 100 feet |
|---|---|---|---|---|
| SP 1/8 TF | 1⁄16 | ½ | 25 | $110.00 |
| SP 1/4 TF | 3⁄16 | 2 | 25 | 135.00 |
| SP 3/8 TF | 5⁄16 | 3 | 25 | 257.10 |
| SP 1/2 TF | ⅜ | 4 | 25 | 370.00 |

## "SNIP-N-FIT" GROMMET STRIPS

Single strip fits round, square, rectangular or oval holes. No adhesive or special tools needed. Versatile, economical. Install simply by slipping U-shape over hole periphery and cutting strip. Also available on reels of 250 ft. for GS-5 and GS-6; all others also available on 500-ft. reels.

### NATURAL POLYETHYLENE

| Electrovert No. | Range, Inches Min.-Max. | Std. Coil, Feet | Net per 100 feet |
|---|---|---|---|
| GS-2 CP | .020 -.039 | 100 | $ 4.40 |
| GS-2A CP | .040–.062 | 100 | 4.79 |
| GS-3 CP | .063–.099 | 100 | 5.12 |
| GS-4 CP | .100–.144 | 100 | 5.89 |
| GS-5 CP | .145–.187 | 100 | 10.29 |
| GS-6 CP | .187–.250 | 50 | 14.85 |

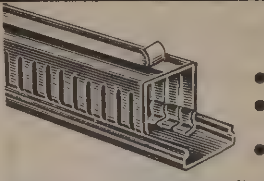
**Cut Spiroband or Grommet Strips**—Set-up charge **$25.00** first 1000 pcs., **$5.00** per 1000 pcs. thereafter; add to cost of material.

## EL CABLE TIES

Meets MIL standards MS-17821, MS-18034 and MIL-S-23190. Superior locking system permits application either by hand or tool. When used with tool, universally applicable with all approved tools. Neat and permanent, four sizes, infinitely adjustable within given range, fit all bundles 1⁄16" thru 4 3⁄16" dia. Molded of virgin nylon; light weight; abrasion resistant, high tensile strength, exceptional dielectric properties and resilience; minimum absorption rate; resistant to common solvents, alkalies, dilute acids, oils and grease.

| Bundle Dia. Min. | Bundle Dia. Max. | MIL No. | Electrovert Number | Net/100 Lots of 100-900 | Net per 1000 |
|---|---|---|---|---|---|
| 1⁄16" | 1" | -4 | EL A | $ 2.50 | $16.00 |
| 1⁄16" | 1 15⁄16" | -1 | EL B | 4.25 | 25.60 |
| 1⁄16" | 4 3⁄16" | -2 | EL C | 10.00 | 54.50 |
| 3⁄16" | 4" | -3 | EL D | 14.60 | 86.00 |

## ELECTRO-DUCT PVC WIRING DUCT



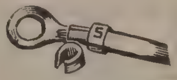
- HIGH IMPACT PVC
- INTERLOCKING CHANNEL AND SNAP-ON COVER
- SNAP-OFF TYPE PLASTIC FINGERS

High-impact vinyl duct won't peel, chip or crack; resists oils, grease, salt solution, most dilute acids, fungus. Non-flammable and warp-proof. High dielectric; will withstand temperatures approx. 150° F. Easily cut and installed with any hand or power cutting tool for butt or mitered joints. Open slot design. Snap-on, non-slip cover eliminates vibration slippage. Temporary adhesive mounting permits drilling and lining up mounting holes easily. Surface indentations inside channel provide positive starting point for drilling; prevents drill-bit slippage. Scored snap-off plastic fingers permit slot enlargement for lead-offs; accommodate any size wire and/or bundle. Choice of gray or white. CSA Approved. As listed, items include channel and cover. Standard length, 6 ft.

| Electrovert Number* | Nom. Size, W. x H. | Std. Ctn., Feet | In 6-Ft. Lengths Net per Ft. Under 200′ | In 6-Ft. Lengths Net per Ft. 200′-999′ |
|---|---|---|---|---|
| 1010A | 1" x 1" | 96 | $0.64 | $0.51 |
| 1020A | 1" x 2" | 90 | .85 | .67 |
| 1030A | 1" x 3" | 60 | 1.04 | .83 |
| 2010A | 2" x 1" | ........ | .90 | .72 |
| 2020A | 2" x 2" | 54 | .98 | .78 |
| 2030A | 2" x 3" | 36 | 1.21 | .95 |
| 3010A | 3" x 1" | 60 | 1.13 | .89 |
| 3020A | 3" x 2" | ........ | 1.20 | .95 |
| 3030A | 3" x 3" | 24 | 1.52 | 1.21 |
| 3040A | 3" x 4" | ........ | 1.99 | 1.61 |
| 4030A | 4" x 3" | ........ | 1.87 | 1.50 |
| 4040A | 4" x 4" | ........ | 2.21 | 1.76 |

*Catalog number and price includes complete unit with channel and cover. For gray, add suffix **G** (e.g., 1010AG); for white, use suffix **W.**

Type-Z Applied



Type-C Applied

## TYPE-C CABLE MARKERS

A clip-on type specifically designed for application either before or after terminal connection has been made. May be removed for re-coding without breaking terminal connection. Durable PVC construction is highly resistant to abrasion, grease, oil and chemicals. Available numerals, 0–9. Available letters, A–Z plus normal electrical symbols. Packaged 50 markers of same size and marking. Colored markers, minimum quantity 500 of any one color, size and marking available at a 35% surcharge. **Tensile Strength:** 7100 psi. **Melting Point:** 147° F.

| Size No. | Wire/Cable Range | Length, In. | Std. Pkg. | Net per Pkg. of 50 |
|---|---|---|---|---|
| C2PL | .080"–.100" | .130 | 50 | $0.82 |
| C3PL | .100"–.118" | .150 | 50 | .82 |
| C4PL | .118"–.138" | .150 | 50 | .84 |
| C5PL | .138"–.156" | .150 | 50 | .86 |
| C6PL | .156"–.187" | .150 | 50 | .90 |
| C7PL | .187"–.218" | .180 | 50 | 1.03 |
| C8PL | .218"–.250" | .210 | 50 | 1.12 |
| C9PL | .250"–.280" | .225 | 50 | 1.19 |
| C10PL | .280"–.315" | .250 | 50 | 1.98 |
| C11PL | .315"–.350" | .250 | 50 | 2.06 |
| C12PL | .350"–.400" | .250 | 50 | 2.21 |
| C13PL | .400"–.460" | .250 | 50 | 2.35 |
| C14PL | .460"–.510" | .250 | 50 | 2.54 |
| C15PL | .510"–.570" | .250 | 50 | 2.87 |

## TYPE-Z CABLE MARKERS

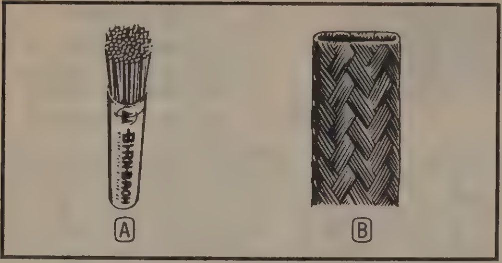
For single wire or cable. Made of flexible PVC (MIL-I-631C) to comply with military, civil and trade associations specifications (JIC, MIL-E-5400, MIL-E-4158A, MIL-E-16400). One-piece, sleeve-type expandable unit with accordian pleat permits markers to fit a given wire diameter range and grip firmly. **Marking:** Choice of: Letters A–Z, numerals 0–9, and electrical symbols. Also multiple and combination of 2, 3, 4 or 5 markings on a single marker. **Standard Colors:** White with black marking; full range of other colors available on inquiry. **Standard Packaging:** Coils of 50 or reels of 500 in same size and marking. **Minimum Order** (per size and character): 50 single white, 500 multiple or 500 colored.

### TYPE-Z IN COIL OF 50

| Size No.* | Wire/Cable Range, In. | Length, In. | Std. Pkg. | Net per Pkg. of 50 |
|---|---|---|---|---|
| Z22 P | .045–.065 | .140 | 50 | $0.60 |
| Z20 P | .066–.085 | .140 | 50 | .60 |
| Z18 P | .086–.115 | .140 | 50 | .60 |
| Z16 P | .110–.135 | .140 | 50 | .60 |
| Z14 P | .130–.160 | .160 | 50 | .60 |
| Z12 P | .150–.175 | .160 | 50 | .60 |
| Z10 P | .170–.195 | .160 | 50 | .61 |
| Z9 P | .190–.215 | .160 | 50 | .62 |
| Z8 P | .210–.250 | .190 | 50 | .70 |
| Z7 P | .245–.295 | .190 | 50 | .74 |
| Z6 P | .290–.360 | .224 | 50 | 1.00 |
| Z4-1 P | .355–.460 | .224 | 50 | 1.15 |

**BIRNBACH**

# SHRINKABLE TUBING, WIRE AND SHIELDING



## HARD DRAWN BUS BAR WIRE (FIG. A)

Meets QQ-W-343 Type S, MIL-W-3861 Type S, ASTM-B-33, ASTM-B-246-51 specifications. For hooking up all types of transmitters, especially ultra-shortwave equipment or wherever non-insulated hook ups are applicable. Made of hard drawn copper, tinned for easy soldering, straightened, cut in 2-foot lengths.

| Birnbach Number | AWG Size | Nom. Dia. | Net per 200-foot Package (100 2-ft. Lengths), Lots of | | |
|---|---|---|---|---|---|
| | | | 1-4 | 5-9 | 10 Up |
| 2010 | 10 | .103″ | $23.43 | $20.93 | $20.93 |
| 2013 | 12 | .082″ | 16.47 | 14.71 | 14.71 |
| 2015 | 14 | .065″ | 12.18 | 10.88 | 10.88 |
| 2016 | 16 | .051″ | 8.88 | 8.88 | 7.93 |
| 2018 | 18 | .040″ | 8.31 | 8.31 | 7.42 |
| 2020 | 20 | .033″ | 8.09 | 8.09 | 7.22 |
| 2022 | 22 | .025″ | 7.77 | 7.77 | 6.94 |

## FLAT TINNED COPPER SHIELDING (FIG. B)

Used for shielding and bonding on aircraft, marine and auto radio wires and cables; for speaker leads, lead-ins, amplifier wires. Extremely flexible; slides over wires and cables. Composed of extremely flexible, fine soft annealed copper tinned wires; closely woven, braided and rolled flat. **Standard Put-Ups:** 50, 100, 250, 500 or 1000 feet.

### 100 AND 500-FOOT SPOOLS

| Birnbach No. | Size, No. of Strands | Flat I.D. | AWG Equiv. | Circular Mils | Rating, Amps | Net per Spool of | |
|---|---|---|---|---|---|---|---|
| | | | | | | 100′ | 500′ |
| 853 | 12 x 2/36 | 1/32″ | 24 | 400 | 6.0 | $ 5.84 | $ 25.13 |
| 854 | 12 x 2/36 | 3/64″ | 22 | 600 | 7.0 | 6.15 | 26.70 |
| 855 | 16 x 3/36 | 5/64″ | 20 | 1200 | 11.0 | 6.87 | 31.92 |
| 858 | 24 x 3/36 | 1/8″ | 18 | 1800 | 16.0 | 7.73 | 34.74 |
| 859 | 24 x 5/36 | 3/16″ | 15 | 3000 | 25.0 | 8.43 | 38.59 |
| 863 | 24 x 7/36 | 1/4″ | 14 | 4200 | 32.0 | 11.42 | 85.61 |
| 864 | 48 x 4/36 | 3/8″ | 12 | 7200 | 46.0 | 18.27 | 88.44 |
| 868 | 48 x 7/36 | 1/2″ | 10 | 9600 | 53.0 | 22.05 | 108.08 |
| 865 | 48 x 8/36 | 5/8″ | 10 | 9600 | 53.0 | 24.50 | 119.79 |
| 865/1 | 48 x 19/36 | 3/4″ | 7 | 20800 | 85.0 | 56.68 | 277.70 |
| 856 | 48 x 19/36 | 1″ | 7 | 20800 | 85.0 | 60.09 | 294.77 |

### 1000-FOOT SPOOLS

| Birnbach No. | Size, No. of Strands | Flat I.D. | AWG Equiv. | Circular Mils | Rating, Amps | Net per 1000′, Lots of | |
|---|---|---|---|---|---|---|---|
| | | | | | | 1-4 | 5-9 |
| 853 | 12 x 2/36 | 1/32″ | 24 | 400 | 6.0 | $49.77 | $44.79 |
| 854 | 12 x 2/36 | 3/64″ | 22 | 600 | 7.0 | 51.51 | 46.36 |
| 855 | 16 x 3/36 | 5/64″ | 20 | 1200 | 11.0 | 61.55 | 55.40 |
| 858 | 24 x 3/36 | 1/8″ | 18 | 1800 | 16.0 | 67.57 | 60.81 |
| 859 | 24 x 5/36 | 3/16″ | 15 | 3000 | 25.0 | 75.21 | 67.69 |

## KYNAR® WIRE WRAP® WIRE

### UL APPROVED, 130° C, 300 V RATING

Solid silver plated copper wire with Kynar (polyvinyldene fluoride) insulation. Especially designed for use on computer back panel wiring in conjunction with Wire Wrap systems. Kynar insulation is ideal for this application because of its cut-through resistance, high temperature rating, and availability in long lengths. UL Style 1422 except BK-2124, Style 1327. **Stock Colors:** 1—White; 2—Black; 3—Red; 4—Green; 5—Yellow; 6—Blue; 7—Brown; 8—Orange; 9—Gray; 10—Purple.

| Birnbach Number | AWG Size | O.D., In. | Nom. Ins. Thk. | Net per 1000′ Roll, Lots of | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 1-4 | 5-9 | 10-24 | 25-49 | 50-99* |
| BK-2130 | 30 | .0195 | .0045 | $23.00 | $18.75 | $15.00 | $12.75 | $11.50 |
| BK-2128 | 28 | .020 | .005 | 27.00 | 22.50 | 18.00 | 14.00 | 13.10 |
| BK-2126 | 26 | .027 | .0055 | 28.75 | 23.00 | 18.45 | 14.50 | 12.75 |
| BK-2124 | 24 | .042 | .011 | 29.50 | 24.00 | 19.50 | 16.50 | 15.25 |

*Larger quantity prices available on request.

®Registered trademarks: Kynar of Pennsalt Chemical; Wire Wrap of Gardner-Denver.

## HEAT SHRINKABLE TUBING

Offers excellent resistance to: fuel JP-4 (MIL-J-5624); aviatio gasoline (100/130); hydraulic oil (MIL-O-5606); hydrochloric aci (35%); water; sodium chloride (5%) and alkalis. **Stock Colors** Black, white or clear.

### TUBING PROPERTIES

| Property | Rating | Test |
|---|---|---|
| Tensile strength | 2960 psi | ASTM D-876-59-T |
| Ultimate elongation | 200% | ASTM D-876-59-T |
| Brittleness temperature | −34° C | ASTM D-746-57-T |
| Specific gravity | 1.34 | MIL-I-631 D, 4. 6. 12 |
| Dielectric strength | 1050 V/mil | ASTM D-149-55-T |
| Water absorption | 0.06% (24 hours) | ASTM D-570-57-T Proc. A |
| Volume resistivity | 5.2 x $10^{14}$ ohm-cm | ASTM D-257-58<br>MIL-I-631 D 4. 6. 13 |
| Fungus resistivity | 0–1 | MIL-I-631 D 3. 5. 7 and 4. 6. 16 |
| Flammability | Self-extinguishing | ASTM D-876-60-T<br>MIL-I-631 D, 4. 6. 13 |
| Flexibility after heat aging 200 hrs. at 100° C; bend over 1/8″ mandrel | Good | |
| Corrosion on copper, brass and aluminum after 14 days at 100° C | Excellent | MIL-I-7444 B |

### TYPE SK-221 IRRADIATED POLYOLEFIN (135° C)

MIL-I-23053 (WEP) Class 1. Supplied in 4-ft. lengths. Wall thickness: same as Type SK-105 below.

| Birnbach Number | I.D., Inches* | | Net per 100 Feet (4′ Lengths) | | | | |
|---|---|---|---|---|---|---|---|
| | Min. | Max. | 1′-99′ | 100′-499′ | 500′-999′ | 1000′-4999′ | 5000′ Up |
| SK221-3/64″ | .046 | .023 | $ 18.50 | $ 15.45 | $ 13.10 | $ 11.40 | $ 10.50 |
| SK221-1/16″ | .062 | .031 | 19.43 | 16.35 | 13.80 | 12.00 | 11.05 |
| SK221-3/32″ | .094 | .047 | 22.45 | 18.90 | 15.95 | 13.90 | 12.75 |
| SK221-1/8″ | .125 | .063 | 24.00 | 20.05 | 17.00 | 14.85 | 13.60 |
| SK221-3/16″ | .184 | .094 | 29.25 | 24.50 | 20.70 | 18.10 | 16.60 |
| SK221-1/4″ | .250 | .125 | 36.70 | 30.90 | 26.00 | 22.70 | 20.75 |
| SK221-3/8″ | .375 | .188 | 40.65 | 34.25 | 28.85 | 25.15 | 23.05 |
| SK221-1/2″ | .500 | .250 | 46.20 | 38.65 | 32.75 | 28.55 | 26.20 |
| SK221-3/4″ | .750 | .375 | 61.60 | 51.80 | 43.70 | 38.10 | 34.95 |
| SK221-1″ | 1.00 | .500 | 86.25 | 72.80 | 61.15 | 53.30 | 48.95 |
| SK221-1½″ | 1.50 | .750 | 135.70 | 115.15 | 96.25 | 83.90 | 76.95 |
| SK221-2″ | 2.00 | 1.00 | 187.40 | 158.60 | 132.90 | 115.85 | 106.35 |

### TYPE SK-105 PVC (105° C)

MIL-I-23053 A-Grade 5 and MIL-I-631 Grade C. Has higher resistance to oils than low density polyethylene. Unsuitable in contact with organic solvents.

| Birnbach Number | I.D., Inches* | | Nom. Wall Thk., Recov. | Put-Up, Feet | Net per 100 Feet, Spool of | | |
|---|---|---|---|---|---|---|---|
| | Min. | Max. | | | 1′-999′ | 1000′-4999′ | 5000′ Up |
| SK105-3/64″ | .046 | .023 | .020 | 500<br>100<br>25 | $ 7.35<br>8.68<br>9.68 | $ 5.76<br>6.51<br>7.26 | $ 4.32<br>5.07<br>5.82 |
| SK105-1/16″ | .062 | .031 | .020 | 500<br>100<br>25 | 6.27<br>7.53<br>8.47 | 5.02<br>6.03<br>6.78 | 3.98<br>4.73<br>5.48 |
| SK105-3/32″ | .094 | .047 | .025 | 250<br>100<br>25 | 7.20<br>8.13<br>9.68 | 5.76<br>6.51<br>7.26 | 4.35<br>5.10<br>5.85 |
| SK105-1/8″ | .125 | .063 | .025 | 250<br>100<br>25 | 7.80<br>8.55<br>9.67 | 6.24<br>6.99<br>7.74 | 5.68<br>5.43<br>6.18 |
| SK105-3/16″ | .184 | .094 | .025 | 250<br>100<br>25 | 8.40<br>9.33<br>10.27 | 6.72<br>7.47<br>8.22 | 5.04<br>5.79<br>6.54 |
| SK105-1/4″ | .250 | .125 | .025 | 250<br>100<br>25 | 9.60<br>10.53<br>11.47 | 7.68<br>8.42<br>9.18 | 5.78<br>6.53<br>7.28 |
| SK105-3/8″ | .375 | .188 | .025 | 250<br>100<br>25 | 12.00<br>12.93<br>13.87 | 9.60<br>10.35<br>11.10 | 7.20<br>7.95<br>8.70 |
| SK105-1/2″ | .500 | .250 | .025 | 100<br>25 | 14.43<br>15.37 | 11.55<br>12.30 | 8.85<br>9.60 |
| SK105-3/4″ | .750 | .375 | .025 | 100<br>25 | 18.00<br>19.87 | 14.40<br>15.90 | 10.80<br>12.30 |
| SK105-1″ | 1.00 | .500 | .030 | 100<br>25 | 24.00<br>25.87 | 19.20<br>20.70 | 14.40<br>15.90 |
| SK105-1½″ | 1.50 | .750 | .035 | 100<br>25 | 33.45<br>35.32 | 26.76<br>28.26 | 20.10<br>21.60 |
| SK105-2″ | 2.00 | 1.00 | .040 | 50<br>25 | 49.50<br>51.37 | 39.60<br>41.10 | 29.70<br>31.20 |

*Minimum expanded (before shrinking) and maximum recovered (after shrinking).

## BIRNBACH SPECIAL SERVICES AVAILABLE THROUGH CRAMER

Birnbach has developed a special services department which is designed to meet your particular needs in wire, cable, tubing and hardware which are not available thru normal sources of supply. Through the facilities available in this department we are able to produce short runs of special cables, special stripes, special packaging, etc. Some of these services are shown below:

**CRAMER CAN FURNISH BIRNBACH EQUIVALENT ITEMS FOR ANY HOOK-UP WIRE LISTED IN THIS CATALOG AT THE SAME PRICES.**

**LEASE USE THE FOLLOWING ADDERS FOR SPECIAL STRIPES:**

### VINYL OR NYLON INSULATION

| | Adder per 1000 Feet, Lengths of | | | |
|---|---|---|---|---|
| **Material** | 100′ to 1999′ | 2000′-9999′ | 10,000′-24,000′ | 25,000′ Up |
| Vinyl | $1.75* | $1.75 | $1.25 | $1.00 |
| Nylon | 1.75* | 1.75 | 1.25 | 1.00 |

*Plus set-up charge of $3.50.

### TEFLON® OR KYNAR® INSULATION

| | Adder per 1000 Feet, Lengths of | | | |
|---|---|---|---|---|
| **Material** | 100′ to 999′ | 1000′-4999′ | 5000′-24,999′ | 25,000′ Up |
| Teflon | $15.00† | $10.50 | $7.50 | $6.00 |
| Kynar | 15.00† | 10.50 | 7.50 | 4.50 |

†Plus set-up charge of $10.50. ®Reg. TM.: Teflon of DuPont; Kynar of Pennsalt Chemical.

## OTHER SPECIAL SERVICES AND PRODUCTS

### WIRE

- MARKED WIRE
- CUT AND STRIPPED WIRE
- SPECIAL LENGTHS CUT TO ORDER
- SPECIAL CONDUCTORS
- SPECIAL INSULATIONS
- ALL UL AND MIL SPECS
- RETRACTILES

### CABLE

- TWISTED PAIRS
- TRIADS
- MULTICONDUCTORS
- MULTIPAIRS
- SHIELDED CABLES (BRAIDED, SPIRAL, ALUMINUM FOIL)
- COMBINATIONS OF SHIELDED AND UNSHIELDED CABLES
- UL AND MIL SPEC CABLES

### TUBING

- MARKED TUBING
- CUT TUBING
- SPECIAL COMPOUNDS AND CONSTRUCTIONS

**ALL THESE PRODUCTS AND SERVICES ARE AVAILABLE IN SHORT RUNS**

**WE WELCOME YOUR INQUIRIES FOR ANY STANDARD OR SPECIAL CONSTRUCTION OF WIRE, CABLE, TUBING AND HARDWARE.**

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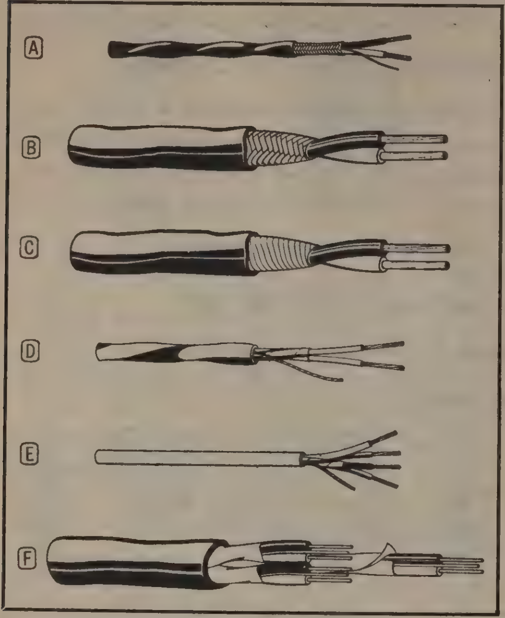
**FOR COMPLETE CATALOG OF BIRNBACH PRODUCTS, CONTACT YOUR NEAREST CRAMER BRANCH**

COLUMBIA

# Wire and Cable



## SHIELDED AUDIO CABLE

### BRAID SHIELD, PVC JACKET, DRAIN WIRE (FIG. A)

Tinned copper conductors, .015" black and red PVC insulation, conductors cabled, tinned copper braid shield, tinned copper drain wire, .025" thick black PVC jacket overall. Temperature, −20° to +60° C. For use in recording studios, radio transmitters, sound systems, broadcasting.

| Columbia No. | No. of Cond. | Size AWG | Strand. | Nom. O.D. In. | Net Each, Spool of 100 ft. | Net Each, Spool of 500 ft. |
|---|---|---|---|---|---|---|
| 2676 | 2 | 22 | Solid | .200 | .......... | $27.40 |
| 2677 | 2 | 22 | 16/34 | .210 | 6.90 | 30.75 |

### BRAID SHIELD, PVC JACKET (FIG. B)

Same as above, but without drain wire. Solid conductors have .015" PVC insulation; 22 and 20 ga., .015"; 18 and 16 ga., .018"; 14 ga., .020". Color Code: 1, blank; 2, red; 3, white; 4, green. Chrome gray .020" thick PVC jacket overall.

| Columbia No. | No. of Cond. | Size AWG | Strand. | Nom. O.D. In. | Net Each, Spool of 100 ft. | Net Each, Spool of 500 ft. |
|---|---|---|---|---|---|---|
| 2695 | 2 | 20 | Solid | .210 | .......... | $ 29.05 |
| 2696 | 2 | 18 | Solid | .220 | .......... | 34.50 |
| 2679 | 2 | 22 | 7/30 | .185 | $ 6.80 | 30.50 |
| 2678 | 3 | 22 | 7/30 | .200 | 8.20 | 36.50 |
| 2680 | 4 | 22 | 7/30 | .210 | 13.60 | 63.70 |
| 2681 | 2 | 20 | 10/30 | .204 | 9.90 | 45.00 |
| 1332 | 3 | 20 | 10/30 | .214 | 12.20 | 56.40 |
| 2683 | 4 | 20 | 10/30 | .232 | 12.85 | 62.20 |
| 2686 | 2 | 18 | 16/30 | .224 | 12.50 | 60.75 |
| 2687 | 3 | 18 | 16/30 | .236 | 18.00 | 84.20 |
| 2689 | 2 | 16 | 26/30 | .250 | .......... | 36.75 |
| 2690 | 3 | 16 | 26/30 | .259 | .......... | 79.50 |
| 2691 | 2 | 14 | 41/30 | .290 | .......... | 76.50 |
| 2692 | 3 | 14 | 41/30 | .295 | .......... | 105.25 |

### SPIRAL SHIELD, PVC JACKET (FIG. C)

Tinned copper conductors, color-coded PVC insulation, conductors twisted, tinned copper spiral shield, gray PVC jacket overall. Spiral shield permits easy pigtail soldering. Jacket, .020" thick. Insulation, .015" thick except 18 and 16-gauge, .018" thick. Color Code: 1, black; 2, red; 3, white; 4, green; 5, yellow; 6, blue.

| Columbia No. | No. of Cond. | Size AWG | Strand. | Nom. O.D. In. | Net Each, Spool of 100 ft. | Net Each, Spool of 500 ft. |
|---|---|---|---|---|---|---|
| 2884 | 2 | 22 | Solid | .170 | $ 4.50 | $19.35 |
| 2885 | 3 | 22 | Solid | .178 | .......... | 22.75 |
| 2882 | 2 | 22 | 7/30 | .175 | 4.55 | 20.20 |
| 1335 | 3 | 22 | 7/30 | .190 | 7.55 | 34.00 |
| 1337 | 4 | 22 | 7/30 | .200 | 9.75 | 43.15 |
| 1341 | 6 | 22 | 7/30 | .235 | 12.75 | 60.75 |
| 2888 | 2 | 20 | 10/30 | .195 | 5.45 | 23.00 |
| 2893 | 3 | 20 | 10/30 | .210 | 8.80 | 39.95 |
| 2769 | 4 | 20 | 10/30 | .225 | 12.00 | 44.65 |
| 2770 | 6 | 20 | 10/30 | .265 | 15.00 | 58.90 |
| 2892 | 2 | 18 | 16/30 | .230 | 6.55 | 29.40 |
| 2768 | 3 | 18 | 16/30 | .235 | 8.40 | 37.70 |
| 2894 | 4 | 18 | 16/30 | .245 | 14.25 | 56.65 |
| 2895 | 2 | 16 | 26/30 | .240 | 9.60 | 42.75 |
| 2896 | 3 | 16 | 26/30 | .245 | 13.95 | 56.65 |

## MYLAR/ALUMINUM FOIL SHIELDED AUDIO CABLE (FIG. D)

### STANDARD SIZE

Tinned copper conductors with color-coded polyethylene insulation: 22 and 20 ga., .015" thick; 18 ga., .018"; 16 ga., .025". Conductors cabled and wrapped with Flexfoil® Mylar* supporte aluminum foil shield; stranded, tinned copper drain wire ove shield; chrome gray PVC jacket overall. Cable is 100% shielde for recording studios, broadcast sound systems and electroni circuits where RF shielding is required. Conductors Color Coded 1, black; 2, clear; 3, red; 4, green.

| Columbia No. | No. of Cond. | AWG (Stranding) | Nom. O.D. In. | Jacket Thick. In. | Net Each, Spool of 500 ft. | Net Each, Spool of 1000 ft. |
|---|---|---|---|---|---|---|
| 2513 | 2 | 24 (7/32) | .160 | .025 | $17.25 | $ 34.50 |
| 2514 | 2 | 22 (7/30) | .170 | .025 | 17.55 | 35.10 |
| 2526 | 3 | 22 (7/30) | .175 | .025 | 22.15 | 44.30 |
| 2523 | 4 | 22 (7/30) | .190 | .025 | 28.75 | 57.00 |
| 2524 | 2 | 20 (10/30) | .195 | .025 | 22.15 | 44.30 |
| 2525 | 3 | 20 (10/30) | .200 | .028 | 27.90 | 55.80 |
| 2534 | 2 | 18 (16/30) | .222 | .028 | 26.65 | 53.25 |
| 2535 | 3 | 18 (16/30) | .236 | .028 | 35.50 | 70.90 |
| 2536 | 2 | 16 (26/30) | .274 | .030 | 39.30 | 78.60 |
| 2537 | 3 | 16 (26/30) | .300 | .030 | 54.00 | 108.00 |

### MINIATURE SIZE

Requires ½ to ⅔ less space than standard broadcast cables. Same construction as above, but with color-coded polypropylene insulation, .008" thick. Color Code: 1, black; 2, red; 3, white.

| | | | | | | |
|---|---|---|---|---|---|---|
| 2515 | 2 | 22 (Solid) | .125 | .018 | $16.60 | $33.20 |
| 2516 | 2 | 22 (7/30) | .135 | .020 | 19.35 | 38.70 |
| 2517 | 3 | 22 (7/30) | .145 | .020 | 24.60 | 49.20 |

*Registered DuPont trademark.

## SHIELDED INSTRUMENTATION/COMMUNICATION MULTIPLE QUAD CABLE (FIG. E)

Tinned copper conductors with color-coded* polypropylene insulation, .008" thick (No. 1331 has color-coded* PVC insulation, .015" thick); Flexfoil® aluminum foil/polyester shield over two conductors; stranded tinned copper drain wire; one shielded pair and two singles cabled on common axis to reduce O.D.; chrome gray PVC jacket overall. For audio, communications and instrumentation use.

| Columbia No. | No. of Cond. | AWG (Stranding) | Nom. O.D. In. | Jacket Thick. In. | Net Each, Spool of 500 ft. | Net Each, Spool of 1000 ft. |
|---|---|---|---|---|---|---|
| 1340 | 4* | 22 (7/30) | .195 | .020 | $29.85 | $59.70 |
| 1331 | 4* | 20 (10/30) | .250 | .025 | 37.50 | 75.00 |

*Two shielded (black and red), two unshielded (green and white).

## INDIVIDUALLY SHIELDED MULTIPLE PAIR AUDIO/DATA CABLE (FIG. F)

### POLYPROPYLENE INSULATION, PVC JACKET

Tinned copper conductors; color-coded polypropylene insulation .008" thick except 18 ga., .016" thick; cabled in pairs with each pair and its drain wire under Flexfoil® aluminum foil/polyester shield; chrome gray PVC jacket overall. Color Code: Same as unshielded, paired cable on opposite page. Polypropylene insulation assures excellent high frequency properties and mechanical durability. Temperature: Up to 105° C. Working Voltage: 300 V (50 V between adjacent shields). Voltage Breakdown: 1500 V between adjacent shields. Insulation Resistance: 100 megohms/M between shields. Capacitance: 115 pF/ft. between adjacent shields. For audio, RF and pulse applications requiring superior circuit isolation.

| Columbia No. | No. of Pairs | No. of Cond. | AWG (Stranding) | Nom. O.D. In. | Jacket Thick. In. | Net Each, Spool of 100 ft. | Net Each, Spool of 500 ft. |
|---|---|---|---|---|---|---|---|
| 6040 | 3 | 6 | 22 (7/30) | .265 | .030 | $12.55 | $58.50 |
| 6041 | 6 | 12 | 22 (7/30) | .360 | .035 | 24.50 | 121.00 |
| 6042 | 9 | 18 | 22 (7/30) | .420 | .040 | 36.00 | 172.00 |
| 6043 | 11 | 22 | 22 (7/30) | .460 | .040 | 41.50 | 203.00 |
| 6044 | 15 | 30 | 22 (7/30) | .530 | .045 | 55.00 | 272.00 |
| 6045 | 19 | 38 | 22 (7/30) | .580 | .055 | 73.00 | 360.00 |
| 6046 | 27 | 54 | 22 (7/30) | .720 | .070 | 109.00 | 540.00† |
| 6047 | 3 | 6 | 18 (16/30) | .375 | .035 | ....... | 93.75 |
| 6048 | 6 | 12 | 18 (16/30) | .555 | .045 | ....... | 191.25 |
| 6049 | 9 | 18 | 18 (16/30) | .620 | .055 | ....... | 288.75 |
| 6050 | 12 | 24 | 18 (16/30) | .765 | .070 | ....... | 384.00 |

†Also available cut to specified length; maximum, 1000 ft.

### PVC INSULATION AND JACKET

Construction same as above, but with color-coded .015" thick PVC insulation for temperatures from −20° to +60° C.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 6035 | 3 | 6 | 22 (Solid) | .280 | .030 | $10.90 | $49.00 |
| 6036 | 6 | 12 | 22 (Solid) | .400 | .035 | 21.00 | 100.00 |
| 6037 | 9 | 18 | 22 (Solid) | .455 | .040 | 29.50 | 145.00 |
| 6039 | 11 | 22 | 22 (Solid) | .500 | .040 | 35.00 | 170.00 |
| 6038 | 15 | 30 | 22 (Solid) | .555 | .045 | 46.00 | 228.00 |

# COLUMBIA Wire and Cable

## PAIRED MULTI-CONDUCTOR CABLE (FIG. A)

inned copper conductors; insulation .010″ thick except 18 ga., 018″ thick color-coded PVC; conductors paired with a short lay wist for conductor balance providing a circuit free from cross-alk; pairs cabled with chrome gray PVC jacket overall. Heavy uty cable for use in audio, intercom, signal systems, annunciators, urse call systems, control circuits and multiple speaker systems.

| Columbia No. | No. of Pairs | No. of Cond. | AWG (Stranding) | Nom. O.D. In. | Jacket Thick. In. | Net Each, Spool of 100 ft. | Net Each, Spool of 500 ft. |
|---|---|---|---|---|---|---|---|
| 4008 | 1 | 2 | 22 (Solid) | .130 | .020 | $ 2.80 | $ 10.00 |
| 4010 | 2 | 4 | 22 (Solid) | .195 | .020 | 4.65 | 18.85 |
| 4014 | 3 | 6 | 22 (Solid) | .220 | .020 | 6.15 | 26.25 |
| 4017 | 6 | 12 | 22 (Solid) | .275 | .020 | 10.05 | 49.15 |
| 4018 | 7 | 14 | 22 (Solid) | .285 | .020 | 13.80 | 58.50 |
| 4020 | 9 | 18 | 22 (Solid) | .310 | .020 | 14.85 | 69.00 |
| 4022 | 11 | 22 | 22 (Solid) | .340 | .020 | 18.75 | 89.25 |
| 4024 | 13 | 26 | 22 (Solid) | .380 | .025 | 21.00 | 201.00 |
| 4026 | 15 | 30 | 22 (Solid) | .400 | .025 | 25.80 | 119.25 |
| 4028 | 16 | 32 | 22 (Solid) | .420 | .025 | 27.30 | 127.50 |
| 4030 | 27 | 54 | 22 (Solid) | .510 | .035 | ....... | 206.25 |
| 4038 | 51 | 102 | 22 (Solid) | .630 | .045 | ....... | 435.00 |
| 6010 | 2 | 4 | 22 (7/30) | .210 | .020 | ....... | 22.15 |
| 6014 | 3 | 6 | 22 (7/30) | .225 | .020 | ....... | 32.85 |
| 6015 | 4 | 8 | 22 (7/30) | .240 | .020 | ....... | 42.00 |
| 6016 | 5 | 10 | 22 (7/30) | .265 | .020 | ....... | 48.75 |
| 6017 | 6 | 12 | 22 (7/30) | .290 | .020 | 12.15 | 55.90 |
| 6019 | 9 | 18 | 22 (7/30) | .355 | .020 | ....... | 86.65 |
| 6022 | 11 | 22 | 22 (7/30) | .365 | .020 | ....... | 102.40 |
| 6023 | 12 | 24 | 22 (7/30) | .410 | .025 | ....... | 119.25 |
| 6026 | 15 | 30 | 22 (7/30) | .450 | .025 | 30.75 | 145.50 |
| 6027 | 19 | 38 | 22 (7/30) | .480 | .025 | ....... | 149.25 |
| 6028 | 23 | 46 | 22 (7/30) | .530 | .030 | ....... | 235.50 |
| 6030 | 27 | 54 | 22 (7/30) | .570 | .035 | ....... | 282.00 |
| 6025 | 51 | 102 | 22 (7/30) | .800 | .045 | ....... | 510.00 |
| 6103 | 3 | 6 | 18 (16/30) | .360 | .035 | 13.95 | 63.00 |
| 6106 | 6 | 12 | 18 (16/30) | .555 | .045 | 28.80 | 131.25 |
| 6109 | 9 | 18 | 18 (16/30) | .638 | .055 | 40.50 | 192.75 |
| 6110 | 12 | 24 | 18 (16/30) | .690 | .055 | ....... | 255.00 |
| 6111 | 15 | 30 | 18 (16/30) | .800 | .060 | ....... | 318.75 |
| 6112 | 19 | 38 | 18 (16/30) | .880 | .070 | ....... | 402.75 |

### CONDUCTOR COLOR CODE

| No. Prs. | Paired Colors | No. Prs. | Paired Colors | No. Prs. | Paired Colors |
|---|---|---|---|---|---|
| 1 | Black, Red | 18 | Green, Yellow | 35 | Purple, Slate |
| 2 | Black, White | 19 | White, Blue | 36 | Purple, Black |
| 3 | Black, Green | 20 | White, Brown | 37 | Slate, Red |
| 4 | Black, Blue | 21 | White, Orange | 38 | Slate, White |
| 5 | Black, Brown | 22 | White, Yellow | 39 | Slate, Green |
| 6 | Black, Yellow | 23 | Blue, Brown | 40 | Slate, Blue |
| 7 | Black, Orange | 24 | Blue, Orange | 41 | Slate, Brown |
| 8 | Red, Green | 25 | Blue, Yellow | 42 | Slate, Yellow |
| 9 | Red, White | 26 | Brown, Orange | 43 | Slate, Orange |
| 10 | Red, Blue | 27 | Brown, Yellow | 44 | Slate, Black |
| 11 | Red, Yellow | 28 | Purple, Red | 45 | W/B*, Red |
| 12 | Red, Brown | 29 | Purple, White | 46 | W/B*, Green |
| 13 | Red, Orange | 30 | Purple, Green | 47 | W/B*, Blue |
| 14 | Green, Blue | 31 | Purple, Blue | 48 | W/B*, Brown |
| 15 | Green, White | 32 | Purple, Brown | 49 | W/B*, Yellow |
| 16 | Green, Brown | 33 | Purple, Yellow | 50 | W/B*, Orange |
| 17 | Green, Orange | 34 | Purple, Orange | 51 | W/B*, Purple |

*White body with black stripe.

## TWO-CONDUCTOR MICROPHONE CABLE (FIG. B)

Tinned copper conductors; white and black polyethylene insulation, .025″ thick except No. 1328, 0.16″ thick; cabled with fillers, textile wrap, spiral or braided tinned copper shield and high gloss silver gray Flexlife® jacket overall. For use with low impedance microphones. Flexlife jacket provides extreme flexibility and high abrasion resistance.

### SPIRAL SHIELD (FIG. B)

| Columbia No. | Impedance | AWG (Stranding) | Nom. O.D. In. | Jacket Thick. In. | Net Each, Spool of 500 ft. | Net Each, Spool of 1000 ft. |
|---|---|---|---|---|---|---|
| 1323 | Low | 22 (16/34) | .225 | .025 | $39.00 | $77.25 |
| 1328 | Min. Low | 24 (10/34) | .180 | .030 | 38.85 | 77.70 |

### BRAIDED SHIELD (FIG. C)

| | | | | | | |
|---|---|---|---|---|---|---|
| 1322 | Low | 22 (16/34) | .235 | .025 | $39.00 | $77.25 |

## SPIRAL SHIELD MICROPHONE CABLE (FIG. D)

Single conductor 25 ga., 7/33 stranded (3 strand tinned copper, 4 strands tinned Copperweld*) white foam polyethylene dielectric, spiral tinned copper shield, silver gray high gloss Flexlife® jacket. For use with high impedance microphones and as hi-fi inter-connecting cable. *Registered Copperweld Steel Corp. TM.

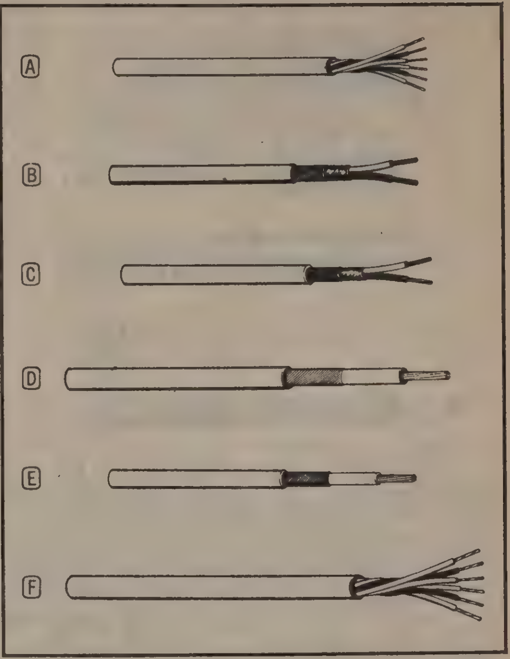
| Columbia No. | Microphone Type | Nom. O.D. In. | Thickness, In. Insulation | Thickness, In. Jacket | Net Each, Spool of 100 ft. | Net Each, Spool of 500 ft. |
|---|---|---|---|---|---|---|
| 1359 | Min. | .085 | .016 | .012 | $4.65 | $18.75 |
| 1369 | Lapel | .140 | .030 | .020 | 5.25 | 21.15 |
| 1389 | Crystal | .190 | .050 | .025 | 6.30 | 26.40 |
| 1395 | Crystal | .250 | .075 | .030 | 7.80 | 35.50 |
| 1314* | Crystal | .160 | .040 | .020 | 6.00 | 25.50 |

*Solid polyethylene dielectric.

## BRAIDED SHIELD MICROPHONE CABLE (FIG. E)

Same as above, but with braided, tinned copper shield. Foam polyethylene dielectric.

| | | | | | | |
|---|---|---|---|---|---|---|
| 1379 | Lapel | .145 | .030 | .020 | $6.00 | $25.50 |
| 1399 | Crystal | .200 | .050 | .025 | 7.50 | 29.25 |



## UNPAIRED MULTI-CONDUCTOR CABLE (FIG. F)

Tinned copper conductors (except Columbia Nos. 2754 and 2755, bare copper), color-coded PVC insulation, conductors cabled, chrome gray PVC jacket overall. Operating temp., −20° C to +60° C. For use in PA systems, unbalanced intercom systems, inter-connecting cables, remote control circuits, telephones, low-voltage relay control cables.

### SOLID CONDUCTORS

| Columbia No. | No. of Cond. | AWG (Stranding) | Nom. O.D. In. | Net Each, Spool of 100 ft. | Net Each, Spool of 500 ft. | Net Each, Spool of 1000 ft. |
|---|---|---|---|---|---|---|
| 4008 | 2 | 22 (1) | .130 | $2.80 | $10.00 | $20.00 |
| 4310 | 3 | 22 (1) | .140 | ....... | 15.00 | 29.75 |
| 4311 | 2 | 20 (1) | .170 | ....... | 14.75 | 29.25 |
| 2754 | 2 | 19 (1) | .165 | ....... | 13.45 | 26.75 |
| 2755 | 3 | 19 (1) | .175 | ....... | 19.40 | 38.90 |

### STRANDED CONDUCTORS

| | | | | | | |
|---|---|---|---|---|---|---|
| 6348 | 2 | 22 (7/30) | .140 | ....... | $ 12.00 | $ 24.00 |
| 4062 | 3 | 22 (7/30) | .150 | $ 3.65 | 14.50 | 29.00 |
| 4063 | 4 | 22 (7/30) | .170 | 4.75 | 19.85 | 39.70 |
| 4064 | 5 | 22 (7/30) | .175 | 5.50 | 23.65 | 47.30 |
| 4066 | 6 | 22 (7/30) | .185 | 8.10 | 32.00 | 63.80 |
| 4088 | 7 | 22 (7/30) | .190 | 8.50 | 33.50 | 66.80 |
| 4065 | 8 | 22 (7/30) | .200 | 9.00 | 45.00 | 88.50 |
| 4070 | 9 | 22 (7/30) | .225 | 9.85 | 47.50 | 94.75 |
| 4071 | 10 | 22 (7/30) | .235 | 10.75 | 49.00 | 97.75 |
| 4067 | 12 | 22 (7/30) | .265 | 12.00 | 55.70 | 111.40 |
| 4073 | 15 | 22 (7/30) | .290 | 20.30 | 91.25 | 182.00 |
| 4076 | 25 | 22 (7/30) | .360 | 31.00 | 149.25 | 298.00 |
| 6351 | 2 | 20 (10/30) | .180 | 3.80 | 14.10 | 28.20 |
| 6352 | 3 | 20 (10/30) | .190 | 5.40 | 24.00 | 47.90 |
| 6353 | 4 | 20 (10/30) | .215 | 6.80 | 33.50 | 66.50 |
| 2830 | 2 | 18 (16/30) | .200 | ....... | 22.75 | 45.00 |
| 2831 | 3 | 18 (16/30) | .210 | ....... | 31.50 | 62.50 |
| 2404 | 4 | 18 (16/30) | .250 | 8.70 | 38.50 | 77.00 |
| 2405 | 2 | 16 (26/30) | .235 | ....... | 28.10 | 56.20 |
| 2406 | 3 | 16 (26/30) | .255 | ....... | 38.40 | 75.00 |
| 2407 | 4 | 16 (26/30) | .295 | ....... | 51.55 | 102.00 |
| 2409 | 2 | 14 (41/30) | .332 | ....... | 44.50 | 89.00 |
| 2410 | 2 | 12 (65/30) | .384 | ....... | 62.25 | 124.50 |

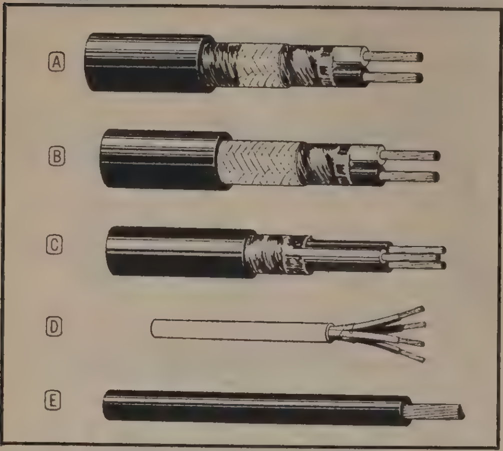
### CONDUCTOR COLOR CODE

No. 2754 has red and white conductors; No. 2755 has red, white and green; Nos. 2409 and 2410 have black and white. All other cables above have conductors as indicated in this table. First color is body; second or third colors are stripes.

| No. | Color | No. | Color | No. | Color |
|---|---|---|---|---|---|
| 1 | Black | 10 | Gray | 19 | White/Yellow |
| 2 | Red | 11 | Pink | 20 | White/Blue |
| 3 | White | 12 | Tan | 21 | White/Brown |
| 4 | Green | 13 | Red/Green | 22 | White/Orange |
| 5 | Orange | 14 | Red/Yellow | 23 | White/Gray |
| 6 | Blue | 15 | Red/Black | 24 | White/Violet |
| 7 | Brown | 16 | White/Black | 25 | White/Black/Red |
| 8 | Yellow | 17 | White/Red | | |
| 9 | Purple | 18 | White/Green | | |

COLUMBIA

# Wire and Cable



## SHIELDED CONTROL CABLE (FIG. A)

Stranded tinned copper conductors, color-coded rubber insulation, cabled and filled where required; cotton wrap over conductors; tinned copper braided shield; cotton wrap; black rubber or neoprene jacket. Resistant to impact and abrasion; extra flexible. For conductor color code, see Table I at bottom of this page. Flexible cables used for control circuits, video and audio interconnecting cable, broadcast and studio uses. Neoprene jacket type recommended for resistance to oil, ozone, moisture, sunlight.

### NEOPRENE JACKET—HEAVY DUTY

| Columbia No. | No. of Cond. | AWG (Stranding) | Nom. O.D. In. | Net Each, Spool of 100 ft. | Net Each, Spool of 500 ft. |
|---|---|---|---|---|---|
| 1201 | 1 | 18 (41/34) | .240 | $ 16.25 | $ 79.10 |
| 1202 | 2 | 18 (41/34) | .295 | 16.95 | 80.00 |
| 1203 | 3 | 18 (41/34) | .305 | 37.50 | 171.10 |
| 1204 | 4 | 18 (41/34) | .330 | 46.30 | 222.25 |
| 1206 | 6 | 18 (41/34) | .370 | 62.75 | 285.15 |
| 1208 | 8 | 18 (41/34) | .420 | 75.00 | 300.00 |
| 1210 | 10 | 18 (41/34) | .480 | 90.00 | 425.00 |
| 1212 | 12 | 18 (41/34) | .555 | 152.10 | 675.60 |
| 1215 | 15 | 18 (41/34) | .640 | 165.00 | 750.00 |
| 1602 | 2 | 16 (65/34) | .335 | 25.00 | 134.00 |
| 1603 | 3 | 16 (65/34) | .355 | 27.50 | 138.00 |
| 1604 | 4 | 16 (65/34) | .385 | 29.00 | 141.00 |
| 1606 | 6 | 16 (65/34) | .445 | 79.65 | 310.30 |
| 1608 | 8 | 16 (65/34) | .510 | 84.00 | 369.00 |
| 1610 | 10 | 16 (65/34) | .575 | 117.00 | 558.00 |
| 1612 | 2 | 14 (41/30) | .395 | 35.25 | 172.50 |
| 1613 | 3 | 14 (41/30) | .425 | 47.25 | 223.50 |
| 1614 | 4 | 14 (41/30) | .455 | 54.75 | 255.50 |
| 1616 | 6 | 14 (41/30) | .515 | 74.25 | 352.50 |
| 1622 | 2 | 12 (65/30) | .440 | 59.65 | 291.00 |
| 1623 | 3 | 12 (65/30) | .465 | 76.50 | 364.50 |
| 1624 | 4 | 12 (65/30) | .505 | 90.00 | ........... |
| 1632 | 2 | 10 (105/30) | .495 | 78.00 | ........... |
| 1633 | 3 | 10 (105/30) | .520 | 111.25 | ........... |

### RUBBER JACKET—HEAVY DUTY

| Columbia No. | No. of Cond. | AWG (Stranding) | Nom. O.D. In. | Net Each, Spool of 100 ft. | Net Each, Spool of 500 ft. |
|---|---|---|---|---|---|
| 1303 | 2 | 18 (41/34) | .295 | $ 15.55 | $ 67.45 |
| 1300 | 1 | 20 (26/34) | .230 | 11.90 | 54.90 |
| 1302 | 2 | 20 (26/34) | .270 | 13.35 | 60.00 |
| 1304 | 3 | 20 (26/34) | .285 | 14.70 | 69.25 |
| 1306 | 4 | 20 (26/34) | .305 | 16.20 | 77.50 |
| 1308 | 5 | 20 (26/34) | .330 | 19.80 | 101.40 |
| 1310 | 6 | 20 (26/34) | .345 | 24.50 | 120.50 |
| 1312 | 7 | 20 (26/34) | .360 | 28.05 | 138.00 |
| 1313 | 8 | 20 (26/34) | .385 | 31.50 | 152.25 |
| 1315 | 10 | 20 (26/34) | .440 | 62.00 | 280.00 |
| 1316 | 12 | 20 (26/34) | .525 | 75.00 | ........... |
| 1317 | 15 | 20 (26/34) | .595 | 105.00 | ........... |
| 1325 | 20 | 20 (26/34) | .660 | 126.00 | ........... |

## SHIELDED CONTROL CABLE (FIG. B)

### POLYETHYLENE INSULATION AND PVC JACKET

Multi-conductor cables have low capacity polyethylene insulation over flexible stranded tinned copper conductors. Each conductor 20 gauge, 26/34 stranding. Rayon wrap and tinned copper braided shield over conductors. Chrome gray PVC jacket overall. Insulation, .015″ thick; jacket, .035″ thick except No. 1642, .030″ thick. Precision engineered to prevent cross-talk and eliminate hum pick-up. For conductor color code, see Table I at bottom right.

| Columbia No. | No. of Cond. | Nom. O.D. In. | Net Each, Spool of 100 ft. | Net Each, Spool of 500 ft. |
|---|---|---|---|---|
| 1642 | 2 | .245 | $ 9.40 | $ 45.85 |
| 1643 | 3 | .250 | 10.45 | 52.00 |
| 1644 | 4 | .260 | 12.80 | 58.00 |
| 1645 | 5 | .275 | 13.70 | 68.00 |
| 1646 | 6 | .300 | 23.50 | 115.00 |
| 1648 | 8 | .330 | 28.50 | 135.00 |
| 1650 | 10 | .375 | 42.50 | 192.00 |
| 1652 | 12 | .380 | 63.00 | 305.00 |
| 1655 | 15 | .410 | 90.00 | 435.00 |
| 1660 | 20 | .455 | 122.00 | 590.00 |

## UNSHIELDED CONTROL CABLE

### RUBBER INSULATION AND RUBBER JACKET (FIG. C)

For control circuits, broadcast and studio use, traffic and fire alarm control, temperature control systems, etc. Tinned copper conductors; color-coded rubber insulation, .020″ thick; cabled and filled; cotton wrap; black rubber jacket, .035″ thick. Each conductor 20 gauge, 26/34 stranding. Temperature, −20° to +60° C. Working voltage, 350 V. Extra limp; resists impact, abrasion. For conductor color code, see Table I.

| Columbia No. | No. of Cond. | Nom. O.D. In. | Net Each, Spool of 100 ft. | Net Each, Spool of 500 ft. |
|---|---|---|---|---|
| 3602 | 2 | .240 | $ 9.00 | $ 43.00 |
| 3603 | 3 | .255 | 9.80 | 46.45 |
| 3604 | 4 | .275 | 11.20 | 49.40 |
| 3605 | 5 | .300 | 11.50 | 51.00 |
| 3606 | 6 | .315 | 22.20 | 107.30 |
| 3607 | 7 | .325 | 25.00 | 115.00 |
| 3608 | 8 | .360 | 28.50 | 122.00 |
| 3610 | 10 | .410 | 49.25 | 225.10 |
| 3612 | 12 | .435 | 51.00 | 228.50 |
| 3615 | 15 | .505 | 68.65 | 325.50 |
| 3620 | 20 | .570 | 87.50 | ........... |

### PVC INSULATION AND PVC JACKET (FIG. D)

Tinned copper conductors, color-coded PVC insulation .018″ thick (.030″ thick for 16 gauge), Mylar* binder overall (except Nos. 2404, 2420, 2421 and 2422), chrome gray PVC jacket. For conductor color code, see Table II at bottom of this page.

*Registered DuPont TM.

| Columbia No. | No. of Cond. | AWG (Stranding) | Nom. O.D. In. | Jacket Thick. In. | Net Each, Spool of 100 ft. | Net Each, Spool of 500 ft. |
|---|---|---|---|---|---|---|
| 2404 | 4 | 18 (16/30) | .250 | .030 | $ 8.75 | $ 39.00 |
| 2420 | 5 | 18 (16/30) | .286 | .037 | 10.85 | 49.90 |
| 2421 | 7 | 18 (16/30) | .324 | .037 | 14.75 | 65.65 |
| 2422 | 9 | 18 (16/30) | .379 | .037 | 19.50 | 91.50 |
| 2412 | 12 | 18 (16/30) | .412 | .040 | 26.25 | 128.25 |
| 2423 | 15 | 18 (16/30) | .490 | .045 | 36.45 | 172.50 |
| 2424 | 19 | 18 (16/30) | .505 | .045 | ........ | 199.50 |
| 2425 | 4 | 16 (19/29) | .375 | .045 | 13.80 | 64.50 |
| 2434 | 5 | 16 (19/29) | .405 | .045 | 18.00 | 76.15 |
| 2426 | 7 | 16 (19/29) | .455 | .045 | 25.35 | 114.00 |
| 2435 | 9 | 16 (19/29) | .525 | .045 | ........ | 141.00 |
| 2427 | 12 | 16 (19/29) | .620 | .045 | 41.25 | 194.00 |
| 2428 | 15 | 16 (19/29) | .650 | .060 | 57.60 | 276.00 |
| 2429 | 19 | 16 (19/29) | .715 | .065 | 71.25 | 334.50 |

## UL HOOK UP WIRE (FIG. E)

Tinned copper conductor, color-coded PVC insulation. Resistant to acids, oil, alkalies, flame, moisture and fungus. For use in internal wiring of electronic and electrical equipment. UL Listed. Available in white, black, red, green, yellow, light blue, brown, orange, gray and violet colors.

### STYLE 1015, CSA TYPE TEW

Voltage rating, 600 volts. Operating temp., −40° C to +105° C. Nominal insulation thickness, .032″.

| Columbia No. | AWG (Stranding) | Nom. O.D. In. | Net Each, Spool of 100 ft. | Net Each, Spool of 1000 ft. |
|---|---|---|---|---|
| 2117 | 22 (1) | .090 | $1.65 | $ 9.55 |
| 2118 | 20 (1) | .097 | 1.80 | 12.55 |
| 2119 | 18 (1) | .105 | 2.20 | 16.20 |
| 2100 | 24 (7/32) | .088 | 1.65 | 10.00 |
| 2101 | 22 (7/30) | .095 | 1.75 | 12.15 |
| 2102 | 20 (10/30) | .102 | 2.05 | 15.45 |
| 2103 | 18 (16/30) | .112 | 2.55 | 19.00 |
| 2104 | 16 (26/30) | .125 | 3.40 | 25.60 |
| 2105 | 14 (41/30) | .142 | 4.65 | 38.70 |

### UL STYLE 1007

Voltage rating, 300 volts. Operating temp., −40° C to +80° C. Nominal insulation thickness, .016″.

| Columbia No. | AWG (Stranding) | Nom. O.D. In. | Net Each, Spool of 100 ft. | Net Each, Spool of 1000 ft. |
|---|---|---|---|---|
| 2003 | 24 (1) | .054 | $1.56 | $ 7.75 |
| 2004 | 22 (1) | .059 | 1.60 | 8.35 |
| 2028 | 20 (1) | .066 | 1.75 | 10.50 |
| 2052 | 18 (1) | .079 | 2.05 | 14.85 |
| 2053 | 16 (1) | .089 | 4.00 | 26.10 |
| 2015 | 24 (7/32) | .056 | 1.70 | 9.40 |
| 2016 | 22 (7/30) | .062 | 1.80 | 11.65 |
| 2040 | 20 (10/30) | .071 | 1.90 | 12.25 |
| 2064 | 18 (16/30) | .080 | 2.25 | 16.75 |
| 2065 | 16 (26/30) | .095 | 3.85 | 26.20 |

## CONDUCTOR COLOR CODES

First color is body color; second color is stripe.

### TABLE I

| No. | Color | No. | Color | No. | Color |
|---|---|---|---|---|---|
| 1 | Black | 8 | Orange | 15 | White/Blue |
| 2 | White | 9 | Gray (Slate) | 16 | White/Brown |
| 3 | Red | 10 | Purple | 17 | White/Purple |
| 4 | Green | 11 | White/Black | 18 | White/Gray |
| 5 | Yellow | 12 | White/Red | 19 | Black/Red |
| 6 | Blue | 13 | White/Green | 20 | Black/Yellow |
| 7 | Brown | 14 | White/Yellow | | |

### TABLE II

| No. | Color | No. | Color | No. | Color |
|---|---|---|---|---|---|
| 1 | Black | 8 | Red/Black | 15 | Blue/White |
| 2 | White | 9 | Green/Black | 16 | Black/Red |
| 3 | Red | 10 | Orange/Black | 17 | White/Red |
| 4 | Green | 11 | Blue/Black | 18 | Orange/Red |
| 5 | Orange | 12 | Black/White | 19 | Blue/Red |
| 6 | Blue | 13 | Red/White | | |
| 7 | White/Black | 14 | Green/White | | |

COLUMBIA

# Wire and Cable

## MACHINE TOOL WIRE (FIG. A)

### LIGHT WALL, MTW/AWM (90° C)
### TEW/AWM (105° C)

Bare copper conductor, color-coded PVC insulation. Meets NMTBA requirements. UL and CSA Listed. CSA listed as TEW sizes 18 AWG through 10 AWG. UL and CSA types TEW and AWM: 105° C in air, 60° C in water, 60° C in oil, 600 volts. UL and NMTBA type MTW: 90° C in air, 60° C in water, 60° C in oil, 600 volts. Sizes 18 AWG to 10 AWG, UL style 1015 and 1335. Resistant to acids, oil, alkalis, flame, moisture and fungus. 600V wire for appliance and machine wiring use.

| Columbia No. | AWG (Stranding) | Nom. Insul. Thick. In. | Nom. O.D. In. | Stock Colors† | Net Each, Spool of 500 ft. |
|---|---|---|---|---|---|
| 7800 | 18 (16/30) | 2/64 | .113 | 1–10 | $ 7.75 |
| 7801 | 16 (26/30) | 2/64 | .125 | 1–11 | 11.00 |
| 7802 | 14 (19) | 2/64 | .139 | 1–14 | 15.00 |
| 7803 | 12 (19) | 2/64 | .158 | 1–11 | 20.80 |
| 7804 | 10 (19) | 2/64 | .182 | 1–7, 11 | 32.00 |

### HEAVY WALL, THW/MTW (90° C)

Bare copper conductor, color-coded PVC insulation. Meets NMTBA requirements. UL Listed. Listed as THW by NEC. Rated 90° C in air, 60° C in water, 60° C in oil. Resistant to acids, oil, alkalis, flame, moisture and fungus. Sizes 14 AWG to 10 AWG, UL style 1400 and 1335; 8 AWG, UL style 1401 and 1336. 600V wire for building and machine tool applications.

| Columbia No. | AWG Stranding) | Nom. Insul. Thick. In. | Nom. O.D. In. | Stock Colors† | Net Each, Spool of 500 ft. |
|---|---|---|---|---|---|
| 7810 | 14 (19) | 3/64 | .171 | 1–12 | $16.50 |
| 7811 | 12 (19) | 3/64 | .190 | 1–11 | 22.20 |
| 7812 | 10 (19) | 3/64 | .214 | 1–7, 11 | 34.20 |
| 7813 | 8 (19) | 4/64 | .277 | 1–4 | 57.00 |

### †STOCK COLORS

| No. | Color | No. | Color | No. | Color |
|---|---|---|---|---|---|
| 1 | Black | 6 | Orange | 11 | Pink |
| 2 | White | 7 | Yellow | 12 | Light Blue |
| 3 | Red | 8 | Brown | 13 | Tan |
| 4 | Blue | 9 | Purple | 14 | Light Green |
| 5 | Green | 10 | Gray | | |

## PORTABLE SERVICE AND POWER CORD (FIG. B)

Stranded bare copper conductors, color-coded rubber insulation. Cabled with fillers. Cotton wrap between conductors and jacket. UL Listed. Best suited for use in electric appliances, power tools and business machines, etc.

### NEOPRENE JACKET

| Columbia No. | No. of Cond. | Size AWG | Type | Volt Rating | Nom. O.D. In. | Net Each, Spool of | |
|---|---|---|---|---|---|---|---|
| | | | | | | 100 ft. | 250 ft. |
| 1477 | 2 | 18 | SVO | 300V | .250 | $ 9.00 | $18.50 |
| 1478 | 2 | 18 | SJO | 300V | .305 | 9.50 | 19.50 |
| 1479 | 3 | 18 | SJO | 300V | .330 | 11.75 | 24.75 |
| 1481 | 2 | 16 | SJO | 300V | .330 | 11.50 | 24.75 |
| 1482 | 3 | 16 | SJO | 300V | .360 | 15.10 | 31.50 |
| 1484 | 2 | 18 | SO | 600V | .385 | 15.50 | 32.00 |
| 1485 | 3 | 18 | SO | 600V | .400 | 20.20 | 36.00 |
| 1487 | 2 | 16 | SO | 600V | .400 | 18.50 | 37.50 |
| 1488 | 3 | 16 | SO | 600V | .425 | 19.00 | 39.00 |
| **RUBBER JACKET** | | | | | | | |
| 1420 | 2 | 18 | SV | 300V | .250 | $ 5.90 | $12.50 |
| 1425 | 2 | 18 | SJ | 300V | .305 | 7.10 | 15.50 |
| 1435 | 3 | 18 | SJ | 300V | .345 | 10.00 | 21.25 |
| 1438 | 4 | 18 | SJ | 300V | .365 | 18.20 | 37.60 |
| 1445 | 2 | 16 | SJ | 300V | .325 | 8.95 | 19.25 |
| 1450 | 3 | 16 | SJ | 300V | .375 | 13.90 | 30.60 |
| 1446 | 4 | 16 | SJ | 300V | .395 | 21.00 | 42.30 |
| 1500 | 2 | 14 | S | 600V | .540 | 17.20 | 37.80 |
| 1505 | 3 | 14 | S | 600V | .565 | 24.25 | 49.20 |
| 1509 | 4 | 14 | S | 600V | .605 | 30.50 | 66.75 |
| 1510 | 2 | 12 | S | 600V | .580 | 26.00 | 51.25 |
| 1515 | 3 | 12 | S | 600V | .635 | 31.50 | 69.00 |
| 1517 | 2 | 10 | S | 600V | .650 | 30.00 | 68.20 |
| 1519 | 3 | 10 | S | 600V | .760 | 43.30 | 91.15 |

## TYPE SPT LAMP AND POWER CORD (FIG. C)

Plastic lamp cord with polarity ridge over one conductor. Rip type construction. UL Listed. For fans, lamps, radios, TV, stereo speakers, signs, etc. Specify brown, white, gray or black.

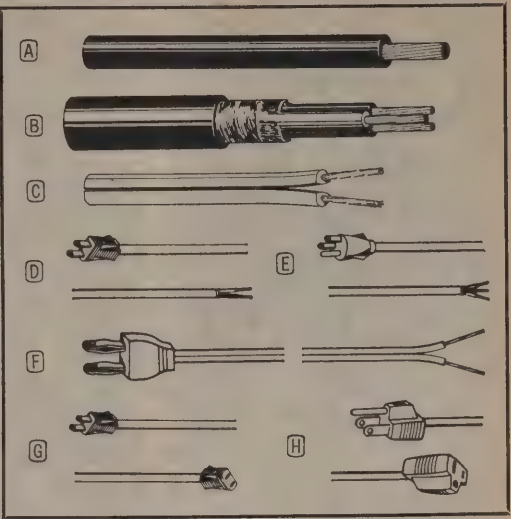
| Columbia No. | No. of Cond. | AWG (Strand) | Nom. O.D. In. | Net Each, Spool of | |
|---|---|---|---|---|---|
| | | | | 100 ft. | 250 ft. |
| 1415 | 2 | 18 (41/34) | .107 x .210 | $3.10 | $6.30 |

## RUBBER TEST LEAD WIRE (FIG. A)

Extra flexible stranded tinned soft annealed copper conductor, color-coded rubber insulation. Working voltage: No. 1326, 1500V; 1319, 3000 V; 1321, 5000 V; 1318, 10,000 V rms AC.

| Columbia No. | Insul. Thick. | Color* | AWG (Stranding) | Nom. O.D. In. | Net Each, Spool of | |
|---|---|---|---|---|---|---|
| | | | | | 100 ft. | 500 ft. |
| 1326 | .040″ | Black | 20 (41/36) | .125 | $3.25 | $12.00 |
| 1319 | .047″ | Black | 20 (41/36) | .140 | 3.40 | 13.40 |
| 1321 | .045″ | Black | 18 (65/36) | .140 | 3.70 | 15.00 |
| 1318 | .088″ | Black | 18 (65/36) | .230 | 5.95 | ........ |

*Available in red or black; please specify.



## FLEXLIFE® PVC TEST LEAD WIRE (FIG. A)

Extra flexible PVC insulated wire for multimeters, analyzers, oscillators, etc. Flexlife plastic insulation is durable and has high gloss finish. Resistant to acids, oil, alkalis, flame, moisture and fungus. Temp., −20° to +60° C. Working voltage: 5000 V rms AC. Breakdown voltage: 20,000 V. Extra flexible stranded tinned soft annealed copper conductor. Flexlife® plastic insulation. Specify black or red.

| Columbia No. | No. of Cond. | AWG (Strand) | Nom. O.D. In. | Insul. Thick. | Net per Spool | |
|---|---|---|---|---|---|---|
| | | | | | 250′ | 500′ |
| 1320 | 1 | 18 (65/36) | .140 | .045″ | $8.10 | $15.55 |

## POWER SUPPLY AND REPLACEMENT CORDS

Molded plastic male cap on one end. Other end has outer jacket removed, conductors stripped; all cords machine hanked. UL Listed. Rated for 125 VAC. For portable tools, appliances, etc.

### TWO-CONDUCTOR (FIG. D)

| Columbia No. | AWG Size | Type | Lgth. Ft. | Rating, Amps | Color | Net Each |
|---|---|---|---|---|---|---|
| 20250 | 18 | SV | 6 | 10 | Black | $0.80 |
| 20252 | 18 | SV | 9 | 10 | Black | .95 |
| 20254 | 18 | SV | 12 | 10 | Black | 1.15 |
| 20327 | 18 | SVT | 6 | 10 | Black | .61 |
| 24516 | 18 | SJ | 6 | 10 | Black | .90 |
| 20258 | 18 | SJ | 10 | 10 | Black | 1.00 |
| 24546 | 18 | SJT | 6 | 10 | Gray | .85 |
| 24549 | 18 | SJT | 9 | 10 | Gray | .95 |
| 20260 | 16 | SJ | 8 | 13 | Black | .95 |
| 20262 | 16 | SJ | 10 | 13 | Black | 1.18 |
| **THREE-CONDUCTOR (FIG. E)** | | | | | | |
| 20330 | 18 | SVT | 6 | 10 | Gray | $0.80 |
| 20331 | 18 | SVT | 8 | 10 | Gray | .90 |
| 20264 | 18 | SJ | 6 | 10 | Black | 1.00 |
| 20314 | 18 | SJ | 8 | 10 | Black | 1.06 |
| 20316 | 18 | SJ | 12 | 10 | Black | 1.48 |
| 24936 | 18 | SJT | 6 | 10 | Gray | 1.00 |
| 24939 | 18 | SJT | 9 | 10 | Gray | 1.20 |
| 24926 | 16 | SJ | 6 | 13 | Black | 1.35 |
| 20324 | 16 | SJ | 8 | 13 | Black | 1.45 |
| 24929 | 16 | SJ | 9 | 13 | Black | 1.60 |
| 24932 | 16 | SJ | 12 | 13 | Black | 1.80 |
| 24946 | 16 | SJT | 6 | 13 | Gray | 1.35 |
| 24949 | 16 | SJT | 9 | 13 | Gray | 1.60 |
| **TWO-CONDUCTOR SMALL APPLIANCE CORDS (FIG. F)** | | | | | | |
| 24586 | 18 | SPT-1 | 6 | 10 | Brown | $0.27 |
| 24596 | 18 | SPT-1 | 6 | 10 | White | .27 |
| 24589 | 18 | SPT-1 | 9 | 10 | Brown | ,33 |
| 24599 | 18 | SPT-1 | 9 | 10 | White | .33 |

## EXTENSION CORDS (FIG. G)

Molded plastic cap and connector. UL Listed. For portable tools, appliances, business machines, etc. Rated at 125 VAC.

### TWO-CONDUCTOR (FIG. G)

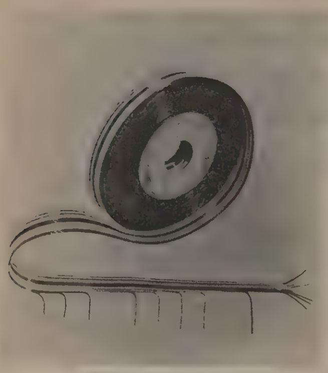
| Columbia No. | AWG Size | Type | Lgth. Ft. | Rating, Amps | Color | Net Each |
|---|---|---|---|---|---|---|
| 20272 | 18 | SV | 6 | 10 | Black | $0.95 |
| 26010 | 18 | SJ | 10 | 10 | Black | 1.45 |
| 26025 | 18 | SJ | 25 | 10 | Black | 2.75 |
| 23026 | 18 | SJT | 25 | 10 | Black | 2.75 |
| 26110 | 16 | SJ | 10 | 13 | Black | 1.65 |
| 23112 | 16 | SJT | 12 | 13 | Black | 1.90 |
| **THREE-CONDUCTOR (FIG. H)** | | | | | | |
| 20288 | 18 | SJ | 10 | 10 | Black | $1.65 |
| 26525 | 18 | SJ | 25 | 10 | Black | 3.20 |
| 20294 | 16 | SJ | 15 | 13 | Black | 3.60 |
| 26625 | 16 | SJ | 25 | 13 | Black | 5.40 |

# Spectra-Strip® FLAT BONDED RIBBON CABLE

## FLAT-BONDED, ROUND CONDUCTOR, RIBBON CABLE

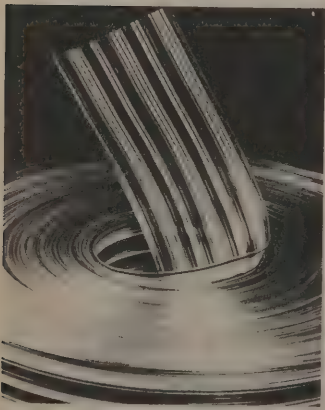
Provides advantages of round conductors with no change in the mechanical, electrical or physical characteristics of the insulation or the conducting wires. Patented cohesion processed PVC insulation meets MIL-W-16878D, Types B, C, D and Underwriters' Laboratories provisions. Each conductor color-coded and easily separated for neat terminations. Temp., −55° C to +105° C. Available in standard Spectra-Strip Color Code—Brown, Red, Orange, Yellow, Green, Blue, Violet, Gray, White and Black. Special sequences of colors and types of cable can be furnished on special order. Standard cabling ranges from 10 to 40 conductors, 14 to 30 gauge and 7 to 105 strands; complete information on request.

| Spectra-Strip Type No. | Conductors | | | Size, W. x Th. | Wt., Lbs. | Net per 100′ Roll | | | |
|---|---|---|---|---|---|---|---|---|---|
| | No. | AWG | Strands | | | 1-4 | 5-9 | 10-49 | 50-99 |
| SS-1030-7B | 10 | 30 | 7 | .310″ x .032″ | 2 | $20.70 | $16.10 | $11.50 | $ 9.70 |
| SS-1028-7B | 10 | 28 | 7 | .350″ x .035″ | 2 | 17.60 | 13.70 | 9.80 | 8.20 |
| SS-1026-7B | 10 | 26 | 7 | .390″ x .039″ | 3 | 15.30 | 11.90 | 8.50 | 7.10 |
| SS-1024-7B | 10 | 24 | 7 | .440″ x .044″ | 4 | 16.20 | 12.60 | 9.00 | 7.60 |
| SS-1024-19B | 10 | 24 | 19 | .440″ x .044″ | 4 | 19.80 | 15.40 | 11.00 | 9.20 |
| SS-1022-7B | 10 | 22 | 7 | .510″ x .051″ | 8 | 19.60 | 15.20 | 10.90 | 9.10 |
| SS-1022-19B | 10 | 22 | 19 | .510″ x .051″ | 8 | 23.60 | 18.40 | 13.10 | 11.00 |
| SS-1530-7B | 15 | 30 | 7 | .480″ x .032″ | 2 | 31.05 | 24.15 | 17.25 | 14.55 |
| SS-1528-7B | 15 | 28 | 7 | .525″ x .035″ | 3 | 26.40 | 20.55 | 14.70 | 12.30 |
| SS-1526-7B | 15 | 26 | 7 | .585″ x .039″ | 4 | 22.95 | 17.85 | 12.75 | 10.65 |
| SS-1524-7B | 15 | 24 | 7 | .660″ x .044″ | 5 | 24.30 | 18.90 | 13.50 | 11.40 |
| SS-1524-19B | 15 | 24 | 19 | .660″ x .044″ | 5 | 29.70 | 23.10 | 16.50 | 13.80 |
| SS-1522-7B | 15 | 22 | 7 | .765″ x .051″ | 7 | 29.40 | 22.80 | 16.35 | 13.65 |
| SS-1522-19B | 15 | 22 | 19 | .765″ x .051″ | 7 | 35.40 | 27.60 | 19.65 | 16.50 |
| SS-2030-7B | 20 | 30 | 7 | .640″ x .032″ | 3 | 41.40 | 32.20 | 23.00 | 19.40 |
| SS-2028-7B | 20 | 28 | 7 | .700″ x .035″ | 4 | 35.20 | 27.40 | 19.60 | 16.40 |
| SS-2026-7B | 20 | 26 | 7 | .780″ x .039″ | 5 | 30.60 | 23.80 | 17.00 | 14.20 |
| SS-2024-7B | 20 | 24 | 7 | .880″ x .044″ | 6 | 32.40 | 25.20 | 18.00 | 15.20 |
| SS-2024-19B | 20 | 24 | 19 | .880″ x .044″ | 6 | 39.60 | 30.80 | 22.00 | 18.40 |
| SS-2022-7B | 20 | 22 | 7 | 1.02″ x .051″ | 8 | 39.20 | 30.40 | 21.80 | 18.20 |
| SS-2022-19B | 20 | 22 | 19 | 1.02″ x .051″ | 8 | 47.20 | 36.80 | 26.20 | 22.00 |
| SS-3030-7B | 30 | 30 | 7 | .960″ x .032″ | 4 | 61.10 | 48.30 | 34.50 | 29.10 |
| SS-3028-7B | 30 | 28 | 7 | 1.05″ x .035″ | 5 | 52.80 | 41.10 | 29.40 | 24.60 |
| SS-3026-7B | 30 | 26 | 7 | 1.17″ x .039″ | 6 | 45.90 | 35.70 | 25.50 | 21.30 |
| SS-3024-7B | 30 | 24 | 7 | 1.32″ x .044″ | 8 | 48.60 | 37.80 | 27.00 | 22.80 |
| SS-3024-19B | 30 | 24 | 19 | 1.32″ x .044″ | 8 | 59.40 | 46.20 | 33.00 | 27.60 |
| SS-3022-7B | 30 | 22 | 7 | 1.53″ x .051″ | 11 | 58.80 | 45.60 | 32.70 | 27.30 |
| SS-3022-19B | 30 | 22 | 19 | 1.53″ x .051″ | 11 | 70.80 | 55.20 | 39.30 | 33.00 |



Flat Bonded Cable

Spectra-Twist Cable



Spectra-Flex Cable

**STANDARD SPECTRA-STRIP 10-COLOR CODING**

Includes, in series, the colors Brown, Red, Orange, Yellow, Green, Blue, Violet, Gray, White and Black.

## SPECTRA-TWIST® FLAT RIBBON CABLE

Round wire conductors twisted together and bonded to form ribbon cable. Each pair can be treated as an individual conductor and broken out, stripped, tinned or otherwise prepared for termination or connector. Using twisted pairs of conductors instead of shielding reduces or eliminates crosstalk; saves space and cost. Standard Spectra-Strip Color Coding—Brown, Red, Orange, Yellow, Green, Blue, Violet, Gray, White and Black; PVC insulated, meets MIL-W-16878D, Types B, C, and D. UL Approved. Temperature range, −54° C to +105° C. Twisted triads also available. Pairs or triads may be shielded and/or PVC jacketed. **Complete information and prices available on request.**

## SPECTRA-FLEX® ULTRA-FLEXIBLE, FLAT BONDED RIBBON CABLE

Ultra-flexible version of Spectra-Strip flat ribbon cable. Can undergo millions of flexings without physical damage or altering its electrical and mechanical properties. Available with 26, 64 or 105 strands per conductor in sizes ranging from 18 to 30 AWG. Cables of up to 100 conductors can be assembled. Cables using different size conductors can be provided as required. PVC insulated, meets MIL-W-16878D, Types B or C requirements. Shielding with a std. braided shield or more flexible spiral-type available. With standard Spectra-Strip Color Code—Brown, Red, Orange, Yellow, Green, Blue, Violet, Gray, White and Black; or, individually numbered conductor identification. **Prices on request.**

## SPECTRA-STRIP 3C CONTROLLED CHARACTERISTICS CABLE

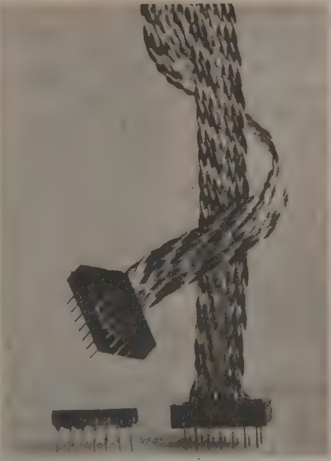
Provides multi-conductor cable with spacing between conductors specified and controlled on tolerances of ±.003″. Allows designer to predict, specify and control capacitance, impedance, reactance, and other parameters. Exact spacing also means accurate matching of conductors with connector and circuit board pin arrangements. Available in virtually any length and number of conductors or as ready-to-install harnesses or IC interconnect assemblies in a wide range of insulation sizes, styles and colors. Some standard Spectra-Strip cables such as Spectra-Flex, twisted pair and coax in XL PVC, DuPont Teflon and other special insulations are available in this cable; complete information on request.

| Spectra-Strip Type No. | Conductors | | | Color Coded | Net per 100′ Spool of | | | |
|---|---|---|---|---|---|---|---|---|
| | No. | AWG | Strands | | 100′ | 500′ | 1000′ | 5000′ |
| 3C-1428-7B-05-050 | 14 | 28 | 7 | Yes | $ 27.58 | $21.56 | $15.58 | $13.30 |
| 3C-1628-7B-05-050 | 16 | 28 | 7 | Yes | 31.52 | 24.64 | 17.92 | 15.20 |
| 3C-2028-7B-05-050 | 20 | 28 | 7 | Yes | 39.40 | 30.80 | 22.40 | 19.00 |
| 3C-2628-7B-05-050 | 26 | 28 | 7 | Yes | 51.22 | 40.04 | 29.12 | 24.70 |
| 3C-3428-7B-05-050 | 34 | 28 | 7 | Yes | 66.98 | 52.36 | 38.08 | 32.30 |
| 3C-4028-7B-05-050 | 40 | 28 | 7 | Yes | 78.80 | 61.60 | 44.80 | 38.00 |
| 3C-5028-7B-05-050 | 50 | 28 | 7 | Yes | 98.50 | 77.00 | 56.00 | 47.50 |
| 3C-6028-7B-05-050 | 60 | 28 | 7 | Yes | 118.20 | 92.40 | 67.20 | 57.00 |
| 3C-1428-7B-05-050-X | 14 | 28 | 7 | All Gray | 24.50 | 18.90 | 13.58 | 11.76 |
| 3C-1628-7B-05-050-X | 16 | 28 | 7 | All Gray | 28.00 | 21.60 | 15.52 | 13.44 |
| 3C-2028-7B-05-050-X | 20 | 28 | 7 | All Gray | 35.00 | 27.00 | 19.40 | 16.80 |
| 3C-2628-7B-05-050-X | 26 | 28 | 7 | All Gray | 45.50 | 35.10 | 25.22 | 21.84 |
| 3C-3428-7B-05-050-X | 34 | 28 | 7 | All Gray | 59.50 | 45.90 | 32.98 | 28.56 |
| 3C-4028-7B-05-050-X | 40 | 28 | 7 | All Gray | 70.00 | 54.00 | 38.80 | 33.60 |
| 3C-5028-7B-05-050-X | 50 | 28 | 7 | All Gray | 87.50 | 67.50 | 48.50 | 42.00 |
| 3C-6028-7B-05-050-X | 60 | 28 | 7 | All Gray | 105.00 | 81.00 | 58.20 | 50.40 |
| 3C-2030-1B-05-050-X | 20 | 30 | Solid | All Gray | 23.00 | 19.60 | 16.00 | 14.00 |
| 3C-2630-1B-05-050-X | 26 | 30 | Solid | All Gray | 29.90 | 25.48 | 20.80 | 18.20 |
| 3C-3430-1B-05-050-X | 34 | 30 | Solid | All Gray | 39.10 | 33.32 | 27.20 | 23.80 |
| 3C-4030-1B-05-050-X | 40 | 30 | Solid | All Gray | 46.00 | 39.20 | 32.00 | 28.00 |
| 3C-5030-1B-05-050-X | 50 | 30 | Solid | All Gray | 57.50 | 49.00 | 40.00 | 35.00 |
| 3C-6030-1B-05-050-X | 60 | 30 | Solid | All Gray | 69.00 | 58.80 | 48.00 | 42.00 |

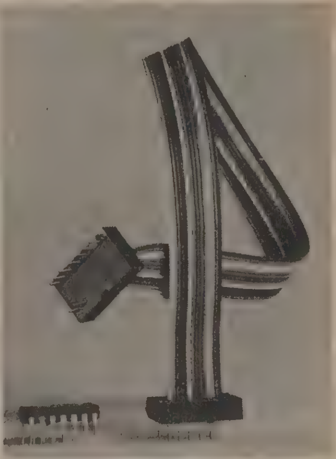
# Spectra-Strip® CABLE ASSEMBLIES AND CONNECTORS

## INTERCONNECT ASSEMBLIES

t ribbon cable assemblies with standard ow profile 14 or 16-pin dual-in-line IC nectors at one or both ends. These emblies make otherwise complicated, dly bussing and crossovers between nted circuit boards; motherboards, kplanes and other IC circuitry fast, ple and inexpensive. Offer the advanes of round conductor, flat ribbon cable h predictable, uniform capacitance and edance. PVC insulated to meet MIL-16878D, Types B, C and D. UL Apved over a wide range of wire sizes and nding. Operating temperature, −54° C +105° C. Standard 10-color coding ilable. Prices below are based on 26 G, 7 strand, type B insulation cable; , top or 45° entry. Special assemblies also available with: End entry, Spectraist cable (24–30 AWG); Spectra-Flex le (24, 26 and 30 AWG); 3C (Conled Characteristic Cable); Teflon Cable –30 AWG); XL PVC Cable (24–30 G); Striped Cable. **Prices on special emblies available on request.**



Spectra-Twist Assembly

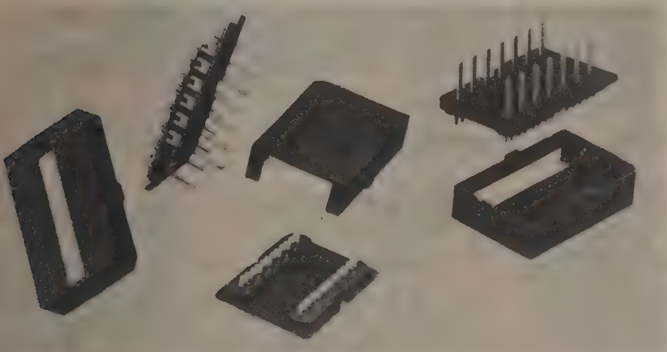


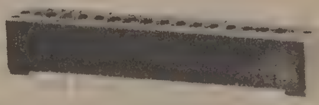
Spectra-Strip Assembly

| Assembly Description | Connectors | Net per 1-Ft. Assembly, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-49 | 50-99 | 100-499 | 500-999 | 1000-4999 |
| -pin with cable | 2 | $2.60 | $2.10 | $1.90 | $1.78 | $1.65 |
| -pin with cable | 1 | 1.34 | 1.09 | .99 | .93 | .87 |
| -pin with cable | 2 | 2.97 | 2.40 | 2.17 | 1.95 | 1.86 |
| -pin with cable | 1 | 1.53 | 1.24 | 1.13 | 1.02 | .97 |

| Description | Net per Foot |
|---|---|
| 14-cond. cable | $0.11 any length or qty. |
| 16-cond. cable | .13 any length or qty. |

## 14-PIN AND 16-PIN IC CONNECTORS





EBC-15

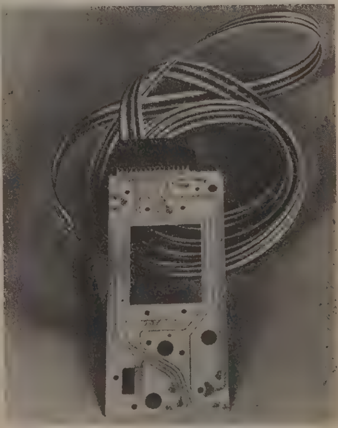
fer volume users of IC circuitry quality 14 and 16-pin connectors for as little as 29 cents ch when purchased in quantity. High reliability types with permanent molded-in concts that won't loosen or press out during termination, installation or use.

| Connector Description | Net Each, Lots of | | | | |
|---|---|---|---|---|---|
| | 1-49 | 50-99 | 100-499 | 500-999 | 1000-4999 |
| -pin plug base | $0.50 | $0.45 | $0.38 | $0.34 | $0.29 |
| -pin plug base | .57 | .51 | .43 | .39 | .33 |
| p only | .12 | .10 | .09 | .08 | .07 |

## LOW-PROFILE PC EDGE BOARD CONNECTOR

esigners using edge-connected PC boards in their electronic equipment will find spaceving benefits in this low-profile Spectra-Strip connector for linking multi-conductor ble to the boards. Combines an edge board connector element and a special mounting ock so that branching of all cable conductors for termination takes place within the mbined dimensions of the two connector elements. The complete connector unit, with mil center-to-center pin spacing, is substantially smaller than conventional connectors, aking more head room available—especially important in compact equipment using circuitry. Primarily designed for use with 1/32″ PC boards. This connector design is aptable to almost any type of edge board including 38-pin, 52-pin or whatever the rticular equipment requires.

| Spectra-Strip Model No. | No. of Terminals | Net Each, Lots of | | | |
|---|---|---|---|---|---|
| | | 1-99 | 100-499 | 500-999 | 1000 Up |
| EBC-15 | 15 | $1.15 | $1.05 | $0.95 | $0.90 |



Cable assembly with EBC-15 shown attached to PC board

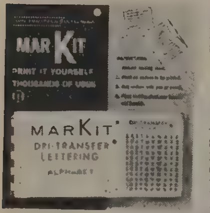
## MULTI-CONDUCTOR XL PVC FLAT RIBBON CABLE ASSEMBLIES

or less than 8½ cents per connection, computer and other eleconic equipment makers can now have Spectra-Strip multinductor flat ribbon cable assemblies with edge board connectors one end and the other ready for termination. Assemblies employ C ribbon cable with spacing between round conductors held to a tolerance of ±.003″. Quickly and inexpensively attach to 15 or 22-pin edge board connectors. Cable assemblies can have conductors from 24 to 30 AWG in any length. Color coding, including striped conductors, can be used and either Mil-Spec or UL Approved insulation is available. **Prices on request.**

**SEE PREVIOUS PAGE FOR COLOR CODING**

# Marking Kits, Tubing

## RUSSELL INDUSTRIES MARKITS® AND DRI-TRANSFERS®



Dri-transfer kits containing the most commonly used symbols, words and letters in electronic marking. Sheet size, 3″ x 6″.

### ELECTRONIC WORDS MARKIT

**No. EM-1** (Black) or **EM-1W** (White)—An electronic glossary containing 27 sheets with over a thousand words from "AC" to "zooms" in alphabetical order. Ideal for application to control panels, prototypes, drawings, terminal boards, electrical and mechanical components.

### PRINTED CIRCUIT PADS MARKIT

**No. PC-1** (Black)—Contains 27 sheets providing thousands of printed circuit pads: Circles (with center holes), teardrops, teardrops with vanishing point, double-end teardrops, double-end teardrops with vanishing points, elbows, terminal elbows, ovals, T-connectors and fillets.

### DIAL MARKING MARKIT

**No. DM-1**—27 sheets, loose-leaf bound with plastic spiral ring; 14 sheets in black; 13 sheets in white. Dial patterns in arcs, wedges, lines and dots include switch symbols for rotary tap switches, potentiometers and calibrated meter dials.

### TERMINAL AND CHASSIS MARKIT

**No. TC-1**—Includes 27 sheets of numbers 1 thru 0, 0 thru 200 and 01 thru 09; plus, complete alphabets. All numbers and letters ⅛″ high. For application in prototypes and production. Loose-leaf bound with plastic spiral ring, 15 sheets are in black; 12 sheets in white.

### PRICES

| Description | Net Each, Lots of 1-5 | 6-11 | 12 Up |
|---|---|---|---|
| MarKits | $4.95 | $4.50 | $4.25 |
| Electronic Symbol Dri-Transfers | 1.69 | 1.59 | 1.49 |

### LOGIC DIAGRAM SYMBOLS MARKIT

**No. LD-1** (Black)—Consists of 27 sheets containing flip flops, arrows, arrow heads, time delays, and, nand, or, nor, registers, shift registers, connection dots, Schmidt triggers, and single shots.

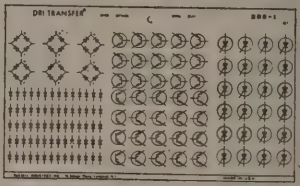
### ALPHABET AND NUMERAL MARKITS

**Alphabet MarKit**—All the letters of the alphabet for universal applications; 27 pages total, with plastic spiral rings.

**Numeral MarKit**—27 pages of numbers for many applications. Loose-leaf bound with plastic spiral rings.

| Size | Alphabet No. Black | Alphabet No. White | Numerals No. Black | Numerals No. White |
|---|---|---|---|---|
| ⅛″ | AM-1 | AM-1W | NM-1 | NM-1W |
| ¼″ | AM-2 | AM-2W | NM-2 | NM-2W |
| ⅜″ | AM-3 | AM-3W | NM-3 | NM-3W |
| ½″ | AM-4 | AM-4W | NM-4 | NM-4W |
| 21/32″ | AM-5 | AM-5W | NM-5 | NM-5W |
| 25/32″ | AM-6 | AM-6W | NM-6 | NM-6W |

### ELECTRONIC SYMBOL DRI-TRANSFER® SHEETS



BRS-1

The most economical system for applying electronic symbols to schematics and other applications. Sheet size, 7″ x 13″. Black only.

**No. DST-1**—Thermistors, photo cells, zener diodes and SCR's.

**No. RCT-1**—Capacitors, tubes, resistors, potentiometers and varistors.

**No. IRM-1**—Relays, contactors, heaters, reactors, rotating components, thermal delay relays, inductors and transformers.

**No. CC-1**—Grounds, shields, contactors and connections.

**No. BRS-1**—Bridge rectifiers, diodes and SCR's.

**No. BFP-1**—Plugs, jacks, switches, lights and fuses.

**No. LAB-1**—Antennas, amplifiers, speakers, mikes and boxes.

**No. UNP-1**—FET, unijunction, n-p-n and p-n-p transistors.

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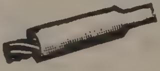
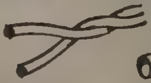
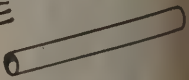
## PENNTUBE PLASTICS CO., SUBSIDIARY DIXON INDUSTRIES

### TEFLON†-TFE SPAGHETTI TUBING

For wire and slim component insulation for service where high temperatures or high reliability is required. Class H dielectric can be used continuously at 250° C. Unaffected by chemical solvents, acids and weather; infinite shelf life. Dielectric strength, 500–2000 volts/mil at 100% humidity. Dielectric constant, 2.0. Dissipation factor, .002. Tensile strength, above 3000 psi at 200% elongation. Thermal conductivity, 0.25 BTU/hu/° F/in. Available for 200° C use in Teflon-FEP. **Specify Color:** Natural, unless otherwise specified: Black, blue, brown, green, gray, orange, red, violet, white or yellow at prices shown. Stripes, other colors, and fractional lengths available on quotation; write for prices.


Expanded


Flexible


Spaghetti

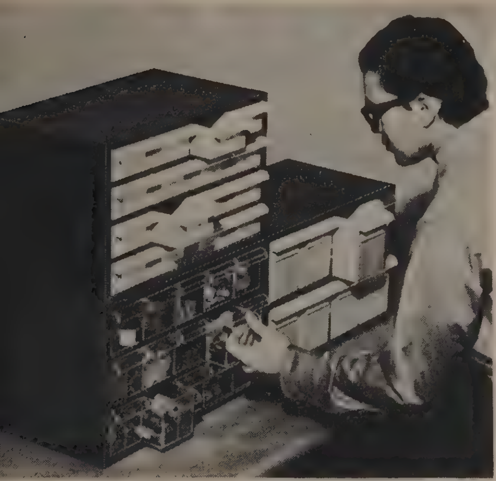
| AWG Size | Nom. I.D., In. | Put-Ups, Ft. Per Spool | Put-Ups, Ft. Min. Unit Reel | Standard Spaghetti Nom. Wall Th. | Standard Spaghetti 100 Ft. Net, Lengths To 199′ | Standard 200–499′ | Standard 500–999′* | Thin Wall Spaghetti Nom. Wall Th. | Thin Wall 100 Ft. Net, Lengths To 199′ | Thin Wall 200–499′ | Thin Wall 500–999′* | Lightweight Spaghetti Nom. Wall Th. | Lightweight 100 Ft. Net, Lengths To 199′ | Lightweight 200–499′ | Lightweight 500–999′* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | .012 | 2000 | 25 | ....... | ....... | ....... | ....... | .009 | $ 8.64 | $ 6.30 | $ 5.67 | .006 | $ 6.24 | $ 6.00 | $ 5.50 |
| 28 | .015 | 2000 | 25 | ....... | ....... | ....... | ....... | .009 | 7.32 | 5.44 | 5.02 | .006 | 5.60 | 5.20 | 4.80 |
| 26 | .018 | 2000 | 25 | ....... | ....... | ....... | ....... | .009 | 7.00 | 5.60 | 5.08 | .006 | 5.11 | 4.87 | 4.30 |
| 24 | .022 | 2000 | 25 | .012 | $ 9.63 | $ 7.98 | $ 6.88 | .010 | 7.49 | 5.65 | 5.15 | .006 | 5.45 | 5.20 | 4.58 |
| 22 | .028 | 1000 | 25 | .012 | 10.98 | 8.85 | 7.59 | .010 | 8.73 | 7.10 | 6.05 | .006 | 6.34 | 6.04 | 5.34 |
| 20 | .034 | 1000 | 25 | .016 | 15.05 | 11.95 | 10.13 | .012 | 11.17 | 9.30 | 7.90 | .006 | 7.82 | 7.51 | 6.43 |
| 19 | .038 | 750 | 10 | .016 | 16.40 | 12.90 | 11.10 | .012 | 12.00 | 10.40 | 8.70 | .006 | 8.62 | 8.28 | 7.09 |
| 18 | .042 | 750 | 10 | .016 | 18.70 | 14.60 | 12.50 | .012 | 15.00 | 11.80 | 9.40 | .006 | 9.50 | 9.11 | 7.80 |
| 17 | .047 | 750 | 10 | .016 | 20.35 | 15.90 | 13.60 | .012 | 16.50 | 12.75 | 10.40 | .006 | 10.50 | 10.05 | 8.61 |
| 16 | .053 | 500 | 10 | .016 | 21.70 | 17.70 | 14.88 | .012 | 17.10 | 13.30 | 10.90 | .006 | 11.35 | 10.85 | 9.31 |
| 15 | .059 | 500 | 10 | .016 | 22.20 | 18.25 | 15.30 | .012 | 17.60 | 13.80 | 11.30 | .006 | 12.50 | 11.92 | 9.80 |
| 14 | .066 | 400 | 10 | .016 | 23.90 | 18.97 | 15.80 | .012 | 18.25 | 14.05 | 11.60 | .008 | 13.55 | 13.05 | 10.70 |
| 13 | .076 | 400 | 10 | .016 | 25.90 | 20.45 | 16.78 | .012 | 19.75 | 15.80 | 12.65 | .008 | 15.34 | 14.80 | 11.65 |
| 12 | .085 | 250 | 10 | .016 | 27.90 | 22.05 | 18.30 | .012 | 21.00 | 16.50 | 13.62 | .008 | 16.35 | 15.50 | 12.62 |
| 11 | .095 | 250 | 10 | .016 | 30.40 | 24.50 | 19.95 | .012 | 23.50 | 18.45 | 15.05 | .008 | 18.20 | 17.45 | 14.15 |
| 10 | .106 | 200 | 10 | .016 | 32.90 | 25.60 | 21.07 | .012 | 24.80 | 19.10 | 15.54 | .008 | 19.60 | 18.10 | 14.54 |
| 9 | .118 | 150 | 5 | .020 | 45.80 | 34.12 | 28.82 | .015 | 28.00 | 23.30 | 20.95 | .008 | 21.15 | 20.50 | 17.02 |
| ⅛″ | .125 | Coil | 5 | .020 | 46.90 | 35.60 | 30.80 | .016 | 29.80 | 24.50 | 22.00 | .008 | 21.39 | 20.85 | 17.85 |
| 8 | .133 | Coil | 5 | .020 | 47.35 | 36.00 | 31.55 | .015 | 31.00 | 25.70 | 23.10 | .008 | 22.63 | 21.55 | 18.97 |
| 7 | .148 | Coil | 5 | .020 | 49.45 | 38.75 | 34.10 | .015 | 32.00 | 28.50 | 25.30 | .008 | 24.46 | 22.80 | 20.45 |
| 6 | .166 | Coil | 5 | .020 | 53.50 | 41.85 | 36.80 | .015 | 35.00 | 30.80 | 27.30 | .010 | 30.81 | 28.95 | 25.70 |
| 5 | .186 | Coil | 5 | .020 | 58.95 | 46.10 | 40.60 | .015 | 37.00 | 33.00 | 29.90 | .010 | 35.15 | 30.40 | 27.45 |
| 4 | .208 | Coil | 5 | .020 | 64.00 | 50.17 | 44.02 | .015 | 39.80 | 35.65 | 33.00 | .010 | 38.30 | 33.60 | 30.45 |
| 3 | .234 | Coil | 5 | .020 | 70.82 | 55.45 | 48.80 | .015 | 43.55 | 38.90 | 35.90 | .010 | 42.00 | 36.75 | 33.50 |
| ¼″ | .255 | Coil | 5 | .020 | 72.40 | 59.00 | 51.90 | .015 | 48.00 | 42.50 | 39.00 | .010 | 44.70 | 39.20 | 35.80 |
| 2 | .263 | Coil | 5 | .020 | 73.05 | 60.95 | 53.65 | .015 | 49.35 | 44.10 | 40.50 | .010 | 45.50 | 39.90 | 36.40 |
| 1 | .294 | Coil | 5 | .020 | 81.10 | 67.65 | 59.55 | .015 | 55.00 | 49.20 | 45.10 | .010 | 50.20 | 44.00 | 40.10 |
| 5/16″ | .321 | Coil | 5 | .020 | 90.70 | 75.20 | 66.10 | .015 | 60.00 | 53.90 | 49.30 | .012 | 59.50 | 52.10 | 47.60 |
| 0 | .330 | Coil | 5 | .020 | 91.40 | 76.15 | 67.00 | .015 | 60.90 | 54.60 | 50.00 | .012 | 60.50 | 53.00 | 48.40 |

*Larger quantity prices furnished on request. †Registered DuPont trademark.

**WE HANDLE ALL PENNTUBE® PRODUCTS, WRITE FOR PRICES.**

# AKRO-MILS PARTS STORAGE CABINETS

## HEAVY-DUTY WELDED STEEL FRAME—MOLDED STYRENE DRAWERS



### COMPACT MODULAR CABINET— 10 DRAWER SIZES

STORE—Small parts, electronic components, medical supplies, A-V material, hardware, tools, instruments.

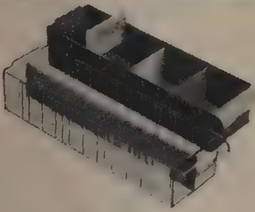
SAVE TIME—Instantly locate parts and supplies.

SAVE SPACE—Pick the right drawer for your requirements, compact modular cabinets are only 18″ w. x 11″ h. except 17-136, 11⅛″ h. and 17-024, 9⅞″ h.

VERSATILE—Stack horizontally or vertically, wall mount, place on carts or shelves.

### HEAVY-DUTY STEEL FRAME CABINET

Charcoal gray baked enamel finish, steel drawer supports, nesting "feet" for stability in stacking.



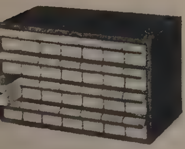
### MOLDED STYRENE DRAWERS—TWO TYPES

GRAY HEAVY-DUTY—Virtually unbreakable, guaranteed for life, will not crack, break or dent.

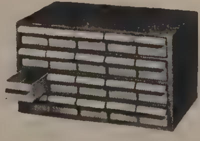
TRANSPARENT—See-thru for quick visual checks; medium duty.

Styrene drawers are lightweight; rust and corrosion proof; safe, no sharp edges; spill proof, retaining tab holds open drawers. All drawers can be partitioned with dividers into sub-compartments. Patented locking dividers will not creep or slip.

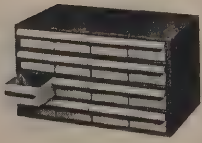
**RAME SIZE 18″ W. X 11″ H. X 11″ D.**



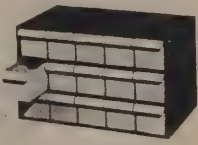
18-228



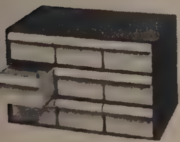
17-320, 18-320



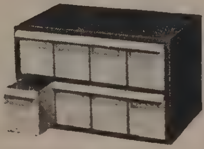
17-416, 18-416



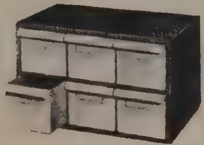
17-715, 18-715



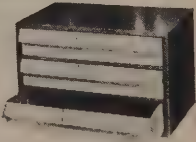
17-909, 18-909



18-608



18-956



18-803

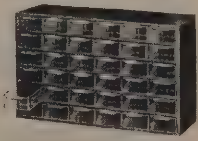
### ORDERING AND PRICING INFORMATION

| Akro-Mils Cabinet No.‡ | | Drawer | | | | Shp. Wt., Lbs. | Net Each | Extra Dividers | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Transparent Drawers | Gray Heavy-Duty Drawers | per Cabinet | Size, Inches W. | H. | D. | | | Cross No. | Net per Pkg. (25) | Length No. | Net per Pkg. (10) |
| 17-136 | ........ | 36 | 2¾ | 1⁷⁄₁₆ | 5⅞ | 13 | $14.99 | 42-101* | $1.70 | 42-121† | $1.70 |
| ........ | 18-228 | 28 | 2⅛ | 2⅛ | 11 | 22 | 25.70 | 42-201 | 2.20 | ........ | ........ |
| 17-024 | ........ | 24 | 2¾ | 2 | 5⅞ | 11 | 14.99 | 40-401 | 1.40 | ........ | ........ |
| 17-320 | 18-320 | 20 | 3⅛ | 2⅛ | 11 | 21 | 22.99 | 42-301 | 1.40 | 42-431 | 1.40 |
| 17-416 | 18-416 | 16 | 4 | 2⅛ | 11 | 20 | 22.99 | 42-401 | 1.70 | 42-431 | 1.40 |
| 17-715 | 18-715 | 15 | 3⅛ | 3¹⁄₃₂ | 11 | 20 | 22.99 | 43-101 | 2.10 | 43-331 | 2.10 |
| 17-909 | 18-909 | 9 | 5¼ | 3¹⁄₃₂ | 11 | 18 | 22.99 | 43-301 | 2.25 | 43-331 | 2.10 |
| ........ | 18-608 | 8 | 4 | 4¾ | 11 | 22 | 22.99 | 44-401 | 2.70 | ........ | ........ |
| ........ | 18-956 | 6 | 5¼ | 4¾ | 11 | 22 | 22.99 | 44-501 | 2.95 | ........ | ........ |
| ........ | 18-803 | 3 | 16¾ | 3¹⁄₃₂ | 11 | 18 | 19.99 | ........ | ........ | 43-331 | 2.10 |

Pkg. of 50. †Pkg. of 25. ‡One cross divider per drawer furnished except 18-803.

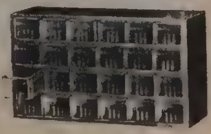
**FRAME SIZE 18″ W. X 11⅛″ H. X 6″ D.**

17-136



**FRAME SIZE 18″ W. X 9⅞″ H. X 6″ D.**

17-024



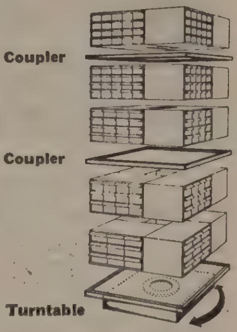
# AKRO-MILS STORAGE-GO-ROUND, DRAWER-BOXES AND DRAWEF

## STORAGE-GO-ROUND ROTARY PARTS CABINETS

- STACKS TOGETHER— NO BOLTING
- ROTATES 360°
- SIZE: 29″ W. X 60″ H. X 29″ D.

### TWENTY CABINETS ON A ROTARY BASE

The advantages of rotary storage and individual drawers in a single unit. Twenty cabinets mou on a turntable base provide immediate access to as many as 560 drawers in a minimum of sp Up to one-half ton of parts, supplies and products stored and indexed at your fingertips. Sav to 50% in storage space: Rotates 360°. Drawers divide into subcompartments. Shipped assembled. Stacks together in minutes.



### COMPLETE STORAGE-GO-ROUND ASSEMBLY

Each Storage-Go-Round complete with turntable base, coup and 20 cabinets with drawers as listed in the following table.

| Quantity of Drawers per Size | Drawer Size, Inches W. x H. x D. | Five Each of Akro-Mil Cabinet Number | |
|---|---|---|---|
| | | 98-555 | 98-444 |
| 100 | 3⅛ x 2⅛ x 11 | 17-320 | 18-320 |
| 75 | 3⅛ x 3¹⁄₃₂ x 11 | 17-715 | 18-715 |
| 80 | 4 x 2⅛ x 11 | 17-416 | 18-416 |
| 45 | 5¼ x 3¹⁄₃₂ x 11 | 17-909 | 18-909 |

**Akro-Mils No. 98-555 Storage-Go-Round**—With transpar drawers. Weight, 425 lbs. Net Each................**$546.**

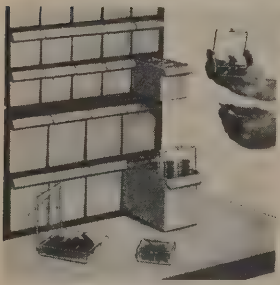
**Akro-Mils No. 98-444 Storage-Go-Round**—With gray heavy-d drawers. Weight, 426 lbs. Net Each................**$546.**

### TURNTABLE BASE AND COUPLERS

Tailor your own rotary storage system. Select any assortment Modular cabinets with 11″ drawers (8, 12, 16 or 20 cabine Order your choice of Modular cabinets plus a turntable a couplers. Shipping Weight, 65 lbs.

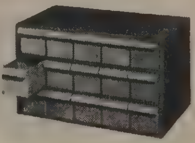
**Akro-Mils No. 98-520**—Turntable base and couplers only. Net Each....................................**$86.**

## DRAWER-BOXES—FOR STORING AND ORGANIZING



**PERFECT FOR . . .**

- N/C TAPES
- SMALL PARTS
- COMPONENTS



### HEAVY-DUTY STEEL FRAME CABINET— STYRENE DRAWERS

Protect, store and index valuable N/C tapes, small parts and articles. Dustproof, clear styrene boxes with positive locking lids prevent damage and breakage. Eight boxes fit into each drawer of a steel framed cabinet. Dividers are furnished to partition drawers into four compartments for indexing. Modular cabinets stack together to form a complete storage system.

05-820

05-900

05-950

05-960

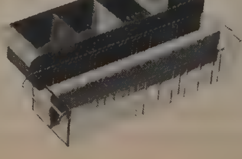
### DRAWER-BOX AND CABINET

NOTE: Order boxes and appropriate cabinet or boxes only f your cabinet.

| Akro-Mils Drawer-Box/Cabinet Number | Carton Qty. | Size, Inches | | | Shpg. Wt., Lbs. | Net per Carto |
|---|---|---|---|---|---|---|
| | | W. | H. | D. | | |
| Drawer-Box 05-820 | 224 | 2 | 1⅛ | 2 | 11 | $24.5 |
| Fits Cabinet 18-228 | 1 | 18 | 11 | 11 | 22 | 25.7 |
| Drawer-Box 05-900 | 120 | 2⅞ | 1⅛ | 2¾ | 12 | 22.8 |
| Fits Cabinet 18-715 | 1 | 18 | 11 | 11 | 20 | 22.9 |
| Drawer-Box 05-950 | 64 | 4½ | 1⅛ | 3¾ | 12 | 18.0 |
| Fits Cabinet 18-608 | 1 | 18 | 11 | 11 | 22 | 22.9 |
| Drawer-Box 05-960 | 48 | 5 | 1⅛ | 4½ | 12 | 18.0 |
| Fits Cabinet 18-956 | 1 | 18 | 11 | 11 | 22 | 22.9 |

## MOLDED STYRENE DRAWERS FOR SHELVING

- CHOICE OF: HI-IMPACT GRAY OR TRANSPARENT
- MOVABLE LOCKING DIVIDERS
- RETAINING TAB HOLDS OPEN DRAWERS



- STYRENE DRAWERS ARE LIGHTWEIGHT, RUST & CORROSION PROOF
- NO SHARP EDGES

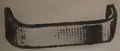
### STYRENE DRAWERS AND DIVIDERS

Long lasting molded styrene drawers for shelving are lightweigh rust and corrosion proof. Choice of Hi-Impact gray or transparen Store more items, in less space, more efficiently. Convert standar shelving, carts and benches to organized storage with individu drawers. Cross dividers allow partitioning drawers into sub compartments. All drawers are 11″ d.

| STYRENE DRAWERS | | | | | | DIVIDERS | |
|---|---|---|---|---|---|---|---|
| Akro-Mils Drawer Number | | Size, Inches W. x H. | Carton | | Net Each | Akro-Mils No. | Net/ Pkg. of 25 |
| Gray | Transparent | | Qty. | Wt., Lbs. | | | |
| 22-251 | ........ | 2⅛ x 2⅛ | 56 | 18 | $0.63 | 42-201 | $2.20 |
| 22-351 | 22-301 | 3⅛ x 2⅛ | 40 | 17 | .71 | 42-301 | 1.40 |
| 23-101 | 23-001 | 3⅛ x 3¹⁄₃₂ | 30 | 18 | 1.18 | 43-101 | 2.10 |
| 22-451 | 22-401 | 4 x 2⅛ | 32 | 15 | .83 | 42-401 | 1.70 |
| 24-451 | ........ | 4 x 4¾ | 18 | 15 | 2.01 | 44-401 | 2.70 |
| 23-301 | 23-201 | 5¼ x 3¹⁄₃₂ | 15 | 13 | 1.47 | 43-301 | 2.25 |
| 24-551 | ........ | 5¼ x 4¾ | 12 | 11 | 2.30 | 44-501 | 2.95 |

# Cabinet Hardware, Brackets

## BUD HANDLES

A

B

C

D

E

F

G

H

I

J

K

L

Fabricated from steel, brass or cast aluminum. Durable finish provides long wear and attractive appearance. Skin packed in pairs or bulk packed (priced singly) with all necessary mounting hardware. Designed for rugged applications, they have unlimited use in electronic, electrical and other fields.

| Bud No. | Fig. | Description | Net per Pair, Lots of | | | Bulk Pack*: Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|
| | | | 1-49 | 50-99 | 100-149 | 1-99 | 100-199 | 200-499 |
| H-9100 | A | 1" x ¼" chrome-plated solid brass; 4" x ½" mtg. cntrs.; 1" hand clearance; four ½" x 6-32 threaded screws | $ 7.50 | $ 6.75 | $ 6.00 | $3.05 | $2.75 | $2.45 |
| H-9101 | A | Same, but 8" x ½" mtg. centers | 11.45 | 10.30 | 9.15 | 5.05 | 4.55 | 4.05 |
| H-9102 | A | ⅝" x ¼" chrome-plated solid brass; 4" mtg. centers; 1" hand clearance; two ½" x 6-32 threaded screws | 5.85 | 5.25 | 4.70 | 2.75 | 2.50 | 2.20 |
| H-9103 | A | Same, but has 6" mounting centers | 6.80 | 6.10 | 5.45 | 3.05 | 2.75 | 2.45 |
| H-9110 | B | ⅜" steel rod angular formed, chrome-plated; 6" mtg. ctrs.; 1¼" hand clearance; two ½" x 10-32 screws | 5.05 | 4.55 | 4.05 | 1.90 | 1.70 | 1.50 |
| H-9111 | B | ⅜" steel rod, chrome plated, 4" mtg. ctrs.; 1" hand clearance; two ½" x 10-32 threaded screws | 2.65 | 2.40 | 2.10 | 1.25 | 1.15 | 1.00 |
| H-9112 | B | 6" mtg. center version of H-9111 | 3.10 | 2.80 | 2.50 | 1.35 | 1.20 | 1.10 |
| H-9113 | B | 8" mtg. center version of H-9111 | 3.40 | 3.05 | 2.70 | 1.35 | 1.20 | 1.10 |
| H-9114 | B | ½" steel rod, chrome-plated; 8" mtg. centers; 1½" hand clearance; two ½" x ¼-28 thd. screws | 5.60 | 5.05 | 4.50 | 2.10 | 1.90 | 1.70 |
| H-9115 | C | ⅜" steel rod, chrome-plated; 4" mtg. ctrs.; 15/16" hand clearance; two ¼-28 thd. nuts | 4.20 | 3.80 | 3.35 | 1.70 | 1.55 | 1.35 |
| H-9116 | C | Same, but has 6" mtg. centers | 4.75 | 4.30 | 3.80 | 1.90 | 1.70 | 1.50 |
| H-9120 | D | Silver-anodized die-cast aluminum; 4⅜" inside, 5⅜" outside mtg. centers; 1" hand clearance; four ½" x 6-32 threaded screws | 6.60 | 5.95 | 5.30 | 2.95 | 2.65 | 2.35 |
| H-9121 | D | Same, except chrome plated alloy | 8.15 | 7.35 | 6.50 | 3.70 | 3.35 | 2.95 |
| H-9123 | D | Similar to H-9120 but 4½" mtg. centers; 1" hand clearance; two ½" x 10-32 thd. screws | 4.30 | 3.85 | 3.45 | 1.90 | 1.70 | 1.50 |
| H-9122 | E | Silver-anodized die-cast aluminum; hinged on ¼" steel pins with 2 hinge blocks; 6½" inside, 7¼" outside mtg. centers; 1⅛" hand clearance; four ⅜" x 10-32 threaded screws | 11.10 | 10.00 | 8.90 | 5.05 | 4.55 | 4.05 |
| H-9130 | F | Silver-anodized die-cast aluminum; 3" mtg. centers; two ⅜" x 10-32 thd. screws; size 4 15/16" x 3" | 9.15 | 8.25 | 7.30 | 4.20 | 3.80 | 3.35 |
| H-9131 | G | Silver-anodized die-cast aluminum; size, 4" x 2⅞"; 2¼" mtg. centers; two ⅝" x ¼-28 thd. raised, counter-sunk screws and nuts | 6.40 | 5.75 | 5.10 | 2.95 | 2.65 | 2.35 |
| H-9140 | H | Silver-anodized die-cast aluminum; 3½" mtg. centers; ¾" hand clearance; two ½" x 10-32 threaded screws | 3.85 | 3.45 | 3.10 | 1.70 | 1.55 | 1.35 |
| H-9149 | ..... | 5¾" x 3 13/16" black shell, chrome handle; flip-up and out handle lies flat in frame when not in use; for Classic Series cabinets; four 8-32 x ½ countersunk screws with nuts. | 12.55 | 11.30 | 10.05 | 5.65 | 5.10 | 4.50 |
| H-9150 | I | Silver-anodized die-cast aluminum; 4" x ⅝" mtg. centers; 1¼" hand clearance; four ½" x 10-32 threaded screws | 5.40 | 4.85 | 4.30 | 2.40 | 2.15 | 1.90 |
| H-9151 | J | Silver-anodized die-cast aluminum; 5 1/16" x ⅝" mtg. centers; 1⅜" hand clearance; four ½" x 10-32 threaded screws | 8.80 | 7.90 | 7.05 | 3.90 | 3.50 | 3.10 |
| H-9152 | J | Similar to above except 3⅞" mtg. centers; 1⅛" hand clearance; two ⅜" x 10-32 threaded screws | 7.15 | 6.45 | 5.70 | 3.15 | 2.85 | 2.50 |
| H-9160 | K | Chrome-plated ⅜" steel rod; 3½" mtg. centers; 1 11/16" hand clearance; two ¼"-28 hex nuts | 4.75 | 4.30 | 3.80 | 1.90 | 1.70 | 1.50 |
| H-9161 | K | Same, but with 5¼" mounting centers | 5.30 | 4.75 | 4.25 | 1.90 | 1.70 | 1.50 |
| H-9162 | K | Same, but with 7" mounting centers | 5.40 | 4.85 | 4.30 | 2.00 | 1.80 | 1.60 |
| H-9163 | K | Same, but with 8¾" mounting centers | 5.60 | 5.05 | 4.50 | 2.10 | 1.90 | 1.70 |
| H-9164 | K | Same, but with 10½" mounting centers | 6.40 | 5.75 | 5.10 | 2.20 | 2.00 | 1.75 |
| H-9165 | K | Same, but with 12¼" mounting centers | 6.95 | 6.25 | 5.55 | 2.40 | 2.15 | 1.90 |
| H-9166 | L | Chrome-plated ¼" brass rod; 1 29/32" mtg. centers; 1" hand clearance; two ½" x 6-32 thd. screws | 2.20 | 2.00 | 1.75 | .95 | .85 | .75 |
| H-9168 | L | Same, but 3" mtg. centers; two ½" x 6-32 thd. screws | 2.30 | 2.05 | 1.85 | 1.00 | .90 | .80 |

*Number shown is for skin packed pairs. For bulk packed handles (priced singly), add suffix **B** to number (example: H-9100**B**).

## TRUCK CASTERS

Use with all Bud relay racks and other floor mounted units. Ball bearing wheels are hard tread composition. **RC-7756** is for heavy duty applications; **RC-7758** is for extra heavy duty use (Series 60 Racks).

| Bud No. | Height | Weight (Set of 4) | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-49 | 50-99 | 100-149 |
| RC-7756 | 2⅝" | 1¾ lbs. | $1.30 | $1.15 | $1.05 |
| RC-7758 | 3¼" | 6 lbs. | 3.20 | 2.90 | 2.55 |

## RUBBER FEET

**No. F-7264A:** Has recessed head with mounting stud; rubber portion 15/16" x 11/32" thick. **No. F-8038:** May be applied to any surface; ¾" dia. x ⅛" thick self adhesive sponge rubber pad. **No. F-9653:** Press-fit type for 7/16" hole.

| Bud No. | Description | Net per 100, Lots of | | | |
|---|---|---|---|---|---|
| | | 1-49 | 50-99 | 100-149 | 200-299 |
| F-7264A | High grade black rubber | $12.10 | $10.90 | $9.70 | ...... |
| F-8038 | Sponge rubber pad | 2.95 | 2.95 | 2.65* | $2.35 |
| F-9653 | Top grade gray rubber | 5.85 | 5.25 | 4.70 | ...... |

*Lots 100–199.

## DOOR HANDLES, CATCH SETS

**No. H-9347:** Fits flush with cabinet door; exposed parts chrome plated. **Nos. H-3360 and H-3361:** Lever-type handles are satin chrome plated with steel spindle and cam; fit Super Deluxe racks.

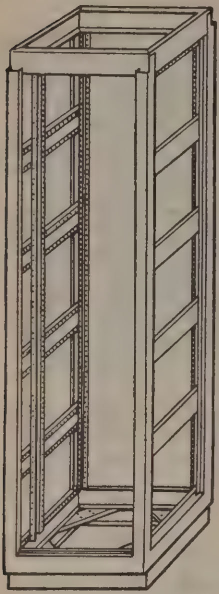
| Bud No. | Description | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-49 | 50-99 | 100-149 |
| H-3360 | Non-locking handle | $4.20 | $3.80 | $3.35 |
| H-3361 | 3360 with lock and key | 7.90 | 7.10 | 6.30 |
| H-9347 | Flush-mount catch set | 1.55 | 1.40 | 1.25 |

## SPEAKER ENCLOSURE HANDLES

Attach to any small housing or speaker enclosure to achieve portability. Made of aluminum tubing with etched finish.

| Bud No. | Length, Inches | Mtg. Ctrs., Inches | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-49 | 50-99 | 100-149 |
| UH-70A | 5⅛ | 4⅝ | $0.65 | $0.60 | $0.55 |
| UH-71A | 3¾ | 3¼ | .55 | .50 | .45 |

# Series "60" Cabinet Racks



(A) **Upright Rack**

Scientifically designed to meet all requirements for human needs as well as component physical specifications; the most practical cabinet rack developed for either a single piece of equipment or a large instrumentation system. Very economical to the user, units are shipped fully assembled and ready for immediate use.

Basic frame welded in a solid unit composed of 14-gauge cold-rolled steel channels. Sides have "U" braces with perforated channels for fastening vertical adjustable mounting rails. Rails also support other types of equipment such as brackets, shelves, slides, etc. Eliminates need of drilling holes in the rack. Sides and rear door made of 18 gauge steel. Door may be mounted to open left or right. Vertical channel, 4″ wide, welded to door to prevent vibration or whip. Two pairs of panel mounting rails are supplied; fully adjustable. Panels may be mounted in front and rear at the same time. Front rails drilled and tapped 10-32 W.E. spacing. Rear rails are drilled according to universal spacing.

All Series Sixty enclosures may be quickly combined with each other to create units of any desired width as shown in the Add-A-Rack series. In addition, such accessories as desk tops, turrets, drawers, slides, sloping panel supports and front door are easily installed.

Standard finishes are textured baked enamel over primer. Specify two-tone gray by adding suffix **GGY**. For two-tone blue, add suffix **BBY** to order number. Standard Bud relay rack panels are available for the Series Sixty racks in light gray and light blue; when ordering, add suffix **GY** for gray; **BY** for blue

### UPRIGHT CABINET RACKS (FIG. A)

Completely assembled 19″ racks with sides, rear door and top. Standard units have plain sides and door and solid top. For greater ventilation, order units with louvered sides and rear door and solid top. Width, 24 1/16″. Inside depth 20½″ clear on all units with 22″ outside depth; 24″, all others. Top opening 18 5/16″ w. x 17″ d. on units with 22″ outside depth; 18 5/16″ w. x 20½″ d., all others. **Specify Color When Ordering:** Add suffix **GGY** to number for gray; suffix **BBY** for blue.

#### COMPLETE 19′ RACKS WITH PLAIN SIDES AND DOOR

| Bud No. | Height | Outside Depth | Panel Space | Weight, Lbs. | Net Each, Lots of 1-3 | 4-6 | 7-9 |
|---|---|---|---|---|---|---|---|
| 60-2300 | 29⅝″ | 22″ | 21″ | 118 | $128.95 | $116.05 | $103.15 |
| 60-2301 | 40⅛″ | 22″ | 31½″ | 156 | 159.60 | 143.65 | 127.70 |
| 60-2302 | 50⅝″ | 22″ | 42″ | 173 | 177.25 | 159.55 | 141.80 |
| 60-2303 | 61⅛″ | 22″ | 52½″ | 197 | 196.90 | 177.20 | 157.50 |
| 60-2304 | 69⅞″ | 22″ | 61¼″ | 220 | 218.70 | 196.85 | 174.95 |
| 60-2305 | 78⅝″ | 22″ | 70″ | 235 | 243.10 | 218.80 | 194.50 |
| 60-2306 | 87⅜″ | 22″ | 78¾″ | 265 | 265.35 | 238.80 | 212.30 |
| 60-2307 | 29⅝″ | 25½″ | 21″ | 156 | 152.25 | 137.05 | 121.80 |
| 60-2308 | 40⅛″ | 25½″ | 31½″ | 176 | 176.95 | 159.25 | 141.55 |
| 60-2309 | 50⅝″ | 25½″ | 42″ | 185 | 196.55 | 176.90 | 157.25 |
| 60-2310 | 61⅛″ | 25½″ | 52½″ | 211 | 218.20 | 196.40 | 174.55 |
| 60-2311 | 69⅞″ | 25½″ | 61¼″ | 240 | 242.55 | 218.30 | 194.05 |
| 60-2312 | 78⅝″ | 25½″ | 70″ | 256 | 269.45 | 242.50 | 215.55 |
| 60-2313 | 87⅜″ | 25½″ | 78¾″ | 267 | 294.10 | 264.70 | 235.30 |

#### COMPLETE 19′ RACKS WITH LOUVERED SIDES AND DOOR

| Bud No. | Height | Outside Depth | Panel Space | Weight, Lbs. | Net Each, Lots of 1-3 | 4-6 | 7-9 |
|---|---|---|---|---|---|---|---|
| 60-2700 | 29⅝″ | 22″ | 21″ | 118 | $134.00 | $120.60 | $107.20 |
| 60-2701 | 40⅛″ | 22″ | 31½″ | 156 | 166.45 | 149.80 | 133.15 |
| 60-2702 | 50⅝″ | 22″ | 42″ | 173 | 186.40 | 167.75 | 149.10 |
| 60-2703 | 61⅛″ | 22″ | 52½″ | 197 | 213.05 | 191.75 | 170.45 |
| 60-2704 | 69⅞″ | 22″ | 61¼″ | 220 | 231.95 | 208.75 | 185.55 |
| 60-2705 | 78⅝″ | 22″ | 70″ | 235 | 257.55 | 231.80 | 206.05 |
| 60-2706 | 87⅜″ | 22″ | 78¾″ | 265 | 279.75 | 251.80 | 223.80 |
| 60-2707 | 29⅝″ | 25½″ | 21″ | 156 | 157.90 | 142.10 | 126.30 |
| 60-2708 | 40⅛″ | 25½″ | 31½″ | 176 | 190.75 | 171.65 | 152.55 |
| 60-2709 | 50⅝″ | 25½″ | 42″ | 185 | 212.20 | 191.00 | 169.75 |
| 60-2710 | 61⅛″ | 25½″ | 52½″ | 211 | 236.15 | 212.55 | 188.90 |
| 60-2711 | 69⅞″ | 25½″ | 61¼″ | 240 | 262.40 | 236.15 | 209.90 |
| 60-2712 | 78⅝″ | 25½″ | 70″ | 256 | 291.50 | 262.35 | 233.20 |
| 60-2713 | 87⅜″ | 25½″ | 78¾″ | 267 | 317.65 | 285.90 | 254.10 |

(B) Plain Door

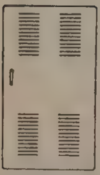
## ACCESSORIES FOR UPRIGHT CABINET RACKS

### ACCESSORY DOORS

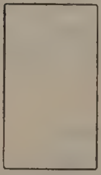
Doors are interchangeable; may be used for front or rear of rack; mount to open either left or right.

#### FOR 19″ PANEL SPACE

| Plain Type (Fig. B) Bud No. | Net Each, Lots of 1-3 | 4-6 | 7-9 | Ht. | Width | Fits Rack With Panel Space of | Wt., Lbs. | Louvered Type (Fig. C) Bud No. | Net Each, Lots of 1-3 | 4-6 | 7-9 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 60-2340 | $19.30 | $17.35 | $15.45 | 21 7/16″ | 18 15/16″ | 21″ | 8 | 60-2540 | $22.05 | $19.85 | $17.65 |
| 60-2341 | 23.85 | 21.45 | 19.10 | 31 15/16″ | 18 15/16″ | 31½″ | 11½ | 60-2541 | 27.40 | 24.65 | 21.90 |
| 60-2342 | 26.35 | 23.70 | 21.10 | 42 7/16″ | 18 15/16″ | 42″ | 15½ | 60-2542 | 30.45 | 27.40 | 24.35 |
| 60-2343 | 29.40 | 26.45 | 23.50 | 52 15/16″ | 18 15/16″ | 52½″ | 19 | 60-2543 | 33.70 | 30.35 | 26.95 |
| 60-2344 | 32.55 | 29.30 | 26.05 | 61 11/16″ | 18 15/16″ | 61¼″ | 22¼ | 60-2544 | 37.50 | 33.75 | 30.00 |
| 60-2345 | 38.00 | 34.20 | 30.40 | 70 7/16″ | 18 15/16″ | 70″ | 25½ | 60-2545 | 41.70 | 37.55 | 33.25 |
| 60-2346 | 39.40 | 35.45 | 31.50 | 79 3/16″ | 18 15/16″ | 78¾″ | 29 | 60-2546 | 45.45 | 40.90 | 36.35 |



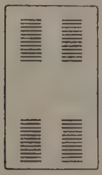
(C) Louvered Door



(D) Plain Side

### ACCESSORY SIDES

| Plain Type (Fig. D) Bud No. | Net Each Pair, Lots 1-3 | 4-6 | 7-9 | Ht. | Width | Fits Rack With Panel Space of | Wt., Lbs. | Louvered Type (Fig. E) Bud No. | Net Each Pair, Lots 1-3 | 4-6 | 7-9 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 60-2560 | $28.75 | $25.90 | $23.00 | 26 55/64″ | 22″ | 21″ | 12½ | 60-2580 | $33.90 | $30.50 | $27.10 |
| 60-2561 | 38.00 | 34.20 | 30.40 | 37 23/64″ | 22″ | 31½″ | 17½ | 60-2581 | 44.85 | 40.35 | 35.90 |
| 60-2562 | 44.20 | 39.80 | 35.35 | 47 55/64″ | 22″ | 42″ | 21 | 60-2582 | 53.35 | 48.00 | 42.70 |
| 60-2563 | 51.05 | 45.95 | 40.85 | 58 23/64″ | 22″ | 52½″ | 26¼ | 60-2583 | 62.70 | 56.45 | 50.15 |
| 60-2564 | 56.30 | 50.65 | 45.05 | 67 7/64″ | 22″ | 61¼″ | 30 | 60-2584 | 69.10 | 62.20 | 55.30 |
| 60-2565 | 61.95 | 55.75 | 49.55 | 75 55/64″ | 22″ | 70″ | 34 | 60-2585 | 76.75 | 69.10 | 61.40 |
| 60-2566 | 71.00 | 63.90 | 56.80 | 84 39/64″ | 22″ | 78¾″ | 38 | 60-2586 | 80.85 | 72.75 | 64.70 |
| 60-2567 | 36.35 | 32.70 | 29.10 | 26 55/64″ | 25½″ | 21″ | 14½ | 60-2587 | 39.80 | 35.80 | 31.85 |
| 60-2568 | 47.45 | 42.70 | 37.95 | 37 23/64″ | 25½″ | 31½″ | 20 | 60-2588 | 52.00 | 46.80 | 41.60 |
| 60-2569 | 54.80 | 49.30 | 43.85 | 47 55/64″ | 25½″ | 42″ | 24 | 60-2589 | 60.60 | 54.55 | 48.50 |
| 60-2570 | 63.65 | 57.39 | 50.90 | 58 23/64″ | 25½″ | 52½″ | 29½ | 60-2590 | 70.45 | 63.40 | 56.35 |
| 60-2571 | 69.75 | 62.80 | 55.80 | 67 7/64″ | 25½″ | 61¼″ | 34½ | 60-2591 | 77.00 | 69.30 | 61.60 |
| 60-2572 | 77.60 | 69.85 | 62.10 | 75 55/64″ | 25½″ | 70″ | 39 | 60-2592 | 84.85 | 76.35 | 67.90 |
| 60-2573 | 81.70 | 73.55 | 65.35 | 84 39/64″ | 25½″ | 78¾″ | 43½ | 60-2593 | 89.45 | 80.50 | 71.55 |



(E) Louvered Side

# BUD Series "60" Cabinet Racks

## ACCESSORIES FOR UPRIGHT CABINET RACKS (CONT'D)

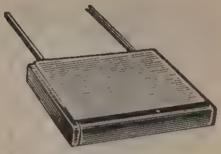
### ACCESSORY PERFORATED TOP

| Bud No. | For Panel Space | Width | Depth | Fits Upright Rack | Wt., Lbs. | Net Each, Lots of 1-3 | 4-6 | 7-9 |
|---|---|---|---|---|---|---|---|---|
| 0-2370 | 19″ | 21 15/16″ | 17″ | With overall depth of 22″ | 6 | $ 7.90 | $ 7.10 | $6.30 |
| 0-2371 | 19″ | 21 15/16″ | 20½″ | With overall depth of 25½″ | 7 | 8.30 | 7.45 | 6.65 |

### SERIES SIXTY DESK TOP (FIG. F)

ay be used in connection with any Series Sixty enclosure. Furnished completely assembled with tique white Formica* surface. Fastens to panel mounting rails by two pre-drilled channels. Will pport in excess of 200 lbs. Surface 24 1/16″ wide, 19½″ deep, 3 1/16″ high. Available in three colors. **ecify Color:** Add suffix **GG** for gray; **BB** for blue; **HG** for gray hammertone.

| ud No. | Fits Series Sixty | Support Channel | Wt., Lbs. | Net Each, Lots of 1-3 | 4-6 | 7-9 |
|---|---|---|---|---|---|---|
| 0-2360 | With 22″ depth | 21 9/32″ long | 22 | $41.70 | $37.55 | $33.35 |
| 0-2362 | With 25½″ depth | 24 25/32″ long | 23 | 43.05 | 38.75 | 34.45 |



F Desk Top

### INCLINED PANEL CABINET RACKS (FIG. G)

ompletely assembled with sides, rear door and solid top. Available in two combinations of plain or uvered sides and rear door. **Specify Color When Ordering:** Add suffix **GGY** to number for gray; **BY** for blue.

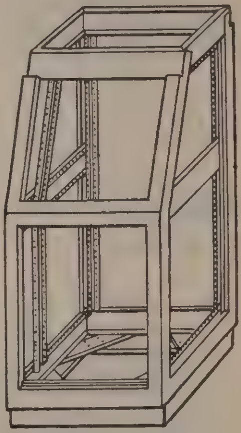
#### COMPLETE 19″ RACKS WITH PLAIN SIDES AND DOOR

ze, 50⅝″ h. x 24 1/16″ w. x 22″ d., outside; 20½″ d., clear inside. Weight, 165 lbs.

| Bud No. | Incline Panel Height | Vertical Panel Height | Top Opening, W. x D. | Net Each, Lots of 1-3 | 4-6 | 7-9 |
|---|---|---|---|---|---|---|
| 60-2330 | 10½″ | 29¾″ | 18 5/16″ x 11 53/64″ | $193.30 | $173.95 | $154.65 |
| 60-2331 | 15¾″ | 24½″ | 18 5/16″ x 10 1/32″ | 204.85 | 184.35 | 163.90 |
| 60-2332 | 17½″ | 22¾″ | 18 5/16″ x 9 27/64″ | 204.85 | 184.35 | 163.90 |

#### COMPLETE 19″ RACKS WITH LOUVERED SIDES AND DOOR

| Bud No. | Incline Panel Height | Vertical Panel Height | Top Opening, W. x D. | Net Each, Lots of 1-3 | 4-6 | 7-9 |
|---|---|---|---|---|---|---|
| 60-2730 | 10½″ | 29¾″ | 18 5/16″ x 11 53/64″ | $207.70 | $186.95 | $166.15 |
| 60-2731 | 15¾″ | 24½″ | 18 5/16″ x 10 1/32″ | 219.90 | 197.90 | 175.90 |
| 60-2732 | 17½″ | 22¾″ | 18 5/16″ x 9 27/64″ | 219.90 | 197.90 | 175.90 |



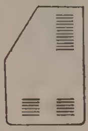
G Inclined Panel Rack

## ACCESSORIES FOR INCLINED PANEL CABINET RACKS

### ACCESSORY FRONT DOORS
### FOR 19″ PANEL SPACE

| Plain Type (Fig. J) Bud No. | Net Each, Lots of 1-3 | 4-6 | 7-9 | Height | Width | Fits Rack Top Open. Size, In. | Wt., Lbs. | Louvered Type (Fig. K) Bud No. | Net Each, Lots of 1-3 | 4-6 | 7-9 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0-2350 | $23.95 | $21.55 | $19.15 | 30 3/16″ | 18 15/16″ | 18 5/16 x 11 53/64 | 11 | 60-2550 | $27.50 | $24.65 | $21.90 |
| 0-2351 | 22.25 | 20.05 | 17.80 | 24 15/16″ | 18 15/16″ | 18 5/16 x 10 1/32 | 9½ | 60-2551 | 25.75 | 23.20 | 20.60 |
| 0-2352 | 21.75 | 19.60 | 17.40 | 23 3/16″ | 18 15/16″ | 18 5/16 x 9 27/64 | 9 | 60-2552 | 24.90 | 22.40 | 19.90 |

H



Side Panels I

### ACCESSORY REAR DOORS
### FOR 19″ PANEL SPACE

| Plain Type (Fig. J) Bud No. | Net Each, Lots of 1-3 | 4-6 | 7-9 | Height | Width | Fits Rack Top Open. Size, In. | Wt., Lbs. | Louvered Type (Fig. K) Bud No. | Net Each, Lots of 1-3 | 4-6 | 7-9 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0-2342 | $26.35 | $23.70 | $21.10 | 42 7/16″ | 18 15/16″ | All sizes | 15½ | 60-2542 | $30.45 | $27.40 | $24.35 |

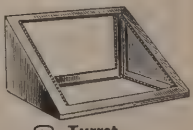
J

Doors K

### ACCESSORY SIDES

pecify "L" for left side or "R" for right side, determined when facing front of rack. Priced per pair.

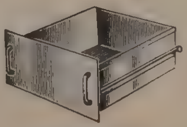
| Plain Type (Fig. H) Bud No. | Net Each, Lots of 1-3 | 4-6 | 7-9 | Height | Width | Fits Rack Top Open. Size, In. | Wt., Lbs. | Louvered Type (Fig. I) Bud No. | Net Each, Lots of 1-3 | 4-6 | 7-9 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0-2574 | $46.00 | $41.40 | $36.80 | 47 55/64″ | 22″ | 18 5/16 x 11 53/64 | 11 | 60-2594 | $50.70 | $45.65 | $40.55 |
| 0-2575 | 47.15 | 42.45 | 37.70 | 47 55/64″ | 22″ | 18 5/16 x 10 1/32 | 9½ | 60-2595 | 52.30 | 47.05 | 41.85 |
| 0-2576 | 47.65 | 42.90 | 38.10 | 47 55/64″ | 22″ | 18 5/16 x 9 27/64 | 9 | 60-2596 | 52.90 | 47.60 | 42.30 |



L Turret

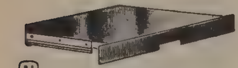
### ACCESSORY PERFORATED TOPS
### FOR 19″ PANEL SPACE

| Bud No. | Width | Depth | Fits Rack Top Size, In. | Wt., Lbs. | Net Each, Lots of 1-3 | 4-6 | 7-9 |
|---|---|---|---|---|---|---|---|
| 60-2372 | 21 15/16″ | 11 13/16″ | 18 5/16 x 11 53/64 | 3½ | $6.10 | $5.50 | $4.90 |
| 60-2373 | 21 15/16″ | 10″ | 18 5/16 x 10 1/32 | 3½ | 5.90 | 5.30 | 4.70 |
| 60-2374 | 21 15/16″ | 9 13/32″ | 18 5/16 x 9 27/64 | 3¼ | 5.90 | 5.30 | 4.70 |

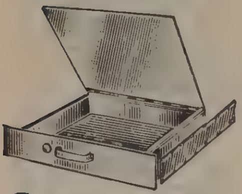


M Drawer

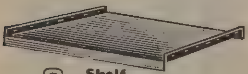
# Series "60" TURRETS, CONVERTIBLES, RACKS & ACCESSORIES



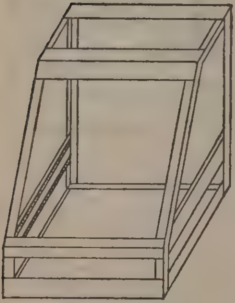
N **Sliding Desk Top**



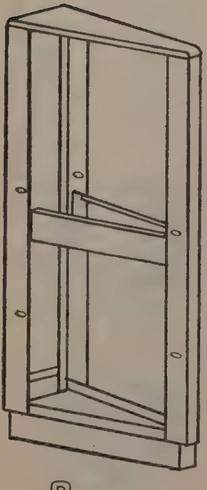
O **Desk Top Drawer**



P **Shelf**



**Convertible** Q



R **15° Wedge**

## ADD-A-RACK SERIES

Each assembly consists of frame, top, bottom, rear door and cowlings; used as an add-on unit to join any of the Series Sixty enclosures into a bank of two or more. One standard rack plus several Add-A-Racks make any desired number of racks combined for optimum width. Colors same as Inclined Racks.

### FOR 19″ PANEL SPACE

| Plain Door | | | | | Louvered Door | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Bud 60- | For Add-on to Rack No. | Net Each, Lots of 1-3 | 4-6 | 7-9 | Bud 60- | For Add-on to Rack No. | Net Each, Lots of 1-3 | 4-6 | 7-9 | Wt., Lbs. |
| 2500 | 60-2300 | $109.75 | $ 98.80 | $ 87.80 | 2900 | 60-2700 | $112.90 | $101.60 | $ 90.30 | 92 |
| 2501 | 60-2301 | 128.50 | 115.65 | 102.80 | 2901 | 60-2701 | 132.20 | 119.00 | 105.75 | 113 |
| 2502 | 60-2302 | 140.80 | 126.70 | 112.65 | 2902 | 60-2702 | 144.80 | 130.30 | 115.85 | 115 |
| 2503 | 60-2303 | 153.85 | 138.45 | 123.10 | 2903 | 60-2703 | 158.25 | 142.45 | 126.60 | 145 |
| 2504 | 60-2304 | 171.90 | 154.70 | 137.50 | 2904 | 60-2704 | 176.70 | 159.05 | 141.35 | 148 |
| 2505 | 60-2305 | 191.50 | 172.35 | 153.20 | 2905 | 60-2705 | 196.90 | 177.20 | 157.50 | 152 |
| 2506 | 60-2306 | 205.60 | 185.05 | 164.50 | 2906 | 60-2706 | 211.35 | 190.20 | 169.10 | 158 |
| 2507 | 60-2307 | 122.75 | 110.50 | 98.20 | 2907 | 60-2707 | 124.40 | 111.95 | 99.50 | 120 |
| 2508 | 60-2308 | 143.85 | 129.45 | 115.10 | 2908 | 60-2708 | 145.95 | 131.35 | 116.75 | 132 |
| 2509 | 60-2309 | 157.10 | 141.40 | 125.70 | 2909 | 60-2709 | 161.30 | 145.15 | 129.05 | 138 |
| 2510 | 60-2310 | 171.45 | 154.30 | 137.15 | 2910 | 60-2710 | 175.75 | 158.20 | 140.60 | 142 |
| 2511 | 60-2311 | 191.75 | 172.60 | 153.40 | 2911 | 60-2711 | 196.45 | 176.80 | 157.15 | 164 |
| 2512 | 60-2312 | 213.45 | 192.10 | 170.75 | 2912 | 60-2712 | 219.15 | 197.25 | 175.30 | 168 |
| 2513 | 60-2313 | 236.25 | 212.65 | 189.00 | 2913 | 60-2713 | 242.25 | 218.05 | 193.80 | 172 |
| 2530 | 60-2330 | 163.60 | 147.25 | 130.90 | 2930 | 60-2730 | 165.50 | 148.95 | 132.40 | 119 |
| 2531 | 60-2331 | 174.50 | 157.05 | 139.60 | 2931 | 60-2731 | 178.80 | 160.90 | 143.05 | 119 |
| 2532 | 60-2332 | 174.50 | 157.05 | 139.60 | 2932 | 60-2732 | 178.80 | 160.90 | 143.05 | 125 |

## SERIES SIXTY TURRETS (FIG. L)

Made of 16 gauge steel; designed so that any one of three sides may be attached to a Series Sixty upright rack or any horizontal surface. Accommodate standard 19″ panels. All mounting rails have universal spacing. Sides easily removed when a series of interconnecting turrets are desired. **Specify Color When Ordering:** Add suffix **GG** for dark gray; **BB** for dark blue; **HG** for gray hammertone. Order standard Bud panels with suffix **GY** for light gray; **BY** for light blue; **HG** for gray hammertone.

| Bud No. | Width | Depth | Height | Panel Space Sloping | Bottom | Rear | Wt., Lbs. | Net Each, Lots of 1-3 | 4-6 | 7-9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 60-2364 | 22 1/16″ | 17⅞″ | 12 5/16″ | 17½″ | 14″ | 8¾″ | 17 | $41.05 | $36.95 | $32.85 |
| 60-2365 | 22 1/16″ | 14⅜″ | 10 3/16″ | 12¼″ | 10½″ | 7″ | 14 | 34.25 | 30.85 | 27.40 |
| 60-2366 | 22 1/16″ | 20 13/16″ | 14⅜″ | 21″ | 17½″ | 10½″ | 20 | 41.05 | 38.85 | 34.50 |

## SERIES SIXTY DRAWER, DESK TOP, AND SHELF ACCESSORIES

**No. 60-2368 Drawer:** Fits into any Series Sixty cabinet rack. Slides easily on nylon rollers. Will support heavy loads. Extends to full depth; stops prevent drawer from falling out. Slides easily attach to panel supporting rails. Silver anodized handles. Shipped completely assembled. **No. 60-2361 Sliding Desk Top:** Fits all Series Sixty racks. Has smooth Formica* surface for writing, servicing or inspection. Fits flush with front of unit. Usable area when fully extended, 11″ x 16⅞″. Occupies only 1¾″ of panel height. Will support 50 lbs. Ball-bearing slide mechanism mounts directly in Series Sixty racks; brackets included to fit other Bud cabinets and consoles. **No. 60-2363 Desk Top Drawer:** Fits Series Sixty racks. Has Formica surface. Fits flush with front of unit. Hinged desk top on drawer holds small tools or parts. Special front-panel latch both locks and releases drawer or top as desired. Mounts to cabinet U-braces; slides travel on nylon rollers. Hardware supplied. **No. 60-2380 and 60-2381 Shelves:** Ideal for support of chassis, power supplies or other equipment; also may be used as base plate for bottom support. Of one-piece 16 gauge steel with flanged front and rear for extra strength and rigidity. Easily bolt to cabinet U-braces. Will support 200 lbs. Hardware supplied.

| Bud No. | Fig. | Size, Inches | Wt., Lbs. | Net Each, Lots of 1-3 | 4-6 | 7-9 |
|---|---|---|---|---|---|---|
| 60-2368† | M | 16 19/32 x 6 11/32 x 19 13/64 inside | 28 | $37.50 | $33.75 | $30.00 |
| 60-2361† | N | 16⅞ x 15⅛ x 1¾ with std. 19″ panel | 9¼ | 22.45 | 20.20 | 17.95 |
| 60-2363† | O | 16 9/16 x 2 31/32 x 14⅞ inside; 19 x 3½ front pnl. | 19 | 64.35 | 57.90 | 51.50 |
| 60-2380‡ | P | 17 31/32 w. x 19 9/32″ d. | 8¼ | 8.00 | 7.20 | 6.40 |
| 60-2381‡ | P | 17 31/32 w. x 22¾″ d. | 8½ | 8.30 | 7.45 | 6.65 |

*Synthane Corp. trademark. †Add suffix **GY** for light textured gray; **BY** for light textured blue; **WH** for white; **S** for sand; **HG** for gray hammertone. ‡Add suffix **GG** for dark textured gray; **BB** for dark textured blue; **WH** for white; **S** for sand; **HG** for gray hammertone.

## SERIES SIXTY CONVERTIBLES (FIG. Q)

Affords optimum viewing angle when placed on a table or bench, or perched on top of a Series Sixty inclined panel cabinet rack. Max. access to the interior for installation of components or service is assured through sides, top, rear, bottom and front. Accepts standard 19″ panels in vertical and inclined panel spaces. Units assembled with lever type door handle, welded frame work, solid top, plain or louvered sides and/or rear door. Width, 24 1/16″; outside depth, 22″; clear inside depth, 20½″; vertical panel space, 3½″; all units. Available with dark gray body and light gray door or dark blue body and light blue door; **Specify Color When Ordering.**

| With Plain Sides and Door | | | | | | | Louvered Sides and Plain Door | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Bud 60- | Net Each, Lots of 1-3 | 4-6 | 7-9 | Height | Inclined Panel Height | Top Opening W. x D. | Bud 60- | Net Each, Lots of 1-3 | 4-6 | 7-9 |
| 4600 | $192.50 | $173.25 | $154.00 | 22 25/32″ | 10½″ | 18 5/16″ x 11 53/64″ | 4700 | $200.50 | $180.45 | $160.40 |
| 4601 | 194.70 | 175.25 | 155.75 | 27 23/32″ | 15¾″ | 18 5/16″ x 10 1/32″ | 4701 | 204.00 | 183.60 | 163.20 |
| 4602 | 197.10 | 177.40 | 157.70 | 29 23/64″ | 17½″ | 18 5/16″ x 9 27/64″ | 4702 | 206.20 | 185.60 | 164.95 |
| With Louvered Sides and Door | | | | | | | Plain Sides, Louvered Door | | | |
| 4900 | $202.20 | $182.00 | $161.75 | 22 25/32″ | 10½″ | 18 5/16″ x 11 53/64″ | 4800 | $197.10 | $177.40 | $157.70 |
| 4901 | 204.80 | 184.30 | 163.85 | 27 23/32″ | 15¾″ | 18 5/16″ x 10 1/32″ | 4801 | 199.30 | 179.35 | 159.45 |
| 4902 | 207.20 | 186.50 | 165.75 | 29 23/64″ | 17½″ | 18 5/16″ x 9 27/64″ | 4802 | 201.70 | 181.55 | 161.35 |

BUD
THE MARK OF PERFECTION

# WEDGES, CABINETS AND ACCESSORIES

## SERIES SIXTY WEDGES

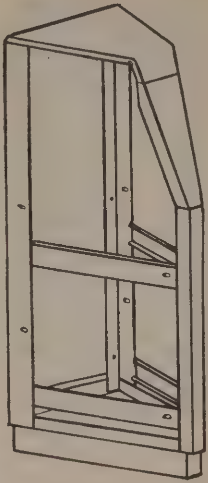
elps in joining any number of series sixty upright or inclined panel units together to conform to any nfiguration or space requirement. These are quickly attached to the adjacent frame work by means simple fasteners. Available with dark gray frame and light gray panel or dark blue frame and ht blue panel; **Specify Color When Ordering.**

### FOR UPRIGHT RACKS

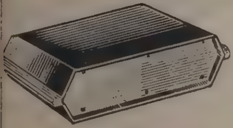
| 15° WEDGES (Fig. R) | | | | | For Cabs. With | | 45° WEDGES (Fig. S) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ud 0- | Width, In. | Net Each, Lots of 1-3 | 4-6 | 7-9 | Panel Ht. | Outside Depth | Bud 60- | Width, In. | Net Each, Lots of 1-3 | 4-6 | 7-9 |
| 300 | 7 3/16 | $ 81.20 | $ 73.10 | $ 64.95 | 21″ | 22″ | 8400 | 18 9/32 | $ 88.80 | $ 79.90 | $ 71.05 |
| 301 | 7 3/16 | 95.80 | 86.20 | 76.65 | 31½″ | 22″ | 8401 | 18 9/32 | 102.80 | 92.50 | 82.25 |
| 302 | 7 3/16 | 105.00 | 94.50 | 84.00 | 42″ | 22″ | 8402 | 18 9/32 | 112.00 | 100.80 | 89.60 |
| 303 | 7 3/16 | 115.80 | 104.20 | 92.65 | 52½″ | 22″ | 8403 | 18 9/32 | 121.20 | 109.10 | 96.95 |
| 304 | 7 3/16 | 129.80 | 116.80 | 103.85 | 61¼″ | 22″ | 8404 | 18 9/32 | 137.40 | 123.65 | 109.90 |
| 305 | 7 3/16 | 142.90 | 128.60 | 114.30 | 70″ | 22″ | 8405 | 18 9/32 | 150.40 | 135.35 | 120.30 |
| 306 | 7 3/16 | 155.80 | 140.20 | 124.65 | 78¾″ | 22″ | 8406 | 18 9/32 | 162.80 | 146.50 | 130.25 |
| 307 | 8 3/32 | 92.00 | 82.80 | 73.60 | 21″ | 25½″ | 8407 | 20 61/64 | 97.40 | 87.65 | 77.90 |
| 308 | 8 3/32 | 106.60 | 95.95 | 85.30 | 31½″ | 25½″ | 8408 | 20 61/64 | 113.60 | 102.25 | 90.90 |
| 309 | 8 3/32 | 119.10 | 107.20 | 95.30 | 42″ | 25½″ | 8409 | 20 61/64 | 126.60 | 113.95 | 101.30 |
| 310 | 8 3/32 | 129.80 | 116.80 | 103.85 | 52½″ | 25½″ | 8410 | 20 61/64 | 137.40 | 123.65 | 109.90 |
| 311 | 8 3/32 | 145.00 | 130.50 | 116.00 | 61¼″ | 25½″ | 8411 | 20 61/64 | 152.10 | 136.90 | 121.70 |
| 312 | 8 3/32 | 162.80 | 146.50 | 130.25 | 70″ | 25½″ | 8412 | 20 61/64 | 169.90 | 152.90 | 135.90 |
| 313 | 8 3/32 | 180.70 | 162.65 | 144.55 | 78¾″ | 25½″ | 8413 | 20 61/64 | 188.30 | 169.45 | 150.65 |

### FOR INCLINED PANEL RACKS

| 15° WEDGES (Fig. R) | | | | | For Vert. Panel Height | 45° WEDGES (Fig. S) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Bud 60- | Width, In. | Net Each, Lots of 1-3 | 4-6 | 7-9 | | Bud 60- | Width, In. | Net Each, Lots of 1-3 | 4-6 | 7-9 |
| 8330 | 7 3/16 | $124.40 | $111.95 | $ 99.50 | 29¾″ | 8430 | 18 9/32 | $130.40 | $117.35 | $104.30 |
| 8331 | 7 3/16 | 132.00 | 118.80 | 105.60 | 24½″ | 8431 | 18 9/32 | 139.60 | 125.65 | 111.70 |
| 8332 | 7 3/16 | 132.00 | 118.80 | 105.60 | 22¾″ | 8432 | 18 9/32 | 139.60 | 125.65 | 111.70 |


Ⓢ 45° Wedge

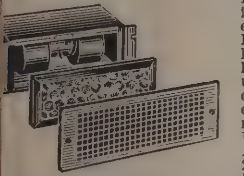
## GRAND PRIX CABINETS



Excellent for audio equipment or wherever appearance is important. Match any decor. Upper and lower segments held together by aluminum extrusions. Body and panels of 20 gauge steel. Four rubber feet. Specify color by suffix: **GGY**, textured dark gray with light panel; **HG**, gray hammertone.

| Bud No. | Size, Inches H. x W. x D. | Wt., Lbs. | Net Each, Lots of 1-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|
| D-1 | 4 3/16 x 19 1/8 x 10 1/2 | 7¼ | $18.40 | $16.55 | $14.70 |
| D-2 | 7 3/16 x 19 1/8 x 10 1/2 | 7¾ | 19.25 | 17.35 | 15.40 |
| D-3 | 4 3/16 x 12 1/8 x 8¾ | 7 | 14.85 | 13.35 | 11.90 |

## TRANS-AIRE BLOWER



Ideal for use where excessive heat is generated by equipment in an enclosed rack, cabinet or console. Brings in fresh air or exhausts heated air, enabling use as an exhaust or intake blower, depending upon mounting position. Unit will operate in any position—vertical or horizontal. May be mounted to rails or standard cabinet or rack. Use of Bud Chassis Supporting Angles SA-1349, SA-1350 or CE-2219 is recommended when blower is mounted in rack or cabinet. lotor is rubber mounted. Thermal overload protection to prevent verheating. Automatic reset. Oil impregnated, disposable fiberlass filter can be changed without removing unit from cabinet. ir displacement shown is at 0° static pressure. Double shielded, ermanently lubricated ball bearings. B-50, B-52 and B-54 are hort-depth models with single speed; others, dual speed. Comlete with filter, nickel-plated grille and 24″ three-wire cord. Light ray enamel finish.

| Bud No. | Size† D. x H. | Air c.f.m. High | Low | Motor Watts | Net Each, Lots of 1-9 | 10-14 | 15-19 |
|---|---|---|---|---|---|---|---|
| -23A | 12″ x 3½″ | 180 | 130 | 125/100 | $ 85.35 | $76.80 | $68.30 |
| -25A | 14½″ x 5¼″ | 350 | 160 | 375/200 | 97.50 | 87.75 | 78.00 |
| -27A | 14½″ x 7″ | 515 | 280 | 550/350 | 109.60 | 98.65 | 87.70 |
| -50* | 6 13/32″ x 3½″ | 150 | ..... | 80 | 83.05 | 74.75 | 66.45 |
| -52* | 7 11/16″ x 5¼″ | 150 | ..... | 80 | 85.75 | 77.20 | 68.60 |
| -54* | 10 13/16″ x 7″ | 300 | ..... | 60 | 109.80 | 98.85 | 87.85 |

Brings in fresh air only. †All for standard 19″ rack.

### FILTERS FOR ABOVE BLOWERS

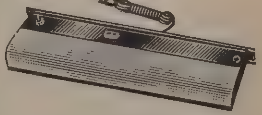
| Bud No. | Unit | Net Each, Lots of 1-24 | 25-49 | 50-99 |
|---|---|---|---|---|
| F-24 | Filter for B-23A, B-50 | $1.90 | $1.70 | $1.50 |
| F-26 | Filter for B-25A | 2.10 | 1.90 | 1.70 |
| F-28 | Filter for B-27A | 2.40 | 2.15 | 1.90 |
| F-53 | Filter for use with B-52 | 2.10 | 1.90 | 1.70 |
| F-55 | Filter for use with B-54 | 2.40 | 2.15 | 1.90 |

## PORTACAB INSTRUMENT CABINETS

Attractive, versatile cabinets desirable as housings for instrumentation requiring highly stylized appearance. Custom, quality look achieved in standard production models. Made entirely of aluminum to minimize weight. Flexible recessed handle permits easy portability as well as vertical stacking. Well louvered for adequate ventilation. Louvers point inward, permitting side-to-side placement of cabinets without space loss. Aluminum front panel recessed ½″. Welded back has opening. Perimeter of panel follows contour of body. Has four detachable rubber feet. Gray hammertone finish only.

| Bud No. | Size, Inches W. x D. x H. | Wt., Lbs. | Bud Chassis | Net Each, Lots of 1-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|---|
| WA-1540 | 6⅛ x 8 x 8 | 2 | AC-402 | $12.45 | $11.20 | $ 9.95 |
| WA-1541 | 8⅛ x 12 x 9 | 3½ | AC-407 | 16.15 | 14.55 | 12.90 |
| WA-1542 | 10⅛ x 8 x 8 | 3¾ | AC-406 | 14.40 | 12.95 | 11.50 |
| WA-1543 | 11⅛ x 18 x 11 | 5½ | AC-416 | 20.00 | 18.00 | 16.00 |
| WA-1544 | 14⅛ x 18 x 12 | 8 | AC-420 | 23.10 | 20.80 | 18.50 |

## "PAN-L-LITE" FLUORESCENT LAMP



Provides bright, glare-free lighting for racks, cabinets, desks; ideal for accurate reading of dials, recorders, etc. Quickly attaches to racks or panels—comes mounted on standard 19″ x 1¾″ panel. Has bronzetone aluminum frame, translucent light diffuser, pushbutton starter switch, convenience outlet, and heavy-duty 6-ft. cord with plug. UL Recognized. Uses 15-watt tube (not supplied). Gray hammertone finish.

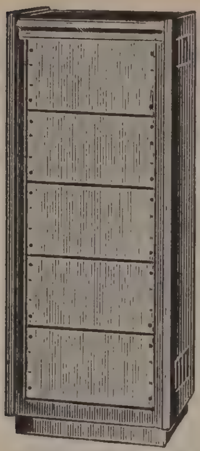
| Bud No. | Size, Inches | Weight, Lbs. | Net Each, Lots of 1-9 | 10-14 | 15-19 |
|---|---|---|---|---|---|
| PL-5 | 18 x 5 x 1¼ | 2 | $11.75 | $10.60 | $9.40 |

## "TEM-STAT" TEMPERATURE CONTROLS

Prevents costly damage to electronic components in enclosed cabinets, boxes, etc. Bimetal sensing element responds quickly to gradual or sudden temperature changes and actuates whatever warning device you use: Activates a light, bell, blower or other device; or, shuts off current. Activates snap-action, heavy-duty, normally open switch contacts. High electrical ratings up to 300° F; fully adjustable temperature ranges. Screw terminals for easy attachment. UL Recognized. Small size, 2 15/16″ lg. x 1″ w. x 1 7/32″ d., suitable for limited space applications. **UL Rating:** 8 amps, full load, 115 VAC (48 amps, locked rotor). 100,000 cycles motor rating; derate 50% for 230 VAC. Full load 13.8 amps 120 VAC (82.8 amps, locked rotor). 6,000 cycles motor rating; derate 50% for 240 VAC. Pilot duty, 125 VA at 115/230 VAC; or, 250 mV or more.

**Bud Model TS-15** (80°–170° F)—
Net Each, Lots of 1–9. . **$6.10**; 10–14. . **$5.50**; 15–19. . **$4.90**

# Series 2000 Cabinet Racks



Upright Cabinet Rack

## SERIES 2000 UPRIGHT CABINET RACKS

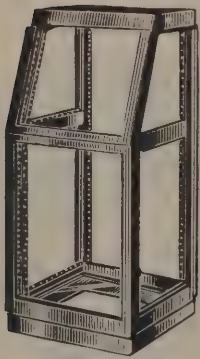
Modern rack enclosures combine the dramatic appearance of sheer, square lines with rugged Bud construction. Basic frame is all-welded with 14 gauge steel members; 18 gauge steel door, sides and top. "U" braces welded to sides of frame augment its strength and rigidity and act as a mounting fo the vertical rails, which can be horizontally adjusted. Front panel mounting rails are tapped 10-32 rear rails are pierced 9/32" dia. Caster bracket in base accepts Bud RC-7758 casters. All cabinets accept standard 19" panels. Shipped completely assembled. Width, 24 3/16". Available in royal blue or gray textured enamel with clear anodized aluminum cowl, or gold textured enamel with gold anodized aluminum cowl. **Specify Color When Ordering.**

### 23⅞" OUTSIDE DEPTH—20½" CLEAR INSIDE DEPTH

| With Plain Sides and Door | | | | | | | With Louvered Sides and Door | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Bud No. | Net Each, Lots of | | | Height | Panel Space | Wt., Lbs. | Bud No. | Net Each, Lots of | | |
| | 1-3 | 4-6 | 7-9 | | | | | 1-3 | 4-6 | 7-9 |
| E-2000 | $135.10 | $121.60 | $108.10 | 30¼" | 21" | 125 | E-2016 | $140.80 | $126.70 | $112.65 |
| E-2001 | 167.10 | 150.40 | 133.70 | 40¾" | 31½" | 150 | E-2017 | 174.25 | 156.85 | 139.40 |
| E-2002 | 176.35 | 158.70 | 141.10 | 44¼" | 35" | 155 | E-2018 | 184.75 | 166.30 | 147.80 |
| E-2003 | 185.65 | 167.10 | 148.50 | 51¼" | 42" | 167 | E-2019 | 195.25 | 175.75 | 156.20 |
| F-2004 | 206.40 | 185.75 | 165.10 | 61¾" | 52½" | 205 | E-2020 | 223.15 | 200.85 | 178.50 |
| E-2005 | 229.10 | 206.20 | 183.30 | 70½" | 61¼" | 219 | E-2021 | 242.95 | 218.65 | 194.35 |
| E-2006 | 254.55 | 229.10 | 203.65 | 79¼" | 70" | 240 | E-2022 | 269.80 | 242.80 | 215.85 |
| E-2007 | 277.95 | 250.15 | 222.35 | 88" | 78¾" | 262 | E-2023 | 293.05 | 263.75 | 234.45 |

### 27⅜" OUTSIDE DEPTH—24" CLEAR INSIDE DEPTH

| Bud No. | 1-3 | 4-6 | 7-9 | Height | Panel Space | Wt., Lbs. | Bud No. | 1-3 | 4-6 | 7-9 |
|---|---|---|---|---|---|---|---|---|---|---|
| E-2008 | $159.55 | $143.60 | $127.65 | 30¼" | 21" | 135 | E-2024 | $165.35 | $148.80 | $132.30 |
| E-2009 | 185.30 | 166.75 | 148.25 | 40¾" | 31½" | 160 | E-2025 | 199.80 | 179.80 | 159.85 |
| E-2010 | 195.55 | 176.00 | 156.45 | 44¼" | 35" | 165 | E-2026 | 211.15 | 190.05 | 168.90 |
| E-2011 | 205.90 | 185.30 | 164.70 | 51¼" | 42" | 187 | E-2027 | 222.45 | 200.20 | 177.95 |
| E-2012 | 228.55 | 205.70 | 182.85 | 61¾" | 52½" | 222 | E-2028 | 247.25 | 222.55 | 197.80 |
| E-2013 | 254.00 | 228.60 | 203.20 | 70½" | 61¼" | 235 | E-2029 | 274.85 | 247.35 | 219.90 |
| E-2014 | 282.15 | 253.95 | 225.70 | 79¼" | 70" | 265 | E-2030 | 305.20 | 274.70 | 244.15 |
| E-2015 | 308.00 | 277.20 | 246.40 | 88" | 78¾" | 380 | E-2031 | 332.65 | 299.40 | 266.15 |



Inclined Panel Cabinet Rack

## SERIES 2000 INCLINED PANEL CABINET RACKS

Same modern styling and rugged construction as upright racks above, with 20° inclined panel for comfortable viewing of mounted instruments. Panel mounting rails in front vertical and inclined panel sections, as well as in the rear, are adjustable front-to-rear. Height, 51¼"; width, 24 3/16"; outside depth, 23⅞"; clear inside depth, 20½". Weight, 173 lbs. Available in same textured finishes as above. **Specify Color When Ordering.**

| With Plain Sides and Door | | | | Inclined Panel Space | Vertical Panel Space | With Louvered Sides and Door | | | |
|---|---|---|---|---|---|---|---|---|---|
| Bud No. | Net Each, Lots of | | | | | Bud No. | Net Each, Lots of | | |
| | 1-3 | 4-6 | 7-9 | | | | 1-3 | 4-6 | 7-9 |
| SE-2064 | $184.05 | $165.65 | $147.25 | 10½" | 29¾" | SE-2067 | $197.70 | $177.95 | $158.15 |
| SE-2065 | 195.10 | 175.60 | 156.10 | 15¾" | 24½" | SE-2068 | 209.30 | 188.35 | 167.45 |
| SE-2066 | 195.10 | 175.60 | 156.10 | 17½" | 22¾" | SE-2069 | 209.30 | 188.35 | 167.45 |

## ADD-A-RACKS AND ACCESSORIES FOR SERIES 2000

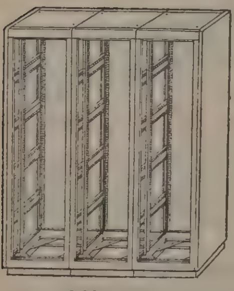
### ADD-A-RACK SERIES FOR UPRIGHT CABINETS

Used as an add-on unit to join Series 2000 upright racks into a bank of two or more. Each assembly consists of a frame, top, bottom, rear door and cowlings. One standard rack must be used, plus any number of Add-A-Rack units. **Specify Color When Ordering**; same as above racks.

| With Plain Door | | | | | With Louvered Door | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Bud No. | For Add-on to Rack No. | Net Each, Lots of | | | Bud No. | For Add-on to Rack No. | Net Each, Lots of | | | Wt., Lbs. |
| | | 1-3 | 4-6 | 7-9 | | | 1-3 | 4-6 | 7-9 | |
| AE-2032 | E-2000 | $114.95 | $103.45 | $ 91.95 | AE-2048 | E-2016 | $119.55 | $107.60 | $ 95.65 | 90 |
| AE-2033 | E-2001 | 134.65 | 121.20 | 107.75 | AE-2049 | E-2017 | 138.50 | 124.65 | 110.80 | 110 |
| AE-2034 | E-2002 | 141.10 | 127.00 | 112.90 | AE-2050 | E-2018 | 145.10 | 130.60 | 116.10 | 113 |
| AE-2035 | E-2003 | 147.55 | 132.80 | 118.05 | AE-2051 | E-2019 | 151.70 | 136.55 | 121.35 | 115 |
| AE-2036 | E-2004 | 161.25 | 145.15 | 129.00 | AE-2052 | E-2020 | 165.75 | 149.20 | 132.60 | 145 |
| AE-2037 | E-2005 | 180.00 | 162.00 | 144.00 | AE-2053 | E-2021 | 185.10 | 166.60 | 148.10 | 148 |
| AE-2038 | E-2006 | 200.50 | 180.45 | 160.40 | AE-2054 | E-2022 | 205.75 | 185.20 | 164.60 | 152 |
| AE-2039 | E-2007 | 215.35 | 193.80 | 172.30 | AE-2055 | E-2023 | 221.40 | 199.25 | 177.10 | 158 |
| AE-2040 | E-2008 | 128.55 | 115.70 | 102.85 | AE-2056 | E-2024 | 130.20 | 117.20 | 104.15 | 120 |
| AE-2041 | E-2009 | 150.65 | 135.60 | 120.50 | AE-2057 | E-2025 | 152.95 | 137.65 | 122.35 | 130 |
| AE-2042 | E-2010 | 157.65 | 141.90 | 126.10 | AE-2058 | E-2026 | 160.85 | 144.75 | 128.70 | 135 |
| AE-2043 | E-2011 | 164.55 | 148.10 | 131.65 | AE-2059 | E-2027 | 168.70 | 151.85 | 134.95 | 138 |
| AE-2044 | E-2012 | 179.65 | 161.70 | 143.70 | AE-2060 | E-2028 | 184.10 | 165.70 | 147.30 | 142 |
| AE-2045 | E-2013 | 200.80 | 180.70 | 160.65 | AE-2061 | E-2029 | 205.75 | 185.20 | 164.60 | 164 |
| AE-2046 | E-2014 | 223.65 | 201.30 | 178.90 | AE-2062 | E-2030 | 229.45 | 206.50 | 183.55 | 168 |
| AE-2047 | E-2015 | 247.50 | 222.75 | 198.00 | AE-2063 | E-2031 | 253.70 | 228.35 | 202.95 | 172 |

### ADD-A-RACK SERIES FOR INCLINED PANEL CABINETS

| Bud No. | For Add-on to Rack No. | 1-3 | 4-6 | 7-9 | Bud No. | For Add-on to Rack No. | 1-3 | 4-6 | 7-9 | Wt., Lbs. |
|---|---|---|---|---|---|---|---|---|---|---|
| ASE-2084 | SE-2064 | $155.75 | $140.20 | $124.60 | ASE-2087 | SE-2067 | $157.55 | $141.80 | $126.05 | 115 |
| ASE-2085 | SE-2065 | 166.15 | 149.55 | 132.90 | ASE-2088 | SE-2068 | 170.20 | 153.20 | 136.15 | 115 |
| ASE-2086 | SE-2066 | 166.15 | 149.55 | 132.90 | ASE-2089 | SE-2069 | 170.20 | 153.20 | 136.15 | 120 |



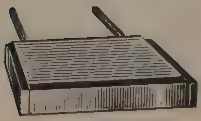
Add-A-Rack

### ACCESSORY FRONT DOORS FOR UPRIGHT CABINETS

| Plain Type | | | | For Vertical Panel Space of | Wt., Lbs. | Louvered Type | | | |
|---|---|---|---|---|---|---|---|---|---|
| Bud No. | Net Each, Lots of | | | | | Bud No. | Net Each, Lots of | | |
| | 1-3 | 4-6 | 7-9 | | | | 1-3 | 4-6 | 7-9 |
| E-9000 | $20.20 | $18.20 | $16.15 | 21" | 15 | E-9020 | $23.15 | $20.85 | $18.50 |
| E-9001 | 24.95 | 22.45 | 19.95 | 31½" | 18 | E-9021 | 28.70 | 25.85 | 22.95 |
| E-9002 | 26.30 | 23.70 | 21.05 | 35" | 19 | E-9022 | 30.30 | 27.25 | 24.25 |
| E-9003 | 27.65 | 24.90 | 22.10 | 42" | 23 | E-9023 | 31.90 | 28.70 | 25.50 |
| E-9004 | 30.85 | 27.75 | 24.70 | 52½" | 27 | E-9024 | 35.20 | 31.70 | 28.15 |
| E-9005 | 34.05 | 30.65 | 27.25 | 61¼" | 29 | E-9025 | 39.35 | 35.40 | 31.50 |
| E-9006 | 39.85 | 35.90 | 31.90 | 70" | 31 | E-9026 | 43.65 | 39.30 | 34.90 |
| E-9007 | 41.25 | 37.15 | 33.00 | 78¾" | 33 | E-9027 | 47.70 | 42.95 | 38.15 |

### ACCESSORY FRONT DOORS FOR INCLINED PANEL CABINETS

| Bud No. | 1-3 | 4-6 | 7-9 | For Vertical Panel Space of | Wt., Lbs. | Bud No. | 1-3 | 4-6 | 7-9 |
|---|---|---|---|---|---|---|---|---|---|
| E-9008 | $25.05 | $22.55 | $20.05 | 29¾" | 11 | E-9028 | $28.80 | $25.90 | $23.05 |
| E-9009 | 23.30 | 21.00 | 18.65 | 24½" | 10½ | E-9029 | 26.95 | 24.25 | 21.55 |
| E-9010 | 22.80 | 20.50 | 18.25 | 22¾" | 9 | E-9030 | 26.10 | 23.50 | 20.90 |



Desk Top

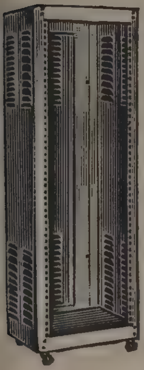
### DESK TOPS FOR SERIES 2000 CABINET RACKS

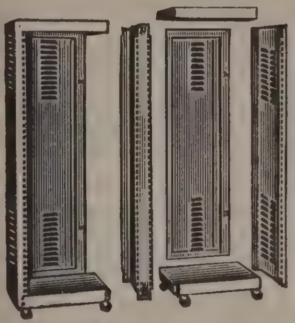
Provides a smooth writing surface or shelf on upright or inclined panel cabinet rack. Two pre-slotted supporting channels are quickly bolted to panel mounting rails. Antique white Formica surface. Supports over 200 lbs. 24 3/16" wide, 19½" deep, 3 1/16" high. Specify gray, royal blue or gold textured enamel finish.

| Bud No. | Fits Cabinet with Depth of | Supporting Channel | Wt., Lbs. | Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 1-3 | 4-6 | 7-9 |
| DT-2960 | 23⅞" | 21 9/32" | 29 | $43.75 | $39.40 | $35.00 |
| DT-2962 | 27⅜" | 24 25/32" | 30 | 45.10 | 40.60 | 36.10 |

# Relay Racks

## DELUXE RELAY RACKS WITH ADD-A-RACK





High quality relay racks made of 16-gauge steel with ¼″ panel supports. Panel mounting supports are recessed so that no panel edges will be exposed. Both back and sides are fully louvered for best ventilation. Snap catches are positioned on the door. Rounded corners give streamlined appearance. Base constructed with four special supports so that casters may be applied to base directly for mobility. Racks are 22″ wide to accept all standard 19″ panels.

**Super Deluxe Series Relay Racks** are equipped with adjustable panel mounting supports permitting forward and backward adjustment of panels for more efficient use of space. Adjustable points are at 1″ intervals for 9″ to 15″ clearance behind panels. Super Deluxe Racks are fitted with both front and rear doors, the rear to cover any equipment behind the panel while making it easily accessible. The front door, not louvered, conceals controls on the front panel.

**Add-A-Rack Series**—Where relay racks are to be joined in series. Provides additional strength and improved appearance. Includes door, top, bottom and coupling unit, all that is needed to make a double relay rack out of a single Deluxe series.

**All Racks Listed** are shipped knocked-down with all necessary hardware and assembly instructions. Casters optional. When ordering specify finish. Add suffix **"HG"** for gray hammertone; suffix **"GR"** for gray rinkletex; suffix **"BR"** for black rinkletex.

### DELUXE RELAY RACKS
### WITH 19″ WIDE PANEL SPACE

**17⅛″ Overall Depth**

| Bud No. | Height, Overall | Panel Space | Wt., Lbs. | Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 1-9 | 10-14 | 15-19 |
| CR-1774 | 42$\frac{1}{16}$″ | 36¾″ | 82 | $ 65.80 | $59.20 | $52.65 |
| CR-1771 | 47$\frac{5}{16}$″ | 42″ | 92 | 74.60 | 67.15 | 59.70 |
| CR-1772 | 66$\frac{9}{16}$″ | 61¼″ | 115 | 93.30 | 83.95 | 74.65 |
| CR-1780 | 75$\frac{5}{16}$″ | 70″ | 125 | 95.65 | 86.10 | 76.50 |
| CR-1773 | 82$\frac{5}{16}$″ | 77″ | 135 | 107.45 | 96.70 | 85.95 |

### EXTRA DEEP DELUXE RACKS
### WITH 19″ WIDE PANEL SPACE

ame as above, except 22⅛″ deep instead of 17⅛″ deep.

| Bud No. | Height, Overall | Panel Space | Wt., Lbs. | Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 1-9 | 10-14 | 15-19 |
| CR-2074 | 42$\frac{1}{16}$″ | 36¾″ | 98 | $ 79.05 | $ 71.15 | $ 63.25 |
| CR-2071 | 47$\frac{5}{16}$″ | 42″ | 102 | 89.45 | 80.50 | 71.55 |
| CR-2072 | 66$\frac{9}{16}$″ | 61¼″ | 137 | 112.05 | 100.85 | 89.65 |
| CR-2075 | 75$\frac{5}{16}$″ | 70″ | 148 | 114.15 | 102.75 | 91.30 |
| CR-2073 | 82$\frac{5}{16}$″ | 77″ | 159 | 133.05 | 119.75 | 106.45 |

### SUPER DELUXE TWO-DOOR RACKS
### WITH 19″ WIDE PANEL SPACE

| Bud No. | Height, Overall | Panel Space | Wt., Lbs. | Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 1-9 | 10-14 | 15-19 |
| CR-2174 | 42$\frac{1}{16}$″ | 36¾″ | 102 | $ 86.55 | $ 77.90 | $ 69.25 |
| CR-2171 | 47$\frac{5}{16}$″ | 42″ | 104 | 93.65 | 84.30 | 74.90 |
| CR-2172 | 66$\frac{9}{16}$″ | 61¼″ | 138 | 120.85 | 108.85 | 96.70 |
| CR-2175 | 75$\frac{5}{16}$″ | 70″ | 150 | 129.90 | 116.90 | 103.90 |
| CR-2173 | 82$\frac{5}{16}$″ | 77″ | 163 | 145.00 | 130.50 | 116.00 |

### ADD-A-RACK ASSEMBLIES

Includes door, top, bottom and coupling unit for add-on use with racks indicated.

| Bud No. | For Use With Rack No. | Wt., Lbs. | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-9 | 10-14 | 15-19 |
| AR-1778 | CR-1774 | 70 | $ 64.75 | $ 58.30 | $51.80 |
| AR-1775 | CR-1771 | 74 | 68.80 | 61.90 | 55.05 |
| AR-1776 | CR-1772 | 100 | 85.80 | 76.95 | 68.40 |
| AR-1779 | CR-1780 | 107 | 90.40 | 81.35 | 72.30 |
| AR-1777 | CR-1773 | 113 | 105.05 | 94.55 | 84.05 |
| AR-2278 | CR-2074 | 102 | 71.95 | 64.75 | 57.55 |
| AR-2275 | CR-2071 | 86 | 81.25 | 73.15 | 65.00 |
| AR-2276 | CR-2072 | 110 | 101.75 | 91.60 | 81.40 |
| AR-2279 | CR-2075 | 120 | 103.85 | 93.45 | 83.10 |
| AR-2277 | CR-2073 | 130 | 123.80 | 111.40 | 99.05 |

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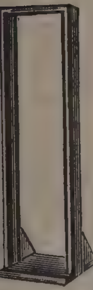
## DELUXE TELEPHONE-TYPE RELAY RACKS



Sturdy open rack with extra strength and greater capacity. Upright U-member is unitize-welded with ventilation provided at top. Two panel-mounting rails, at front and rear, tapped 10-32 with W.E. spacing. Made of 12 ga. steel throughout. Chassis-type base drilled for RC-7756 casters. Triangular brackets hold uprights to base; holes provided on both sides for bolting racks together in "Add-A-Rack" manner. Add suffix **HG** for gray hammertone finish; **BR** for black rinkletex; **GY** for gray rinkletex. Racks have 20⅞″ base width and take 19″ wide panels.

| Bud No. | Height, Overall | Panel Space | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-9 | 10-14 | 15-19 |
| RR-1367 | 64⅝″ | 61¼″ | $56.75 | $51.10 | $45.40 |
| RR-1368 | 73⅜″ | 70″ | 61.05 | 54.95 | 48.85 |
| RR-1369 | 80⅜″ | 77″ | 68.00 | 61.20 | 54.40 |

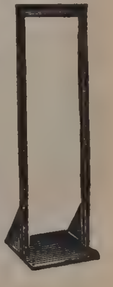
### RACK SHELVES

Heavy gauge steel shelves with 1″ flange for rigidity and strength. Mount on chassis supporting angles in rack to hold power supplies, modulators, etc. Width 19″. Black enamel finish.

| Bud No. | Depth, Inches | Weight, Lbs. | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 |
| CB-1976 | 15″ | 6 | $4.95 | $4.45 | $3.95 |
| CB-1977 | 12″ | 5 | 3.95 | 3.55 | 3.15 |

## TELEPHONE-TYPE RELAY RACKS

**Standard Models:** 3″ channels and crossbars of ¼″ steel. Base has chassis type bottom with side angles. Base drilled for RC-7756 casters. Suffix **BR**, black rinkletex; **HG**, gray hammertone.



**Heavy Duty Model RR-1265:** Two 3½″ x 5″ x ¼″, 20⅜″ long angles form base. Steel channels are 3″ x 1⅝″, 71$\frac{29}{32}$″ long. Cross bars are ⅛″ x 2$\frac{3}{32}$″ angles. Panel holes tapped 12-24 with W.E. space. Black rinkletex finish only. Usually bolted to floor.

### FOR 19″ WIDE PANELS

| Bud No. | Height, Overall | Panel Space | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-9 | 10-14 | 15-19 |
| RR-1263 | 35$\frac{39}{64}$″ | 31½″ | $29.80 | $26.80 | $23.85 |
| RR-1363 | 40$\frac{55}{64}$″ | 36¾″ | 28.80 | 25.90 | 23.05 |
| RR-1264 | 70$\frac{39}{64}$″ | 66½″ | 34.20 | 30.80 | 27.35 |
| RR-1364 | 75$\frac{55}{64}$″ | 71¾″ | 35.85 | 32.25 | 28.70 |
| RR-1366 | 81$\frac{7}{64}$″ | 77″ | 39.25 | 35.35 | 31.40 |
| RR-1265 | 72$\frac{5}{32}$″ | 66½″ | 79.40 | 71.45 | 63.50 |

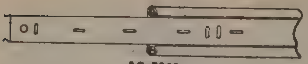
### TABLE-MOUNT TELEPHONE RACK

Sturdy rack with chassis type base mounts heavy components on table where enclosures are not required. Panel mount rails recessed for flush mount of 19″ panels. Shipped knocked down. Specify black rinkletex (suffix **BR**) or gray hammertone (suffix **HG**).

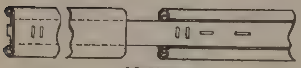
| Bud No. | Height, Overall | Panel Space | Wt., Lbs. | Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 1-14 | 15-24 | 25-34 |
| RR-1248 | 24″ | 21″ | 14¼ | $12.80 | $11.50 | $10.25 |
| RR-1249 | 31″ | 28″ | 16¾ | 15.10 | 13.60 | 12.10 |

# Racks, Cabinets, Accessories

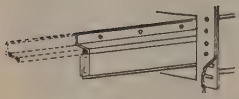
## PRECISION SLIDING MECHANISMS



AS-5060



AS-5020



AS-5080

All steel commercial design provides a wide variety of models for a wide range of purposes. Provides smooth, light telescoping movement with unsurpassed reliability and minimal wear. **Specifications:** Slide members and component parts made from work hardened, cold rolled steel; bearings are nickel-plated carburized steel. Electro-zinc plate finish; grease is high-low temperature type. **Mounting:** Units require 2 each BAS-5100 front mounting brackets and 2 each BAS-5101 rear mounting brackets per pair to attach slides to EIA rails. One each NAS-5110 rail bar nut used with each mounting bracket.

### 2 MEMBER, ¾ EXTENSION
### FRICTION DISCONNECT

| Bud Number | Slide Length, Inches | Slide Travel, Inches | Load Rating, Lbs. | Net per Pair, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 1-4 | 5-9 | 10-24 |
| AS-5000 | 12 | 9 | 108 | $ 9.50 | $ 8.55 | $ 7.60 |
| AS-5001 | 16 | 12 | 95 | 11.00 | 9.90 | 8.80 |
| AS-5002 | 20 | 15 | 82 | 11.80 | 10.60 | 9.45 |

### POSITIVE STOP

| | | | | | | |
|---|---|---|---|---|---|---|
| AS-5060 | 12 | 9 | 108 | $8.70 | $7.85 | $6.95 |
| AS-5061 | 16 | 12 | 95 | 9.30 | 8.35 | 7.45 |
| AS-5062 | 20 | 15 | 82 | 9.80 | 8.80 | 7.85 |

### 3 MEMBER, FULL EXTENSION
### POSITIVE STOP

| | | | | | | |
|---|---|---|---|---|---|---|
| AS-5020 | 12 | 12.88 | 175 | $22.40 | $20.15 | $17.90 |
| AS-5021 | 16 | 16.88 | 160 | 24.90 | 22.40 | 19.90 |
| AS-5022 | 20 | 19.88 | 142 | 26.90 | 24.20 | 21.50 |

### POSITIVE W/FRONT DISCONNECT, ⅜ SIDE SPACE

| | | | | | | |
|---|---|---|---|---|---|---|
| AS-5040 | 12 | 11.88 | 120 | $29.80 | $26.80 | $23.85 |
| AS-5041 | 16 | 15.88 | 108 | 32.30 | 29.05 | 25.85 |
| AS-5042 | 20 | 20.88 | 92 | 34.40 | 30.95 | 27.50 |

### DUAL MEMBER W/DRAWER SECTION, FULL EXTENSION AND LIFT-OFF DISCONNECT

Drawer section lengths are equal to slide lengths. Provides full extension in ⅜" side space. Equipped with stationary front, and adjustable rear mounting brackets for EIA rails. Chassis mounts to drawer section. Removable by lining up open slot in drawer section over tab in moving member and lifting off.

| | | | | | | |
|---|---|---|---|---|---|---|
| AS-5080 | 12 | 12 | 80 | $27.30 | $24.55 | $21.85 |
| AS-5081 | 16 | 16 | 70 | 27.90 | 25.10 | 22.30 |
| AS-5082 | 20 | 20 | 60 | 30.75 | 27.70 | 24.60 |

### MOUNTING BRACKETS

| Bud No. | Description | Net Each, Lots of | | | Bud No. | Description | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1-4 | 5-9 | 10-24 | | | 1-4 | 5-9 | 10-24 |
| BAS-5100 | Front bracket | $1.30 | $1.15 | $1.05 | BAS-5103 | Rear bracket* | $1.30 | $1.15 | $1.05 |
| BAS-5101 | Rear bracket | 1.30 | 1.15 | 1.05 | NAS-5110 | Bar nut | 1.30 | 1.15 | 1.05 |
| BAS-5102 | Front bracket* | 1.30 | 1.15 | 1.05 | SB-5107 | Adapter kit† | 2.64 | 2.40 | 2.10 |

*For use with 3 member front disconnect types only. †For use with Series 2000, 60 and Classic II.

## PRESTIGE BALL CORNER RACKS

Attractive, practical housing for permanent or mobile instrumentation. Standard Prestige relay rack consists of framework, top, bottom, two ball cornered sides, and a ball corner door. Sides attach to frame by means of a tongue-and-slot arrangement at bottom and two screws at top. Sides easily removable for access. Drilled and tapped panel mounting rails on all four vertical members of frame. Doors mount from either left or right side. Slotted base takes ball-cornered side panels on any of the four sides. Door and side clearance permits covering of equipment without damage to knobs or controls. Provision made for recessed casters. Extra doors available for placing on any of the sides. Knockout holes provided for attaching two or more units together. Bottom will support 500 lbs., panel rails 200 lbs. suspended vertically between rails. Units take Bud SD-1717 sliding drawer assembly or 60-2368 drawer. Shipped knocked-down, with necessary assembly hardware. **Gray hammertone finish only. Now furnished with adjustable panel mounting rails.**

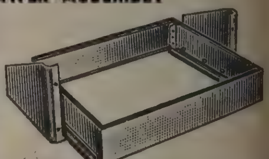
| Bud No. | Height, Overall | Panel Space | Wt., Lbs. | Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 1-9 | 10-14 | 15-19 |
| CR-2280 | 66 9/16" | 61¼" | 179 | $162.80 | $146.50 | $130.25 |
| CR-2281 | 71 13/16" | 66½" | 186 | 166.85 | 150.15 | 133.50 |
| CR-2282 | 82 5/16" | 77" | 213 | 187.45 | 168.70 | 149.95 |
| DR-2290 | Door for CR-2280 | | 28 | 19.15 | 17.25 | 15.30 |
| DR-2291 | Door for CR-2281 | | 33 | 22.45 | 20.20 | 17.95 |
| DR-2292 | Door for CR-2282 | | 39 | 25.10 | 22.60 | 20.10 |

## PRESTIGE ADD-A-RACKS

Where relay racks are to be joined in series the Add-A-Rack assembly is lower in cost yet provides additional strength and improved appearance. Consists of top, bottom, rear door and framework. Made of 16 gauge steel. Extra ball corner doors will fit adjustable panel mounting rails which are recessed so that panel will be flush with face of rack. Add-A-Racks may be added at any time as needed. Gray hammertone finish.

| Bud No. | Used to Add-A-Rack to | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-9 | 10-14 | 15-19 |
| AR-2284 | CR-2280 | $123.10 | $110.80 | $ 98.50 |
| AR-2286 | CR-2281 | 133.00 | 119.70 | 106.40 |
| AR-2287 | CR-2282 | 149.40 | 134.45 | 119.50 |

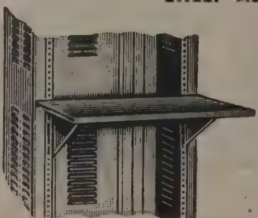
## SLIDING DRAWER ASSEMBLY



Ideal for use as a record player mounting base, typewriter base, apparatus and instrument base, writing desk, etc. Installs quickly and simply in any standard rack. Can't fall out or tilt. Provides a completely safe mounting base for anything put on it. Ball bearing suspension for easy sliding. Chassis formed from one-piece 14 gauge aluminum; electro-welded. Support brackets formed from one-piece ⅛" steel. Slide rail fastens securely to chassis, slides in and out easily on channeled ball bearings. Stop screw on slide rail prevents drawer from falling out of channel. Support brackets finished in black, channel finished in natural aluminum; chassis, slide and plate finished in light gray hammertone. Will support up to 30 lbs. **Chassis Size:** 16¾" x 14" x 3", with ½" flange top and bottom. Drawer plate fastens to top or bottom.

| Bud No. | Description | Wt., Lbs. | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-14 | 15-24 | 25-34 |
| SD-1717 | Sliding drawer | 5 | $15.90 | $14.30 | $12.70 |
| TP-1718 | Drawer plate | 1½ | 3.95 | 3.55 | 3.16 |

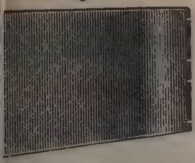
## SHELF ASSEMBLY



Immediately adds extra utility to a standard rack at very little cost. Useful as a desk, work space, etc. Gray or black rinkletex finish or gray hammertone finish will match all standard Bud rack finishes. Can't fall off or tilt; will support any reasonable weight. Shelf portion supported by two brackets, punched to fit standard panel mounting strips. No panel support needed but can be attached over panel if desired. Slides welded to bottom of shelf; mounting brackets slip into slides and fasten with two screws. All necessary hardware furnished. Formed of 16 gauge steel; ⅝" flange on all three sides; overall height, 7⅛". Brackets are 7" high. Specify black rinkletex (suffix **BR**), gray rinkletex (suffix **GR**), or light gray hammertone (suffix **HG**) finish.

| Bud No. | Size, Inches D. x W. | Weight, Lbs. | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-14 | 15-24 | 25-34 |
| SA-1719 | 16 x 22 | 13¼ | $14.15 | $12.75 | $11.30 |
| SA-1720 | 20 x 22 | 15¼ | 14.35 | 12.90 | 11.50 |

# Relay Rack Panels, Chassis



## STANDARD RELAY RACK PANELS

### 24″ WIDE PANELS

| Ht., In. | 1/8″ 5005 H-36 ALUMINUM | | | |
|---|---|---|---|---|
| | Bud PA- | Net Each, Lots of | | |
| | | 1-49 | 50-99 | 100-149 |
| 1¾ | 2401 | $ 2.55 | $ 2.30 | $ 2.05 |
| 3½ | 2402 | 3.30 | 2.95 | 2.65 |
| 5¼ | 2403 | 4.50 | 4.05 | 3.60 |
| 7 | 2404 | 5.30 | 4.75 | 4.25 |
| 8¾ | 2405 | 6.50 | 5.85 | 5.20 |
| 10½ | 2406 | 8.05 | 7.25 | 6.45 |
| 12¼ | 2407 | 9.00 | 8.10 | 7.20 |
| 14 | 2408 | 10.90 | 9.80 | 8.70 |
| 15¾ | 2409 | 11.65 | 10.50 | 9.30 |
| 17½ | 2410 | 12.20 | 11.00 | 9.75 |
| 19¼ | 2411 | 13.40 | 12.05 | 10.70 |
| 21 | 2412 | 14.75 | 13.30 | 11.80 |

hoice of steel or aluminum
ay rack panels, 1/8″ or 3/16″
ick, in both 19″ and 24″
dths. Specify color when
dering, use suffix: **BR**,
ack rinkletex; **GR**, gray
nkletex; **HG**, gray ham-
ertone; **BY**, light blue tex-
red; **GY**, light gray tex-
red; **WH**, white; **S**, sand.
uminum panels 5005 H-36
2024 T-3 alloy.

### 19″ WIDE 5005 H-36 ALUMINUM PANELS

| Ht., In. | 1/8″ 5005 H-36 ALUMINUM | | | | 3/16″ 5005 H-36 ALUMINUM | | | |
|---|---|---|---|---|---|---|---|---|
| | Bud PA- | Net Each, Lots of | | | Bud PA- | Net Each, Lots of | | |
| | | 1-49 | 50-99 | 100-149 | | 1-49 | 50-99 | 100-149 |
| 1¾ | 1101 | $ 1.60 | $1.45 | $1.30 | 3101 | $ 2.65 | $ 2.40 | $ 2.10 |
| 3½ | 1102 | 2.30 | 2.05 | 1.85 | 3102 | 3.70 | 3.35 | 2.95 |
| 5¼ | 1103 | 3.00 | 2.70 | 2.40 | 3103 | 4.85 | 4.35 | 3.90 |
| 7 | 1104 | 3.80 | 3.40 | 3.05 | 3104 | 6.10 | 5.50 | 4.90 |
| 8¾ | 1105 | 4.35 | 3.90 | 3.50 | 3105 | 7.15 | 6.45 | 5.70 |
| 0½ | 1106 | 5.50 | 4.95 | 4.40 | 3106 | 8.85 | 7.95 | 7.10 |
| 2¼ | 1107 | 6.55 | 5.90 | 5.25 | 3107 | 10.25 | 9.25 | 8.20 |
| 4 | 1108 | 7.35 | 6.60 | 5.90 | 3108 | 11.40 | 10.25 | 9.10 |
| 5¾ | 1109 | 8.30 | 7.45 | 6.65 | 3109 | 13.25 | 11.95 | 10.60 |
| 7½ | 1110 | 9.00 | 8.10 | 7.20 | 3110 | 14.60 | 13.15 | 11.70 |
| 9¼ | 1111 | 9.90 | 8.90 | 7.90 | 3111 | 15.85 | 14.25 | 12.70 |
| 1 | 1112 | 10.95 | 9.85 | 8.75 | 3112 | 17.50 | 15.75 | 14.00 |

### 19″ WIDE 1/8″ STEEL AND ALUMINUM PANELS

| Ht., In. | 1/8″ STEEL | | | | 1/8″ 2024 T-3 ALUMINUM | | | |
|---|---|---|---|---|---|---|---|---|
| | Bud PS- | Net Each, Lots of | | | Bud PA- | Net Each, Lots of | | |
| | | 1-49 | 50-99 | 100-149 | | 1-49 | 50-99 | 100-149 |
| 1¾ | 1250 | $1.45 | $1.30 | $1.15 | 1131 | $ 2.00 | $ 1.80 | $1.60 |
| 3½ | 1251 | 1.55 | 1.40 | 1.25 | 1132 | 2.55 | 2.30 | 2.05 |
| 5¼ | 1252 | 2.10 | 1.90 | 1.70 | 1133 | 3.30 | 2.95 | 2.65 |
| 7 | 1253 | 2.20 | 2.00 | 1.75 | 1134 | 4.30 | 3.85 | 3.45 |
| 8¾ | 1254 | 2.95 | 2.65 | 2.35 | 1135 | 4.75 | 4.30 | 3.80 |
| 0½ | 1255 | 3.40 | 3.05 | 2.70 | 1136 | 6.15 | 5.55 | 4.90 |
| 2¼ | 1256 | 3.95 | 3.55 | 3.15 | 1137 | 6.95 | 6.25 | 5.55 |
| 4 | 1257 | 4.40 | 3.95 | 3.50 | 1138 | 8.15 | 7.35 | 6.50 |
| 5¾ | 1258 | 4.75 | 4.30 | 3.80 | 1139 | 8.80 | 7.90 | 7.05 |
| 7½ | 1259 | 5.30 | 4.75 | 4.25 | 1140 | 9.55 | 8.60 | 7.65 |
| 9¼ | 1260 | 5.85 | 5.25 | 4.70 | 1141 | 10.35 | 9.30 | 8.30 |
| 1 | 1261 | 6.70 | 6.05 | 5.35 | 1142 | 11.75 | 10.60 | 9.40 |

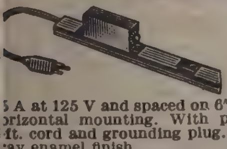
## SURFACE SHIELD PANELS

right aluminum alloy 5005 H-36 panels have blemish-free mill
iish. Covered on both sides with sturdy, pressure-sensitive, white
per; protects against damage and useful for marking for drilling,
sitioning, etc. Standard notched sizes.

### STANDARD 19″ WIDE PANELS

| Ht., In. | 1/8″ ALUMINUM | | | | 3/16″ ALUMINUM | | | |
|---|---|---|---|---|---|---|---|---|
| | Bud SFA- | Net Each, Lots of | | | Bud SFA- | Net Each, Lots of | | |
| | | 1-49 | 50-99 | 100-149 | | 1-49 | 50-99 | 100-149 |
| ¾ | 1831 | $ 1.50 | $1.35 | $1.20 | 3161 | $ 2.65 | $ 2.40 | $ 2.10 |
| ½ | 1832 | 2.30 | 2.05 | 1.85 | 3162 | 3.80 | 3.40 | 3.05 |
| ¼ | 1833 | 3.00 | 2.70 | 2.40 | 3163 | 4.95 | 4.45 | 3.95 |
| | 1834 | 3.80 | 3.40 | 3.05 | 3164 | 6.10 | 5.50 | 4.90 |
| ¾ | 1835 | 4.35 | 3.90 | 3.50 | 3165 | 7.25 | 6.55 | 5.80 |
| ½ | 1836 | 5.50 | 4.95 | 4.40 | 3166 | 8.40 | 7.55 | 6.70 |
| ¼ | 1837 | 6.55 | 5.90 | 5.25 | 3167 | 10.70 | 9.65 | 8.55 |
| | 1838 | 7.35 | 6.60 | 5.90 | 3168 | 12.20 | 11.00 | 9.75 |
| ¾ | 1839 | 8.30 | 7.45 | 6.65 | 3169 | 13.70 | 12.35 | 10.95 |
| ½ | 1840 | 9.00 | 8.10 | 7.20 | 3170 | 15.05 | 13.55 | 12.05 |
| ¼ | 1841 | 9.90 | 8.90 | 7.90 | 3171 | 16.55 | 14.90 | 13.25 |
| | 1842 | 10.95 | 9.85 | 8.75 | 3172 | 17.95 | 16.15 | 14.35 |

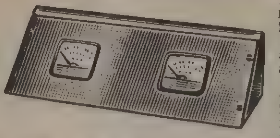
## POWER OUTLET STRIPS



For racks or cabinets with a number of instruments requiring individual power sources. Steel raceways protect cords from damage. Mount vertically or horizontally; snap into clips in housing. Grounding-type receptacles rated
5 A at 125 V and spaced on 6″ centers except POS-4, designed for
orizontal mounting. With pushbutton-reset overload breaker,
ft. cord and grounding plug. UL Recognized components. Light
ay enamel finish.

| Bud No. | No. of Outlets | Length, Inches | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-5 | 6-11 | 12-17 |
| POS-4 | 4 | 17½ | $24.95 | $22.45 | $19.95 |
| POS-7 | 7 | 48 | 26.30 | 23.65 | 21.05 |
| POS-9 | 9 | 60 | 28.95 | 26.05 | 23.15 |
| POS-11 | 11 | 72 | 31.55 | 28.40 | 25.25 |

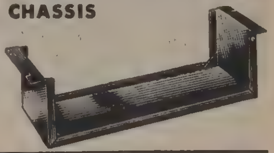
## DUAL-VIEW PANEL SUPPORT



Designed for installation on a rack where an oblique view of instrument panel is desired. Engineered so that the entire assembly occupies no more space than size of supported panel. Panel support cover can be removed for easy servicing or installation of instruments. Made of heavy gauge steel with contoured edges. Comes knocked-down with necessary assembly hardware, but without panels. Bud panels to fit these supports are PS-1253 (steel), and PA-1104 (aluminum) for Model IP-1120; PS-1255 (steel), and PA-1106 (aluminum) for IP-1121. Specify color when ordering, use suffix: **BR**, for black rinkletex; **HG**, gray hammertone; **GR**, gray rinkletex; **GY**, light gray textured; **BY**, light blue textured.

**Bud No. IP-1120**—Requires 19″ x 7″ panel space. Wt., 3½ lbs.
Net Each, Lots of 1–24.................................**$6.15**
Net Each, Lots of: 25–49.......**$5.55**; 50–99....... **4.90**
**Bud IP-1121**—Requires 19″ x 10½″ panel space. Wt., 6¾ lbs.
Net Each, Lots of 1–24.................................**$8.70**
Net Each, Lots of: 25–49.......**$7.85**; 50–99....... **6.95**

## PANEL CHASSIS



Panel mounting chassis for vertical installation where depth is limited or front service is desired. Made of .060″ aluminum alloy 5005 H-14 in natural finish. Front flange has standard notching. Fits standard 19″ panel space.

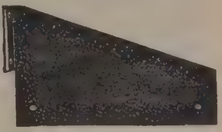
| Bud No. | Height, Inches | Weight, Lbs. | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 |
| CB-1370 | 1¾ | ¾ | $3.30 | $2.95 | $2.65 |
| CB-1371 | 3½ | 1¼ | 3.65 | 3.30 | 2.90 |
| CB-1372 | 5¼ | 1½ | 4.20 | 3.80 | 3.35 |
| CB-1373 | 7 | 2 | 4.75 | 4.30 | 3.80 |
| CB-1374 | 8¾ | 2¼ | 5.60 | 5.05 | 4.50 |
| CB-1375 | 10½ | 2¾ | 6.50 | 5.85 | 5.20 |
| CB-1376 | 12¼ | 3 | 7.25 | 6.55 | 5.80 |
| CB-1377 | 14 | 3¼ | 7.90 | 7.10 | 6.30 |

## CHASSIS MOUNTING BRACKETS

Mounts chassis to panels, essential when panel supports entire chassis weight. Heavy gauge steel 6½″ high, cut away at bottom to mount flush to panel. Black enamel finish.

| Bud No. | Depth, In. | Net per Pair, Lots of | | |
|---|---|---|---|---|
| | | 1-49 | 50-99 | 100-149 |
| MB-458 | 8 | $1.75 | $1.60 | $1.40 |
| MB-448 | 10 | 1.75 | 1.60 | 1.40 |
| MB-459 | 11 | 2.00 | 1.80 | 1.60 |
| MB-449 | 12 | 2.30 | 2.05 | 1.85 |
| MB-460 | 13 | 2.20 | 2.00 | 1.75 |
| MB-450* | 10 | 2.55 | 2.30 | 2.05 |
| MB-451* | 13 | 2.75 | 2.50 | 2.20 |

*8½″ high for chassis height of 4″.

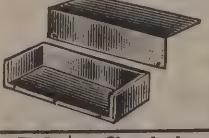


## TRIANGULAR MOUNTING BRACKETS

Ideal for rigid support of shelves to take heavy loads. Heavy gauge steel with ¾″ flange. Black enamel finish only.

| Bud No. | Height, In. | Depth, In. | Wt., Lbs. | Net per Pair, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 1-49 | 50-99 | 100-149 |
| MB-1266 | 5 | 5 | ½ | $1.45 | $1.30 | $1.15 |
| MB-1267 | 7 | 7 | 1 | 1.55 | 1.40 | 1.25 |
| MB-1268 | 9 | 9 | 1½ | 1.90 | 1.70 | 1.50 |

## CONVERTA-BOXES



Versatile enclosure combines welded base and two-sided cover. Components or controls are easily mounted to any surface of the unit. All contents easily accessible. Cover and base are fastened by self-tapping screws. Rigid 20 ga. cadmium-plated steel.

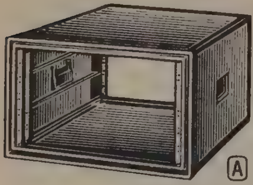
| Bud No. | Size, Inches H. x W. x D. | Wt., Lbs. | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 |
| CU-341 | 1½ x 4 x 3 | ½ | $2.65 | $2.40 | $2.10 |
| CU-452 | 2 x 5 x 4 | ¾ | 2.55 | 2.30 | 2.05 |
| CU-482 | 2 x 8 x 4 | 1¼ | 2.75 | 2.50 | 2.20 |
| CU-592 | 2½ x 9½ x 5 | 1¾ | 2.95 | 2.65 | 2.35 |
| CU-622 | 2½ x 12 x 6 | 2¼ | 3.20 | 2.90 | 2.55 |
| CU-712 | 2½ x 15 x 7 | 3 | 4.30 | 3.85 | 3.45 |

## CHASSIS SUPPORTING ANGLES

Distribute weight to sides of the rack to relieve the panel. Angles are 3″ x 1⅜″ x 7/64″ steel. Black enamel finish. **No. CE-2219** designed for attachment to rails of Prestige Relay Racks. Slotted for infinite vertical adjustment; extend to full cabinet depth; 21″ x 3″ x 2¾″.

| Bud No. | Length, Inches | Weight, Lbs. | Net per Pair, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 |
| SA-1349 | 14½ | 3½ | $3.20 | $2.90 | $2.55 |
| SA-1350 | 12 | 3 | 3.20 | 2.90 | 2.55 |
| CE-2219 | 21 | 6½ | 4.45 | 4.00 | 3.55 |

# Metal Cabinets and Doors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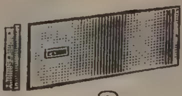
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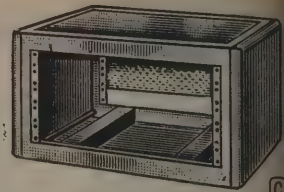
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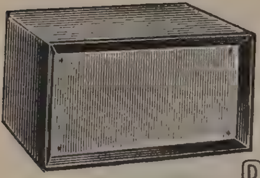
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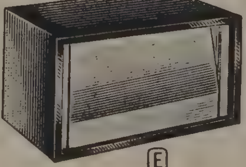
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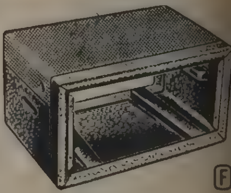

F

## CLASSIC II CABINETS (FIG. A)

Combines serene rectilinear beauty with rugged construction. Double rim aluminum extrusion outlines front of cabinet, with edges polished. Two full-length steel flanges support the recessed anodized aluminum handles. Plain .060" aluminum panels on all four sides; textured finish. Clear inside depth, 20⁹⁄₁₆"; overall, 21⁷⁄₁₆". Specify color by suffix: **GT**, gray textured; **RB**, royal blue textured; **GD**, gold textured.

| Bud No. | Ht., In. Overall | Panel Space, In. | Wt., Lbs. | Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 1-4 | 5-9 | 10-14 |
| AGC-9267 | 7¹⁄₁₆ | 5⁵⁄₁₆ | 29¼ | $ 82.80 | $ 74.50 | $66.25 |
| AGC-9268 | 8¹³⁄₁₆ | 7¹⁄₁₆ | 30½ | 87.30 | 78.60 | 69.85 |
| AGC-9269 | 10⁹⁄₁₆ | 8¹³⁄₁₆ | 32¼ | 89.40 | 80.45 | 71.50 |
| AGC-9270 | 12⁵⁄₁₆ | 10⁹⁄₁₆ | 33¼ | 92.40 | 83.15 | 73.90 |
| AGC-9271 | 14¹⁄₁₆ | 12⁵⁄₁₆ | 34¼ | 96.15 | 86.55 | 76.95 |
| AGC-9272 | 15¹³⁄₁₆ | 14¹⁄₁₆ | 35 | 99.10 | 89.20 | 79.30 |
| AGC-9273 | 17⁹⁄₁₆ | 15¹³⁄₁₆ | 36 | 102.85 | 92.55 | 82.30 |
| AGC-9274 | 19⁵⁄₁₆ | 17⁹⁄₁₆ | 36¾ | 105.85 | 95.30 | 84.70 |
| AGC-9275 | 21¹⁄₁₆ | 19⁵⁄₁₆ | 37¾ | 108.15 | 97.35 | 86.50 |
| AGC-9276 | 22¹³⁄₁₆ | 21¹⁄₁₆ | 38½ | 111.75 | 100.60 | 89.40 |
| AGC-9277 | 24⁹⁄₁₆ | 22¹³⁄₁₆ | 39½ | 114.75 | 103.30 | 91.80 |
| AGC-9278 | 26⁵⁄₁₆ | 24⁹⁄₁₆ | 40¼ | 117.90 | 106.10 | 94.30 |
| AGC-9279 | 28¹⁄₁₆ | 26⁵⁄₁₆ | 41¼ | 120.90 | 108.80 | 96.70 |
| AGC-9280 | 29¹³⁄₁₆ | 28¹⁄₁₆ | 42 | 123.45 | 111.10 | 98.75 |

## PRESTIGE VERSA-CABINETS (FIG. C)

Sturdy framework with ball cornered sides, perforated back, solid bottom plate and two supporting channels. Front, back, top and bottom are removable for easy access; also accept 19" panels for full closure; top panel may be perforated. An opening, 1¾" x 19", across the bottom of the back is supplied for controls, knobs, leads, etc.; may be covered with PS-1250 or PA-1101 panels if desired. Sides may be removed to join one or more cabinets together, using holes in frame; units may also be stacked. Handles may be attached to side. Four rubber feet. Top may be closed, using PS-1256HG or PA-1107HG solid panels, or PC-1710 perforated panel. **Size:** 23³⁄₁₆" w. x 15²⁵⁄₃₂" d. overall. Gray hammertone finish. Weight, 28 to 35 lbs.

| Bud No. | Height, Overall | Panel Space | Rear Panel | Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 1-14 | 15-24 | 25-34 |
| PC-1700 | 8¾" | 5¼" | 3½" | $38.00 | $34.20 | $30.40 |
| PC-1701 | 10½" | 7" | 5¼" | 40.20 | 36.20 | 32.15 |
| PC-1702 | 12¼" | 8¾" | 7" | 41.25 | 37.15 | 33.00 |
| PC-1703 | 14" | 10½" | 8¾" | 46.55 | 41.90 | 37.25 |
| PC-1704 | 15¾" | 12¼" | 10½" | 49.05 | 44.15 | 39.25 |
| PC-1710 | Perforated steel top plate, 12¼" x 19" | | | 4.20 | 3.80 | 3.35 |

## SHADOW CABINETS (FIG. D)

Versatile housing with removable front, bottom and rear panels. Front panel recessed 1". Front edge of body is beveled. Body of 18 gauge and panels of 16 gauge steel. Four rubber feet. Available in light gray hammertone finish only.

| Bud No. | Overall Size, In. W. x H. x D. | Uses Bud Chassis No. | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 |
| SB-2140 | 14¼ x 8 x 10 | AC-424, CB-704 | $ 9.80 | $8.80 | $7.85 |
| SB-2141 | 13¼ x 7½ x 9 | AC-407, CB-1193 | 7.80 | 7.00 | 6.25 |
| SB-2142 | 17 x 9½ x 11 | AC-411, CB-666 | 13.10 | 11.80 | 10.50 |
| SB-2143 | 15½ x 6 x 9 | AC-409, CB-1194 | 7.50 | 6.75 | 6.00 |

## CLASSIC DOORS 19" WIDE (FIG. B)

Designed for use on Classic II Cabinets; also fit any rack or cabinet with 19" panel space by attaching to panel mounting rails. Made of ⅛" aluminum alloy 5005-H36. Stop fits on one panel mounting rail; hinged door attaches to other rail. If an opening is required above and/or below the door, select a door with a height smaller than the opening it is to cover. Equipped with plated, flush-type latch. Finished in vinyl texture; specify color by suffix: **WH**, white textured; **S**, sand.

| Bud No. | Ht., In. | Wt., Lbs. | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-4 | 5-9 | 10-14 |
| AGD-367 | 5¼ | 1¾ | $ 8.90 | $ 8.00 | $ 7.10 |
| AGD-368 | 7 | 2 | 10.40 | 9.35 | 8.30 |
| AGD-369 | 8¾ | 2¾ | 11.40 | 10.25 | 9.10 |
| AGD-370 | 10½ | 3 | 12.50 | 11.25 | 10.00 |
| AGD-371 | 12¼ | 3½ | 13.40 | 12.05 | 10.70 |
| AGD-372 | 14 | 4 | 13.70 | 12.35 | 10.95 |
| AGD-373 | 15¾ | 4¾ | 15.50 | 13.95 | 12.40 |
| AGD-374 | 17½ | 5 | 16.80 | 15.10 | 13.45 |
| AGD-375 | 19¼ | 5½ | 18.00 | 16.20 | 14.40 |
| AGD-376 | 21 | 6¼ | 19.10 | 17.20 | 15.30 |
| AGD-377 | 22¾ | 6¾ | 20.00 | 18.00 | 16.00 |
| AGD-378 | 24½ | 7¼ | 21.00 | 18.90 | 16.80 |
| AGD-379 | 26¼ | 7½ | 22.20 | 20.00 | 17.75 |
| AGD-380 | 28 | 8 | 23.70 | 21.35 | 18.95 |

## FUTURA CABINETS (FIGS. D AND E)

Handsome housing of 20 and 18 gauge steel. Four rubber feet. Nos. MD-1960 thru -1962 (similar to Fig. D) have vertical front panel; others (Fig. E) have inclined front panel rising 2" vertically, then inclining 15°. Specify color by suffix: **BBY**, dark blue textured body with light blue textured panels; **HG**, gray hammertone body with light gray textured panels.

| Bud No. | Overall Size, In. W. x H. x D. | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-24 | 25-49 | 50-99 |
| MD-1960 | 13 x 7 x 8 | $10.35 | $ 9.30 | $ 8.30 |
| MD-1961 | 14 x 8 x 9 | 11.15 | 10.05 | 8.90 |
| MD-1962 | 16 x 8 x 9 | 11.50 | 10.35 | 9.20 |
| MD-1963 | 13 x 7 x 8 | 12.10 | 10.90 | 9.70 |
| MD-1964 | 14 x 8 x 9 | 13.00 | 11.70 | 10.40 |
| MD-1965 | 16 x 8 x 9 | 13.80 | 12.40 | 11.05 |

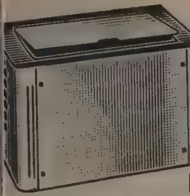
## STANDARD PRESTIGE CABINETS (FIG. F)

Has two supporting rails, laterally movable to fit any chassis width, and shielded handle slots. Finger holes in cover for easy lifting. Of 16 gauge steel. Takes 19" panels. With embossed feet. **Size:** 21⅝" w. x 14¾" d. overall. Gray hammertone finish.

| Bud No. | Height, Overall | Panel Space | Wt., Lbs. | Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 1-14 | 15-24 | 25-34 |
| C-1440 | 9⁹⁄₁₆" | 7" | 25 | $40.05 | $36.05 | $32.05 |
| C-1441 | 11⁵⁄₁₆" | 8¾" | 26 | 42.25 | 38.05 | 33.80 |
| C-1442 | 13¹⁄₁₆" | 10½" | 28½ | 44.00 | 39.60 | 35.20 |
| C-1550* | 9⁹⁄₁₆" | 7" | 23½ | 43.35 | 39.00 | 34.70 |
| C-1551* | 11⁵⁄₁₆" | 8¾" | 25 | 45.10 | 40.60 | 36.10 |
| C-1552* | 13¹⁄₁₆" | 10½" | 27½ | 47.65 | 42.90 | 38.10 |

*With perforated cover; others solid.

# Cabinets and Cases


A

B

C

## STREAMLINED CABINETS (FIG. A)

eal for housing devices not requiring excessive depth. Recessed, nged cover with convenient finger lift for access. Panels fit flush th embossed, rounded corner fronts. Back opening 3½″ h. provles for cables or rear controls; louvered sides provide ample ntilation. **Size:** 8¼″ d. x 8″ h. overall. Specify black rinkletex uffix **BR**), gray rinkletex (suffix **GR**) or gray hammertone uffix **HG**) finish.

| Bud No. | Width, Overall | Panel Space | Wt., Lbs. | Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 1-24 | 25-49 | 50-99 |
| -1480 | 10½″ | 8″ x 8″ | 6¼ | $ 8.35 | $ 7.50 | $ 6.70 |
| -1481 | 12½″ | 8″ x 10″ | 6¾ | 8.45 | 7.60 | 6.75 |
| -1482 | 14½″ | 8″ x 12″ | 7½ | 9.00 | 8.10 | 7.20 |
| -1483 | 16½″ | 8″ x 14″ | 7¾ | 9.70 | 8.75 | 7.75 |
| -1484 | 18½″ | 8″ x 16″ | 9¼ | 10.35 | 9.30 | 8.30 |
| -1485* | 20⅝″ | 12″ x 18″ | 17½ | 20.15 | 18.15 | 16.10 |

epth is 12″.

## ISTRUMENT AND RECEIVER CABINETS (FIG. B)

onomy version of the Streamlined Cabinet series. Recessed, nged cover provides access to contents. Front panel is attached th self-tapping screws. Louvers provide ample ventilation. Black kletex finish only.

| Bud No. | Size, Inches H. x W. x D. | Wt., Lbs. | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 |
| -973 | 7 x 8 x 8 | 4¾ | $ 6.25 | $ 5.65 | $5.00 |
| -993 | 7 x 10 x 8 | 5 | 7.15 | 6.45 | 5.70 |
| -994 | 7 x 12 x 8 | 6 | 7.35 | 6.60 | 5.90 |
| -995 | 7 x 14 x 8 | 7 | 8.05 | 7.25 | 6.50 |
| -1190 | 8 x 16 x 8 | 8½ | 11.20 | 10.10 | 8.95 |
| -975 | 9 x 15 x 11 | 12¼ | 13.65 | 12.30 | 10.90 |
| -999 | 12 x 18 x 12 | 18¼ | 14.75 | 13.30 | 11.80 |

## CARRYING CASES (FIG. C)

versatile cabinet that accepts a variety of equipment. Remove front and back panels; handle may be attached to top. Available in sturdy steel or lightweight aluminum to suit your requirents.

### STEEL CASES

ecify black rinkletex (suffix **BR**) or gray hammertone (suffix ) finish when ordering.

| Bud No. | Size, Inches D. x W. x H. | Wt., Lbs. | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 |
| -1095 | 5 x 6 x 9 | 3 | $4.50 | $4.05 | $3.60 |
| -1091 | 5 x 9 x 6 | 3 | 4.50 | 4.05 | 3.60 |
| -1096 | 6 x 7 x 12 | 5¼ | 6.25 | 5.65 | 5.00 |
| -1092 | 6 x 12 x 7 | 5 | 6.25 | 5.65 | 5.00 |
| -1097 | 7 x 7¾ x 15 | 7¼ | 6.95 | 6.25 | 5.55 |
| -1100 | 8 x 10 x 10 | 7 | 7.15 | 6.45 | 5.70 |
| -1093 | 7 x 15 x 9 | 8 | 8.70 | 7.85 | 6.95 |

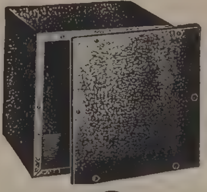
### NATURAL FINISH ALUMINUM CASES*

| Bud No. | Size, Inches D. x W. x H. | Wt., Lbs. | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 |
| C-2095 | 5 x 6 x 9 | 1½ | $4.60 | $4.15 | $3.70 |
| C-2091 | 5 x 9 x 6 | 1½ | 4.60 | 4.15 | 3.70 |
| C-2096 | 6 x 7 x 12 | 2½ | 6.95 | 6.25 | 5.55 |
| C-2092 | 6 x 12 x 7 | 2½ | 6.95 | 6.25 | 5.55 |

### GRAY HAMMERTONE ALUMINUM CASES*

| Bud No. | Size, Inches D. x W. x H. | Wt., Lbs. | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 |
| C-2095HG | 5 x 6 x 9 | 1½ | $5.30 | $4.75 | $4.25 |
| C-2091HG | 5 x 9 x 6 | 1½ | 5.30 | 4.75 | 4.25 |
| C-2096HG | 6 x 7 x 12 | 2½ | 8.05 | 7.25 | 6.45 |
| C-2092HG | 6 x 12 x 7 | 2½ | 8.05 | 7.25 | 6.45 |

luminum alloy 5005 H-14.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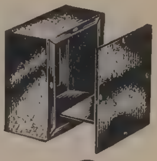

E

## METAL UTILITY CABINETS (FIG. D)

Highly useful housing for all types of electronic equipment such as mixers, monitors, frequency meters, etc. Both front and back panels are removable for easy accessibility.

### STEEL CABINETS

Specify black rinkletex (suffix **BR**) or gray hammertone (suffix **HG**) finish.

| Bud No. | Size, Inches D. x W. x H. | Wt., Lbs. | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-49 | 50-99 | 100-149 |
| CU-883 | 2 x 4 x 4 | ¾ | $1.45 | $1.30 | $1.15 |
| CU-728 | 3 x 5 x 4 | 1 | 1.75 | 1.60 | 1.40 |
| CU-729 | 4 x 5 x 6 | 1¾ | 2.00 | 1.80 | 1.60 |
| CU-1098 | 6 x 6 x 6 | 2¼ | 3.10 | 2.80 | 2.50 |
| CU-1099 | 5 x 6 x 9 | 3 | 3.30 | 2.95 | 2.65 |
| CU-879 | 7 x 8 x 10 | 3¼ | 4.50 | 4.05 | 3.60 |
| CU-1124 | 6 x 7 x 12 | 5 | 4.40 | 3.95 | 3.50 |
| CU-880 | 8 x 10 x 10 | 6¼ | 5.45 | 4.90 | 4.35 |
| CU-881 | 8 x 11 x 12 | 8½ | 6.00 | 5.40 | 4.80 |
| CU-882 | 7 x 9 x 15 | 8¼ | 6.10 | 5.50 | 4.90 |

### NATURAL FINISH ALUMINUM CABINETS*

| | | | | | |
|---|---|---|---|---|---|
| AU-1083 | 2 x 4 x 4 | ¼ | $2.00 | $1.80 | $1.60 |
| AU-1028 | 3 x 5 x 4 | ½ | 2.00 | 1.80 | 1.60 |
| AU-1029 | 4 x 5 x 6 | ¾ | 2.20 | 2.00 | 1.75 |
| AU-1039 | 6 x 6 x 6 | 1 | 3.10 | 2.80 | 2.50 |
| AU-1040 | 5 x 6 x 9 | 1½ | 3.65 | 3.30 | 2.90 |

### GRAY HAMMERTONE ALUMINUM CABINETS*

| | | | | | |
|---|---|---|---|---|---|
| AU-1083HG | 2 x 4 x 4 | ¼ | $2.20 | $2.00 | $1.75 |
| AU-1028HG | 3 x 5 x 4 | ½ | 2.55 | 2.30 | 2.05 |
| AU-1029HG | 4 x 5 x 6 | ¾ | 2.65 | 2.40 | 2.10 |
| AU-1039HG | 6 x 6 x 6 | 1 | 3.50 | 3.15 | 2.80 |
| AU-1040HG | 5 x 6 x 9 | 1½ | 4.40 | 3.95 | 3.50 |

*Aluminum alloy 5005 H-14.

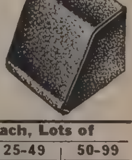
## MINIATURE UTILITY CABINETS (FIG. E)

Ideal housing for construction of electronic devices using miniature tubes and transistorized circuitry. Front panel has a built-on chassis. Both front and rear panels are removable; fastened by self-tapping screws. Black rinkletex enamel finish.

| Bud No. | Size, In. H. x W. x D. | Chassis W. x D., In. | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-49 | 50-99 | 100-149 |
| C-1793 | 4 x 4 x 2 | 3⅛ x 1⅞* | $1.85 | $1.65 | $1.50 |
| C-1794 | 4 x 5 x 3 | 4⅛ x 2⅞* | 2.10 | 1.90 | 1.70 |
| C-1795 | 5 x 4 x 3 | 3⅛ x 2⅞† | 2.30 | 2.05 | 1.85 |
| C-1796 | 6 x 5 x 4 | 4⅛ x 3⅞‡ | 2.40 | 2.15 | 1.90 |
| C-1797 | 5 x 6 x 4 | 5⅛ x 3⅞† | 2.75 | 2.50 | 2.20 |
| C-1798 | 6 x 6 x 6 | 4⅞ x 5⅞‡ | 3.30 | 2.95 | 2.65 |

*1″ high. †1¼″ high. ‡1¾″ high.

## UNIVERSAL SLOPING PANEL CABINETS



Fully enclosed and shielded housing with one-piece detachable back and sides fastened to body with four self-tapping screws. Components may be mounted on back, bottom, sides or front. Gray hammertone finish only.

### ALUMINUM MODELS

Aluminum alloy 5005 H-14.

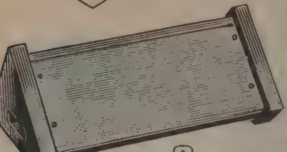
| Bud No. | Size W. x D. x H. | Wt., Lbs. | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-24 | 25-49 | 50-99 |
| AC-1610 | 4″ x 4¹⁄₁₆″ x 4¹⁹⁄₆₄″ | ⅜ | $2.65 | $2.40 | $2.10 |
| AC-1611 | 5″ x 4¹⁄₁₆″ x 4¹⁹⁄₆₄″ | ½ | 2.55 | 2.30 | 2.05 |
| AC-1612 | 6″ x 4¹⁄₁₆″ x 4¹⁹⁄₆₄″ | ⁹⁄₁₆ | 2.75 | 2.50 | 2.20 |
| AC-1613 | 7″ x 4¹⁄₁₆″ x 4¹⁹⁄₆₄″ | ⅝ | 3.10 | 2.80 | 2.50 |

### STEEL MODELS

| | | | | | |
|---|---|---|---|---|---|
| C-1606 | 4″ x 4¹⁄₁₆″ x 4¹⁹⁄₆₄″ | 1 | $2.10 | $1.90 | $1.70 |
| C-1607 | 5″ x 4¹⁄₁₆″ x 4¹⁹⁄₆₄″ | 1 | 2.20 | 2.00 | 1.75 |
| C-1608 | 6″ x 4¹⁄₁₆″ x 4¹⁹⁄₆₄″ | 1¼ | 2.40 | 2.15 | 1.90 |
| C-1609 | 7″ x 4¹⁄₁₆″ x 4¹⁹⁄₆₄″ | 1½ | 2.75 | 2.50 | 2.20 |

BUD — THE MARK OF PERFECTION

# Cabinets and Foundations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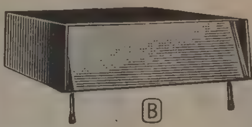
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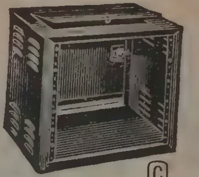
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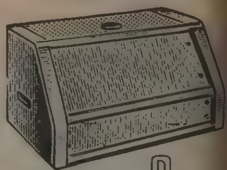
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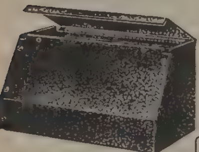
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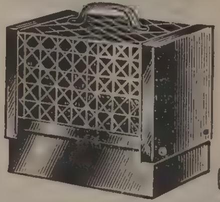
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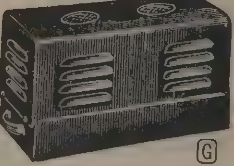
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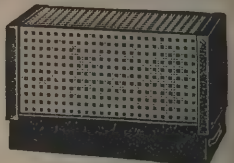

H

## "MARK-T" CABINETS (FIG. A)

Many applications in the realm of control enclosures. Of welded 16 ga. steel with removable front panel and hinged door. Angle of panel and door permit easy viewing of contents. Turn of knurled knob opens door latch. Recessed carrying handles. Four rubber feet. Gray textured body with light gray panel and door. Extra door or panel available on special order.

| Bud No. | Size, Inches W. x D. x H. | Panel or Door Area, Inches | Net Each, Lots of 1-14 | 15-24 | 25-34 |
|---|---|---|---|---|---|
| MT-214 | 16 x 10 15/32 x 6 33/64 | 14 x 5¾ | $31.90 | $28.70 | $25.50 |
| MT-219 | 21 x 10 15/32 x 6 33/64 | 19 x 5¾ | 34.95 | 31.45 | 27.95 |
| MT-224 | 26 x 10 15/32 x 6 33/64 | 24 x 5¾ | 41.15 | 37.05 | 32.90 |

## "TILT-A-VIEW" CABINETS (FIG. B)

Artfully designed to present variable viewing angles excellent for observing meters, dials, etc. Two-piece, 18-ga. steel. Fast, easy access to interior. Two 2" high legs, detachable for changed viewing angle, have rubber feet. Can be mounted on desk, cabinet or wall. Hooded top. No screws in panels. Vinyl texture finish. Gray textured body with light sand panels.

| Bud No. | Size, Inches W. x D. x H. | Net Each, Lots of 1-14 | 15-24 | 25-34 |
|---|---|---|---|---|
| TV-2155 | 15 x 10 x 4½ | $ 8.90 | $ 8.00 | $ 7.10 |
| TV-2156 | 16 x 12 x 6½ | 10.45 | 9.40 | 8.35 |
| TV-2157 | 17 x 14 x 8½ | 15.20 | 13.70 | 12.15 |

## DELUXE CABINET RACKS (FIG. C)

Heavy-gauge steel racks with recessed hinged door on top and snap catch; rounded corners. The five large sizes have hinged rear doors; others, welded rear panels. Louvered sides. Embossed metal feet. Specify black rinkletex (suffix **BR**), gray rinkletex (**GR**) or gray hammertone (**HG**). **Size:** 14¾" x 22" w. Fits 19" panels. **Includes 12 ga. steel panel.**

| Bud No. | Height, Overall | Panel Space | Wt., Lbs. | Net Each, Lots of 1-14 | 15-24 | 25-34 |
|---|---|---|---|---|---|---|
| CR-1726 | 8 25/32" | 7" | 28 | $20.70 | $18.65 | $16.55 |
| CR-1741 | 10 9/16" | 8¾" | 30 | 22.05 | 19.85 | 17.65 |
| CR-1740 | 12 5/16" | 10½" | 34 | 25.85 | 23.25 | 20.70 |
| CR-1742 | 14 1/16" | 12¼" | 37 | 26.65 | 24.00 | 21.30 |
| CR-1739 | 15 13/16" | 14" | 40 | 36.10 | 32.50 | 28.90 |
| CR-1743* | 19 5/16" | 17½" | 47 | 35.40 | 31.85 | 28.30 |
| CR-1727* | 22 13/16" | 21" | 51 | 38.00 | 34.20 | 30.40 |
| CR-1744* | 28 1/16" | 26¼" | 58 | 40.85 | 36.75 | 32.70 |
| CR-1728* | 33 5/16" | 31½" | 68 | 43.35 | 39.00 | 34.70 |
| CR-1745* | 36 13/16" | 35" | 78 | 45.55 | 41.00 | 36.45 |

*These sizes have both top and rear doors.

## HEAVY-DUTY CABINET RACKS

Similar to above units with Add-A-Cab feature (similar to Add-A-Rack) for continuously expanding systems. Panel mounting rails are integral part of the sides. Removable rear door. Louvered sides and 2½" x 17⅞" opening in the bottom of the back assure adequate ventilation. Made of 16 ga. steel. Gray hammertone finish; black or gray rinkletex at 10% additional charge. **Size:** 17⅛" d. x 22" w.

| | | | | | | |
|---|---|---|---|---|---|---|
| CR-1736 | 24½" | 19¼" | 47 | $37.20 | $33.50 | $29.75 |
| CR-1737 | 31½" | 26¼" | 56 | 39.95 | 35.95 | 31.95 |
| CR-1738 | 40¼" | 35" | 67 | 47.65 | 42.90 | 38.10 |
| ACR-1936 | Add-A-Cab for CR-1736 | | 41 | 37.05 | 33.35 | 29.65 |
| ACR-1937 | Add-A-Cab for CR-1737 | | 47 | 45.45 | 40.90 | 36.35 |
| ACR-1938 | Add-A-Cab for CR-1738 | | 55 | 47.00 | 42.30 | 37.60 |

## PRESTIGE SLOPING PANEL CABINETS (FIG. D)

Ventilated top opens completely. Removable panel trim bar permits installation or removal of panels with chassis attached. Top panel is swept back for easy viewing. Takes standard 19" panels. Shielded lifting handles. Rear opening 2½" x 18" for controls, etc.; panel recess 1¼"; bottom panel 3½" high. **Size:** 22" w. x 9¼" top depth. Gray hammertone finish only. Weight, 25, 27 and 30 lbs.

| Bud No. | Size, In. H. x D. | Slope Height | Net Each, Lots of 1-14 | 15-24 | 25-34 |
|---|---|---|---|---|---|
| C-1555 | 11⅞ x 14⅜ | 7" | $48.20 | $43.40 | $38.55 |
| C-1556 | 13¼ x 15⅛ | 8¾" | 51.80 | 46.60 | 41.45 |
| C-1557 | 14¾ x 16⅛ | 10½" | 55.55 | 50.00 | 44.45 |

## SLOPING PANEL CABINETS (FIG. E)

Hinged tip for easy access; front panel also removable. Specify black rinkletex (suffix **BR**) or gray hammertone (suffix **HG**).

| Bud No. | Size, Inches H. x W. x D. | Wt., Lbs. | Net Each, Lots of 1-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|
| C-1584 | 6½ x 7 1/16 x 7 9/32 | 2¾ | $ 4.65 | $4.20 | $3.70 |
| C-1587 | 8 x 8 1/16 x 8 | 4 | 6.15 | 5.55 | 4.90 |
| C-1585 | 6½ x 9 1/16 x 7 9/32 | 2½ | 5.10 | 4.60 | 4.10 |
| C-1588 | 8 x 10 1/16 x 8 | 4½ | 6.80 | 6.10 | 5.45 |
| C-1586 | 6½ x 11 1/16 x 7 9/32 | 3¾ | 5.85 | 5.25 | 4.70 |
| C-1894 | 8 x 14 1/16 x 8 | 6 | 7.25 | 6.55 | 5.80 |
| C-1892 | 8 x 13 1/16 x 8 15/32 | 5½ | 8.00 | 7.20 | 6.40 |
| C-1896 | 9 x 18 1/16 x 8 5/32 | 9¾ | 10.15 | 9.15 | 8.10 |
| C 1893 | 10 x 18 1/16 x 10½ | 12½ | 10.60 | 9.55 | 8.50 |

## MINIATURE AMPLIFIER FOUNDATION (FIG. F)

Compact amplifier foundation ideal for use with miniature tubes. Cover is perforated metal with attached handle for portability. Available in black rinkletex finish only.

| Bud No. | Size, Inches Chassis | Hgt. | Wt., Lbs. | Net Each, Lots of 1-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|---|
| CA-1754 | 5 x 7 | 6 | 2 | $5.95 | $5.35 | $4.75 |

## STREAMLINED FOUNDATIONS (FIG. G)

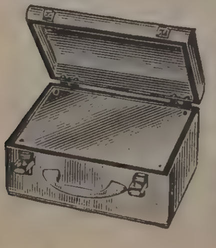
Attractive unit houses, amplifiers and similar apparatus. Standard chassis with removable top cover with chrome trim. Sides and ends louvered. Handles attached to chassis. Overall height, 9"; chassis 3" high. Specify black rinkletex (suffix **BR**), or gray rinkletex (suffix **GR**).

| Bud No. | Size, Inches W. x D. | Wt., Lbs. | Net Each, Lots of 1-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|
| CA-1750 | 10 1/16 x 5 | 4¼ | $10.00 | $ 9.00 | $ 8.00 |
| CA-1751 | 12 1/16 x 7 | 5¾ | 11.90 | 10.70 | 9.50 |
| CA-1752 | 17 1/16 x 7 | 7 | 12.65 | 11.40 | 10.10 |
| CA-1753 | 17 1/16 x 10 | 9¾ | 13.65 | 12.30 | 10.80 |

## STANDARD FOUNDATIONS (FIG. H)

Standard chassis with perforated cover for maximum ventilation. Handles are attached to chassis. Chassis 2½" h., except CA-1128, 3" h. Overall height, 8 11/32", except CA-1128, 8 27/32". Black rinkletex finish only.

| | | | | | |
|---|---|---|---|---|---|
| CA-699 | 9⅝ x 5⅛ | 3¾ | $ 8.35 | $7.50 | $6.70 |
| CA-1125 | 13⅝ x 5⅛ | 5 | 8.70 | 7.85 | 6.95 |
| CA-1126 | 17⅛ x 7⅛ | 7¼ | 9.80 | 8.80 | 7.85 |
| CA-1128 | 12⅛ x 10⅛ | 6½ | 10.10 | 9.10 | 8.10 |



## TRANSICASE PORTABLE INSTRUMENT CASES

Handsome, portable instrument case with unlimited applications. Contour design fabricated of .040" aluminum with flush-fitting aluminum panel. Lid protects instruments in case; mounted on two slide-off, bright nickel-plated hinges with toggle catches. Rubber feet at both base and back; metal plugs supplied to fill holes if rubber feet are not used. Bright nickel-plated handle. **Specify Color:** Add suffix **BBY** for textured blue; **GGY** for textured gray enamel.

| Bud No. | Inside Panel Size, Inches | Clear Internal Space Below Panel | Above Panel | Internal Aperture | Overall Size, Inches W. x D. x H. | Wt., Lbs. | Net Each, Lots of 1-9 | 10-14 | 15-19 |
|---|---|---|---|---|---|---|---|---|---|
| TC-300 | 8 15/16 x 5 15/16 | 4 13/32" | 1 15/32" | 8" x 5 31/32" | 10 1/16 x 7 x 5 | 2½ | $29.20 | $26.30 | $23.35 |
| TC-301 | 10⅜ x 7¼ | 4 13/32" | 1 15/32" | 9 7/16" x 7 9/32" | 11½ x 8¼ x 6 | 3¼ | 29.95 | 26.95 | 23.95 |
| TC-302 | 11⅞ x 7 15/16 | 5 29/32" | 1 15/32" | 10 15/16" x 7 31/32" | 13 x 9 x 7½ | 4 | 32.00 | 28.80 | 25.60 |
| TC-303 | 15⅜ x 7 15/16 | 5 29/32" | 1 15/32" | 14 7/16" x 7 31/32" | 16½ x 9 x 7½ | 4¾ | 32.55 | 29.30 | 26.05 |
| TC-304 | 19 x 7 | 7 11/32" | 1 15/32" | 18 1/16" x 7 1/32" | 20⅛ x 8 x 9 | 6¾ | 34.30 | 30.85 | 27.45 |

# Chassis and Accessories

## ALUMINUM AND STEEL CHASSIS BASES, PLATES

Each chassis is made from a single sheet of metal. All corners are reinforced and spot welded. Aluminum bases are welded on Government approved welders as used for aircraft parts; natural finish aluminum alloy 5005 H-14. All four sides are folded at the bottom for added rigidity and strength.

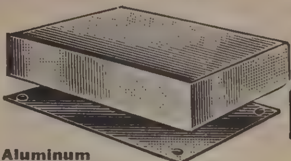
### ALUMINUM CHASSIS BASES

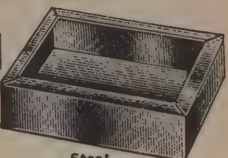
| Bud No. | Size, Inches D. x W. x H. | Ga. | Wt., Lbs. | Net Each, Lots of 1-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|---|
| AC-1401 | 2½ x 4½ x 1 | 18 | ⅛ | $ 1.45 | $ 1.30 | $ 1.15 |
| AC-1402 | 3½ x 4½ x 1 | 18 | ⅛ | 1.45 | 1.30 | 1.15 |
| AC-1403 | 3½ x 5½ x 1 | 18 | ⅛ | 1.45 | 1.30 | 1.15 |
| AC-1404 | 4 x 5 x 2 | 18 | ¼ | 1.75 | 1.60 | 1.40 |
| AC-1405 | 4 x 6 x 1½ | 18 | ¼ | 1.55 | 1.40 | 1.25 |
| AC-430 | 4 x 6 x 3 | 18 | ⅓ | 2.00 | 1.80 | 1.60 |
| AC-431 | 4 x 6 x 2 | 18 | ¼ | 1.75 | 1.60 | 1.40 |
| AC-1406 | 4 x 8 x 2 | 18 | ¼ | 2.00 | 1.80 | 1.60 |
| AC-432 | 4 x 17 x 3 | 16 | 1 | 3.40 | 3.05 | 2.70 |
| AC-1407 | 4½ x 8 x 1½ | 18 | ¼ | 1.75 | 1.60 | 1.40 |
| AC-402 | 5 x 7 x 2 | 18 | ⅓ | 1.90 | 1.70 | 1.50 |
| AC-429 | 5 x 7 x 3 | 18 | ½ | 2.10 | 1.90 | 1.70 |
| AC-1408 | 5 x 9 x 1½ | 18 | ⅓ | 1.75 | 1.60 | 1.40 |
| AC-1409 | 5 x 9½ x 1½ | 18 | ⅓ | 1.85 | 1.65 | 1.50 |
| AC-403 | 5 x 9½ x 2 | 18 | ½ | 2.00 | 1.80 | 1.60 |
| AC-401 | 5 x 9½ x 2½ | 18 | ½ | 2.30 | 2.05 | 1.85 |
| AC-421 | 5 x 9½ x 3 | 18 | ⅝ | 2.40 | 2.15 | 1.90 |
| AC-404 | 5 x 10 x 3 | 18 | ⅝ | 2.40 | 2.15 | 1.90 |
| AC-422 | 5 x 13 x 3 | 18 | ¾ | 2.75 | 2.50 | 2.20 |
| AC-1410 | 5 x 13½ x 2½ | 18 | ¾ | 2.30 | 2.05 | 1.85 |
| AC-1411 | 5½ x 5½ x 1 | 18 | ⅕ | 1.65 | 1.50 | 1.30 |
| AC-1412 | 5½ x 9½ x 1½ | 18 | ⅓ | 1.85 | 1.65 | 1.50 |
| AC-1413 | 6 x 8 x 2 | 18 | ⅓ | 2.00 | 1.80 | 1.60 |
| AC-1414 | 6 x 14 x 3 | 16 | 1⅛ | 3.65 | 3.30 | 2.90 |
| AC-433 | 6 x 17 x 3 | 16 | 1¼ | 4.10 | 3.70 | 3.30 |
| AC-405 | 7 x 7 x 2 | 18 | ½ | 2.00 | 1.80 | 1.60 |
| AC-406 | 7 x 9 x 2 | 18 | ½ | 2.10 | 1.90 | 1.70 |
| AC-407 | 7 x 11 x 2 | 18 | ⅝ | 2.40 | 2.15 | 1.90 |
| AC-408 | 7 x 12 x 3 | 18 | ⅞ | 2.95 | 2.65 | 2.35 |
| AC-409 | 7 x 13 x 2 | 18 | ¾ | 2.55 | 2.30 | 2.05 |
| AC-1415 | 7 x 15 x 2 | 16 | 1 | 3.20 | 2.90 | 2.55 |
| AC-411 | 7 x 15 x 3 | 16 | 1¼ | 4.05 | 3.65 | 3.25 |
| AC-1416 | 7 x 17 x 2 | 16 | 1⅛ | 3.65 | 3.30 | 2.90 |
| AC-1417 | 7 x 17 x 2½ | 16 | 1¼ | 3.75 | 3.40 | 3.00 |
| AC-423 | 7 x 17 x 3 | 16 | 1½ | 4.10 | 3.70 | 3.30 |
| AC-1418 | 8 x 10 x 2½ | 18 | 1 | 3.10 | 2.80 | 2.50 |
| AC-1419 | 8 x 12 x 2½ | 16 | 1⅛ | 3.65 | 3.30 | 2.90 |
| AC-424 | 8 x 12 x 3 | 16 | 1¼ | 3.50 | 3.15 | 2.80 |
| AC-425 | 8 x 17 x 2 | 16 | 1½ | 3.65 | 3.30 | 2.90 |
| AC-412* | 8 x 17 x 3 | 16 | 1¾ | 4.15 | 3.75 | 3.30 |
| AC-1420 | 8½ x 15 x 3 | 16 | 1½ | 3.85 | 3.45 | 3.10 |
| AC-1421 | 9 x 15 x 3 | 16 | 1½ | 4.40 | 3.95 | 3.50 |
| AC-413 | 10 x 12 x 3 | 16 | 1¼ | 4.15 | 3.75 | 3.30 |
| AC-414 | 10 x 14 x 3 | 16 | 1½ | 4.20 | 3.80 | 3.35 |
| AC-415* | 10 x 17 x 2 | 16 | 1½ | 4.10 | 3.70 | 3.30 |
| AC-416* | 10 x 17 x 3 | 16 | 1¾ | 4.75 | 4.30 | 3.80 |
| AC-427* | 10 x 17 x 4 | 14 | 2½ | 6.60 | 5.95 | 5.30 |
| AC-1422 | 10 x 17 x 5 | 16 | 2¼ | 9.55 | 8.60 | 7.65 |
| AC-1423 | 10 x 23 x 3 | 14 | 2¾ | 6.95 | 6.25 | 5.55 |
| AC-426* | 11 x 17 x 2 | 14 | 2 | 5.05 | 4.55 | 4.05 |
| AC-417* | 11 x 17 x 3 | 14 | 2¼ | 5.85 | 5.25 | 4.70 |
| AC-1424 | 12 x 12 x 3 | 16 | 1½ | 4.20 | 3.80 | 3.35 |
| AC-1425 | 12 x 17 x 2 | 16 | 1⅝ | 5.30 | 4.75 | 4.25 |
| AC-418* | 12 x 17 x 3 | 14 | 2¼ | 5.95 | 5.35 | 4.75 |
| AC-419* | 13 x 17 x 2 | 14 | 2⅝ | 5.30 | 4.75 | 4.25 |
| AC-420* | 13 x 17 x 3 | 14 | 2¾ | 6.25 | 5.65 | 5.00 |
| AC-428* | 13 x 17 x 4 | 14 | 3¼ | 7.70 | 6.95 | 6.15 |
| AC-1426 | 13 x 17 x 5 | 14 | 3½ | 10.45 | 9.40 | 8.35 |
| AC-1427 | 14 x 17 x 3 | 14 | 2¾ | 7.50 | 6.75 | 6.00 |
| AC-1428 | 15 x 17 x 4 | 14 | 3¼ | 10.45 | 9.40 | 8.35 |
| AC-1429 | 15 x 17 x 6 | 14 | 4⅛ | 14.30 | 12.85 | 11.45 |
| AC-1430 | 17 x 17 x 3 | 14 | 3¼ | 8.80 | 7.90 | 7.05 |
| AC-1431 | 17 x 17 x 4 | 14 | 3⅞ | 12.45 | 11.20 | 9.95 |

*Punched to accommodate chassis mtg. brackets.

### ALUMINUM CHASSIS BOTTOM PLATES

| Bud No. | Fits Chassis W. x L., In. | Wt., Lbs. | Net Each, Lots of 1-49 | 50-99 | 100-149 |
|---|---|---|---|---|---|
| BPA-1501 | 2½ x 4½ | 1/16 | $0.75 | $0.70 | $0.60 |
| BPA-1502 | 3½ x 4½ | 1/16 | .90 | .80 | .70 |
| BPA-1503 | 3½ x 5½ | ⅛ | .90 | .80 | .70 |
| BPA-1504 | 4 x 5 | ⅛ | .90 | .80 | .70 |
| BPA-1505 | 4 x 6 | ⅛ | .90 | .80 | .70 |
| BPA-1506 | 4 x 8 | ⅛ | 1.10 | 1.00 | .90 |
| BPA-1532 | 4 x 17 | ¼ | 1.10 | 1.00 | .90 |
| BPA-1507 | 4½ x 8 | 3/16 | 1.20 | 1.10 | .95 |
| BPA-1589 | 5 x 7 | ⅛ | 1.00 | .90 | .80 |
| BPA-1508 | 5 x 9 | 3/16 | 1.00 | .90 | .80 |
| BPA-1590 | 5 x 9½ | ⅛ | 1.00 | .90 | .80 |
| BPA-1591 | 5 x 10 | ¼ | 1.00 | .90 | .80 |
| BPA-1509 | 5 x 13 | ¼ | 1.55 | 1.40 | 1.25 |
| BPA-1510 | 5 x 13½ | ¼ | 1.55 | 1.40 | 1.25 |
| BPA-1511 | 5½ x 5½ | ⅛ | 1.00 | .90 | .80 |
| BPA-1512 | 5½ x 9½ | 3/16 | 1.10 | 1.00 | .90 |
| BPA-1513 | 6 x 8 | 3/16 | 1.20 | 1.10 | .95 |
| BPA-1514 | 6 x 14 | 5/16 | 1.55 | 1.40 | 1.25 |
| BPA-1515 | 6 x 17 | ⅜ | 2.00 | 1.80 | 1.60 |
| BPA-1592 | 7 x 7 | 3/16 | 1.00 | .90 | .80 |
| BPA-1593 | 7 x 9 | ¼ | 1.10 | 1.00 | .90 |
| BPA-1594 | 7 x 11 | ¼ | 1.20 | 1.10 | .95 |
| BPA-1595 | 7 x 12 | 5/16 | 1.45 | 1.30 | 1.15 |
| BPA-1596 | 7 x 13 | ½ | 1.55 | 1.40 | 1.25 |
| BPA-1516 | 7 x 15 | ½ | 1.75 | 1.60 | 1.40 |
| BPA-1517 | 7 x 17 | ½ | 1.75 | 1.60 | 1.40 |
| BPA-1518 | 8 x 10 | ¼ | 1.65 | 1.50 | 1.30 |
| BPA-1519 | 8 x 12 | ⅜ | 2.00 | 1.80 | 1.60 |
| BPA-1520 | 8 x 17 | ½ | 2.10 | 1.90 | 1.70 |
| BPA-1521 | 8½ x 15 | ½ | 2.40 | 2.15 | 1.90 |


Aluminum Chassis and Plate


Steel

### ALUMINUM CHASSIS BOTTOM PLATES (CONT'D)

| Bud No. | Fits Chassis W. x L., In. | Wt., Lbs. | Net Each, Lots of 1-49 | 50-99 | 100-149 |
|---|---|---|---|---|---|
| BPA-1522 | 9 x 15 | ½ | $2.55 | $2.30 | $2.05 |
| BPA-1523 | 10 x 12 | ½ | 2.00 | 1.80 | 1.60 |
| BPA-1524 | 10 x 14 | ½ | 2.00 | 1.80 | 1.60 |
| BPA-1597 | 10 x 17 | ⅝ | 2.00 | 1.80 | 1.60 |
| BPA-1525 | 10 x 23 | ⅞ | 2.95 | 2.65 | 2.35 |
| BPA-1526 | 11 x 17 | ¾ | 2.20 | 2.00 | 1.75 |
| BPA-1527 | 12 x 12 | ⅝ | 2.20 | 2.00 | 1.75 |
| BPA-1528 | 12 x 17 | ¾ | 2.65 | 2.40 | 2.10 |
| BPA-1598 | 13 x 17 | ⅞ | 2.85 | 2.55 | 2.30 |
| BPA-1529 | 14 x 17 | 15/16 | 2.85 | 2.55 | 2.30 |
| BPA-1530 | 15 x 17 | 1 | 3.85 | 3.45 | 3.10 |
| BPA-1531 | 17 x 17 | 1 1/16 | 3.95 | 3.55 | 3.15 |

### STEEL CHASSIS BASES

Made of 20 gauge steel except as otherwise specified.

| Size, Inches D. x W. x H. | Zinc Plated Finish: Bud CB- | Net Each, Lots of 1-24 | 25-49 | 50-99 | Black Rinkletex Finish: Bud CB- | Net Each, Lots of 1-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|---|---|---|
| 5½ x 5½ x 1 | 101* | $2.00 | $1.80 | $1.60 | ...... | ..... | ..... | ..... |
| 5 x 7 x 2 | 629* | 2.00 | 1.80 | 1.60 | 628* | $1.55 | $1.40 | $1.25 |
| 4½ x 8 x 1½ | 102* | 2.20 | 2.00 | 1.75 | ...... | ..... | ..... | ..... |
| 5 x 9 x 1½ | 103* | 2.00 | 1.80 | 1.60 | ...... | ..... | ..... | ..... |
| 5 x 9½ x 2½ | 645* | 2.55 | 2.30 | 2.05 | 644* | 2.00 | 1.80 | 1.60 |
| 5 x 9½ x 1½ | 776* | 2.55 | 2.30 | 2.05 | 788* | 1.75 | 1.60 | 1.40 |
| 5 x 10 x 3 | 605* | 2.60 | 2.35 | 2.10 | 604* | 2.00 | 1.80 | 1.60 |
| 5 x 13 x 3 | 105 | 3.20 | 2.90 | 2.55 | ...... | ..... | ..... | ..... |
| 6 x 8 x 2 | 104 | 2.20 | 2.00 | 1.75 | ...... | ..... | ..... | ..... |
| 6 x 14 x 3 | 756 | 3.10 | 2.80 | 2.50 | 755 | 2.55 | 2.30 | 2.05 |
| 7 x 7 x 2 | 1191 | 2.30 | 2.05 | 1.85 | 789 | 2.00 | 1.80 | 1.60 |
| 7 x 9 x 2 | 1192 | 2.30 | 2.05 | 1.85 | 790 | 2.00 | 1.80 | 1.60 |
| 7 x 11 x 2 | 1193 | 2.55 | 2.30 | 2.05 | 791 | 2.10 | 1.90 | 1.70 |
| 7 x 12 x 3 | 793 | 3.10 | 2.80 | 2.50 | 792 | 2.30 | 2.05 | 1.85 |
| 7 x 13 x 2 | 1194 | 2.75 | 2.50 | 2.20 | 646 | 2.20 | 2.00 | 1.75 |
| 5 x 13½ x 2½ | 1198 | 3.20 | 2.90 | 2.55 | 647 | 2.55 | 2.30 | 2.05 |
| 7 x 15 x 3 | 1189 | 3.65 | 3.30 | 2.90 | 649 | 2.95 | 2.65 | 2.35 |
| 8½ x 15 x 3 | 666 | 4.10 | 3.70 | 3.30 | 665 | 3.20 | 2.90 | 2.55 |
| 4 x 17 x 3 | 1066 | 3.10 | 2.80 | 2.50 | 1068 | 2.65 | 2.40 | 2.10 |
| 7 x 17 x 2½ | 1199 | 3.30 | 2.95 | 2.65 | 648 | 3.00 | 2.70 | 2.40 |
| 7 x 17 x 3 | 758 | 3.75 | 3.40 | 3.00 | 757 | 3.20 | 2.90 | 2.55 |
| 8 x 10 x 2½ | 702 | 2.95 | 2.65 | 2.35 | 701 | 2.55 | 2.30 | 2.05 |
| 8 x 12 x 2½ | 704 | 3.20 | 2.90 | 2.55 | 703 | 2.55 | 2.30 | 2.05 |
| 8 x 12 x 3 | 760 | 3.40 | 3.05 | 2.70 | 759 | 2.65 | 2.40 | 2.10 |
| 8 x 17 x 2 | 774 | 3.40 | 3.05 | 2.70 | 650 | 2.55 | 2.30 | 2.05 |
| 8 x 17 x 3 | 775 | 3.75 | 3.40 | 3.00 | 651† | 3.10 | 2.80 | 2.50 |
| 10 x 12 x 3 | 1195 | 3.50 | 3.15 | 2.80 | 652 | 2.75 | 2.50 | 2.20 |
| 12 x 12 x 3 | 106 | 4.60 | 4.15 | 3.70 | ...... | ..... | ..... | ..... |
| 10 x 14 x 3 | 779 | 3.50 | 3.15 | 2.80 | 653 | 3.10 | 2.80 | 2.50 |
| 10 x 17 x 2 | 769 | 3.50 | 3.15 | 2.80 | 654† | 2.95 | 2.65 | 2.35 |
| 10 x 17 x 3 | 637 | 4.20 | 3.80 | 3.35 | 636† | 2.95 | 2.65 | 2.35 |
| 10 x 17 x 3 | 1196‡ | 4.40 | 3.95 | 3.50 | 655†‡ | 3.65 | 3.30 | 2.90 |
| 10 x 23 x 3 | 1197‡ | 5.05 | 4.55 | 4.05 | 656‡ | 4.30 | 3.85 | 3.45 |
| 11 x 17 x 2 | 770‡ | 4.20 | 3.80 | 3.35 | 657†‡ | 3.40 | 3.05 | 2.70 |
| 11 x 17 x 3 | 771‡ | 5.15 | 4.65 | 4.10 | 658†‡ | 4.10 | 3.70 | 3.30 |
| 12 x 17 x 2 | 661‡ | 4.50 | 4.05 | 3.60 | 663†‡ | 3.75 | 3.40 | 3.00 |
| 12 x 17 x 3 | 662‡ | 5.30 | 4.75 | 4.25 | 664†‡ | 4.15 | 3.75 | 3.30 |
| 13 x 17 x 2 | 772‡ | 5.40 | 4.85 | 4.30 | 659†‡ | 4.15 | 3.75 | 3.30 |
| 13 x 17 x 3 | 773‡ | 5.95 | 5.35 | 4.75 | 660†‡ | 4.95 | 4.45 | 3.95 |
| 10 x 17 x 4 | 641‡ | 5.30 | 4.75 | 4.25 | 640†‡ | 4.75 | 4.30 | 3.80 |
| 13 x 17 x 4 | 643‡ | 6.95 | 6.25 | 5.55 | 642†‡ | 5.85 | 5.25 | 4.70 |
| 10 x 17 x 5 | 624‡ | 7.80 | 7.00 | 6.25 | 623‡ | 6.60 | 5.95 | 5.30 |
| 13 x 17 x 5 | 626‡ | 8.60 | 7.75 | 6.90 | 625‡ | 7.25 | 6.55 | 5.80 |

*22 gauge. †Punched to accommodate chassis mounting brackets. ‡18 gauge.

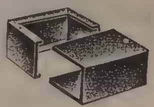
### STEEL CHASSIS BOTTOM PLATES

Protect wiring and keep out dust from chassis bottom. Four embossed feet. Two finishes to match chassis finish.

| Fits Chassis Size, In. W. x L. | Zinc Plated Finish: Bud BP- | Net Each, Lots of 1-49 | 50-99 | 100-149 | Black Rinkletex Finish: Bud BP- | Net Each, Lots of 1-49 | 50-99 | 100-149 |
|---|---|---|---|---|---|---|---|---|
| 5 x 7 | 706 | $0.95 | $0.85 | $0.75 | 705 | $0.90 | $0.80 | $0.70 |
| 5 x 9½ | 667 | 1.00 | .90 | .80 | 680 | .90 | .80 | .70 |
| 5 x 10 | 538 | 1.10 | 1.00 | .90 | 536 | 1.00 | .90 | .80 |
| 7 x 7 | 668 | 1.40 | 1.25 | 1.10 | 681 | 1.40 | 1.25 | 1.10 |
| 7 x 9 | 669 | 1.45 | 1.30 | 1.15 | 682 | 1.45 | 1.30 | 1.15 |
| 7 x 11 | 670 | 1.50 | 1.35 | 1.20 | 683 | 1.50 | 1.35 | 1.20 |
| 7 x 12 | 539 | 1.75 | 1.60 | 1.40 | 537 | 1.55 | 1.40 | 1.25 |
| 7 x 13 | 671 | 1.65 | 1.50 | 1.30 | 684 | 1.55 | 1.40 | 1.25 |
| 5 x 13½ | 672 | 1.45 | 1.30 | 1.15 | 685 | 1.10 | 1.00 | .90 |
| 4 x 17 | 1067 | 1.65 | 1.50 | 1.30 | 1069 | 1.20 | 1.10 | .95 |
| 7 x 17 | 673 | 1.90 | 1.70 | 1.50 | 686 | 1.20 | 1.10 | .95 |
| 8 x 10 | 708 | 1.45 | 1.30 | 1.15 | 707 | 1.20 | 1.10 | .95 |
| 8 x 12 | 710 | 1.75 | 1.60 | 1.40 | 709 | 1.50 | 1.35 | 1.20 |
| 8 x 17 | 674 | 2.00 | 1.80 | 1.60 | 687 | 1.50 | 1.35 | 1.20 |
| 10 x 12 | 675 | 2.10 | 1.90 | 1.70 | 688 | 1.55 | 1.40 | 1.25 |
| 10 x 14 | 514 | 2.00 | 1.80 | 1.60 | 517 | 2.00 | 1.80 | 1.60 |
| 10 x 17 | 676 | 2.15 | 1.95 | 1.70 | 689 | 1.65 | 1.50 | 1.30 |
| 11 x 17 | 677 | 2.20 | 2.00 | 1.75 | 690 | 1.75 | 1.60 | 1.40 |
| 12 x 17 | 678 | 2.55 | 2.30 | 2.05 | 691 | 2.00 | 1.80 | 1.60 |
| 13 x 17 | 679 | 2.95 | 2.65 | 2.35 | 692 | 2.05 | 1.85 | 1.65 |

# Boxes and Cases

## MINIBOXES, HANDY BOXES



Design of this box permits installation of more components than would be possible in the conventionally designed boxes the same size. Two-piece construction. **Either snap-lock or screw type.** The flange type construction assures adequate shielding. Made from heavy .040 ga. aluminum. Available in natural aluminum finish and gray hammertone finish.

### GRAY HAMMERTONE MINIBOXES

| Bud No. | Size, Inches L. x H. x W. | Wt. Lbs. | Net Each, Lots of 1-49 | 50-99 | 100-149 |
|---|---|---|---|---|---|
| CU-2100A | 2¾ x 2⅛ x 1⅝ | ¼ | $1.00 | $0.90 | $0.80 |
| CU-2101A | 3¼ x 2⅛ x 1⅝ | ¼ | 1.00 | .90 | .80 |
| CU-2102A | 4 x 2⅛ x 1⅝ | ¼ | 1.10 | 1.00 | .90 |
| CU-2103A | 4 x 2¼ x 2¼ | ¼ | 1.20 | 1.10 | .95 |
| CU-2104A | 5 x 2¼ x 2¼ | ¼ | 1.30 | 1.15 | 1.05 |
| CU-2105A | 5 x 4 x 3 | ½ | 1.65 | 1.50 | 1.30 |
| CU-2106A | 5¼ x 3 x 2⅛ | ¼ | 1.45 | 1.30 | 1.15 |
| CU-2107A | 6 x 5 x 4 | ¾ | 2.10 | 1.90 | 1.70 |
| CU-2108A* | 7 x 5 x 3 | ¾ | 2.40 | 2.15 | 1.90 |
| CU-2109A* | 8 x 6 x 3½ | 1 | 3.10 | 2.80 | 2.50 |
| CU-2110A* | 10 x 6 x 3½ | 1¼ | 3.40 | 3.05 | 2.70 |
| CU-2111A* | 12 x 7 x 4 | 1¾ | 4.60 | 4.15 | 3.70 |
| CU-2112A* | 17 x 5 x 4 | 2¼ | 4.60 | 4.15 | 3.70 |
| CU-2113A* | 10 x 2 x 1⅝ | ½ | 1.75 | 1.60 | 1.40 |
| CU-2114A* | 12 x 2½ x 2¼ | ¾ | 2.30 | 2.05 | 1.85 |
| CU-2115A | 4 x 2 x 2¾ | ¼ | 1.20 | 1.10 | .95 |
| CU-2116A | 4¼ x 2¼ x 1½ | ¼ | 1.20 | 1.10 | .95 |
| CU-2117A | 3¼ x 2⅛ x 1⅛ | ¼ | 1.20 | 1.10 | .95 |

*.050″ aluminum.

### NATURAL FINISH MINIBOXES

| | | | | | |
|---|---|---|---|---|---|
| CU-3000A | 2¾ x 2⅛ x 1⅝ | ¼ | $0.90 | $0.80 | $0.70 |
| CU-3001A | 3¼ x 2⅛ x 1⅝ | ¼ | .90 | .80 | .70 |
| CU-3002A | 4 x 2⅛ x 1⅝ | ¼ | .90 | .80 | .70 |
| CU-3003A | 4 x 2¼ x 2¼ | ¼ | 1.10 | 1.00 | .90 |
| CU-3004A | 5 x 2¼ x 2¼ | ¼ | 1.20 | 1.10 | .95 |
| CU-3005A | 5 x 4 x 3 | ½ | 1.20 | 1.10 | .95 |
| CU-3006A | 5¼ x 3 x 2⅛ | ¼ | 1.20 | 1.10 | .95 |
| CU-3007A | 6 x 5 x 4 | ¾ | 1.55 | 1.40 | 1.25 |
| CU-3008A* | 7 x 5 x 3 | ¾ | 2.00 | 1.80 | 1.60 |
| CU-3009A* | 8 x 6 x 3½ | 1 | 2.55 | 2.30 | 2.05 |
| CU-3010A* | 10 x 6 x 3½ | 1¼ | 2.75 | 2.50 | 2.20 |
| CU-3011A* | 12 x 7 x 4 | 1¾ | 3.85 | 3.45 | 3.10 |
| CU-3012A* | 17 x 5 x 4 | 2¼ | 3.85 | 3.45 | 3.10 |
| CU-3013A* | 10 x 2 x 1⅝ | ½ | 1.45 | 1.30 | 1.15 |
| CU-3014A* | 12 x 2½ x 2¼ | ¾ | 2.00 | 1.80 | 1.60 |
| CU-3015A | 4 x 2 x 2¾ | ¼ | 1.10 | 1.00 | .90 |
| CU-3016A | 4¼ x 2¼ x 1½ | ¼ | 1.10 | 1.00 | .90 |
| CU-3017A | 3¼ x 2⅛ x 1⅛ | ¼ | .90 | .80 | .70 |

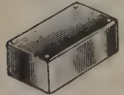
*.050″ aluminum.

### HANDY BOXES

Similar to Miniboxes in design and construction, except made of 22 gauge steel. Black rinkletex finish only. Screw type only.

| | | | | | |
|---|---|---|---|---|---|
| HB-1621 | 4¼ x 2¼ x 1½ | ¼ | $2.05 | $1.85 | $1.65 |
| HB-1622 | 4 x 2 x 2¾ | ½ | 2.05 | 1.85 | 1.65 |

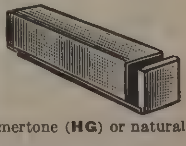
## PRECISION DIECAST BOXES



Suitable for numerous uses where a small box is required. Diecast LM-380 aluminum with close fitting, flange lid which attaches to bosses in the box by means of screws. Boxes are light weight, and easily machined.

| Bud No. | Size, Inches W. x D. x H. | Net Each, Lots of 1-24 | 25-49 | 50-99 |
|---|---|---|---|---|
| CU-124 | 2.375 x 4.375 x 1.219 | $1.55 | $1.40 | $1.25 |
| CU-234 | 3.688 x 4.688 x 2.219 | 2.50 | 2.25 | 2.00 |
| CU-247 | 4.703 x 7.390 x 2.219 | 4.10 | 3.70 | 3.30 |
| CU-347 | 4.703 x 7.390 x 3.219 | 4.40 | 3.95 | 3.50 |

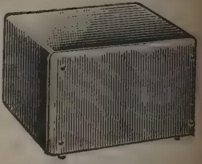
## MINISLIDES



Ideal for housing components or assemblies where easy access to internally mounted parts is important. Can be mounted in a number of positions in a rack or cabinet. Accessibility achieved by removing sliding cover. Design of Minislide Box provides adequate shielding and protection from dust. Sturdily made of .050 aluminum. 4 self-tapping fastening screws included. Choice of gray hammertone (**HG**) or natural aluminum (**NA**).

| Bud No. | Finish | Size, Inches W. x D. x H. | Wt., Lbs. | Net Each, Lots of 1-49 | 50-99 | 100-149 |
|---|---|---|---|---|---|---|
| MS-2150 | (HG) | 3⅛ x 13 x 2⅝ | 1 | $5.15 | $4.65 | $4.10 |
| MS-2151 | (HG) | 5⅛ x 13 x 2⅝ | 1½ | 5.85 | 5.25 | 4.70 |
| MS-2152 | (HG) | 3⅛ x 17 x 2⅝ | 1¼ | 5.70 | 5.15 | 4.55 |
| MS-3050 | (NA) | 3⅛ x 13 x 2⅝ | 1 | 3.85 | 3.45 | 3.10 |
| MS-3051 | (NA) | 5⅛ x 13 x 2⅝ | 1½ | 4.75 | 4.30 | 3.80 |
| MS-3052 | (NA) | 3⅛ x 17 x 2⅝ | 1¼ | 4.50 | 4.05 | 3.60 |

## CONTOUR UTILITY CABINETS

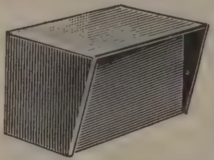


Attractively designed utility housing with rounded contour corners. Flanged panels also have rounded corners to preserve the symmetry of design. Constructed of 20 gauge steel. Both front and rear panels are removable; the front panel is solid while the rear panel is louvered for proper ventilation. Four rubber feet, attached to base, prevent scratching surface the unit is placed on. Body is textured dark gray enamel; panel is textured light gray enamel.

| Bud No. | Overall Size, Inches W. x D. x H. | Net Each, Lots of 1-24 | 25-49 | 50-99 |
|---|---|---|---|---|
| CU-463 | 6 7/32 x 3¾ x 4 7/32 | $ 6.50 | $5.85 | $5.20 |
| CU-465 | 6 7/32 x 5¾ x 4 7/32 | 7.45 | 6.70 | 5.95 |
| CU-585 | 8 7/32 x 5¾ x 5 7/32 | 9.55 | 8.60 | 7.65 |
| CU-587 | 8 7/32 x 7¾ x 5 7/32 | 10.50 | 9.45 | 8.40 |

| Bud No. | Overall Size, Inches W. x D. x H. | Net Each, Lots of 1-49 | 50-99 | 100-149 |
|---|---|---|---|---|
| CU-7125 | 12 7/32 x 5¾ x 7 7/32 | $ 9.65 | $8.70 | $7.70 |
| CU-7127 | 12 7/32 x 7¾ x 7 7/32 | 10.20 | 9.20 | 8.15 |

## COWL-TYPE MINIBOXES

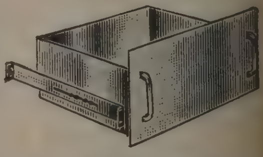


The cowl-type Minibox has a projecting cover to reduce glare on the panel from overhead lighting. It also provides protection for controls and dials. Cover has two box braces to which bottom is attached with sheet metal screws. When assembled, this type of construction results in a sturdy, rigid housing. Constructed of .040″ aluminum and available in natural or light hammertone gray finish.

| Bud No. | Overall Size, Inches H. | W. | D. | Net Each, Lots of 1-49 | 50-99 | 100-149 |
|---|---|---|---|---|---|---|
| SC-2130* | 6 | 10 | 7 | $8.05 | $7.25 | $6.45 |
| SC-2131* | 7 | 12 | 8 | 8.80 | 7.90 | 7.05 |
| SC-2132* | 3 | 8 | 5 | 4.75 | 4.30 | 3.80 |
| SC-2133* | 5 | 5 | 5 | 4.75 | 4.30 | 3.80 |
| SC-3030† | 6 | 10 | 7 | 5.85 | 5.25 | 4.70 |
| SC-3031† | 7 | 12 | 8 | 6.40 | 5.75 | 5.10 |
| SC-3032† | 3 | 8 | 5 | 3.30 | 2.95 | 2.65 |
| SC-3033† | 5 | 5 | 5 | 3.50 | 3.15 | 2.80 |

*Painted light gray hammertone. †Natural aluminum finish.

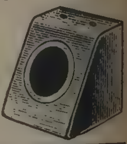
## DRAWER WITH ADJUSTABLE SLIDES



Fits any cabinet or cabinet rack with 19″ panel space. Slide bracket adjustable 16½″ to 24¼″ to fit any cabinet with depth 17″ to 25½″. Fastens by bracket to panel mounting rail in front and rear of cabinet. Nylon rollers for smooth movement. Hardware supplied. Specify color when ordering: Add suffix **HG** for gray hammertone; **BR** for black rinkletex; **GR** for gray rinkletex.

| Bud No. | Inside Size, Inches | Wt., Lbs. | Net Each, Lots of 1-9 | 10-14 | 15-19 |
|---|---|---|---|---|---|
| D-1721 | 16 19/32 x 6 11/32 x 16 13/64 | 19½ | $55.10 | $49.60 | $44.10 |

## UNIVERSAL METER CASES



Center hole punched for 2″ meters, plus easily removed knock-out ring to provide fit for 3″ meters. Single piece detachable back and sides fastened to case with self-tapping screws for easy installation and servicing. Two ⅜″ knock-out holes in top provide for installation of feed-through insulators, switches, volume controls, etc. Gray hammertone finish only. **Size:** 4 19/64″ h. x 4″ w. x 4 1/16″ d.

| Bud No. | Construction | Weight, Lbs. | Net Each, Lots of 1-49 | 50-99 | 100-149 |
|---|---|---|---|---|---|
| CM-1935 | Steel | ¾ | $1.85 | $1.65 | $1.50 |
| CMA-1936 | Aluminum | ¼ | 2.10 | 1.90 | 1.70 |

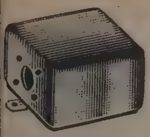
## WIDE UNIVERSAL METER CASE

Same as above, except extra wide to permit installation of small components along with a meter or accommodate a 4″ meter. Made of 5005 H-14 aluminum. **Size:** 4 19/64″ h. x 6″ w. x 4 1/16″ d.

| Bud No. | Construction | Weight, Lbs. | Net Each, Lots of 1-49 | 50-99 | 100-149 |
|---|---|---|---|---|---|
| CMA-1930 | Aluminum | ½ | $3.65 | $3.30 | $2.90 |

# LMB® Box Chassis, Enclosures

## DRAWN MINIATURE BOX CHASSIS

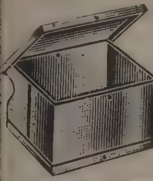


Precision made miniature boxes for subminiature assembly. Cold rolled steel cadmium plated; plain finish available, deduct **5%** from prices shown. With mounting ears; ears can be removed if desired. Lids available separately which are soldered in when used in assembly. Boxes are not fabricated (holes punched in the box) quotations for punching miniature boxes available on request.

| LMB Model | Size, Inches L. x W. x D. | Net Each, Lots of 100 | |
|---|---|---|---|
| | | Boxes | Lids |
| M-01 | 1⅛ x 1 x 15⁄16 | $0.46 | $0.13 |
| M-06* | 1½ x 1⅛ x ¾ | .53 | .18 |
| M-10 | 1¾ x 1¼ x ⅞ | .46 | .13 |
| M-11 | 2 x 1¼ x ¾ | .46 | .13 |
| M-12 | 2 x 1¼ x 1 | .46 | .13 |
| M-15 | 2 x 1¾ x ½ | .46 | .13 |
| M-16 | 2 x 1¾ x ¾ | .46 | .13 |
| M-17 | 2 x 1¾ x 1 | .46 | .13 |
| M-018 | 2 x 2 x 1¼ | .46 | .13 |
| M-21* | 2½ x 2 x 1¼ | .57 | .20 |
| M-23* | 3⅞ x 2⅜ x ⅞ | 1.21 | .40 |

Special order only and in 500 each minimum quantity.

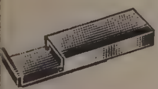
## UTILITY BOXES



Original construction affords 25% more building space than any other utility box on the market. Original design does away with mounting flanges on top and bottom of box, thereby making the entire area available for building. It is also possible to use frame as a stand by turning the top into the frame when working on the other side of the box. This is a great convenience where space is inadequate to work and also protects the parts while building. Made from quality aircraft aluminum, specification type 3003-H 14.

| LMB Model | Size, Inches | Aluminum Gauge | Net Each | |
|---|---|---|---|---|
| | | | Plain | Gray, Black or Brown |
| -C 970 | 4 x 4 x 2 | .040 | $1.73 | $2.00 |
| -C 971 | 5 x 4 x 3 | .040 | 1.86 | 2.18 |
| -C 972 | 6 x 5 x 4 | .040 | 2.40 | 2.78 |
| -C 973 | 6 x 6 x 6 | .040 | 2.81 | 3.32 |
| -C 973A | 6 x 6 x 3 | .040 | 2.43 | 2.97 |
| -C 974 | 7 x 5 x 3 | .040 | 3.28 | 3.83 |
| -C 975 | 9 x 6 x 5 | .051 | 3.72 | 4.28 |
| -C 976 | 10 x 8 x 7 | .051 | 5.09 | 5.89 |
| -C 977 | 12 x 7 x 6 | .051 | 4.91 | 5.83 |
| -C 978 | 10 x 10 x 8 | .051 | 6.49 | 7.54 |
| -C 979 | 12 x 11 x 8 | .051 | 7.77 | 8.82 |
| -C 980 | 15 x 9 x 7 | .051 | 7.87 | 8.92 |

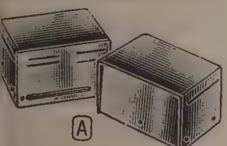
## SLIDE COVER BOXES



These boxes lend themselves readily to broadcast work, television strips, mobile equipment, terminal block boxes, public address construction, custom-built equipment, amateur experimentation, and many other uses. Also adaptable to telephone type of construction. Steel plated, aluminum natural or painted finish.

| LMB Model | Size, Inches L. x W. x H. | Net Each | |
|---|---|---|---|
| | | Natural | Black, Gray or Brown |
| 16 | 13 x 3⅛ x 2⅝ | $2.97 | $3.72 |
| 17 | 13 x 4⅛ x 2⅝ | 3.50 | 4.35 |
| 18 | 13 x 5¼ x 2⅝ | 3.85 | 4.73 |
| 19 | 17 x 3⅛ x 2⅝ | 3.69 | 4.57 |

## W.M. UTILITY ENCLOSURES



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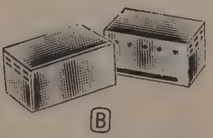


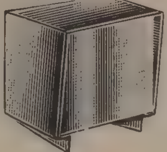
Ⓑ

uitable for countless uses: Instrument and amplifier cases, trans- itters, etc. Engineered for ease of construction. Bottom plate of assis and hood removes with the release of four screws. It is not ecessary to take off the front and back panel to build on or work the chassis. **Fig. A** shows front and back of Models W-1A, -1B and W-1C, with built-in vents for ventilation. **Fig. B** shows ont and back of Model W-1D. W. M. utility cases are made of eavy gauge aluminum, Aircraft quality type, 3003 H-14. W-1A, -1B and W-1C are .060 gauge; W-1D uses .070.

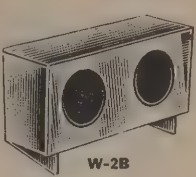
| LMB Model | Size, Inches L. x W. x H. | Net Each | |
|---|---|---|---|
| | | Plain | Gray Hammertone |
| -1A* | 7 x 5 x 4½ | $ 4.37 | $ 5.32 |
| -1B* | 10 x 4 x 3½ | 4.37 | 5.32 |
| -1C* | 8½ x 6⅛ x 5 | 4.87 | 5.86 |
| -1D† | 18 x 9 x 11 | 10.73 | 14.44 |

With built-in chassis. †Will accommodate an 11″ x 17″ x 2″ or chassis.

## W.M. AL-CAB SERIES "GLAMOR CABINETS"

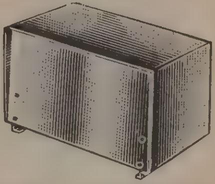


W-2A



W-2B

- **TRANSISTOR CONSTRUCTION**
- **METER HOUSING**
- **INSTRUMENT CASES**
- **AMATEUR RADIO CHASSIS**



W-2F, W-2G, W-2H, W-2J

### METER CASES

| LMB Model | Size, Inches W. x D. x H. | Net Each | |
|---|---|---|---|
| | | Plain | Gray |
| W-2AP* | 4 x 3½ x 3 | $2.07 | $2.40 |
| W-2A | 4 x 3½ x 3½ | 2.18 | 2.51 |
| W-2B* | 7 x 3 x 3½ | 2.48 | 2.94 |
| W-2C | 7 x 3⅜ x 3½ | 3.22 | 3.73 |
| W-2E | 4½ x 4½ x 3½ | 2.53 | 2.86 |

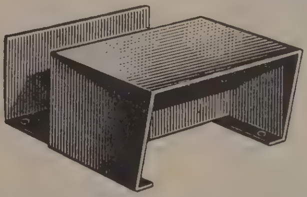
*With holes 2¼″ and 3¼″; all others without holes.

### DELUXE SERIES

| LMB Model | Size, Inches W. x D. x H. | Net Each | |
|---|---|---|---|
| | | Plain | Gray |
| W-2F* | 4½ x 7½ x 5 | $ 4.80 | $ 5.70 |
| W-2G* | 10 x 13 x 5¾ | 10.33 | 12.71 |
| W-2H* | 11 x 7 x 6¼ | 8.12 | 9.49 |
| W-2J* | 11½ x 8 x 7 | 8.91 | 10.20 |

*With built-in chassis.

## LMB "NEW" LINE OF CABINETS



Housing for small instruments, amplifiers, intercoms, PA systems, etc. Cover slides off at the bottom of the cabinet by removing four screws exposing all of the inside of the cabinet. Made of .040 gauge aluminum in plain or gray silver hammertone finish.

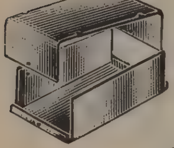
| LMB Model | Size, Inches D. x W. x H. | Net Each | |
|---|---|---|---|
| | | Plain | Gray |
| 275N | 2¾ x 3 x 4 | $1.74 | $1.82 |
| 2754N | 2¾ x 2¾ x 4 | 1.80 | 1.94 |
| 342N | 3 x 4¼ x 2⅜ | 1.75 | 1.97 |
| 442N | 4 x 4½ x 2⅝ | 1.88 | 2.15 |
| 444N | 4 x 4 x 4 | 1.97 | 2.23 |
| 453N | 4 x 5 x 3 | 2.04 | 2.27 |
| 463N | 4 x 6 x 3 | 2.07 | 2.48 |
| 555N | 5 x 5 x 5 | 2.64 | 3.03 |
| 564N | 5 x 6 x 4 | 2.44 | 2.86 |
| 685N | 6 x 8 x 5 | 3.66 | 4.13 |

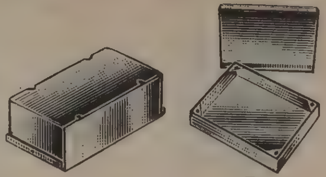
Same as above except available in colors as listed. Fitted with ½″ rubber feet.

| LMB Model | Color | Net Each | LMB Model | Color | Net Each |
|---|---|---|---|---|---|
| 275 | Ivory | $2.19 | 453 | Blue | $2.65 |
| 2754 | Gold | 2.32 | 453 BG | Blue and gold | 3.09 |
| 342 | Green | 2.35 | 463 GB | Gold and beige | 3.30 |
| 442 | Red | 2.53 | 463 | Beige | 2.87 |
| 442 RG | Red and gold | 2.97 | 555 | Earth green | 3.41 |
| 442 RB | Red and black | 2.97 | 564 | Biscayne blue | 3.25 |
| 444 | Black | 2.62 | 685 | Bronze | 4.51 |
| 444 BG | Black and gold | 3.06 | | | |

**SEE FOLLOWING PAGE FOR ADDITIONAL CABINETS**

# LMB® Box Chassis


A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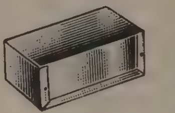
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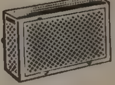
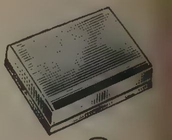

D


E

## INTERLOCKING TYPE (FIG. A)

Interlocking construction. Screw fastened. All screw fastenings are drilled and tapped. Self-tapping screws are not used. Specify plain, gray, black or brown except as otherwise noted.

| Size, Inches L. x W. x H. | Color | Regular Type Model | Regular Type Net | Snap-Latch Model | Snap-Latch Net |
|---|---|---|---|---|---|
| 2¼ x 1½ x 1⅝ | Any | M00 | $0.63 | SL-M00 | $0.63 |
| 2 5/16 x 2⅛ x 1¾ | Any | 00Z | .70 | SL-00Z† | .70 |
| 3¼ x 2⅛ x 1⅝ | Any | 000 | .75 | SL-000 | .75 |
| 4 x 2⅛ x 1⅝ | Any | 00 | .78 | SL-00 | .78 |
| 2¾ x 2⅛ x 2⅝ | Any | 100 | .98 | SL-100 | .98 |
| 4¼ x 2¼ x 1¼ | Any | 101 | .96 | SL-101 | .96 |
| 4 x 2 x 2¾ | Any | 102 | 1.12 | SL-102 | 1.12 |
| 2¾ x 2⅛ x 2⅛ | Any | 103 | .94 | | |
| 4 x 2¼ x 2¼ | Any | 107 | 1.06 | SL-107 | 1.06 |
| 5 x 2¼ x 2¼ | Any | 108 | 1.13 | SL-108 | 1.13 |
| 3¾ x 3 x 2⅛ | Any | 135 | 1.07 | SL-135 | 1.07 |
| 5¼ x 3 x 2⅛ | Any | 136 | 1.19 | SL-136 | 1.19 |
| 6½ x 2⅛ x 1⅝ | Any | 650 | 1.16 | | |
| 8 x 3 x 2¾ | Any | 137 | 1.77 | SL-137 | 1.77 |
| 8½ x 2⅛ x 1⅝ | Any | 850 | 1.49 | | |
| 6¼ x 3½ x 2⅛ | Any | 138 | 1.45 | SL-138 | 1.45 |
| 5½ x 3 x 1¼ | Any | 139 | 1.11 | SL-139 | 1.11 |
| 3 x 4 x 5 | Plain | 140 | 1.42 | | |
| 3 x 4 x 5 | * | 140 | 1.77 | | |
| 6 x 4 x 3 | Plain | 141 | 1.58 | | |
| 6 x 4 x 3 | * | 141 | 1.89 | | |
| 6 x 4 x 5 | Plain | 142 | 1.85 | | |
| 6 x 4 x 5 | * | 142 | 2.32 | | |
| 4 x 4 x 2 | Any | 143 | 1.46 | SL-143 | 1.46 |
| 10 x 4 x 2½ | Any | 144 | 2.41 | SL-144 | 2.41 |
| 7 x 5 x 3 | Any | 145 | 2.32 | SL-145 | 2.32 |
| 8 x 6 x 4½ | Any | 146 | 3.29 | | |
| 12 x 2 x 1¾ | Any | 15 | 1.77 | SL-15 | 1.85 |

*Specify gray, black or brown. †2¼" x 2¼" x 1¾".

## CAP COVER CHASSIS (FIG. B)

Use either the top or the bottom of chassis for construction. Chassis can also be mounted on side and construction can be on both top and bottom at the same time. Sturdily built from Aircraft aluminum Type 3003 H-14. Welded corners for a stronger chassis. Cap construction allows for using all the space inside chassis without being hindered by the mounting flange which normally takes 10% to 20% of mounting space out of average chassis. P Series are perforated on all four sides and are ideal where heat dissipation is a factor. Number given is without cover; for type with cap cover add suffix **C** (553**C**); for perforated type, add suffix **P** (553**P**).

| LMB Model | Size, Inches L. x W. x H. | Gauge | Without Cap Cover Net Ea. | With Cap Cover* Net Ea. | Perforated† Net Ea. |
|---|---|---|---|---|---|
| 553 | 5 x 5 x 3 | 18 | $1.49 | $2.15 | $2.53 |
| 572 | 5 x 7 x 2 | 18 | 1.29 | 1.93 | 2.26 |
| 573 | 5 x 7 x 3 | 18 | 1.56 | 2.15 | 2.48 |
| 5952 | 5 x 9½ x 2 | 18 | 1.38 | 2.04 | 2.37 |
| 5103 | 5 x 10 x 3 | 18 | 1.82 | 2.48 | 2.81 |
| 5133 | 5 x 13 x 3 | 18 | 2.04 | 2.75 | 3.08 |
| 642 | 6 x 4 x 2 | 18 | 1.63 | 2.04 | 2.42 |
| 643 | 6 x 4 x 3 | 18 | 1.71 | 2.15 | 2.70 |
| 664 | 6 x 6 x 4 | 18 | 1.27 | 1.65 | 1.98 |
| 6173 | 6 x 17 x 3 | 18 | 2.94 | 3.74 | 4.07 |
| 772 | 7 x 7 x 2 | 18 | 1.49 | 2.09 | 2.42 |
| 792 | 7 x 9 x 2 | 18 | 1.61 | 2.15 | 2.48 |
| 7103 | 7 x 10 x 3 | 18 | 1.68 | 2.75 | 3.08 |
| 7112 | 7 x 11 x 2 | 18 | 1.74 | 2.53 | 2.86 |
| 7123 | 7 x 12 x 3 | 18 | 2.23 | 3.03 | 3.36 |
| 7153 | 7 x 15 x 3 | 18 | 2.94 | 3.96 | 4.29 |
| 7173 | 7 x 17 x 3 | 18 | 3.03 | 4.07 | 4.40 |
| 8103 | 8 x 10 x 3 | 18 | 2.92 | 3.96 | 4.29 |
| 8104 | 8 x 10 x 4 | 18 | 1.67 | 2.39 | 2.72 |
| 8123 | 8 x 12 x 3 | 18 | 2.66 | 3.46 | 3.88 |
| 8172 | 8 x 17 x 2 | 18 | 2.77 | 3.85 | 4.18 |
| 8173 | 8 x 17 x 3 | 16 | 3.25 | 4.95 | 5.28 |
| 10103 | 10 x 10 x 3 | 18 | 2.86 | 3.85 | 4.40 |
| 10123 | 10 x 12 x 3 | 18 | 2.97 | 3.96 | 4.73 |
| 10143 | 10 x 14 x 3 | 18 | 3.25 | 4.73 | 5.17 |
| 10172 | 10 x 17 x 2 | 16 | 3.14 | 4.81 | 5.25 |
| 10173 | 10 x 17 x 3 | 16 | 3.74 | 5.70 | 6.58 |
| 10174 | 10 x 17 x 4 | 16 | 5.34 | 7.01 | 7.89 |
| 11173 | 11 x 17 x 3 | 14 | 4.62 | 6.48 | 7.53 |
| 12172 | 12 x 17 x 2 | 14 | 4.95 | 7.12 | 7.88 |
| 12173 | 12 x 17 x 3 | 14 | 5.06 | 7.59 | 8.25 |
| 13172 | 13 x 17 x 2 | 14 | 4.95 | 7.26 | 8.03 |
| 13173 | 13 x 17 x 3 | 14 | 5.28 | 7.59 | 8.25 |
| 13174 | 13 x 17 x 4 | 14 | 6.55 | 8.75 | 9.41 |

*For cap cover add suffix **C** (553**C**); †Perforated add suffix **P**.

## TITE-FIT AND JIFFY BOX CHASSIS (FIG. C)

**Tite-Fit Box Chassis**—A standardized box that has many uses and is engineered to deserve its name of Tite-Fit.

**Jiffy Box Chassis**—The ideal box for construction where screws cannot be used and also where access to the box must be quick and often. Just push together to close and the catches hold the box together tightly—only a slight pressure of the fingers is needed to open.

| Size, Inches | Tite-Fit Box Model | Tite-Fit Box Net Each Plain | Tite-Fit Box Net Each * | Jiffy Box Model | Jiffy Box Net Each Plain | Jiffy Box Net Each * |
|---|---|---|---|---|---|---|
| 2¾ x 2⅛ x 1⅝ | T-F 770 | $0.68 | $0.89 | J-870 | $0.68 | $0.89 |
| 2¾ x 2⅛ x 2¾ | T-F 771 | .75 | 1.05 | J-871 | .75 | 1.05 |
| 3¼ x 2⅛ x 1⅛ | T-F 772 | .68 | .92 | J-872 | .68 | .92 |
| 3½ x 2⅛ x 1⅝ | T-F 773 | .68 | .92 | J-873 | .68 | .92 |
| 4 x 2⅛ x 1⅝ | T-F 774 | .68 | 1.05 | J-874 | .68 | 1.05 |
| 4 x 2¼ x 2¼ | T-F 775 | .83 | 1.07 | J-875 | .83 | 1.07 |
| 4 x 2 x 2¾ | T-F 776 | .83 | 1.10 | J-876 | .83 | 1.10 |
| 4¼ x 2¼ x 1½ | T-F 777 | .79 | 1.10 | J-877 | .79 | 1.10 |
| 5 x 2¼ x 2¼ | T-F 778 | .86 | 1.13 | J-878 | .86 | 1.13 |
| 5 x 4 x 3 | T-F 779 | 1.03 | 1.45 | J-879 | 1.03 | 1.45 |
| 5¼ x 3 x 2⅛ | T-F 780 | .90 | 1.23 | J-880 | .90 | 1.23 |
| 6 x 5 x 4 | T-F 781 | 1.62 | 2.01 | J-881 | 1.62 | 2.01 |
| 7 x 5 x 3 | T-F 782 | 1.54 | 2.05 | J-882 | 1.54 | 2.05 |
| 8 x 6 x 3½ | T-F 783 | 1.89 | 2.48 | J-883 | 1.89 | 2.48 |
| 10 x 6 x 3½ | T-F 784 | 2.22 | 2.79 | J-884 | 2.22 | 2.79 |
| 10 x 2 x 1⅝ | T-F 785 | 1.27 | 1.73 | J-885 | 1.27 | 1.73 |
| 12 x 2½ x 2¼ | T-F 786 | 1.51 | 1.84 | J-886 | 1.51 | 1.84 |
| 12 x 7 x 4 | T-F 787 | 2.98 | 3.77 | J-887 | 2.98 | 3.77 |
| 17 x 5 x 4 | T-F 788 | 3.21 | 3.78 | J-888 | 3.21 | 3.78 |

*Specify gray, black or brown.

## PERFORATED BOX CHASSIS (FIG. D)

Scientifically perforated on three sides and top of box. Ideal for heat dissipation and shielding. Specify plain or gray finish.

| Model | Size, Inches | Net Each |
|---|---|---|
| 00Z | 2 5/16 x 2⅛ x 1¾ | $0.91 |
| 000 | 3¼ x 2⅛ x 1⅝ | 1.05 |
| 00 | 4 x 2⅛ x 1⅝ | 1.12 |
| 100 | 2¾ x 2⅛ x 2⅝ | 1.32 |
| 101 | 4¼ x 2¼ x 1¼ | 1.23 |
| 102 | 4 x 2 x 2¾ | 1.55 |
| 107 | 4 x 2¼ x 2¼ | 1.20 |
| 108 | 5 x 2¼ x 2¼ | 1.65 |
| 135 | 3¾ x 3 x 2⅛ | 1.50 |
| 136 | 5¼ x 3 x 2⅛ | 1.75 |
| 137 | 8 x 3 x 2¾ | 2.28 |
| 138 | 6¼ x 3½ x 2⅛ | 2.00 |
| 139 | 5½ x 3 x 1¼ | 1.50 |
| 140 | 3 x 4 x 5 | 1.93 |
| 141 | 6 x 4 x 3 | 2.07 |
| 142 | 6 x 4 x 5 | 2.40 |
| 143 | 4 x 4 x 2 | 1.54 |
| 144 | 10 x 4 x 2½ | 2.41 |
| 650 | 6½ x 2⅛ x 1⅝ | 1.55 |
| 850 | 8½ x 2⅛ x 1⅝ | 1.75 |
| 15 | 12 x 2 x 1¾ | 1.97 |

## FLANGE LOCK BOX CHASSIS (NOT ILLUS.)

Endlock or sidelock construction (specify EL or LS when ordering). Finished in black crackle, gray or brown hammertone, or plain (specify when ordering).

| Model | Size, Inches | Net | Model | Size, Inches | Net |
|---|---|---|---|---|---|
| 221 | 2¾ x 3⅛ x 1⅝ | $1.24 | 654 | 6 x 5 x 4 | $2.76 |
| 321 | 3¼ x 2⅛ x 1⅝ | 1.24 | 666 | 6 x 6 x 6 | 3.73 |
| 421 | 4 x 2⅛ x 1⅝ | 1.24 | 686 | 6 x 8 x 6 | 4.70 |
| 422 | 4 x 2¼ x 2¼ | 1.42 | 695 | 6 x 9 x 5 | 4.22 |
| 424 | 4 x 2 x 4 | 2.18 | 753 | 7 x 5 x 3 | 2.86 |
| 435 | 4 x 3 x 5 | 2.41 | 754 | 7 x 5 x 4 | 3.04 |
| 444 | 4 x 4 x 4 | 2.08 | 863 | 8 x 6 x 3½ | 3.15 |
| 531 | 5¼ x 3 x 1½ | 1.42 | 865 | 8 x 6 x 5 | 3.93 |
| 532 | 5¼ x 3 x 2⅛ | 1.62 | 1063 | 10 x 6 x 3½ | 3.93 |
| 534 | 5⅝ x 3 x 4 | 2.27 | 1085 | 10 x 8 x 5 | 4.86 |
| 543 | 5 x 4 x 3 | 2.06 | 1221 | 12 x 2 x 1¼ | 2.06 |
| 546 | 5 x 4 x 6 | 3.02 | 1274 | 12 x 7 x 4 | 5.12 |
| 645 | 6 x 4 x 5 | 2.86 | 1754 | 17 x 5 x 4 | 5.80 |

## SHIELDED CHASSIS (FIG. E)

Shielded chassis for laboratory, industrial production, experimentation or wherever a large shielded chassis is required.

| LMB Model | Size, Inches L. x W. x H. | Net Each Plain | Net Each Anodized |
|---|---|---|---|
| 20 | 7½ x 7 x 2 | $1.84 | $2.27 |
| 21 | 13 x 10 x 3 | 4.77 | 6.39 |
| 22 | 17 x 10 x 3 | 5.64 | 7.34 |

# PAMOTOR

ONE OF THE PURDY GROUP OF COMPANIES

# Miniature Metal Fans

## SPECIFICATIONS

### PENTAFLOW MODELS (PREMIUM QUALITY, 5-YEAR WARRANTY)

| Pamotor Number | Input Volts | Input Watts | Air Flow cfm | Features |
|---|---|---|---|---|
| 4500P | 115 | 19 | 115 | Low noise, high volume air flow |
| 4600P | 115 | 20 | 120 | Ball-thrust bearing design; handles 30% higher back pressure than conventional 4½″ design |
| 8500P | 115 | 15 | 43 | Ultra-compact; three times the air flow of nearest competitor |

### INDUCTION MOTOR MODELS

| Pamotor Number | Input Volts | Input Watts | Air Flow cfm | Features |
|---|---|---|---|---|
| 1000A | 115 | 25 | 125 | For lab, office machines, communications, industrial control eqpt. |
| 1110* | 115 | 35 | 110 | 400-Hz axial design for airborne equipment; adaptable for ducts |
| 1300 | 220 | 25 | 125 | 220-V version of 1000A |
| 2000 | 115 | 25 | 125 | Highest free-air delivery available in 4½″ package |
| 2050 | 220 | 25 | 125 | 220-V version of 2000 |
| 2110* | 115 | 35 | 110 | 400-Hz ball bearing design for airborne equipment |
| 3000 | 115 | 15 | 65 | Double the air flow of other 3½″ fans; adjustable speed |
| 3050 | 220 | 15 | 65 | 220-V version of 3000 |

### SHADED-POLE MOTOR MODELS

| Pamotor Number | Input Volts | Input Watts | Air Flow cfm | Features |
|---|---|---|---|---|
| 1500 | 115 | 25 | 105 | General purpose fan; high performance, low noise, low cost |
| 1550 | 220 | 25 | 105 | 220-V version of 1500 |
| 2500 | 115 | 25 | 115 | High volume delivery, low cost; broad range of applications |
| 2550 | 220 | 25 | 115 | 220-V version of 2500 |
| 4500 | 115 | 19 | 115 | High volume air flow, low cost, low noise |
| 4550 | 220 | 19 | 115 | 220-V version of 4500 |
| 4506 | 115 | 19 | 115 | Ball bearing design; 20,000 hrs. operation at 85° C |
| 4556 | 220 | 19 | 115 | 220-V version of 4506 |
| 4600 | 115 | 20 | 120 | Handles 30% higher back pressure than conventional 4½″ designs |
| 4700 | 115 | 20 | 65 | Saves space and weight where venturi housing is not required |
| 4750 | 220 | 20 | 65 | 220-V version of 4700 |
| 4800 | 115 | 10 | 70 | Low speed, virtually noiseless; hi-fi, TV, medical, office |
| 7500 | 115 | 40 | 250 | For large enclosures with high air flow resistance; replaces two smaller fans or one 7″ or 10″ conventional design type |
| 7550 | 220 | 40 | 250 | 220-V version of 7500 |
| 7506 | 115 | 40 | 250 | Ball bearing version; 20,000 hrs. operation at 85° C |
| 7556 | 220 | 40 | 250 | 220-V version of 7506 |
| 8500 | 115 | 15 | 43 | Ultra-compact; 3 times the air flow of nearest competitor |
| 8550 | 220 | 15 | 43 | 220-V version of 8500 |
| 8506 | 115 | 15 | 43 | Ball bearing version; 20,000 hrs. operation at 85° C |
| 8556 | 220 | 15 | 43 | 220-V version of 8506 |
| 8700 | 115 | 15 | 35 | For use where venturi housing not required; mounts on 4″ bracket |

For 400-Hz operating; all others, 50/60 Hz.

## APACITORS FOR INDUCTION TYPES

| Pamotor Number | For Models | Cap., μF | Net Each, Lots of 1-9 | Net Each, Lots of 10-24 | Net Each, Lots of 25-49 |
|---|---|---|---|---|---|
| 1004* | 1000A | 6 | $2.75 | $2.50 | $2.25 |
| 1004G | 1000A | 6 | 3.30 | 3.00 | 2.75 |
| 1005* | 2000, 3000 | 4 | 2.75 | 2.50 | 2.25 |
| 1005G | 2000, 3000 | 4 | 3.30 | 3.00 | 2.75 |
| 1006 | 1300, 2050 | 2 | 2.75 | 2.50 | 2.25 |
| 1009 | 3050 | 1 | 2.25 | 2.00 | 1.90 |
| 1010 | 1110, 2110 | .5 | 2.25 | 2.00 | 1.90 |

Capacitors supplied by Pamotor are SPRAGUE val can type or German stud mount type. The atter is designated by suffix "G". When ordering μF and 6 μF capacitors, specify desired type.

## ACCESSORIES

| Pamotor Number | Accessory | Series | Net Each 1-499 |
|---|---|---|---|
| 5501 | Brackets | * | $0.20 pr. |
| 5502 | Filter | * | 2.00 |
| 5503 | Screen Assembly | * | 2.00 |
| 5504 | Fingerguards | * | 1.00 |
| 5505 | Plug and Cord | 4500 | .60 |
| 5506 | Fingerguards | 7500 | 3.00 |
| 5507 | Fingerguards | † | .85 |
| 5508 | Fingerguards | 8500 | .85 |
| 5509 | Air Straightener | 7500 | 3.50 |
| 5511 | Adapter Ring | 7500 | 1.20 |

*For 2000, 2110, 2500, 4500. †For 1000A, 1110, 1300, 1500.

## SIZES AND PRICING

### PENTAFLOW MODELS

| Pamotor Number | Nominal Size, Inches | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|
| 4500P | 4½ x 4½ x 1½ | $16.65 | $15.40 | $13.85 | $12.60 | $11.70 |
| 4600P | 4½ x 4½ x 1½ | 18.95 | 17.35 | 15.95 | 14.35 | 13.30 |
| 8500P | 3⅛ x 3⅛ x 1½ | 18.95 | 17.35 | 15.95 | 14.35 | 13.30 |

### INDUCTION MOTOR MODELS

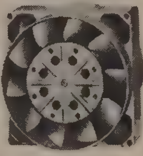
nduction type fan prices do not include cost of applicable capacitor where required; specify capacitor y Pamotor Part Number when ordering.

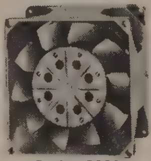
| Pamotor Number | Nominal Size, Inches | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|
| 1000A, 1300 | 4½ x 4½ x 2 | $28.80 | $25.90 | $23.10 | .......... | .......... |
| 1110 | 4½ x 4½ x 2 | 39.85 | 35.60 | 32.80 | .......... | .......... |
| 2000, 2050 | 4½ x 4½ x 2 | 28.80 | 25.90 | 23.10 | .......... | .......... |
| 2110 | 4½ x 4½ x 2 | 39.85 | 35.60 | 32.80 | .......... | .......... |
| 3000, 3050 | 3½ x 3½ x 2 | 17.30 | 15.60 | 14.05 | .......... | .......... |

### SHADED-POLE MOTOR MODELS

| Pamotor Number | Nominal Size, Inches | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|---|
| 1500, 1550 | 4½ x 4½ x 2 | $18.20 | $16.35 | $14.70 | $13.20 | $11.90 |
| 2500, 2550 | 4½ x 4½ x 2 | 18.20 | 16.35 | 14.70 | 13.20 | 11.90 |
| 4500, 4550 | 4½ x 4½ x 1½ | 12.65 | 11.70 | 10.50 | 9.55 | 8.90 |
| 4506, 4556 | 4½ x 4½ x 1½ | 23.95 | 22.35 | 19.70 | 18.10 | 16.90 |
| 4600 | 4½ x 4½ x 1½ | 14.95 | 13.65 | 12.60 | 11.30 | 10.50 |
| 4700, 4750 | 4⅛ (dia.) x 1½ | 12.65 | 11.70 | 10.50 | 9.55 | 8.90 |
| 4800 | 4½ x 4½ x 1½ | 13.95 | 12.65 | 11.90 | 10.55 | 9.55 |
| 7500, 7550 | 6 (dia.) x 2 | 32.90 | 31.15 | 28.05 | 24.95 | 23.40 |
| 7506, 7556 | 6 (dia.) x 2 | 62.70 | 57.20 | 50.90 | 45.80 | 43.10 |
| 8500, 8550 | 3⅛ x 3⅛ x 1½ | 14.95 | 13.65 | 12.60 | 11.30 | 10.50 |
| 8506, 8556 | 3⅛ x 3⅛ x 1½ | 22.35 | 20.40 | 18.55 | 17.05 | 16.10 |
| 8700 | 3 (dia.) x 1½ | 14.95 | 13.65 | 12.60 | 11.30 | 10.50 |

Pentaflow


Series 1000A


Series 2000

Series 4700

Series 4800

Series 8500

Series 7500

# Rotron COMMERCIAL COOLING FANS

## MUFFIN® FAN

Compact and lightweight fan offers dependable, low-cost cooling in all commercial applications. Provides 107 cubic feet per minute free air delivery at 60 Hz for flushing computers, power supplies, office machinery, light projectors, instruments and electronic control equipment. Simple, functional design only 4 11/16″ square x 1½″ deep; weighs just 1 lb. Offers substantial air performance, narrow axial depth and mounting versatility, high reliability, low noise level (only 40 dB) and attractive appearance. Rated for ambient temperature from 0° to 160° F. Operating life of 10 years (continuous duty) at 70° F with no lubricating necessary. Incorporates an aluminum heat sink at the base of the bearing to provide a cool running motor. An encapsulated winding resists moisture and humidity. Airflow is instantly reversible by turning the fan end-for-end. Impedance protected; has UL Yellow Card Component Recognition. Electrical connection may be made by tinned brass solder terminals; or with No. 16415 cord and plug. Available for 115 or 230 VAC, 50–60 Hz, in skeleton or venturi model; draws only 14 watts. Units with suffix BB have miniature precision stainless steel ball bearings. Can be used with No. 25678 grille fan kit, or No. 15449 filter kit (listed with accessories below).

### MUFFIN FAN TYPES AND SPECIFICATIONS

| Rotron Model | Volts | Hz | Phase | Nom. Speed rpm | Full Load Watts | Line Amps | Max. CFM |
|---|---|---|---|---|---|---|---|
| M747 | 115 | 50–60 | 1 | 3200 | 14 | .16 | 107 |
| M756 | 230 | 50–60 | 1 | 3200 | 14 | .08 | 107 |
| M747BB* | 115 | 50–60 | 1 | 3200 | 14 | .16 | 107 |
| M756BB* | 230 | 50–60 | 1 | 3200 | 14 | .08 | 107 |

### PRICING

| Fan Type | Net Each, Lots of | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-749 | 750-999 |
| Skeleton | $11.80 | $10.70 | $ 9.60 | $ 8.70 | $ 8.30 | $ 7.65 | $7.05 | $6.75 |
| Venturi | 12.05 | 10.95 | 9.85 | 8.95 | 8.55 | 7.90 | 7.30 | 7.00 |
| Skeleton* | 18.50 | 16.80 | 15.35 | 14.15 | 13.15 | 12.25 | ..... | ..... |
| Venturi* | 18.75 | 17.05 | 15.60 | 14.40 | 13.40 | 12.50 | ..... | ..... |

*With miniature, precision, stainless-steel ball bearings.

## CENTAUR® FAN

Maximum air performance and pressure building capabilities in a compact unit, 4 11/16″ square x 1½″, weighing only 1.2 lbs. Provides a maximum of 115 cubic feet per minute free delivery on 60 Hz, with operation up to .43″ of water at zero delivery. Interchangeable with the Muffin fan; ideal for flushing electronic control equipment, office copying machines, telephone equipment, computer consoles, power supplies, transmitters and receivers. Boasts the highest air performance obtainable from a fan of its size, with a noise level of only 40 dB. Draws only 15 watts at 115 V. Has a 5-blade high-impact, flame retardant polycarbonate propeller and a reinforced phenolic venturi block. Mounting spiders are diecast aluminum. Suitable for ambient temperatures from −40° to +160° F; continuous duty life in excess of five years at 70° F. Impedance protected; has UL Yellow Card Components Recognition. Airflow is instantly reversible by turning fan end-for-end. Tinned, brass solder terminals; or No. 16415 cord and plug can be used for easy electrical connection. Can be used with No. 25678 grille venturi kit, or No. 15449 filter kit (listed below).

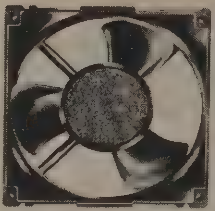
### CENTAUR FAN TYPES AND SPECIFICATIONS

| Rotron Model | Volts | Hz | Phase | Nom. Speed rpm | Full Load Watts | Line Amps | Max. CFM |
|---|---|---|---|---|---|---|---|
| CT3A2 | 115 | 50–60 | 1 | 3200 | 15 | 0.22 | 115 |
| CT3A52 | 230 | 50–60 | 1 | 3200 | 15 | 0.12 | 115 |

### PRICING

| Fan Type | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
| Either model | $12.35 | $11.25 | $10.15 | $9.25 | $8.85 | $8.20 |

## SENTINEL® FAN



Designed for rugged applications with ambient temperature up to 100° C; will withstand greater shock and vibration than the Muffin fan. Meets MIL-E-4970A requirements. Provides long, trouble-free life without maintenance. For cooling power supplies, computers, office equipment and military ground support systems. Incorporates a glass-filled phenolic venturi block, encapsulated stator, stainless steel ball bearings, and an aluminum heat sink which draws heat from the windings to provide a cool running motor. Has UL Yellow Card Component Recognition. Size, 4 11/16″ sq. x 1½″ deep. Weight, 1 lb. Available in skeleton or venturi version. Can be used with No. 25678 grille fan kit, or No. 15449 filter kit.

### SENTINEL FAN TYPES AND SPECIFICATIONS

| Rotron Model | Volts | Hz | Phase | Nom. Speed rpm | Full Load Watts | Line Amps | Max. CFM |
|---|---|---|---|---|---|---|---|
| 747 | 115 | 50–60 | 1 | 3200 | 14 | 0.15 | 107 |
| 756 | 230 | 50–60 | 1 | 3200 | 14 | 0.08 | 107 |

### PRICING

| Rotron Model | Fan Type | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
| 747 or 756 | Skeleton | $24.75 | $23.45 | $21.25 | $18.55 | $17.85 |
| 747 or 756 | Venturi | 25.00 | 23.70 | 21.50 | 18.80 | 18.10 |

## WHISPER® FAN

Scientifically designed to deliver a substantial quantity of cooling with maximum reliability, minimum acoustical disturbance. Provides 65 CFM air delivery at extremely low noise level of 18 dB; draws only 8 watts. Ideal for cooling TV cameras, PA and sound systems, tape recorders, hi-fi equipment, TV receivers, ham radio gear and similar commercial applications. All accessories are interchangeable with the Muffin fan. Impedance protected; has UL Yellow Card Component Recognition. Airflow is reversible by turning fan end-for-end. Available in skeleton or venturi version. Can be used with No. 25678 grille kit, or No. 15449 filter kit (listed below).

### WHISPER FAN SPECIFICATIONS

**Power Required:** 115 volts, 50–60 Hz, single phase. **Speed:** 1750 rpm nominal. **Full Load Watts:** 8. **Line Amps:** 0.095. **Air Output:** 65 CFM maximum. **Size:** 4 11/16″ sq. x 1½″. Weight, 1 lb.

### PRICING

| Rotron Model | Fan Type | Net Each, Lots of | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-749 | 750-999 |
| M745 | Skel. | $11.80 | $10.70 | $9.60 | $8.70 | $8.30 | $7.65 | $7.05 | $6.75 |
| M745 | Vent. | 12.05 | 10.95 | 9.85 | 8.95 | 8.55 | 7.90 | 7.30 | 7.00 |

### ACCESSORIES FOR MUFFIN, SENTINEL, WHISPER AND CENTAUR FANS

| Rotron No. | Description | Net Each |
|---|---|---|
| 13996 | Mounting clips (set of 2) | $0.30 |
| 16238 | Spiral grille | 1.00 |
| 17826 | Expanded metal grille | 1.00 |
| 20132-2 | Finger guard | .70 |
| 15448 | Filter element | 2.25 |
| 15449 | Filter ass'y (filter, frame and clips) | 2.90 |
| 13967 | Filter frame | 1.00 |
| 18440 | Filtercoat | 1.25 |
| 16415 | Plug and cord | .70 |
| 24326-1 | Clip (for motor side) | .06 |
| 24326-2 | Clip (for prop side) | .06 |
| 25678 | Grille assembly | 1.05 |

ROTRON
INCORPORATED

# Rotron COMMERCIAL COOLING FANS

## BISCUIT® BLOWER

The only air moving device that fits nside a 1¾″ rack panel mounted instrument. Only 1$\frac{9}{16}$″ deep, with 25 CFM free elivery performance. Pressure building apability is sufficient to drive air through ghtly packaged equipment, permitting gnificant increase in packaging den- ities. Offers 10-year life expectancy at oom ambient; rated for maximum ambient temperature of 160° F (72° C). ow noise level (44 dB) at free delivery. Impedance protected; UL Yellow Card Component Recog.; draws 16 W. May be ounted in any attitude with a choice f three options: to the back of the blower, to the blower inlet, or to the blower outlet. Has tinned brass solder erminals for easy connection, or No. 7555 plug and cord may be used. Blower ousing and impeller are high strength lass-filled compression molded phenolic; bearing is single piece ntered bronze, impregnated with high temperature silicone oil. tator is encapsulated in glass and mineral filled epoxy over poxy ground insulation. Weight, 1.2 lbs.

### BISCUIT BLOWER TYPES AND SPECIFICATIONS

| Rotron Model | Inlet Type | Volts | Hz | Line Amps | Watts Load | CFM |
|---|---|---|---|---|---|---|
| BT2A-1 | Plain | 115 | 50–60 | 0.18 | 16 | 25 |
| BT2A-2 | Rim | 115 | 50–60 | 0.18 | 16 | 25 |
| BT3A-1 | Plain | 230 | 50–60 | 0.09 | 16 | 25 |
| BT3A-2 | Rim | 230 | 50–60 | 0.09 | 16 | 25 |

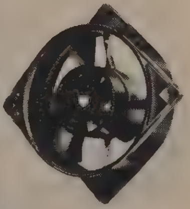
### PRICING

| Inlet Type | Net Each, Lots of | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-749 | 750-999 |
| Plain | $14.95 | $13.80 | $12.80 | $12.10 | $11.45 | $10.90 | $10.40 | $ 9.95 |
| Rim | 15.50 | 14.30 | 13.30 | 12.55 | 11.90 | 11.35 | 10.80 | 10.35 |

### ACCESSORIES

| Rotron No. | Description | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-99 | 100-499 | 500-999 |
| 001-048 | Inlet clamp | $0.70 | $0.60 | $0.45 |
| 24540 | Outlet guard | .55 | .45 | .35 |
| 17555 | Plug and cord | .70 | .70 | .70 |

## SKIPPER® FAN



ow profile fan mounts using only two ounting screws. Venturi model has ntg. holes on the two front flanges and n two rear flanges; requires an installation area of less than 4¾″ square. Provides the maximum in reliable, low-cost ooling, delivering 100 CFM. Airflow irection can be easily changed by reverse mounting. Impedance protected; UL Yellow Card Component Recognition. Features noise level of only 35.8 dB SIL). An ultra-quiet, low speed (65 CFM) model is available with noise level f only 25.2 dB. Cool running, diecast inc motor housing assures excellent heat issipation. Provides continuous cooling t temperature up to 50° C. Pre-lubricated bronze sleeve bearings ffer a 5-year maintenance-free life. Size, 4¾″ square x 2″ deep. Weight, less than 1 lb..

### SKIPPER FAN TYPES AND SPECIFICATIONS

| Rotron Model | Type | Volts | Hz | Phase | Watts Load | CFM |
|---|---|---|---|---|---|---|
| SK2A1 | Venturi | 115 | 50–60 | 1 | 16 | 100 |
| SK2A2 | Skeleton | 115 | 50–60 | 1 | 16 | 100 |
| SK2C1 | Venturi | 115 | 50–60 | 1 | 10 | 65 |
| SK2C2 | Skeleton | 115 | 50–60 | 1 | 10 | 65 |
| SK3A1 | Venturi | 230 | 50–60 | 1 | 16 | 100 |
| SK3A2 | Skeleton | 230 | 50–60 | 1 | 16 | 100 |

### PRICING

| Fan Type | Net Each, Lots of | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-749 | 750-999 |
| Venturi | $9.75 | $9.15 | $8.75 | $8.00 | $7.45 | $7.05 | $6.75 | $6.50 |
| Skeleton | 9.30 | 8.70 | 8.35 | 7.70 | 7.10 | 6.75 | 6.35 | 6.20 |

### ACCESSORIES

**Rotron No. 20132-2 Finger Guard**—Net Each............**70c**
**Rotron No. 24326-1 Mounting Clip**—Net Each............ **6c**

## SERGEANT® FAN

Versatile and reliable 100-CFM fan is extremely low in price, measures 4$\frac{23}{32}$″ w. x 2¾″ d. x 6$\frac{23}{64}$″ h. Available for either direction of airflow. For cooling power supplies, office copiers, computer terminals, mini-computers, projectors, vending machines, electronic instruments and appliances. Mounts quickly using two holes which fit the standard 4.125″ square hole layout. Can be mounted in any attitude, either directly to the panel wall where the impeller may extend beyond the panel, or flush mounted by including a venturi spacer. Suitable for ambients up to 130° F (55° C) with design life of five years at 75° F (25° C) without maintenance. Low noise level (43 dB) at free delivery. Draws 20 watts. Impedance protected; UL Yellow Card Component Recognition. Has 12″ long, 18-gauge leads for electrical connection. Motor is concentric, with Class A insulation. Two sintered bronze bearings are lubricated for life, include wick-supplied reservoirs. Mounting spiders are formed steel wire, bright zinc plated. Venturi spacer and impeller are injection molded acetal resin thermoplastic. Weight, 1.2 lbs.

### SERGEANT FAN TYPES AND SPECIFICATIONS

| Rotron Model | Air Flow | Mtg. | Volts | Hz | At Free Delivery | | |
|---|---|---|---|---|---|---|---|
| | | | | | Line Amps | Watts | CFM |
| ST2A-1 | Left | Flush | 115 | 50–60 | 0.25 | 20 | 100 |
| ST2A-2 | Left | Panel | 115 | 50–60 | 0.25 | 20 | 100 |
| ST2A-4 | Right | Flush | 115 | 50–60 | 0.25 | 20 | 100 |
| ST2A-5 | Right | Panel | 115 | 50–60 | 0.25 | 20 | 100 |
| ST3A-1 | Left | Flush | 230 | 50–60 | 0.13 | 20 | 100 |
| ST3A-2 | Left | Panel | 230 | 50–60 | 0.13 | 20 | 100 |
| ST3A-4 | Right | Flush | 230 | 50–60 | 0.13 | 20 | 100 |
| ST3A-5 | Right | Panel | 230 | 50–60 | 0.13 | 20 | 100 |

### PRICING

| Mounting Type | Net Each, Lots of | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 | 500-749 | 750-999 |
| Flush | $8.50 | $7.85 | $7.30 | $6.90 | $6.55 | $6.20 | $5.95 | $5.65 |
| Panel | 8.35 | 7.70 | 7.15 | 6.75 | 6.45 | 6.10 | 5.85 | 5.55 |

## SPRITE® FAN

For cooling applications in low profile electronic equipment where space is at an absolute premium. Reliable, low cost design delivers 33 CFM free air despite small size, only 3⅛″ square x 1.635″. Fits 3½″ rack-mounted instruments. Aerodynamic performance is tailored to produce high pressure in the range approaching free delivery. Outperforms larger, conventional fans in many applications, where the conventional fans have higher free delivery performance at zero static pressure. Typical applications include: Flushing of office copying machines, power supplies, transmitters, receivers, counters, core memory equipment, paper tape equipment printers and digital voltmeters. Extremely quiet, with only 35 dB noise level. Impedance protected; operates in ambients up to 140° F (60° C). Mounts easily with through holes in corners of flanges at opposite ends of the fan barrel. Airflow is reversible by turning fan end-for-end. Brass solder terminals for easy electrical connection; No. 20787 plug and cord can be used. Has UL Yellow Card Component Recognition. Weight, 14 oz.

### SPRITE FAN TYPES AND SPECIFICATIONS

| Rotron Model | Volts | Hz | Phase | Speed rpm | Watts Load | Line Amps | CFM |
|---|---|---|---|---|---|---|---|
| SP2A2 | 115 | 50–60 | 1 | 3000 | 9 | .13/.11 | 33 |
| SP2A3 | 230 | 50–60 | 1 | 3100 | 9 | .07/.06 | 33 |

### PRICING

| Rotron No. | Description | Net Each, Lots of | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 | 250-499 |
| SP2A2 | Sprite Fan | $13.00 | $11.85 | $10.90 | $10.00 | $9.25 | $8.70 |
| SP2A3 | Sprite Fan | 13.00 | 11.85 | 10.90 | 10.00 | 9.25 | 8.70 |

### ACCESSORIES

| Rotron No. | Description | Net Each |
|---|---|---|
| 20049 | Finger guard | $0.75 |
| 20787 | Plug and cord | .95 |

# Rotron COMMERCIAL COOLING FANS

## FEATHER® FAN

Delivers 270 CFM for flushing commercial electronic cabinets and consoles where high air performance is required and space is critical. Only $2\frac{7}{16}$″ deep and 7″ dia. Constructed of high-impact polycarbonate plastic, resistant to extreme temperatures and boasting outstanding dimensional stability. Powered by a multi-slot induction motor with pre-lubricated stainless steel ball bearings for ambient temperature range of −55° to +65° C. Capacitor is included, mounted on fan venturi. Tinned brass terminals; plug and cord available. Clamping rims permit easy mounting; airflow is reversible by turning fan end-for-end. Models 113 and 213 incorporate a thermal protector in the winding and have UL Yellow Card Components Recognition. Matched filter box No. 17785 is permanent, non-loading and washable. Weight, 1½ lbs.

### FEATHER FAN TYPES AND SPECIFICATIONS

| Rotron Model | Volts | Hz | Phase | Cap. µF | Speed rpm | Watts Load | Line Amps | Max. CFM |
|---|---|---|---|---|---|---|---|---|
| 103 | 115 | 50–60 | 1 | 2.0 | 3380 | 20 | 0.18 | 270 |
| 113* | 115 | 50–60 | 1 | 2.0 | 3380 | 20 | 0.18 | 270 |
| 203 | 230 | 50–60 | 1 | 0.5 | 3350 | 20 | 0.09 | 270 |
| 213* | 230 | 50–60 | 1 | 0.5 | 3350 | 20 | 0.09 | 270 |

*With thermal protection.

### PRICING

| Rotron Model | Net Each, Lots of | | | | |
|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
| 103 or 203 | $30.80 | $27.85 | $25.60 | $23.85 | $22.30 |
| 113 or 213 | 31.70 | 28.65 | 26.30 | 24.50 | 22.90 |

### FEATHER FAN ACCESSORIES

| Rotron No. | Description | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
| 14559 | Rim mount guard | $ 3.65 | $3.25 | $2.90 | $2.70 | $2.55 |
| 14651 | Panel mount guard | 3.65 | 3.25 | 2.90 | 2.70 | 2.55 |
| 17785 | Filter box | 10.15 | 9.20 | 8.60 | 8.10 | 7.20 |
| 24947 | Mtg. clamps (set of 3) | .15 | .15 | .15 | .15 | .15 |
| 14611 | Panel mount clips† | .15 | .15 | .15 | .15 | .15 |
| 18440 | Filtercoat (can) | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| 16398 | Plug & cord assembly | .90 | .90 | .90 | .90 | .90 |

†Three required per panel mount guard No. 14651.

## TARZAN® FAN

Unique patented axial fan designed for flushing applications with higher than normal impedance to airflow, in tightly packed electronic cabinets and chassis. Provides 350 CFM free delivery, operates up to 0.9″ of water at cut-off. Venturi is molded from tough phenolic; spiders are die-cast aluminum. Five-bladed propeller is made of high-impact, flame retardant polycarbonate. Motor has double-shielded ball bearings for continuous duty without maintenance. Rated for maximum ambient temperature of 160° F, with 3 to 4 year life at 120° F. Mounts easily by thru-holes at flange corners, at opposite end of fan barrel. Airflow is reversible by turning fan end-for-end. Available with 12″ leads or solder terminals for electrical connection. All models have thermal protectors and have UL Yellow Card Components Recognition. Size, $6\frac{29}{32}$″ square x $4\frac{11}{32}$″. Weight, 5 lbs.

### TYPES AND SPECIFICATIONS

| Rotron Model | Volts | Hz | Phase | Speed rpm | Watts Load | Line Amps | Max. CFM |
|---|---|---|---|---|---|---|---|
| TN3A2,<br>TN3C2 | 115 | 50–60 | 1 | 3300 | 85 | 1.2 | 350 |
| TN3A3,<br>TN3C3 | 230 | 50–60 | 1 | 3300 | 85 | 0.6 | 350 |

### PRICING

| Rotron No. | Description | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
| TN3A2* | Fan (terminals) | $39.60 | $35.65 | $32.90 | $30.55 | $28.55 |
| TN3C2* | Fan (11″ leads) | 38.30 | 34.55 | 31.90 | 29.65 | 27.65 |
| TN3A3*† | Fan (terminals) | 39.60 | 35.65 | 32.90 | 30.55 | 28.55 |
| TN3C3*† | Fan (11″ leads) | 38.30 | 34.55 | 31.90 | 29.65 | 27.65 |
| 21196-2 | Finger guard | 1.60 | 1.50 | 1.40 | 1.30 | 1.10 |
| 20990 | Filter box | 10.00 | 9.50 | 8.90 | 8.25 | 7.10 |
| 18440 | Filtercoat | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| 17555 | Plug and cord | .70 | .70 | .70 | .70 | .70 |

*With thermal protection. †230-volt types.

## CARAVEL® FAN

Compact, versatile fan delivers air volume of 575 CFM with a narrow depth of only 3½″; ideal for flushing large instrument racks and cabinets, transmitter cubicles and relay racks. May be mounted directly to a panel or cabinet wall using holes located around the circumference of the venturi. Airflow may be reversed by turning fan end-for-end. Motor has ball bearings for long, quiet life; no maintenance required. Suitable for any high grade commercial application where cabinet temperature does not exceed 140° F. Fan rotates at 1650 rpm for noise level of only 49 dB (SIL). Available with 24″ leads or solder terminals. All models contain thermal protectors and have UL Yellow Card Components Recognition. Size, 10″ dia. x 3½″. Weight, 4.3 lbs.

### CARAVEL FAN TYPES AND SPECIFICATIONS

| Rotron Model | Connection | Volts | Hz | Phase | Speed rpm | Watts Load | Line Amps | Max. CFM |
|---|---|---|---|---|---|---|---|---|
| CL2T2* | Term. | 115 | 50–60 | 1 | 1600 | 52 | 0.76 | 575 |
| CL2L2* | Leads | 115 | 50–60 | 1 | 1600 | 52 | 0.76 | 575 |
| CL3T2* | Term. | 230 | 50–60 | 1 | 1600 | 52 | 0.37 | 575 |
| CL3L2* | Leads | 230 | 50–60 | 1 | 1600 | 52 | 0.37 | 575 |

*With thermal protection.

### PRICING

| Rotron No. | Description | Net Each, Lots of | | | | |
|---|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
| CL2T2 | Fan (terminals) | $27.95 | $25.05 | $23.15 | $21.50 | $20.90 |
| CL2L2 | Fan (24″ leads) | 27.00 | 24.40 | 22.50 | 20.90 | 19.85 |
| CL3T2 | Fan (terminals) | 27.95 | 25.05 | 23.15 | 21.50 | 20.90 |
| CL3L2 | Fan (24″ leads) | 27.00 | 24.40 | 22.50 | 20.90 | 19.85 |
| 19694-2 | Screen guard | 2.15 | 1.90 | 1.70 | 1.65 | 1.55 |
| 17555 | Plug and cord | .70 | .70 | .70 | .70 | .70 |

## NUGGET® BLOWER

Compact, low-cost blower designed for spot cooling applications. New centraxial wheel gives greater efficiency than standard squirrel cage wheels, with greater volume to pressure characteristics. Delivers 14 CFM; ideal for hot spot cooling in test instruments, transmitters, TV cameras, office machinery and tape recorders. Specially designed miniature subfractional horsepower draws only 7 watts. Rugged blower housing is injection molded from polycarbonate plastic; size, $3\frac{9}{16}$″ x $4\frac{1}{32}$″ x $2\frac{1}{8}$″. Also available without housing for use as an air stirring device; requires space of only 2½″ x 2″. Impedance protected; has UL Yellow Card Component Recognition. **Power Required:** 115 volts, 50–60 Hz, single phase. **Speed:** 3275 rpm nominal. **Watts:** 7 full load. **Line Amps:** 0.08. **Air Output:** 14 CFM max. Weight, 0.6 lbs.

### NUGGET BLOWER PRICING

| Rotron Number | Net Each, Lots of | | | | |
|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
| NTH2 | $19.95 | $18.05 | $16.20 | $15.15 | $14.35 |
| NTP2* | 18.85 | 16.95 | 15.10 | 14.05 | 13.25 |

*Without housing.

### NUGGET BLOWER ACCESSORIES

| Rotron No. | Description | Net Ea., 1-249 |
|---|---|---|
| 17181 | Housing | $1.75 |
| 17597-1 | Outlet clamp | .70 |
| 17471 | Outlet flange | 1.00 |
| 17469 | Inlet rim | .70 |
| 17597 | Inlet clamp | .70 |
| 19803 | Set of 3 threaded inserts | .25 |
| 17555 | Plug and cord assembly | .70 |

# Rotron PANEL FANS AND ACCESSORIES

## MODULAIR® MB-9200 PANEL FAN

**400 CFM AIR DELIVERY**

**ONLY 8¾" HIGH, 3½" DEEP**

**INCLUDES DUST FILTER AND GRILLE**

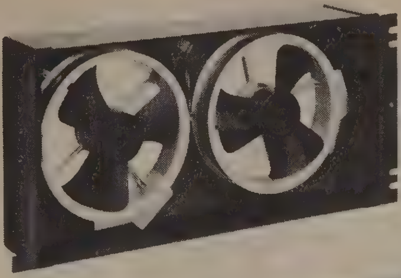
wo powerful ball bearing Feather fans in parallel permit 400 FM air output from a package 8¾" high x 3½" deep. Designed r use in 19" EIA rack cabinets where component density and sistance to airflow is low. Offers the same air performance as odel MB-5100 (below), but with 10" shorter depth; this allows ounting on back rails for cabinet, behind front-mounted equipent, thus saving front panel space. Includes a low impedance, ashable, porous Scott Foam filter enclosed in an aluminum frame. andard assembly includes an attractive chrome-plated grille.

### SPECIFICATIONS

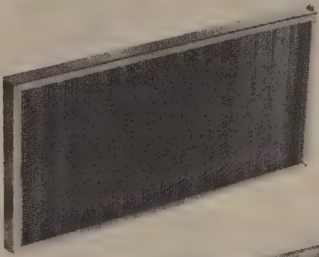
| otron Type | Volts | Hz | Phase | Cap. μF | Nom. Speed rpm | Full Load Watts | Line Amps | Max. CFM |
|---|---|---|---|---|---|---|---|---|
| 100 | 115 | 50–60 | 1 | 2.0 | 3380 | 40 | 0.36 | 400 |

### PRICING

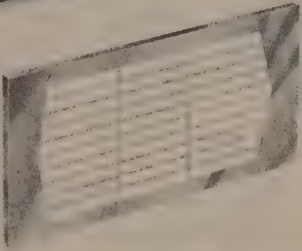
| Rotron No. | Description | Net Each, Lots of 1-4 | 5-9 | 10-24 | 25-49 | 50 Up |
|---|---|---|---|---|---|---|
| MB-9200 | Type 100 fan | $79.10 | $75.60 | $72.10 | $70.00 | $67.20 |
| 24361-3 | Repl. filter | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 |



Basic MB-9200 Panel Fan



Filter (Supplied)



Grille (Supplied)

## MODULAIR® MB-9100 PANEL FAN

**240 CFM AIR DELIVERY**

**ONLY 5¼" HIGH, 3½" DEEP**

**INCLUDES DUST FILTER AND GRILLE**

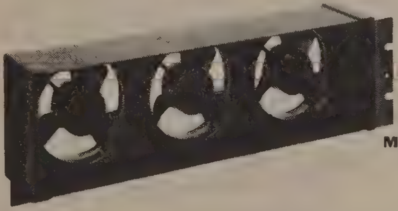
hree famous Mark 4 Muffin fans deliver 240 CFM of clean, tered air from a package only 5¼" high and 3½" deep. Consists a plenum, filter and air source, ready for immediate installation a 19" EIA rack cabinet where the component density and sistance to air flow are minimal, and where there are relatively ee passages for the flow of air. The Muffin fans offer a life exectancy of 10 years (continuous duty) at ambient temperature 70° F. Equipped with a low impedance, washable, porous Scott oam filter enclosed in an aluminum frame. Includes an attractive rome plated grille. The Muffin fans are impedance protected and esigned to satisfy UL Requirements. Size, 19" w. x 3½" d. x 5¼" h.

### SPECIFICATIONS

| otron Type | Volts | Hz | Phase | Nom. Speed rpm | Full Load Watts | Line Amps | Max. CFM |
|---|---|---|---|---|---|---|---|
| 100 | 115 | 50–60 | 1 | 3200 | 42.0 | 0.48 | 240 |

### PRICING

| Rotron No. | Description | Net Each, Lots of 1-4 | 5-9 | 10-24 | 25-49 | 50 Up |
|---|---|---|---|---|---|---|
| MB-9100 | Type 100 Fan | $61.10 | $58.50 | $55.60 | $54.10 | $52.00 |
| 24361-1 | Repl. filter | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |



Basic MB-9100 (Comes with Filter and Grille like MB-9200, above)

## MODULAIR® MB-5100 PANEL FAN

- **400 CFM AIR DELIVERY**
- **REQUIRES ONLY 5¼" PANEL HEIGHT**
- **NOISE LEVEL OF ONLY 55 dB (SIL)**
- **PERMANENT, WASHABLE ALUMINUM FILTER**

Cooling panel consists of twin Feather fans and a permanent, washable aluminum filter; mounted in a compact, well constructed box with an attractive grille. High air performance of 400 CFM with air directed upward to minimize dead spots or eddying within the cabinet, assuring maximum cooling of all components within the system. Requires only 5¼" of panel height in the base of the rack; installs quickly with standard EIA notching. Dissipates 1.9 kW of heat with a 15° F temperature rise. Noise level, only 55 dB (SIL). Supplied with capacitors and electrical cord. Fans have prelubricated stainless steel ball bearings, suitable for years of maintenance-free operation over ambient temperature range of −55° to +65° C. Size, 19" w. x 13²¹⁄₃₂" d. x 5¼" h. Weight, 13 lbs.

### SPECIFICATIONS

| otron Type | Volts | Hz | Phase | Cap. μF* | Nom. Speed rpm | Full Load Watts | Line Amps | Max. CFM |
|---|---|---|---|---|---|---|---|---|
| 100 | 115 | 50–60 | 1 | 2.0 | 3380 | 44 | 0.38 | 400 |

ncludes two capacitors.

### PRICING

| Rotron No. | Description | Net Each, Lots of 1-4 | 5-9 | 10-24 | 25-49 | 50 Up |
|---|---|---|---|---|---|---|
| MB-5100 | Type 100 fan | $100.20 | $95.20 | $90.85 | $82.45 | $80.80 |
| 19699 | Fan guard kit | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| 18440 | Filtercoat | 1.25 | 1.25 | 1.25 | 1.25 | 1.25 |
| 16305 | Filter | Price On Request | | | | |

®ROTRON
INCORPORATED

# Rotron MILITARY COOLING FANS

## AXIMAX® 1

Smallest and lightest of this family of miniature 400 Hz fans; for cooling small, tightly packed airborne equipment. Choice of two speeds, 1 or 3 phase. Only 1¾" dia. x 1½"; weighs just 4 oz. Lubricated for 125° C maximum ambient temperature. Running life of 10,000 hours at 72° C ambient at sea level, running at 20,000 rpm. Slower speed fans will operate considerably longer. Airflow is reversible by turning fan end-for-end. Clamping rims at each end of the venturi simplify mounting. Compact terminal block for electrical connections. Meets applicable military specifications.

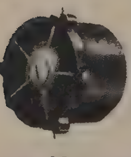
### AXIMAX 1 TYPES AND SPECIFICATIONS

| Rotron Type | Volts | Phase | Hz | Cap., μF | Speed rpm | Watt Load | Line Amps | Max. CFM |
|---|---|---|---|---|---|---|---|---|
| 623YS | 115 | 1 | 400 | 0.25 | 22,600 | 18 | 0.16 | 21.5 |
| 367JS | 200 | 3 | 400 | ....... | 22,500 | 17 | 0.1 | 23 |
| 464YS | 115 | 1 | 400 | 0.15 | 11,500 | 8.5 | 0.1 | 11 |

### PRICING

| Rotron Model | Net Each, Lots of | | | |
|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 |
| Any of above | $50·80 | $45·90 | $41·35 | $36·75 |

## AXIMAX® 2



For cooling electronic packages in aircraft and missiles. Designed for tightly packed "black boxes" where maximum cooling is mandatory, with a minimum of space and weight penalty due to the fan. Choice of 400 Hz constant speed, or varying speed Altivar® motors which change speed directly with altitude; 60 Hz type also available. Lubricated for 125° C maximum ambient temperature. Running life, 10,000 hours at 72° C at sea level, running at 20,000 rpm; slower speed fans will operate considerably longer. Meets applicable military specifications. **Size:** 2" dia. x 1½" deep. Weight, 4½ oz.

### AXIMAX 2 TYPES AND SPECIFICATIONS

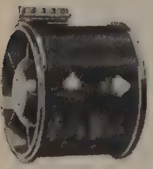
| Rotron Type | Volts | Phase | Hz | Cap., μF | Speed rpm | Watt Load | Line Amps | Max. CFM |
|---|---|---|---|---|---|---|---|---|
| 606NS | 115 | 1 | 60 | 1.0 | 3,150 | 7 | 0.06 | 8 |
| 368YS | 115 | 1 | 400 | 0.5 | 20,000 | 38 | 0.33 | 58 |
| 367JS | 200 | 3 | 400 | ....... | 20,500 | 34 | 0.13 | 59 |
| 464YS | 115 | 1 | 400 | 0.15 | 11,000 | 10 | 0.10 | 30 |
| 415YS* | 115 | 1 | 400 | 0.15 | 11,000 | 18 | 0.19 | 32 |
| 395JS* | 200 | 3 | 400 | ....... | 11,000 | 18 | 0.1 | 32 |

*Altivar.

### PRICING

| Rotron Model | Net Each, Lots of | | | |
|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 |
| 606NS | $50·25 | $45·70 | $41·45 | $37·20 |
| Any other | 47·25 | 42·70 | 38·45 | 34·20 |

## AXIMAX® 3



For 400 Hz airborne and missile cooling applications requiring large air deliveries in minimum space. Choice of constant speed or high altitude, variable speed Altivar® (changes speed directly with altitude) motors; 60 Hz model also available. Lubricated for 125° C maximum ambient. Life, 8000 hours continuous duty at sea level at 72° C ambient. Airflow is reversible by turning fan end-for-end. Clamping rims at each end of case permit easy mounting. Compact terminal block for electrical connection. Meets applicable military specifications. **Size:** 3" dia. x 2⁵⁄₁₆" deep. Weight, 14 oz.

### AXIMAX 3 TYPES AND SPECIFICATIONS

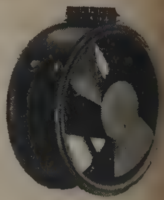
| Rotron Type | Volts | Phase | Hz | Cap., μF | Speed rpm | Watt Load | Line Amps | Max. CFM |
|---|---|---|---|---|---|---|---|---|
| 599NS | 115 | 1 | 60 | 0.5 | 3,450 | 4 | 0.03 | 23 |
| 528YS | 115 | 1 | 400 | 2.0 | 22,000 | 130 | 1.3 | 157 |
| 422DS | 115 | 1 | 400 | 1.0 | 11,300 | 21 | 0.26 | 78 |
| 341JS | 200 | 3 | 400 | ....... | 22,000 | 126 | 0.41 | 157 |
| 400YS* | 115 | 1 | 400 | 0.5 | 11,000 | 35 | 0.30 | 76 |
| 387JS* | 200 | 3 | 400 | ....... | 13,900 | 56 | 0.25 | 98 |

*Altivar.

### PRICING

| Rotron Model | Net Each, Lots of | | | |
|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 |
| 599NS | $66·70 | $60·60 | $54·85 | $49·10 |
| Any other | 63·70 | 57·60 | 51·85 | 46·10 |

## PROPIMAX® 2



For cooling in airborne and missile applications where high shaft speeds are mandatory for maximum air performance in minimum space. Choice of 400 Hz constant speed motor, or varying speed Altivar® motors which change shaft speed directly with altitude; 60 Hz model available. Lubricated for 125° C maximum ambient temperature. Life, 10,000 hours continuous duty at sea level at 72° C ambient temperature. Airflow is reversible by turning fan end-for-end. Clamping rims at each end of venturi for easy mounting. Terminal block for all electrical connections. Meets applicable military specifications. **Size:** 3¼" dia. x 1½" deep. Weight, 6½ oz.

### PROPIMAX 2 TYPES AND SPECIFICATIONS

| Rotron Type | Volts | Phase | Hz | Cap., μF | Speed rpm | Watt Load | Line Amps | Max. CFM |
|---|---|---|---|---|---|---|---|---|
| 606NS | 115 | 1 | 60 | 1.0 | 3,100 | 7 | 0.06 | 17 |
| 366ZS | 115 | 1 | 400 | 0.75 | 21,000 | 41 | 0.5 | 122 |
| 464ZS | 115 | 1 | 400 | 0.15 | 11,000 | 10 | 0.1 | 62 |
| 367JS | 200 | 3 | 400 | ....... | 20,500 | 34 | 0.13 | 118 |
| 415ZS* | 115 | 1 | 400 | 0.15 | 12,300 | 18 | 0.18 | 67 |
| 395JS* | 200 | 3 | 400 | ....... | 12,500 | 18 | 0.1 | 68 |

*Altivar.

### PRICING

| Rotron Model | Net Each, Lots of | | | |
|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 |
| 606NS | $59·10 | $53·70 | $48·65 | $43·60 |
| Any other | 56·00 | 50·70 | 45·65 | 40·60 |

## PROPIMAX® 3 AND 3B

For cooling tightly packed airborne equipment with heavy component density, large heat loads and high air impedance as related to envelope dimensions of the system. Delivers up to 220 CFM free air. Lubricated for 125° C max. ambient. Life, 8,000 hours continuous duty at sea level at 72° C. Airflow is reversible by turning fan end-for-end. Clamping rims at each end of venturi for easy mounting. Compact terminal block for all electrical connections. Meets applicable military specifications. **Size:** 3¾" dia. x 2" deep. Wt., 16 oz.

### TYPES AND SPECIFICATIONS

**Propimax 3:** Two-bladed propeller; powered by constant-speed, 400 Hz motor operating at 22,000 rpm. Gives large air volumes against high static pressures.

| Rotron Type | Volts | Phase | Hz | Cap., μF | Speed rpm | Watt Load | Line Amps | Max. CFM |
|---|---|---|---|---|---|---|---|---|
| 409ZS | 115 | 1 | 400 | 2.5 | 22,500 | 100 | 1.0 | 220 |
| 341JS | 200 | 3 | 400 | ....... | 22,500 | 80 | 0.3 | 220 |

**Propimax 3B:** Four-bladed propeller for operation at 12,000 rpm (or less) on 400 Hz; 60 Hz design also available. Choice of constant speed (11,000 rpm) or high altitude variable speed Altivar (changes speed directly with altitude) motors. Large air volumes against lower static pressure.

| Rotron Type | Volts | Phase | Hz | Cap., μF | Speed rpm | Watt Load | Line Amps | Max. CFM |
|---|---|---|---|---|---|---|---|---|
| 763ZS | 115 | 1 | 60 | 0.5 | 3,450 | 10.5 | 0.120 | 58 |
| 754DS | 115 | 1 | 400 | 2.0 | 11,000 | 60 | 0.600 | 190 |
| 400ZS* | 115 | 1 | 400 | 0.5 | 6,000 | 35 | 0.300 | 100 |
| 473JS | 200 | 3 | 400 | ....... | 11,000 | 54 | 0.260 | 190 |
| 387JS* | 200 | 3 | 400 | ....... | 8,200 | 67 | 0.300 | 140 |

*Altivar.

### PROPIMAX 3 AND 3B PRICES

| Rotron Model | Net Each, Lots of | | | |
|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 50-99 |
| Propimax 3 (All Types) | $65·50 | $59·20 | $53·20 | $47·35 |
| Propimax 3B 763ZS | 68·50 | 62·20 | 56·30 | 50·35 |
| Other Types | 65·50 | 59·20 | 53·20 | 47·35 |

## SYNCLAMPS

For Aximax® and Propimax® fans. Three synclamps required per fan, for mounting.

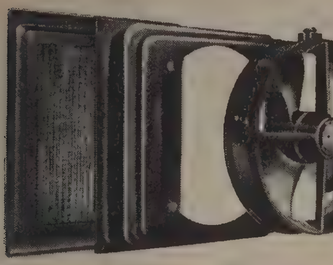
**Rotron No. 24254 Standard Synclamp**—Net Each.........60¢
**Rotron No. 14015 Reverse Synclamp**—Net Each...........60¢

## CAPACITORS

Oil-impregnated, canned, paper dielectric running capacitors rated at 220 VAC are recommended for most Aximax and Propimax fans. Not supplied by Rotron.

# Rotron Cooling Equipment

## SAUCER® FAN



or flushing military electronic cabinets and consoles where high
r performance is required and space is critical. Ideal for tightly
acked racks and consoles, with air delivery of 280 CFM and
arrow depth dimension (only 2½″). Driving motor is entirely
ontained in the propeller hub to conserve axial depth. Multi-slot
duction motor has pre-lubricated, stainless steel ball bearings
r ambient temperature range of −55° to +72° C. Airflow is
eversible by turning fan end-for-end. Compact terminal block for
ectrical connection. Clamping rims at each end of venturi for
asy mounting. Optional matched filter box No. 19869 is perma-
ent, non-loading and washable (listed at right). Fan guards also
vailable. Meets applicable military specifications. **Size:** 7″ dia. x
½″. Weight, 1.6 lbs.

### SAUCER FAN SPECIFICATIONS

| otron No. | Volts | Phase | Hz | Cap., µF* | Speed rpm | Watt Load | Line Amps | Max. CFM |
|---|---|---|---|---|---|---|---|---|
| 340ZS | 115 | 1 | 50–60 | 2.0 | 3300 | 24 | .23 | 280 |

Required for motor operation, but not supplied.

### PRICING

| Rotron Model | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 |
|---|---|---|---|---|
| 340ZS | $60.20 | $54.40 | $48.95 | $43.50 |

### *CAPACITORS

aucer and Spartan fans require an oil-impregnated, canned, paper
ielectric running capacitor rated 220 VAC, with capacity as
ndicated; not supplied by Rotron.

## SPARTAN® FAN

Military fan for cooling power supplies, computer systems and other shipboard and ground support equipment. Delivers 117 CFM free air at 3300 rpm, 60 Hz; 135 CFM, 400 Hz model also available. Dimensionally interchangeable with Rotron Muffin fan. Multi-slot, double-shielded ball bearing, induction motor is lubricated for life at 100° C maximum ambient temperature. Electrical connection by choice of 12″ leads (Type SL) or compact terminal block (Type ST). Mounting holes are located on 4.125″ centers in flange corners at opposite ends of fan barrel. Airflow direction may be reversed by turning fan end-for-end. Venturi ring, spiders and hub are a single aluminum casting for high shock and vibration requirements. Meets applicable military specifications for ground and shipboard use. **Size:** 4¹¹⁄₁₆″ sq. x 1½″ deep. Weight, 1 lb.

### SPARTAN FAN TYPES AND SPECIFICATIONS

| Rotron Type | Volts | Phase | Hz | Cap., µF* | Speed rpm | Watt Load | Line Amps | Max. CFM |
|---|---|---|---|---|---|---|---|---|
| 682YS | 115 | 1 | 50–60 | 1.0 | 3300 | 12.5 | 0.11 | 117 |
| 810DS | 115 | 1 | 400 | 0.39 | 3700 | 13.0 | 0.13 | 135 |

*Required for motor operation, but not supplied.

### PRICING

| Rotron Model | Connection | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|
| SL 682YS | 12″ leads | $32.40 | $30.65 | $28.45 | $25.90 |
| ST 682YS | Term. block | 34.50 | 32.65 | 30.25 | 27.55 |
| SL 810DS | 12″ leads | 45.65 | 43.25 | 40.15 | 36.55 |
| ST 810DS | Term. block | 47.75 | 45.25 | 42.00 | 38.25 |

### ACCESSORIES

For Saucer fan.

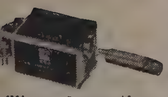
| Rotron No. | Description | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 |
|---|---|---|---|---|---|
| 14559 | Rim mount guard | $ 3.65 | $ 3.25 | $ 2.90 | $ 2.70 |
| 14651 | Panel mount guard | 3.65 | 3.25 | 2.90 | 2.70 |
| 14611 | Panel mount guard clip† | .15 | .15 | .15 | .15 |
| 19869 | Filter box‡ | 21.40 | 20.00 | 18.75 | 17.65 |
| 18440 | Filtercoat | 1.25 | 1.25 | 1.25 | 1.25 |

†Three required per panel mount guard (No. 14651). ‡Comes with four synclamps (No. 24254).

### SYNCLAMPS

Three required per fan, for mounting.
**Rotron No. 24254 Standard Synclamp**—Net Each.........**60c**
**Rotron No. 14015 Reverse Synclamp**—Net Each..........**60c**

## AIRFLOW INTERLOCK SWITCHES



**Model 2A Airflow Switch:** Interlocks equipment operation with cooling airflow, actuating on air velocity change. Detects air stoppage both up and down stream. Mounts to round or flat duct with a single screw. Interchangeable actuating vanes are available in 8 sensitivity ranges. Life,
nillions of operations. Rated 5 amps, 250 VAC. SPDT actuation.

| Rotron Type | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|
| witch with vane (specify vane) | $8.30 | $7.50 | $6.95 | $6.45 | $6.00 |
| ane only (any type) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

**Determinator Kit:** Convenient method for determining correct vane size and sensitivity rating required for final equipment design. Consists of a Model 2A switch and a complete set of 8 actuating vanes. In plastic box.

| Rotron Type | Net Each, Lots of 1-9 | 10-24 | 25-49 | 50-99 | 100-249 |
|---|---|---|---|---|---|
| Determinator Kit | $16.10 | $14.55 | $13.45 | $12.45 | $11.65 |

**FOR COMPLETE INFORMATION ON MODEL 2A AIRFLOW INTERLOCK SWITCHES, SEND FOR ROTRON CATALOG SHEET NO. K-6800C.**

### AIRFLOW INTERLOCK SWITCH TYPES

| | | Vert.-Up Airstream | | Horizontal Airstream: Arm Horizontal | | Horizontal Airstream: Arm Vertical-Vane Down | | Vert.-Down Airstream | |
|---|---|---|---|---|---|---|---|---|---|
| ype No. | Vane Lgth. | Incr. Air Actuate Ft/Min. | Decr. Air Deactuate Ft/Min. | Incr. Air Actuate Ft/Min. | Decr. Air Deactuate Ft/Min. | Incr. Air Actuate Ft/Min. | Decr. Air Deactuate Ft/Min. | Incr. Air Actuate Ft/Min. | Decr. Air Deactuate Ft/Min. |
| 000 | 2 27/32″ | 785 | 700 | 735 | 630 | 750 | 615* | Not usable | Not usable |
| 350 | 2 7/32″ | 1125 | 1030 | 1025 | 970 | 1000 | 890 | 720† | 685† |
| 600 | 1 15/16″ | 1340 | 1212 | 1215 | 1095 | 1225 | 1130 | 1040* | 865† |
| 800 | 1 21/32″ | 1550 | 1450 | 1460 | 1335 | 1500 | 1375 | 1280 | 1115* |
| 000 | 1 7/16″ | 1800 | 1675 | 1790 | 1580 | 1760 | 1580 | 1595* | 1425* |
| 450 | 1 1/8″ | 2340 | 2120 | 2120 | 1867 | 2270 | 2035 | 2125 | 1950 |
| 000 | 15/16″ | 2925 | 2700 | 2690 | 2420 | 2880 | 2570 | 2780 | 2395 |
| 000 | 3/4″ | 4000 | 3680 | 3720 | 3485 | 3870 | 3520 | 3760 | 3565 |

±15%; †±20%; all others ±10%.

# Dow Corning® Silicones

HEAT SINK

POTTING

SURFACE COAT

MOLDING

## DOW CORNING 340 HEAT SINK COMPOUND

Grease-like silicone material, heavily filled with heat-conductive metal oxides provides high thermal conductivity. Designed particularly for use at the base of mounting studs of transistors, diodes, etc. Won't dry, harden or melt. Withstands long term exposure to temperatures up to 200° C. Provides positive heat sink to chassis, increasing component life and efficiency. Evaporation, 1% after 24 hours at 200° C. Choice of several put-ups.

**20-lb. Pail**—Net Per Lb., Any Quantity................**$3.00**
**100-lb. Pail**—Net Per Lb., Any Quantity............... **2.90**

| Lots of | Net Each, 5 Ounce Collapsible Tube | Net Each, 14 Ounce Semco Cartridge |
|---|---|---|
| 1–11 | **$5.00*** | **$9.00** |
| 12–47 | **4.00** | **7.00** |
| 48 Up | **3.00** | **6.00** |

*Min. order 6 tubes.

## SILICONE SURFACE COATING COMPOUNDS

### DOW CORNING 103 COMPOUND

Grease-like, non-melting silicone material has excellent electrical insulating properties; water repellent and oxidation resistant. Retains capabilities in −40° F to over +400° F. Applied easily with grease gun, wiping or rubbing. Can be brushed or sprayed if thinned with xylene, mineral spirits, perchloroethylene or lacquer thinner. Fine lubricant and preservative for rubber and plastic items. Prevents corrosion of switches; seals rubber doors; insulates and repels water, splashed solder, glue, etc.

**10-lb. Can**—Net Per Lb., 1 to 3 cans..................**$4.45**
**10-lb. Can**—Net Per Lb., Pkg. 4 cans.................. **4.20**
**50-lb. Pail**—Net Per Lb., Any Quantity................ **4.05**
**Collapsible Tube** (8 oz.)—Net Each, lots of
12 and multiples.......**$2.55**; 48 and multiples.......**$2.30**

### DOW CORNING 20 RELEASE COATING

Economical, semipermanent silicone release agent for use with phenolics, melamines, polyesters, epoxies and silicone encapsulating resins. Heat stable, non-carbonizing and non-oily; permits multiple release. Will not discolor molded parts. Supplied at 50% solids; used at 5% to 10% by diluting in Stoddard solvent or VM & P naphtha. Applied by spray, brush or wiping.

**Pint (1-lb.) Can**—Net per Lb., 6 or multiples...........**$3.40**
**Gallon (7½-lb.) Can**—Net per Lb., Any Quantity...... **2.19**
**5-Gallon Can (37.5 lbs.)**—Net per Lb., Any Quantity... **1.79**

### DOW CORNING 4 COMPOUND

Versatile silicone seal and lubricant for switches, cable, connectors, battery terminals and bulb bases. Won't impair electrical properties. Applied with grease or caulking gun, brushing or wiping. Translucent and colorless with petroleum jelly consistency. Meets MIL-I-8660A specifications.

**10-lb. Can**—Net Per Lb., 1 to 3 cans..................**$5.10**
**10-lb. Can**—Net Per Lb., Pkg. 4 cans.................. **4.85**
**50-lb. Pail**—Net Per Lb., Any Quantity................ **4.70**

| In Lots of | Collapsible Tube, Net Each | |
|---|---|---|
| | 2 Ounce | 8 Ounce |
| 12 and multiples | **$1.12** | **$2.85** |
| 48 and multiples | **.95** | **2.60** |

### DOW CORNING 107 COMPOUND

Extra versatile silicone release agent for use in rubber, plastic, plywood and metal fabricating industries. Petroleum jelly consistency; heat stable; non-carbonizing. Ideal for easy release of styrenes, polyesters and vinyls. Dilutes in most common solvents for brush or spray application. One application lasts for 100 to 150 mold releases.

**10-lb. Can**—Net Per Lb., 1 to 3 cans..................**$4.45**
**10-lb. Can**—Net Per Lb., Pkg 4 cans.................. **4.20**
**50-lb. Pail**—Net Per Lb., Any Quantity................ **4.05**
**Collapsible Tube** (8 oz.)—Net Each, lots of
12 and multiples.......**$2.55**; 48 and multiples.......**$2.30**

## SYLGARD® POTTING, EMBEDDING AND ENCAPSULATING MATERIALS

### SYLGARD 182 RESIN

Clear, solventless silicone resin for potting, filling, embedding and encapsulating. Transparent for visual parts inspection. Can be cut for repair of parts, and new resin filled in. Blended with curing agent, it cures in any thickness in 4 hours at 150° F. Shelf-life approx. 1 year before mixing; pot life, 8 to 16 hours after mixed with agent. Curing agent, supplied, is blended with resin in 1:10 ratio, by weight. Can be cured in contact with metals, plastics, glass, asbestos, natural and synthetic fibers and ceramics while completely sealed or exposed to air. Heat stability up to 395° F. Typ. properties after curing: Hardness, shore A scale 40; coefficient of expansion, .00096; passes 10 cycles MIL-I-16923C thermal shock resistance, −55° C to +155° C; water absorption, 0.1% after 7 days immersion at 25° C; mechanical strength, 800–1000 psi; brittle point, lower than −70° C; dielectric strength, 550 V per mil min. ASTM-D-149.

| Net Per Pound | | | |
|---|---|---|---|
| 1-lb. Kit (Pint Can) | 11-lb. Kit | 55-lb. Kit | 20 55-lb. Kits |
| **$8.00** | **$5.95** | **$5.40** | **$5.30** |

### SYLGARD 183 RESIN

Similar to Sylgard 182, but opaque black. Heat stability up to 482° F.

| | | | |
|---|---|---|---|
| **$7.00** | **$4.60** | **$4.05** | **$3.95** |

### SYLGARD 184 RESIN

Room temperature curing, clear, solventless silicone resin for packaging temperature-sensitive devices. Transparent for circuit identification. When blended with curing agent, cures without exotherm in 24 hours at room temperature; in 4 hours at 150° F. Shelf life approx. 1 year before mixing; pot life 2½ hours after curing agent added. Curing agent, supplied, is blended with resin in 1:10 ratio, by weight. Can be cured in contact with metals, plastics, glass, asbestos, natural and synthetic fibers and ceramics When cured, resin withstands heat up to 392° F. Typ. properties after curing: Hardness, shore A scale 30; thermal shock resistance, 10 cycles MIL-I-16923C, −55° C to +155° C; water absorption, less than 0.1% after 7 days immersion at 25° C; mechanical strength, 800–1000 psi; brittle point lower than −70° C; dielectric strength, 500 V per mil min. ASTM-D-149.

| Net Per Pound | | | |
|---|---|---|---|
| 1-lb. Kit | 11-lb. Kit | 55-lb. Kit | 20 55-lb. Kits |
| **$8.00** | **$5.95** | **$5.40** | **$5.30** |

### SYLGARD 185 RESIN

Same as Sylgard 184, but opaque black. Higher heat resistance (to 485° F) and hardness (Shore A scale 35).

| | | | |
|---|---|---|---|
| **$7.00** | **$4.60** | **$4.05** | **$3.95** |

### SYLGARD PRIMER

Useful for obtaining adhesion of Sylgard 182, 183, 184 and 185 resins to metals, glass and plastics.

**Pint (0.7-lb.) Can**—Net Each, Any Quantity.........**$ 6.00**
**Gallon (5.5-lb.) Can**—Net Each, Any Quantity....... **11.00**

### SYLGARD 1330 THINNER

Silicone fluid for diluting Sylgard 182, 183, 184 and 185 resins. Thin and free-flowing for potting and filling component arrangements which could not be potted with undiluted resins. Sylgard resins may be diluted with up to 20 parts thinner by weight to 100 parts resin without major changes in cured resin performance or curing cycle characteristics.

| Net Per Pound | | |
|---|---|---|
| 1-lb. (Pint Can) | 8-lbs. (Gallon Can) | 40-lbs. (5-Gallon Can) |
| **$6.00** | **$3.50** | **$3.00** |

## DOW CORNING RTV ENCAPSULANTS

Satisfy all potting and coating needs to provide environmental protection to electronic equipment. Remains rubbery from below −65° C to 250° C. Max. curing temp. 150° C, lower temp. preferable when long curing time can be allowed. **3110:** white, low viscosity base; **3112:** white, medium viscosity base that cures to a high durometer, high strength rubber; **3116:** white, medium viscosity, general purpose base; **3120:** red, medium viscosity base that cures to a high durometer high strength rubber. **Mix Ratio:** base 10 parts to catalyst one part. **Choose catalyst S, F or H.**

| Dow Corning No. | Net per Pound | | | |
|---|---|---|---|---|
| | 1-lb. 6 & Mult. | 10-lb. 1-9 | 10-lb. 10-99 | 10-lb. 100 & Up |
| 3110 | **$4.30** | **$4.10** | **$3.80** | **$3.70** |
| 3112 | **4.30** | **4.10** | **3.80** | **3.70** |
| 3116 | **4.30** | **4.10** | **3.80** | **3.70** |
| 3120 | **4.30** | **4.10** | **3.80** | **3.70** |

**RTV Catalysts**—Cat. **F:** light tan, cures encapsulant bases in any thickness or in confined spaces, in 12 minutes to 5 hrs., depending upon concentration. **S:** light blue, cures bases in 5 to 12 hrs. **H:** light yellow, cures bases either at room temp. or by heating; does not cure deep sections or in confinement.

**S, H and F Catalyst**—.1-lb. collapsible tube,
Net per Carton of 6..............................**$2.70**

**S and H**—Pint (1-lb.) Can,
Net per lb., lots of 1–9.**$4.10**; 10–99.**$3.80**; 100 Up. **3.70**

**Catalysts F**—1 lb. (in 3 tubes),
Net per lb., lots of 1–9.**$4.10**; 10–99. **3.80**; 100 Up. **3.70**

# Dow Corning® Silicones

## SILASTIC® RTV ADHESIVE, SEALING AND ENCAPSULATING MATERIALS

### SILASTIC 899 RTV ADHESIVE/SEALANT

High-quality, one-component adhesive/sealant red silicone rubber uitable for use as an encapsulant. Cures on contact with moisture n air at room temperature; curing time for sections up to ⅛" hick (all the thickness required for full protection) is 24 hours t 77° F and 50% relative humidity. Resulting tough, rubbery olid remains flexible from −85° F to +500° F, has excellent heat tability and insulating properties and is resistant to weathering, ozone and moisture. Shore A durometer hardness, 40. Tensile trength, 400 psi. Tack-free time, 1 hr. For encapsulation of end-turns of random-wound motor stators or of induction heater coils, potting of junction boxes, preventing form-wound coil movement, making form-in-place grommets or seals, and insulatng connections. Can be applied over Classes A, B, F and H nsulation.

**12 oz. Cartridge**—Net Each, Lots 1–11 cartridges...... **$10.00**
**Carton of Twelve 1/12-Gal. Cartridges**—Net per Carton, Lots 1–5................ **$56.75**; 6 Up................ **$55.00**
**10-lb. (1.2-gal.) Can**—Net per Lb., Any Quantity..... **4.15**

### SILASTIC 732 RTV RUBBER ADHESIVE

Extra-strong, reliable silicone rubber adhesive and sealant supplied ready to use. No catalyst or heat required—reacts with moisture in air and begins curing. Vulcanizes in 24 hours at 77° F and 50% relative humidity. Moisture resistant and heat stable for a wide variety of uses. Seals generators for submerged or high moisture operating conditions; waterproofs strain gauges, in place; secures metal shield plates to printed circuits. Handy, easy-to-dispose collapsible tubes. Brittle point, 100° F. Durometer hardness, shore A scale 25. Tensile strength, 150 psi. Tack-free time, less than 1 hour at 77° F and 50% relative humidity. Color, white; also available in translucent and black if so specified when ordering.

| Lots of | Net per Carton of Tubes | | | |
|---|---|---|---|---|
| | 2-oz. 12-Carton | 5-oz. 12-Carton | 6-oz.* 12-Carton | 12-oz.* 12-Carton |
| 1 | $14.00 | | | |
| 1–5 | | $17.04 | $20.30 | $31.80 |
| 2–4 | 9.30 | | | |
| 5–23 | 7.60 | | | |
| 6 Up | | | 19.80 | 31.20 |
| 6 and mult. | | 16.80 | | |
| 12 and mult. | 6.78 | | | |
| 108 and mult. | | 16.50 | | |

*Foil cartridge; black not available in 6-oz. size.

### DOW CORNING GP-77 VARNISH

Tough, universal insulating impregnant is used for dipping, flooding or impregnating electrical components for operation in temperatures up to 200° C. Designed to meet MIL-1-24092B requirements. Usages includes Class A, B, F and H insulation systems. Features: Easy processing without baking between dips; thermal stability; high bond strength; solvent and chemical resistance; dielectric strength; moisture repellency; adhesion to silicone rubber tapes; compatible with insulating materials. Retains high bond strength after extended thermal cycling; room-temperature bond strengths of 80 pounds or greater are typical. Cures by baking 6 to 10 hours at 150° C; or, 4 to 6 hours at 200° C.

**1-Gallon Container**—Net per Gallon, Lots 1–3 Gallons.. **$16.50**
Net per Gallon, 4 Gallons or more.................... **13.40**
**5-Gallon Container**—Net per Gallon................... **10.60**
**55-Gallon Container**—Net per Gallon, Lots 1–9 Gallons. **9.00**
Net per Gallon, 10 Gallons or more.................... **8.20**

### NEW SILASTIC 734 RTV ADHESIVE/SEALANT

Free-flowing, self-leveling one-component, silicone rubber material for potting, coating and sealing. Cures on exposure to water vapor in the air, at room temperature. Curing time, at 75° F and 50% relative humidity, 1 hour for tack-free skin; 24 hours for sections ⅛" thick to achieve a Shore A Durometer hardness of about 35. Curing to a tough, rubbery solid, the material contains no solvent and has little shrinkage during cure. Adheres to most surfaces including metal, glass, wood, ceramics and many plastics (but not polyethylene and others which exude fluids such as plasticizers). Resists weathering, moisture, ozone, vibration and temperature extremes (flexible from −85° F to 500° F). Applies by pouring, dipping, brushing or spraying; supplied in collapsible tubes, cartridges and bulk containers (cartridges are for hand caulking guns; bulk may be used with dispensing pumps and accessories). Clear and white colors.

**3-oz. Tube**—Net Each, Lots 1–11 tubes.............. **$ 3.50**
Net Each, Carton of 12 tubes....................... **36.00**
**12-oz. Foil Cartridge**—Net Each, 1–11 cartridges...... **6.50**
Net Each, Carton of 12 cartridges.................. **49.00**
**40-lb. Pail**—Net per Lb., Lots 1–9 pails.............. **4.75**
Net per Lb., 10 pails or more....................... **4.50**

### DOW CORNING 1201 PRIMER

Used for obtaining high adhesion of all Silastic Brand RTV silicone rubbers to metals, glass or plastics.

**Pint (¾-lb.) Can**—Net Each, Any Quantity............ **$3.75**
**Gallon (6-lb.) Can**—Net per Lb., Any Quantity........ **1.10**

### DOW CORNING 997 VARNISH

The impregnant chosen by most manufacturers for insulating. Established reliability (10 years use); long service life even at 220° C spot temperature; good drainage with little run-off during cure; combines high bond strength with moisture resistance and electrical properties. Meets MIL-I-2707B, Type I specifications. Used with xylene solvent. Dark brown color. Solids 49% min. after 3 hrs. at 135° C. Specific gravity, 1.00 to 1.02 at 25° C. Viscosity, 100–200 centipoises at 25° C. Drying time, 3 hrs. max. at 200° C. Flash point, 90° F, Cleveland open cup.

| In Lots of | Net per Gallon | | |
|---|---|---|---|
| | 1 Gallon | 5 Gallons | 55 Gallons |
| 1 | $20.50 | $13.55 | $11.85 |
| 6 and multiples | 16.50 | | |

### DOW CORNING 33 SILICONE LUBRICANT

Primarily used in ball bearings operating in −100° F to +350° F under light to moderate loads. Choice of fluid, light, medium or heavy grease consistencies. Fluid and light for use with sealed type bearings; medium and heavy for non-tightly sealed bearings. High resistance to oxidation, heat, decomposition and breakdown due to shear. Dispersible in carbon tetrachloride, toluene and other solvents. Insoluble in water.

**10-lb. Can**—Fluid or heavy. Net Per Lb., 1–3 cans...... **$6.60**
**10-lb. Can**—Light or medium. Net Per Lb., 1–3 cans.... **5.55**
**10-lb. Can**—Fluid or heavy. Net Per Lb., Pkg. 4 cans.... **6.35**
**10-lb. Can**—Light or medium. Net Per Lb., Pkg. 4 cans. **5.30**
**45-lb. Pail**—Fluid or heavy. Net Per Lb............... **6.20**
**45-lb. Pail**—Light or medium. Net Per Lb............. **5.15**

| In Lots of | 8 ounce Collapsible Tube, Net Each | |
|---|---|---|
| | Light & Medium | Fluid & Heavy |
| 12 and multiples | $3.10 | $3.65 |
| 48 and multiples | 2.85 | 3.40 |

### DOW CORNING 200 DIELECTRIC FLUID

Clear, water-white silicone liquid available in a range of viscosities, 10 to 1000 centistokes. Chemically a dimethyl siloxane polymer, has unusual chemical and physical properties permitting hundreds of applications: Dielectric and coolant for transformers, capacitors, klystrons and other high-heat components; release material, alone or as a part of a compound; lubricant for plastic surfaces such as gears, bearings, etc.; moisture repellent dielectric for clocks, timers, TV tuners, etc. Standard viscosities of 10, 20, 50, 100, 200, 350, 500 and 1000 centistokes; intermediate obtained by blending standard viscosities in varying proportions. Features include: Relatively flat viscosity-temperature slope; serviceability −40° F to over 400° F; water repellent; good dielectric properties over wide range of temperatures and frequencies; low surface tension to readily wet clean surfaces; nontoxic and nonirritating.

| Viscosity Centistokes | Net Wt., Lbs. | Net/Lb., Lots | | Viscosity Centistokes | Net Wt., Lbs. | Net/Lb., Lots | | | Viscosity Centistokes | Net Wt., Lbs. | Net/Lb., Lots | | Viscosity Centistokes | Net Wt., Lbs. | Net/Lb., Lots | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1-5 | 6 Up | | | 1-3 | 4-7 | 8 Up | | | 1-24 | 25 Up | | | 1-4 | 5 Up |
| 5–10 | 1 | $6.10 | $2.84 | 5–10 | 7.5 | $2.40 | $1.85 | $1.70 | 5–10 | 37.5 | $1.65 | $1.37 | 5–10 | 420 | $1.37 | $1.36 |
| 20 | 1 | 6.00 | 2.55 | 20 | 8 | 2.28 | 1.71 | 1.56 | 20 | 40 | 1.51 | 1.21 | 20 | 440 | 1.21 | 1.20 |
| 50–1000 | 1 | 6.00 | 2.55 | 50–1000 | 8 | 2.28 | 1.71 | 1.56 | 50–1000 | 40 | 1.30 | .99 | 50–1000 | 440 | .99 | .98 |

### TYPICAL PROPERTIES OF STANDARD VISCOSITY RANGES

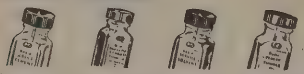
Specifications at 77° F unless otherwise noted. Values are not intended for use in preparing specifications.

| Viscos. Centistokes | Flash Pt.†, °F | Pour Pt.‡, °F | Spec. Grav. | Visc-Temp.§ Coef. | Expansion Coef.# | Refractive Index | Surface Tension dyne/cm | Thermal Conductivity• | Elec. Strgh.▲ V/mil | Diel. Constant* | Dissipation Factor at | | | Volume Resis.■ Ohm/cm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | $10^2$ Cy. | $10^3$ Cy. | $10^5$ Cy. | |
| 10 | 325 | −85 | 0.940 | 0.57 | 0.00108 | 1.399 | 20.1 | 0.00032 | 350 | 2 63 | 0.00004 | 0.00003 | 0.00002 | $1 \times 10^{14}$ |
| 20 | 450 | −76 | 0.955 | 0.59 | 0.00107 | 1.400 | 20.6 | 0.00034 | 350 | 2.68 | 0.00004 | 0.00002 | 0.00001 | $1 \times 10^{14}$ |
| 50 | 535 | −67 | 0.960 | 0.59 | 0.00104 | 1.402 | 20.8 | 0.00036 | 350 | 2.71 | 0.00006 | 0.00001 | 0.00001 | $1 \times 10^{14}$ |
| 100 | 575 | −67 | 0.968 | 0.60 | 0.00096 | 1.4030 | 20.9 | 0.00037 | 350 | 2.73 | 0.00005 | 0.00001 | 0.00001 | $2 \times 10^{14}$ |
| 200 | 600 | −63 | 0.971 | 0.62 | 0.00096 | 1.4031 | 21.0 | 0.00037 | 350 | 2.73 | 0.00005 | 0.00001 | 0.00001 | $4 \times 10^{14}$ |
| 350 | 600 | −58 | 0.972 | 0.62 | 0.00096 | 1.4032 | 21.1 | 0.00038 | 350 | 2.73 | 0 00005 | 0.00001 | 0.00001 | $6 \times 10^{14}$ |
| 500 | 600 | −58 | 0.972 | 0.62 | 0.00096 | 1.4033 | 21.1 | 0.00038 | 350 | 2.74 | 0.00005 | 0.00001 | 0.00001 | $1 \times 10^{15}$ |
| 1000 | 600 | −58 | 0.972 | 0.62 | 0.00096 | 1.4035 | 21.2 | 0.00038 | 350 | 2.74 | 0.00005 | 0.00001 | 0.00001 | $2 \times 10^{15}$ |

*At $10^2$, $10^3$ and $10^6$ cycles (ASTM-D924). †Open cup ASTM-D92. ‡ASTM-D97-39, Sect. 5-7. §Viscosity at 210° F divided by Viscosity at 100° F. #cc/cc/° C. •gm-cal/sec/cm²/° C differential/1 cm thickness. ▲ASTM-D877. ■ASTM-D1169.

GC
ELECTRONICS

# Chemicals and Paints



Most chemicals come in 2-oz. wide mouth bottles for easy use. The plastic cap has a brush attached. Write for prices and information on larger containers, also available.

## CEMENTS

**G-C Epox Cement**—Super-strong adhesive cures at room temperature. Bonds metal, ceramic, glass, plastic, etc. with 3000 lbs./sq. in. strength. Resistant to virtually any environment. Good dielectric property. Mix from kit of 2 tubes in equal amounts; 3 oz.
**No. 346**—Net Each Kit.......... **$1.95**

**G-C Epoxy Glue**—Super grip, fast set glue is specified by NASA for use in space program. Resists acids, alkali, grease, gas, water, etc. Mix from two tubes in equal parts, hardens in 5 min. under 150° F heat lamp. Kit of 2 tubes, approx. 4-oz.
**No. 347**—Net Each Kit.......... **$2.50**

**G-C Radio Service Cement**—The best cement for repairing radios and torn speaker cones or replacing torn cones. Vibrationproof, waterproof and fast drying. Non-shrinking. Use also on plastic, metal, wood, etc.
**No. 30-4**—4-oz. Net Each.......... **84c**
**No. 34-2-S**—Tube. Net Each....... **59c**

**G-C Bakelite® Cement**—The only cement for use on phenolics. Use on knobs, cabinets, panels.
**No. 32-2**—2-oz. Net Each.......... **99c**

**G-C Plastic Cement**—For broken plastic cabinets, knobs, dials, and crystal assemblies, grille cloth, etc.
**No. 32-2A**—2-oz. Net Each........ **59c**

**G-C Rubber-to-Metal Cement** — For cementing dial drives, rubber mountings, gaskets, hose, weather stripping, etc.
**No. 35-2**—2-oz. Net Each .......... **60c**

**G-C Pliobond**—A cold-setting, rubber-like, thermoplastic liquid that dries rapidly to a waterproof, chemically-resistant bond with permanent flexibility and very high strength. Glues all materials.
**No. 43-2**—2 oz. Net Each.......... **60c**

**G-C Acrylic Cement**—For Lucite®, plexiglass, and acrylic materials. Strong, fast drying.
**No. 40-2**—2-oz. Net Each.......... **60c**

**G-C Ne-O-Prene Cement**—For cementing neoprene rubber to neoprene or other products, such as metal, wood, paper, etc. Fast drying.
**No. 52-2**—2 oz. Net Each.......... **98c**

**G-C "Vinylite" Cement**—Thermoplastic cement. Clear plastic cement for use in metals, plastics, paper, leather, etc. Sets on cooling.
**No. 58-2**—2-oz. Net Each............ **59c**

## LUBRICANTS

**G-C Lube-Rex**—Reduces noise by preventing corrosion and prolongs life. Excellent for lubricating bearings, gears etc.
**No. 1206-S**—2-oz. tube. Net Each... **59c**

**G-C Pressurized Lubricating Oil**—Ideal for hard to reach trouble spots. Will shoot oil up to six feet. Lubricates moving machinery, gears etc.
**No. 10-916**—6-oz. aerosol. Net Each. **95c**

**G-C Reach-All Pen Oiler**—Fine electronic oil for radio and TV servicing. Oil meets MIL-L-6085A specs. Tube extends and retracts; dispenses a drop or fraction. Best suited for gears, guns, fishing reels etc.
**No. 984**—Pen oiler. Net Each....... **99c**

**G-C Contact Burnishing Tool Kit**—For servicing of relays, switches. Contains one 2-oz bottle No. 210-2 contact cleaner and burnishing tool.
**No. 9339**—Net Each................ **97c**

**G-C Sili-Spray**—High quality silicone lubricant. Applies light lubricant film that lasts and lasts, won't leave residue build-up. Can be used in home, office, workshop.
**No. 10-600**—6-oz. aerosol. Net.... **$1.25**
**No. 10-601**—6-oz. aerosol in hang-up package. Net Each.................. **$1.39**

**G-C Moisture Remover**—Special ingredients remove moisture, deposit a thin lubricating film preventing further oxidation.
**No. 10-700**—16-oz. aerosol. Net... **$1.95**

## CLEANERS

**G-C Chloro-Kleen**—Non-toxic powerful solvent quickly dissolves grease, dirt, oils, tar and waxes. Contains Chlorothene.
**No. 213-G**—1-gallon. Net per gal.. **$8.25**

**G-C Audio-Video Magnetic Tape Head Cleaner**—Removes dirt and oxide build-up, won't harm tape or paint finish. May be used on running tape. Comes with 6" spray extension.
**No. 10-620**—16-oz. spray can. Net. **$2.35**

**G-C Electronic Dry Cleaner**—A "dry" cleaner for use on contacts, relays and other electronic devices where residual, oily deposits are undesirable. Also an excellent degreaser and a general solvent for inks and gummy deposits on electrical or mechanical devices, such as typewriters, presses, etc. Non-flammable; does not contain carbon tet.
**No. 8669**—16-oz. Net Each...... **$2.10**

**G-C Super Freeze Mist**—Enables serviceman to pinpoint bad capacitors, transistors, and oxidized joints by cooling components. Leaves no liquid residue; non-toxic, noninflammable. Cools three times faster than other coolers.
**No. 8668**—6-oz. Net Each....... **$1.44**
**No. 10-702**—15-oz. aerosol. Net... **2.50**

**G-C Relay-Kleen Contact Cleaner**—"Dry" cleaner for relays and contacts. Leaves no oily residual deposit. Also a degreaser and solvent. Noninflammable; contains no carbon tet. In spray can with extension tube for hard-to-reach places.
**No. 8682-16**—16-oz. Net Each.... **$3.49**

**G-C Super Contact Cleaner**—Heavy duty cleaner formulated to provide protection on all electrical and electronic contacts in switches, tuners, and relays. Preserving and lubricating residue lasts longer than that of any other cleaner.
**No. 8680**—6-oz. Net Each....... **$1.79**

**G-C "Red" Electronic Contact Cleaner**—All-purpose lubricant cleaner for contacts. Dissolves dirt, removes corrosion and leaves a protective film.
**No. 210-2**—2-oz. Net Each......... **60c**

**G-C Carbon Control Cleaner**—Cleans and eliminates noise in carbon volume controls without taking apart. Special applicator. Just squirt cleaner along shaft.
**No. 212-2**—2-oz. Net Each......... **59c**

## DOPES, INSULATING LIQUIDS

**G-C Liquid Tape**—For hard-to-get-at places for high voltage insulation. Use also for anti-rust coating, weatherproofing, etc.
**No. 176-2**—2-oz. bottle. Net Each **$1.05**
**No. 176-16**—16-oz. bottle. Net Ea. **6.40**

**G-C Liquidope**—Clear fast drying. Gives excellent support to coil forms. Non-inductive, all wave coil dope. Use G-C No. 28 for thinner.
**No. 36-2**—2-oz. Net Each.......... **60c**

**G-C Q-Dope**—Liquid polystyrene low-loss coil dope for RF, UHF, and VHF components. Will not change circuit values. Also a polystyrene cement.
**No. 37-2**—2-oz. Net Each.......... **55c**

**G-C TV Tube Koat**—Fast-drying conductive coating for recoating the outside of TV picture tubes that are scratched or peeling. Also used to coat the inside of TV cabinets for prevention of high voltage leaks and static discharge. Ideal for coating at points where ground clips contact tube.
**No. 49-2**—2-oz. bottle. Net Each.. **$0.72**
**No. 49-12**—16-oz. spray can. Net. **1.95**

**G-C TV High Voltage Corona Dope**—For preventing corona shorts in high voltage circuits in TV sets. Easy to apply, air drying. Use on any high voltage circuit.
**No. 50-2**—2-oz. Net Each.......... **78c**

**G-C Red Glpt Insulating Varnish**—Most common coating for solder connections, anti-corona and high voltage points. Heat resistant to 300° F.
**No. 90-2**—2 oz. Net Each.......... **63c**

## CHEMICAL SPRAY BOMBS

In 6-oz. aerosol spray cans.

**G-C K-27 Print-Kote**—TV silicone resin for printed circuits.
**No. 14-6**—Clear. Net Each....... **$2.42**

**G-C De-Ox-Id®**—Electrical contact cleaner for silver, detent, and radar contacts.
**No. 19-6**—Net Each............. **$1.85**

**G-C Spra-Kleen**—Combination cleaner and lubricant for electrical contacts.
**No. 8666-16**—16-oz. aerosol. Net.. **$1.95**

## SOLVENTS AND THINNERS

**G-C Strip-X**—Strips enamel from magnet wire. Just dip wire into and wipe off insulation—cleaned, ready for soldering.
**No. 26-2**—2-oz. Net Each.......... **78c**

**G-C Cement Thinner**—Best thinner for G-C Service Cement.
**No. 28-2**—2-oz. Net Each.......... **59c**

**G-C Lacquer Thinner**—Thins all lacquer, lacquer enamels, telephone black and gray, etc.
**No. 29-2**—2-oz. Net Each.......... **59c**

**G-C Radio Service Solvent**—Best thinner for all cements—dissolves cement off old cones and speakers.
**No. 31-2**—2-oz. Net Each........ **$0.59**
**No. 31-8**—8-oz. Net Each........ **1.10**

**G-C Q-Dope Thinner**—Solvent for Q-Dope and polystyrene materials. Clear water white solvent.
**No. 41-2**—2-oz. Net Each.......... **59c**

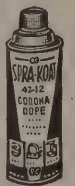
## TUNER CLEANERS

**G-C Tuner Bath**—Cleanses and degreases tuners. Does not harm plastics and will not detune.
**No. 10-901**—16-oz. spray can. Net. **$2.29**

**G-C Magic Vista Golden Foam Tuner Cleaner**—Puts life in color and black and white TV tuners. Cleans ,polishes and lubricates tuner contacts. Safe for plastics.
**No. 10-800**—8-oz. spray can. Net.. **$2.29**

## SPRA-KOAT CHEMICALS

All Spra-Koat products are supplied in 16-oz. aerosol spray cans.



**G-C Zero-Mist**—Instantly locates defective circuit components of an intermittent nature due to temperature change. Checks components in operation without removal.
**No. 8667**—Net Each... **$2.19**

**G-C Corona Dope Spra-Koat**—Air-drying corona dope for TV hi-voltage work.
**No. 47-12**—Net Each.. **$2.65**

**G-C Koloid Clear Acrylic**—Acrylic ester resin compound for high frequency work.
**No. 8665**—Net Each............. **$1.50**

**G-C Koloid K-29 Hi-Voltage Resin**—Air-drying clear resin spray for insulating high voltage points or parts.
**No. 9123**—Net Each............. **$1.83**

## HEAT SINK COMPOUNDS

**G-C DC-Z9 Silicone Heat Sink Compound**—Lowers overall temp. level of electronic devices, seals between transistors, diodes etc. and compound will not dry out or harden. Oxides suspended in silicone dissipate "hot spots."
**No. 8109-S**—1-oz. tube. Net Each. **$2.63**

**G-C Transistor Z5 Silicone Compound**—Maintains efficient transfer of heat from transistor to chassis such as in auto radios. Applied to original installation and whenever transistors are replaced.
**No. 8101-S**—1-oz. tube. Net Each. **$2.39**

®Trademark: Bakelite of Bakelite Corp.; Lucite of DuPont; De-Ox-Id of De-Ox-Id Labs, Chlorothene NU of Dow Chemical Co.

# Ersin Multicore Solder

Iulticore 5-core solders are fast-melting. Manufactured to save me on tough joints and difficult metals. Ersin flux is non-toxic, xtra-active and non-corrosive.

### SAVBIT® MULTICORE—1 POUND CARTONS

pecial copper-loaded alloy reduces tip wear y 90%. Five core construction; tins rapidly.

| auge | Net per Pound 1-27 Lbs. | 28-83 Lbs. | 84-111 Lbs. | 112 Lbs. Up |
|---|---|---|---|---|
| 14* | $3.58 | $3.00 | $2.61 | $2.51 |
| 16* | 3.61 | 3.04 | 2.62 | 2.53 |
| 18* | 3.74 | 3.15 | 2.73 | 2.62 |
| 20 | 4.07 | 3.42 | 2.97 | 2.84 |
| 22 | 4.37 | 3.66 | 3.18 | 3.06 |
| 24 | 6.16 | 5.20 | 4.51 | 4.32 |

For 7-lb. reels, deduct 4c per pound from prices shown.

### PAKS

Iandy dispenser pak contains rosin-core solder in 60/40 alloy s required for printed circuit boards, diode and transistor work. lame-proof aluminum dispenser containers for PC and EZ Paks vill not burn; prevents accidents when working in close proximity o transistor boards, etc. Conforms to Federal Specification QQ-S-571.

| | |
|---|---|
| **C Pak (21 ft., 22 gauge)**—Net Each | $0.59 |
| **Z Dispenser Pak (14 ft., 18-gauge)**—Net Each | .59 |
| **erviceman's Pak (40 ft., 19-gauge)**—Net Each | 1.00 |

### FIVE CORE EXTRA FINE GAUGES (HALF POUND REELS)

Tin-lead alloys conform to latest Federal Specification QQ-S-571.

| Alloy | Gauge | ½-lb. Net | Alloy | Gauge | ½-lb. Net |
|---|---|---|---|---|---|
| 60/40 (Sn60) | 24 (.022″) | $2.96 | 63/37 (Sn63) **Eutectic** | 22 (.028″) | $2.26 |
| | 28 (.014″) | 3.90 | | 24 (.022″) | 3.09 |
| | 32 (.0108″) | 5.09 | | 28 (.014″) | 3.96 |
| | 34 (.009″) | 6.18 | | 32 (.0108″) | 5.14 |
| 62/36/2 (Sn62) | 28 (.014″) | 4.96 | | 34 (.009″) | 6.54 |

### EXTRUSOL® HIGH PURITY AND LOW ANTIMONY
### SOLID BAR SOLDER

High Purity conforms to Federal Spec. QQ-S-571d. Low Antimony s a commercial bar solder. Comes in packages of two 1-lb. bars.

| Alloy, Tin/ Lead | High Purity Net Each Package, Lots of 1-6 | 8-26 | 28-54 | 56 Up | Low Antimony Net Each Package, Lots of 1-6 | 6-28 | 28-54 | 56 Up |
|---|---|---|---|---|---|---|---|---|
| 50/50 | $5.42 | $4.56 | $3.96 | $3.80 | $4.42 | $3.72 | $3.22 | $3.10 |
| 60/40 | 6.38 | 5.36 | 4.66 | 4.46 | 5.38 | 4.52 | 3.92 | 3.76 |
| 63/37 | 6.50 | 5.46 | 4.74 | 4.56 | 5.50 | 4.62 | 4.02 | 3.86 |

### STANDARD MULTICORE—1 POUND CARTONS

Tin-lead alloys conform to latest Federal Specification QQ-S-571.

| Alloy | Gauge | Net per Pound 1-27 Lbs. | 28-83 Lbs. | 84-111 Lbs. | 112 Lbs. Up |
|---|---|---|---|---|---|
| 40/60 (Sn40) | 14 (.080″)* | $2.92 | $2.45 | $2.14 | $2.05 |
| | 16 (.064″)* | 2.99 | 2.51 | 2.17 | 2.08 |
| | 18 (.048″)* | 3.02 | 2.54 | 2.21 | 2.12 |
| 50/50 (Sn50) | 14* | 3.29 | 2.76 | 2.40 | 2.30 |
| | 16* | 3.37 | 2.83 | 2.46 | 2.36 |
| | 18* | 3.70 | 2.87 | 2.49 | 2.39 |
| 60/40 (Sn60) | 14* | 3.72 | 3.11 | 2.71 | 2.60 |
| | 16* | 3.74 | 3.15 | 2.73 | 2.62 |
| | 18* | 3.81 | 3.20 | 2.78 | 2.68 |
| | 19 (.040″) | 4.04 | 3.39 | 2.95 | 2.83 |
| | 20 (.036″) | 4.11 | 3.46 | 3.00 | 2.88 |
| | 21 (.032″) | 4.24 | 3.57 | 3.09 | 2.98 |
| | 22 (.028″) | 4.42 | 3.72 | 3.23 | 3.09 |
| | 24 (.022″) | 6.32 | 5.32 | 4.61 | 4.42 |

### SPECIAL MULTICORE—1 POUND SPOOLS

Tin-lead alloys conform to latest Federal Specification QQ-S-571.

| | | | | | |
|---|---|---|---|---|---|
| **L.M.P.†** (Sn62) | 16 | $5.67 | $4.77 | $4.14 | $3.98 |
| | 18 | 6.56 | 5.51 | 4.78 | 4.59 |
| | 20 | 7.41 | 6.23 | 5.41 | 5.07 |
| | 21 | 7.66 | 6.43 | 5.59 | 5.36 |
| | 22 | 8.12 | 6.82 | 5.92 | 5.68 |
| 63/37 (Sn63) **Eutetic** | 16 | 3.96 | 3.33 | 2.89 | 2.77 |
| | 18 | 4.03 | 3.38 | 2.95 | 2.82 |
| | 20 | 4.19 | 3.52 | 3.05 | 2.93 |
| | 21 | 4.28 | 3.59 | 3.12 | 2.99 |
| | 22 | 4.36 | 3.66 | 3.17 | 3.06 |
| | 24 | 6.48 | 5.44 | 4.73 | 4.53 |
| **H.M.P.‡** | 16 | 4.78 | 4.01 | 3.49 | 3.34 |
| | 18 | 4.85 | 4.07 | 3.54 | 3.38 |
| | 22 | 5.47 | 4.59 | 3.99 | 3.83 |

†Low Melting Point. ‡High Melting Point; not to Federal Specifications.

*For 7-lb. reels, deduct 4c per pound from prices shown.

### LIQUID FLUXES AND PC70 THINNER

Flux formula A (0360) conforms to MIL-F-14256C-W, non-activated; formula B (4370) activated; no MIL specification; formula C (5380) conforms to MIL-F-14256C-A, activated. PC70 thinner is for use with Ersin liquid fluxes. Additional fluxes, preservatives, and solvents available on request: PC2 tarnish remover; PC10 activated surface preservative; PC21 activated rosin flux; PC25 rosin foam flux; PC41 anti-oxidant solder cover; PC52 protective coating; PC80 cleaning solvent for removing residue from PC boards; PC90 peel-off solder resist; PC91 thinner for PC90; PC101 water soluble, water based; PC112 water soluble, solvent based.

#### IN PINTS, QUARTS OR GALLONS

| Net Ea., Pts. | Flux | PC70 Thinner | Net Ea., Qts. | Flux | PC70 Thinner | Net Ea., Gals. | Flux | PC70 Thinner |
|---|---|---|---|---|---|---|---|---|
| 1 | $2.50 | $2.25 | 1 | $3.40 | $3.06 | 1 | $7.95 | $7.15 |
| 2-4 | 2.10 | 1.89 | 2 | 2.85 | 2.57 | 2 | 5.80 | 5.22 |
| 5-16 | 1.83 | 1.64 | 3-8 | 2.48 | 2.23 | 3 Up | 5.56 | 5.00 |
| 17 Up | 1.75 | 1.58 | 9 Up | 2.38 | 2.14 | | | |

#### IN AEROSOL CANS

| Ersin No. PC10, PC21 or PC52 Net per Aerosol Can, Lots of 1-12 | 13-24 | 25 Up | Ersin No. PC41 Anti-Oxidant Net per Lb., Lots of 7-14 lbs. | 15-28 lbs. | 29 lbs. Up |
|---|---|---|---|---|---|
| $3.85 | $3.23 | $2.81 | $5.40 | $4.54 | $3.94 |

**cramer** CAN SUPPLY ALL YOUR REQUIREMENTS
FOR INDUSTRIAL ELECTRONIC PARTS AND EQUIPMENT.

WE OFFER COMPLETE BROAD LINE, IN-DEPTH INVENTORIES FOR
INDUSTRIAL QUANTITY CONVENIENCE, PLUS FAST DELIVERY.
AS NEW PRODUCTS ARE DEVELOPED, WE WILL HAVE THEM AVAILABLE.

CALL OR WRITE FOR FULL INFORMATION ON NEW OR UNLISTED ITEMS.

FOR LARGER QUANTITY ORDERS **cramer** OFFERS
MANUFACTURER-COMPETITIVE PRICING IN MOST INSTANCES.
CALL FOR QUOTATIONS ON YOUR REQUIREMENTS.

# Enamels, Chemicals, Soldering Tools

## KRYLON SPRAY-ON ENAMELS AND CHEMICALS

KRYLON
CRYSTAL CLEAR
SPRAY COATING

**No. 1302 Crystal-Clear Spray**—Prevents pitting and rusting of antenna; reduces corona and arcing; salt-spray resistant. Dielectric strength, 450–800 V/mil, short time, ⅛" thickness; dielectric constant, 3.2 to 3.7 (1,000 Hz); electrical resistance, $10^{10}$ ohms/$cm^3$. In pint size spray can.
Net Each, 1–11 .......................... $ 1.30
Net per Dozen .......................... 14.04

### SPRAY ENAMELS

Weatherproof and waterproof. Excellent adhesion. Guaranteed non-clogging valve. Available in the following colors:

| Krylon No. | Color | Krylon No. | Color |
|---|---|---|---|
| 1401 | Bright Silver | 1811 | Harvest Gold |
| 1403* | Dull Aluminum | 1901* | Regal Blue |
| 1501 | Glossy White | 1902* | Baby Blue |
| 1502 | Flat White | 1903* | Metallic Blue |
| 1503* | Antique White | 2001* | Hunter Green |
| 1601 | Glossy Black | 2002* | Pastel Aqua |
| 1602 | Flat Black | 2101 | Cherry Red |
| 1603* | Charcoal Gray | 2109* | Pastel Pink |
| 1604* | Shadow Gray | 2201 | Bright Copper |
| 1605* | Dove Gray | 2202* | Brass |
| 1701 | Bright Gold | 2301* | O.D. Khaki |
| 1801* | Chrome Yellow | 2401* | Sunset Orange |
| 1802* | Pastel Yellow | 2501* | Leather Brown |
| 1809* | School Bus Yellow | 2504* | Biege |

*Available only in pint size spray can.

**Pint Size Spray Can**—Net Each, 1–11 .......................... $ 1.19
Net per Dozen .......................... 12.89
**8 Oz. Spray Can**—Add **A** to Krylon number.
Net Each, 1–11 .......................... .65
Net per Dozen .......................... 7.06

### GLOWING FLUORESCENT SPRAY PAINT

For use on paper, wood, cloth, glass, metal, styrofoam and some plastics. Dry in minutes. Glows in daylight. Made to MIL-P-21600 (AER) specifications.

| Krylon No. | Color | Krylon No. | Color |
|---|---|---|---|
| 3101 | Red Orange | 3105 | Cerise |
| 3102 | Yellow Orange | 3106 | Green |
| 3103* | Sunset Gold | 3107* | Blue |
| 3104* | Lemon Yellow | | |

*Available only in pint size spray can.

**Pint Size Spray Can**—Net Each, 1–11 .......................... $ 1.86
Net per Dozen .......................... 20.09
**8 Oz. Spray Can**—Add **A** to Krylon number.
Net Each, 1–11 .......................... .93
Net per Dozen .......................... 10.01

### HIGH-HEAT ALUMINUM SPRAY PAINT

Thick paint formulation for high heat conditions. Withstands temperatures up to 600° F for long periods, up to 1,200° F for intermittent periods. Use for touching up steam pipes, boilers, furnaces, ovens, radiators, motors or other surfaces painted with industrial aluminum. Fast drying.
**Krylon No. 1402 Pint Size Spray Can**—Net Each, 1–11 . $ 1.66
Net per Dozen .......................... 17.93

### RED INSULATING VARNISH

Penetrates through multiple layers of taped coils, increasing dielectric strength and leaving a tough, flexible film that resists oil, water, acid and alkalis. Dielectric Strength: Dry, 1,000 volts/mil; wet, 700 volts/mil. Film offers high adhesion characteristics, exceptional arc resistance and nontracking properties. Use on stator windings, armatures, coils, commutator rings, bus-bars, etc.
**Krylon No. 7004 Pint Size Spray Can**—Net Each, 1–11 . $ 1.30
Net per Dozen .......................... 14.04

### HIDE-a-MARK® SPRAY COAT

Covers old stencils, crayon markings, etc. Makes drums, crates, cartons reusable. Dries rapidly, allows new stencilling almost immediately. Ready to use, no brush, no muss, no fuss.
**Krylon No. 3007 16 Oz. Spray Can**—Net Each, 1–11 . . . $ 1.13
Net per Dozen .......................... 12.17

### RUST MAGIC® METAL PRIMER

Penetrates rust layers in minutes to form a tough bonded union that stops rust and prevents further corrosive action. Dries to the touch in 20 minutes; recoatable in two hours. May be top-coated with most finishes: Krylon spray paint, enamel, vinyl, epoxy, acrylic, etc.
**Krylon No. 1317 Pint Size Spray Can**—Net Each, 1–11 . $ 1.19
Net per Dozen .......................... 12.89

### ZINC CHROMATE METAL PRIMERS

Always ready spray dispensers of rust inhibiting zinc chromate primer. Indispensable wherever metal priming is necessary. Dries fast. In pint size spray can.
**Krylon No. 1319** (Yellow) or **1320** (Green)—Net, 1–11 . $ 1.30
Net per Dozen .......................... 14.04

### TUNER CLEANER

Removes dirt and gummy deposits from electrical contacts. Provides a non-drying film which lubricates contact surfaces. Prevents oxidation, corrosion and will not harm plastics known to Krylon laboratory.
**Krylon No. 1333 16 Oz. Spray Can**—Net Each, 1–11 . . . $ 1.99
Net per Dozen .......................... 21.46
**Krylon No. 1333A 8 Oz. Spray Can**—Net Each, 1–11 . . 1.32
Net per Dozen .......................... 14.26

### ELECTRIC MOTOR CLEANER

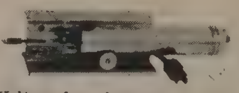
Instantly penetrates, dissolves and cleans grease, oil and dirt from motors, generators, fans, etc. Evaporates completely; no residue. Harmless to insulation or painted surfaces. Contains no carbon tet.
**Krylon No. 1327 Pint Size Spray Can**—Net Each, 1–11 . $ 1.13
Net per Dozen .......................... 12.17

### LET-GO® PENETRANT/SOLVENT

Super-penetrant and rust solvent, lubricates as it penetrates. Loosens frozen nuts, bolts, tight-fitting fasteners.
**Krylon No. 1332 Pint Size Spray Can**—Net Each, 1–11 . $ 1.13
Net per Dozen .......................... 12.17

## G.E. SOLDERING IRONS

### CORDLESS SOLDERING IRON/HOT KNIFE

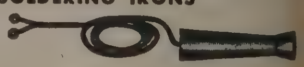


Cordless, rechargeable iron doubles as a hot knife with optional tip. Ideal for use near machinery with rotating parts or in otherwise inaccessible areas. Voltage from batteries to knife 3.6 volts for operator safety; tip attains temperature of 800° F in 15 seconds. Convenient charging stand operates from 120 VAC; three-wire 6′ power cord. Indicating light is illuminated when unit is charging.

**G.E. No. 6A298G2 Handle, Battery Holder and Soldering Iron Tip**—Net Each .......................... $21.00
**G.E. No. 6A297G50 Soldering Tip**—Net Each .......... 7.50
**G.E. No. 6A297 Cutting Tip**—Net Each .......... 7.50
**G.E. No. 6A299 Charging Stand**—Net Each .......... 34.00
**G.E. No. 6A672 Battery Stack**—Net Each .......... 43.00

### MIDGET SOLDERING IRONS

Midget types rated 6 volts, 18 to 45 watts, nominal. Cord, 6 ft. lg. Tips are ironclad.



**G.E. No. 6A203 Handle and Cord**—For single- and four-tap transformers. Net Each .......................... $4.50
**G.E. No. 6A203G2 Handle and Cord**—For transformer with three-heat switch only. Net Each .......................... $5.10
**G.E. No. 6A221 Heater Assembly**—For threaded tips. Rated 25 watts. Net Each .......................... $5.00
**G.E. No. 6D4P16 Threaded Ironclad Tip**—⅝" pyramid . . . . 1.75
**G.E. No. 6D4P20 Threaded Ironclad Tip**—⅝" cone . . . . . . . 1.75
**G.E. No. 6D4P4 Threaded Ironclad Tip**—⅝" spade . . . . . . . 1.75

#### TIP & HEATER UNITS

| G.E. No. | Dia. | Tip Type | Net Each |
|---|---|---|---|
| 6A211 | ¼" | Chisel | $5.00 |
| 6A213 | ⅛" | Cone | 5.00 |
| 6A215 | 3/16" | Pyramid | 5.00 |
| 6A217 | 3/16" | Chisel | 5.00 |
| 6A211-G31* | ⅜" | Chisel | 5.65 |

*45 watts, all others 25 watts.

#### TRANSFORMERS

With 6 ft., 2-conductor cord.

| G.E. No. | Tap | Pri. Volts | Net Each |
|---|---|---|---|
| 6A362G2 | Single | 115 | $8.50 |
| 6A364G2 | Four | 115 | 11.30 |
| 6A434 | † | 115 | 24.30 |

†With three-heat switch, 18–45 watts. Use only with G.E. No. 6A203G2 handle and cord.

### MIGHTY MIDGET SOLDERING IRONS

Lightweight iron for heavy jobs; rated 12 volts, 55 to 100 watts. Tips are ironclad.

**G.E. No. 6A210G61 Handle and Cord**—Two-conductor cord. Net Each .......................... $9.75
**G.E. Tip and Heater Units—No. 6A211G54** (60 watts), **No. 6A211G50** (80 watts), **No. 6A211G33** (100 watts); ½" chisel tip. Net Each .......................... $5.55
**G.E. No. 6A364G7 Transformer**—Primary, 115 VAC; secondary, 12 VAC with taps for 55, 70, 85 and 100 watts; four-ft. cord. Net Each .......................... $19.70

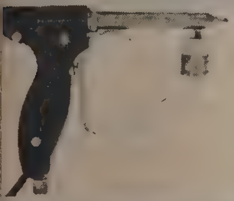
## G.E. SOLDERING IRONS (CONT'D)

### TEMPERATURE CONTROLLED IRON

Control unit maintains selected temperature for a wide range of jobs from high-mass joints to microminiature connections. Ideal for high production, high quality work, lab use, service shops and wherever temperature limits are specified. Rated up to 135 watts at 120 volts; tip and handle weigh only 2½ oz. ointer selection of desired temperature, 70° F to 1000° F.

**No. 6A488 Control Box Only**—Net Each.......$230·00
**No. 6A491 Handle and 5′ Cord Only**—Net Ea... 12·00
**No. 6A492G2 ⅛″ Chisel Tip and Heater**—Net.. 12·00
**No. 6A492G3 ³⁄₁₆″ Chisel Tip and Heater**—Net.. 12·00
**No. 6A490 Complete Iron**—Includes all units above.
Each...................................$250·00

### DESOLDERING TOOL



Allows safe and easy removal of electronic components from PC boards with minimum chance of damage to either board or component. Operates from 120 VAC using safe three-wire cord. Uses self-contained 15-oz. freon canister pressure supply; adapter available for air hose connection (150 psi max.). Tips available in two hole sizes to suit most applications. Unit offers both suction and blowing action.

**G.E. No. 6A685 Gas Canister**—Net Each...............$2·80
**G.E. No. 6A683P50 Tip**—Hole dia., .060″. Net Each..... 1·50
**G.E. No. 6A683P32 Tip**—Hole dia., .032″. Net Each..... 1·50
**G.E. No. 6A680 Complete Unit**—Basic tool plus all items above. Net Each.....................................$54·00
**G.E. No. 6A686P10 Air Hose Adapter**—Net Each...... 1·70

### LIGHTWEIGHT INDUSTRIAL IRONS

Complete with handle, 6′ cord, ironclad tip, heater assembly. Thread-on heater and tip. Operates on 60 W, 120 V. UL Listed.

| G.E. No. | Rating | | Tip | | Net Each |
|---|---|---|---|---|---|
| | Volts | Watts | Dia. | Type | |
| 6A273 | 120 | 60 | ¼″ | Chisel | $17·45 |
| 6A283 | 120 | 60 | ³⁄₁₆″ | Pyramid | 17·45 |
| 6A283G23 | 120 | 60 | ³⁄₁₆″ | Chisel | 17·45 |

| Tip | | Renewal Tip & Heater | | Ironclad Tip Only | |
|---|---|---|---|---|---|
| Dia. | Type | G.E. No. | Net Ea. | G.E. No. | Net Ea. |
| ¼″ | Chisel | 6A300 | $8·55 | 6D4P10 | $1·75 |
| ³⁄₁₆″ | Pyramid | 6A301 | 8·55 | 6D4P16 | 1·75 |
| ³⁄₁₆″ | Chisel | 6A301G4 | 8·55 | 6D4P12 | 1·75 |

**No. 6A273G62 Handle and Cord**—Six foot cord; two conductor. Net Each...............................................$8·95
**No. 6A273G63 Handle and Cord**—Six foot cord; three conductor with NEMA standard plug. Net Each...................$10.40
**G.E. No. 6A304 Heater Unit**—For use with thread-on tips; 40-watt; 2¾″ shank. Net Each.........................$7·45
**G.E. No. 6A301G7 Heater Unit**—Same, but 60-watt; 4″ shank. Net Each...............................................$8·20

### PENLINE-120 SOLDERING IRONS

Rated 120 volts, 25 to 45 watts. Lexan® handle, ironclad tips. Wt., 2 oz.

**G.E. No. 6D400 Handle and Cord**—Six foot cord; two conductor. Net Each...............................................$3·70
**G.E. No. 6D400G2 Handle and Cord**—Six foot cord; three conductor with NEMA standard plug. Net Each...........$4·95
**G.E. Heater Assembly**—**No. 6D415** (25 watt), **No. 6D414** (30 watt), **No. 6D413*** (40 watt). Accept threaded tips. Net Ea. $4·95

| Tip | | Tip & Heater Unit | | | Ironclad Tip Only | |
|---|---|---|---|---|---|---|
| Dia. | Type | G.E. No.* | Watts | Net Ea. | G.E. No. | Net Ea. |
| ³⁄₁₆″ | Chisel | 6D410 | 30 | $5.80 | 6D4P22 | $1.75 |
| ⁹⁄₃₂″ | Chisel | 6D411 | 30 | 5.90 | 6D4P8 | 1.75 |
| ⅜″ | Chisel | 6D412 | 45 | 6.00 | 6D4P12 | 1.75 |

*UL Listed.

## LUXO ADJUSTABLE LAMPS AND ACCESSORIES

### LIL-6 INCANDESCENT

Two arms with 24″ overall reach. Perfect size to fit into tight, dark corners everywhere; stands, clamps or hangs. With heavyweight 7″ contoured base with handy catch-all area and 40 watt bulb 40S11 (15 watt and 25 watt can be used). Shade, 5″ h. x 4″ dia. Specify red, charcoal or white.

### LTR-1 DESIGNERS CHOICE INCANDESCENT

Bell-shaped shade 6¾″ h. x 6¼″ dia.; 60 watt bulb recommended. Specify black, oyster white, dove gray or desert tan.

### L-1, L-2 AND L-3 CLASSIC INCANDESCENT

Classic shade 7⅛″ h. x 6¾″ dia. Specify oyster white, dove gray, desert tan or black, L-1; dove gray or black, L-2. Model L-3 has 2 movable and 1 fixed arms. Ideal for overhead lighting that swings down from wall or ceiling. Lights a full 10-ft. diameter. Specify dove gray, desert tan or oyster white.

### LS-1, LS-3 AND LS-101 FLAIR INCANDESCENT

Gently flared shade 7⅛″ h. x 8⅛″ dia. Fits any decor. LS-101 has Nylux-covered springs. LS-1 available in oyster white, dove gray, desert tan, black, red, yellow or blue. LS-101 available in same colors except the red, yellow and blue. LS-3 same as Model L-3.

### LB BULLET INCANDESCENT

Tough, tiny tapered Bullet shade 5⅞″ h. x 4½″ dia. with replaceable inner reflector. Ideal for machine tool use where grease and spatter build-up can cut light output. Dove gray only.

### LVT SERIES INCANDESCENT

Large ventilating area maintained throughout shade by scientifically spaced arrangement of electrical components. Well shielded to eliminate all possible glare. Inner reflector; unique ventilating chimney. Shade 5″ h. x 2½″ dia. Supplied with built-in step down transformers for 110 volt input, 12 volt output; 6 volt and 24 volt models available on special order. Can be supplied without transformer where low voltage power supply is available. GE 1383 bulb recommended. Specify oyster white, desert tan, black or dove gray.

### LC-1 AND LC-2 COMBO FLUORESCENT WITH INCANDESCENT

Ideal artificial light that gives every type of illumination for every situation. Shade 7¼″ h. x 9½″ dia. For hard, cool fluorescent, switch off the incandescent; for soft, warm incandescent, press off the fluorescent. No starter required, has button starter switch. Superior ballast for hum-free operation. Incandescent has porcelain socket and button switch. Circline T-9 22 W fluorescent and 60 W incandescent bulbs recommended. LC-2-FE model incorporates Combo lamp with perfectly balanced base. Specify oyster white, desert tan, dove gray or black, LC-1; dove gray, LC-2; dove gray, desert tan or black, LC-2-FE.

### FL-1 AND FL-2 FLUORESCENT

Head of lamp stays parallel to whatever surface it is on. Shade 18⅞″ lg. x 4⅝″ d. Inner reflector; ends finished with white opaque shields. Two-button starter switch; ballasts for hum-free operation. Two T-8 CW 15 watt bulbs recommended. FL-2-FE with heavy, free-standing base. Specify oyster white, desert tan, dove gray or black, FL-1; desert tan, dove gray, FL-2; desert tan, dove gray or black, FL-2-FE.

### LFM ILLUMINATED MAGNIFIERS

Shadow-free Circline fluorescent tube provides 360° of light around the object being magnified. Head never gets in the light; hands are free to work. Spring-balanced arm holds firmly in position; provides the perfect combination of illumination, magnification and binocular vision. Made of diecast aluminum. Starter not required; ballast for hum-free operation. T-9 Circline 22 watt bulb recommended. With 3 diopter 5″ dia. biconvex precision ground glass lens. Optional 5 diopter biconvex lens and 10 diopter plano-convex achromatic lens available. LFM-2-FE incorporates LFM-2 magnifier with free standing tip-proof base. Specify oyster white, desert tan or dove gray, LFM-1; desert tan or dove gray, LFM-2 and LFM-2-FE. Hand-held model also available.

### ARM VARIATIONS AND PRICES

Suffix **-1** and **-101** indicates two extension arms 18″ long for 45″ total reach; suffix **-2** indicates two arms 11″ long for 30″ total reach; **-3** indicates two 18″ mobile and one 11″ fixed arms for 60″ total reach. Specify color (see individual listing). **Bracket A, B or C supplied except as otherwise noted.** See accessories for other brackets available.

| ENAMEL | | POLISHED CHROME | |
|---|---|---|---|
| Luxo Model | Net Each | Luxo Model | Net Each |
| LIL-6* | $14·96 | | |
| LTR-1-A, B, C | 22·69 | LTRX-1-Ax, Bx, Cx | $47·25 |
| L-1-A, B, C | 18·98 | LX-1-Ax, Bx, Cx | 45·30 |
| L-2-A, B, C | 21·00 | | |
| L-3-A, B, C | 26·06 | LX-3-Ax, Bx, Cx | 50·44 |
| LS-1-A, B, C | 20·96 | LSX-1-Ax, Bx, Cx | 45·30 |
| LS-101-A, B, C | 22·46 | | |
| LS-3-A, B, C | 26·06 | LSX-3-Ax, Bx, Cx | 50·44 |
| LB-1-A, B, C | 19·20 | ENAMEL | |
| LB-2-A, B, C | 19·20 | FL-1-A, B, C | $29·96 |
| LVT-1-A, B, C | 31·65 | FL-2-A, B, C | 29·96 |
| LVT-2-A, B, C | 31·65 | FL-2-FE | 37·46 |
| LC-1-A, B, C | 28.13 | LFM-1-A, B, C | 39·34 |
| LC-2-A, B, C | 28.13 | LFM-2-A, B, C | 39·34 |
| LC-2-FE | 35·63 | LFM-2-FE | 46·84 |

*Includes bulb.

# KESTER Solder and Flux

44
KESTER SOLDER

## KESTER "44" RESIN CORE SOLDER

Revolutionary solder advancement uses a fast-acting, instant-wetting, non-corrosive, non-conductive flux for faster soldering and long-lasting, stronger bond. Available in any size ranging from .005" to .250". Also available for Fed. Spec. QQ-S-571d. Two standard put-ups: 1-lb. and 5-lb. spools; 20 lb. spools available on special order.

| Alloy Tin/Lead | Dia. In. (Ga) | Spool of | Net per Spool, Lots of 1-10 | 11-24 | 25 Up |
|---|---|---|---|---|---|
| 40/60 | .093 (13) | 1 lb. | $ 2.32 | $ 2.07 | $ 1.83 |
| | | 5 lbs. | 11.30 | 10.10 | 8.95 |
| | .062 (16) | 1 lb. | 2.41 | 2.16 | 1.91 |
| | | 5 lbs. | 11.80 | 10.55 | 9.30 |
| 50/50 | .093 (13) | 1 lb. | 2.76 | 2.47 | 2.18 |
| | | 5 lbs. | 13.50 | 12.05 | 10.65 |
| | .062 (16) | 1 lb. | 2.85 | 2.55 | 2.25 |
| | | 5 lbs. | 13.95 | 12.50 | 11.05 |
| 60/40 | .093 (13) | 1 lb. | 3.12 | 2.79 | 2.46 |
| | | 5 lbs. | 15.10 | 13.50 | 11.95 |
| | .062 (16) | 1 lb. | 3.21 | 2.87 | 2.54 |
| | | 5 lbs. | 15.60 | 13.95 | 12.30 |
| | .050 (18) | 1 lb. | 3.61 | 3.23 | 2.85 |
| | | 5 lbs. | 16.65 | 14.90 | 13.15 |
| | .040 (19) | 1 lb. | 3.82 | 3.42 | 3.02 |
| | | 5 lbs. | 17.20 | 15.40 | 13.60 |
| | .031 (21) | 1 lb. | 3.97 | 3.55 | 3.14 |
| | | 5 lbs. | 17.95 | 16.05 | 14.20 |
| | .025 (23) | 1 lb. | 4.96 | 4.44 | 3.92 |
| | | 5 lbs. | 22.40 | 20.05 | 17.70 |
| 63/37 | .093 (13) | 1 lb. | 3.25 | 2.91 | 2.57 |
| | | 5 lbs. | 15.75 | 14.10 | 12.45 |
| | .062 (16) | 1 lb. | 3.34 | 2.99 | 2.64 |
| | | 5 lbs. | 16.25 | 14.55 | 12.85 |
| | .050 (18) | 1 lb. | 3.74 | 3.35 | 2.96 |
| | | 5 lbs. | 17.30 | 15.45 | 13.65 |
| | .040 (19) | 1 lb. | 3.95 | 3.54 | 3.12 |
| | | 5 lbs. | 17.85 | 16.00 | 14.10 |
| | .031 (21) | 1 lb. | 4.10 | 3.67 | 3.24 |
| | | 5 lbs. | 18.60 | 16.65 | 14.70 |
| | .025 (23) | 1 lb. | 5.09 | 4.56 | 4.02 |
| | | 5 lbs. | 23.10 | 20.65 | 18.25 |

## KESTER SOLID WIRE SOLDER

KESTER SOLDER
SOLID WIRE

For use with external flux, this solder is equal in quality and purity to Kester "44" solder. Always uniform in diameter and alloy. Standard put-ups are 1-lb. and 5-lb. spools; 20-lb. spools and 50-lb. reels also available.

| Alloy Tin/Lead | Dia., In. (Ga) | Spool of | Net per Spool, Lots of 1-10 | 11-24 | 25 Up |
|---|---|---|---|---|---|
| 40/60 | .125 (11) | 1 lb. | $ 2.19 | $ 1.96 | $ 1.73 |
| | | 5 lbs. | 10.55 | 9.45 | 8.35 |
| | .062 (16) | 1 lb. | 2.38 | 2.13 | 1.88 |
| | | 5 lbs. | 11.55 | 10.35 | 9.10 |
| 50/50 | .125 (11) | 1 lb. | 2.53 | 2.26 | 2.00 |
| | | 5 lbs. | 12.25 | 10.95 | 9.70 |
| | .062 (16) | 1 lb. | 2.81 | 2.52 | 2.22 |
| | | 5 lbs. | 13.75 | 12.30 | 10.85 |
| 60/40 | .062 (16) | 1 lb. | 3.17 | 2.84 | 2.51 |
| | | 5 lbs. | 15.35 | 13.75 | 12.10 |
| | .031 (21) | 1 lb. | 3.90 | 3.49 | 3.08 |
| | | 5 lbs. | 17.55 | 15.70 | 13.85 |

KESTER TV-RADIO SOLDER

## KESTER TV-RADIO SOLDER

Improved, practical-wire-size (.062") solder is ideal for servicemen's kit. Compact, easy-to-carry package. Resin core is ideal for everything electrical or electronic.

**Kester TV-Radio Solder**—Carton of 10 boxes (total weight, 1 lb.).
Net Each . . . . . . . . . . . . . . . . . $2.60

## BAR SOLDER

KESTER SOLDER

Available in all the tin-lead alloys. Uniform distribution of tin/lead alloys provides for more efficient and easy application.

| Alloy Tin/Lead | Bar Weight | Net Each, Lots of 1-10 | 11-24 | 25 Up |
|---|---|---|---|---|
| 40/60 | 1 lb. | $2.00 | $1.79 | $1.58 |
| 50/50 | 1 lb. | 2.28 | 2.04 | 1.80 |
| 60/40 | 1 lb. | 2.70 | 2.41 | 2.13 |
| 63/37 | 1 lb. | 2.89 | 2.58 | 2.28 |

## KESTER ACID-CORE SOLDER

KESTER SOLDER

The "original" acid cord solder, meets all the requirements for chassis mending and general soldering work (non-electronic). Provides the maximum in efficiency.

**Kester "Metal Mender" Acid Core Solder**—40/60 solder in handy display carton of ten 2-oz. boxes.
Net Each Carton . . . . $2.60

**Kester Acid Core Solder**—1-lb.
Spool, Net . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . $1.63
5-lb. Spool, Net . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 7.95

KESTER SOLDERING PASTE

## KESTER SOLDERING PASTE

Provides uniform fluxing strength to assure the best results, time-after-time, job after job. Scientific manufacturing process achieves more even, finer distribution of fluxing ingredients throughout the paste. Convenient put-ups for every use.

**Kester Soldering Paste**—Display carton of ten 2-oz. cans.
Net per Carton . . . . . . . . . $1.93
Net per 1-lb. can . . . . . . . 1.00
Net per 5-lb. can . . . . . . . . 5.33

## KESTER SOLDERING FLUXES

KESTER SOLDERING FLUX

For use on all metals except aluminum. Remain stable even under extreme conditions. The latest development in practical flux, these efficient formulations meet all manufacturing techniques including specialized assembly, automation, modular techniques, etc. Choice of pint, quart or gallon put-ups; 5-gallon containers also available on request.

**Kester Formula No. 1544**—Highly activated resin flux, non-corrosive and electrically non-conductive. Probably the most active non-corrosive flux in cored solder.
Net per Pint . . . . . . . . . . . . . . . . . $ 2.50
Net per Quart . . . . . . . . . . . . . . . 4.20
Net per Gallon . . . . . . . . . . . . . . 10.90

**Kester Formula No. 1571**—Resin flux specifically meets various and exacting requirements of PC soldering. Net per Pint . . . . . . . . . . . . . $ 2.50
Net per Quart . . . . . . $4.20 Net per Gallon . . . . . . . 10.90

**Kester Formula No. 1587**—Resin-type foaming flux for PC soldering. Non-corrosive, electrically non-conductive and perfectly safe resin formula to military requirements. Net per Pint . . . $ 2.50
Net per Quart . . . . . . $4.20 Net per Gallon . . . . . . . 10.90

**Kester Formula No. 196 (MIL-F-14256C, Type A)**—Activated resin formula to military requirements. Net per Pint . . . . . $ 2.50
Net per Quart . . . . . . $4.20 Net per Gallon . . . . . . . 10.90

**Kester Formula No. 115 (MIL-F-14526, Type W)**—General, all-purpose rosin flux is non-corrosive, electrically non-conductive and conforms to military requirements. Net per Pint . . . . . . . $ 2.50
Net per Quart . . . . . . $4.20 Net per Gallon . . . . . . . 10.90

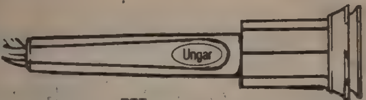
**Kester Formula No. 930 Remover**—Rosin residue remover dissolves and removes all types rosin or resin flux residues from soldered connections at room or normal temps. Net per Pint $ 2.50
Net per Quart . . . . . . $4.20 Net per Gallon . . . . . . . 10.90

**Kester Copper-Nu**—Pre-cleaner for cleaning surface prior to soldering. Net per Pint . . . . . . . . . . . . . . . . . . . . . . . . . . . . $ 2.50
Net per Quart . . . . . . $4.20 Net per Gallon . . . . . . . 10.90

**Kester Protecto**—A solution that maintains and preserves the solderability and extends the shelf life of metallic surfaces for subsequent soldering. Net per Pint . . . . . . . . . . . . . . . . . . . . $ 2.50
Net per Quart . . . . . . $4.20 Net per Gallon . . . . . . . 10.90

# Ungar® "Standard Line" Soldering Tools

ALL IRONS
ND HEATING
UNITS
ARE
UL LISTED



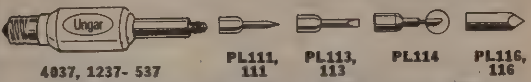
777

## MODEL 777 "CLEAN ROOM" HANDLE, KIT

Clean Room" grip for electronic use. Pastel color handle reduces perator eye fatigue. Full contact spring socket; stainless steel eat deflector; octagonal guard washer; plated socket terminals; eramic and glass insulator; thermo-stabilized phenolic body; olyvinyl insulated cord. Tips can't wobble.

**ngar Model 777 Handle**—For 120 VAC/DC. Net, 1–9 . . . **$2.02**
et Each, 10–49 . . . . . . . . . . . . **$1.66** 50 Up . . . . . . . . . . **1.51**
**ngar Model 776 Handle**—Same, but red with cork grip.
et Each, 1–9 . . . . **$2.02** 10–49 . . . . **$1.66** 50 Up . . . **$1.51**
**ngar Model 7070 All Purpose Kit**—44 W, 120 VAC with 776 andle, 1237 heating unit, and 111, 113, 116 tips.
et Each, 1–5 . . . . **$5.98** 6–11 . . . . **$4.92** 12 Up . . . . **$4.49**
**ngar Model 7075 Heavy-Duty Kit**—56½ W, 120 VAC with 777 andle, 4037 heating unit and 111, 113, 116 tips.
et Each, 1–9 . . . . **$7.09** 10–49 . . . . **$5.75** 50 Up . . . . **$5.29**
**ngar Model 7929 Kit**—27 W with 7901 handle and heating unit; 13 tip; 7951 wire stripper; 400 sponge and tray.
Net Each, 1–9 . . . . **$4.25** 10–49 . . . . **$3.49** 50 Up . . . . **$3.19**

ALL PARTS THREAD TOGETHER WITH FINGERTIP EASE



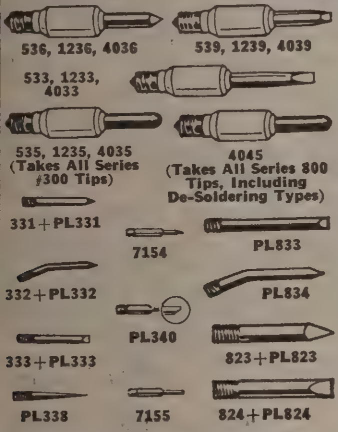
## THREAD-ON HEATING UNITS AND TIPS

Provides 100% increase in recovery rate; greater heat transfer. Stops tip seizure from oxidation or solder; passivated plating prevents barrel oxidation and surface flaking. Tips copper alloy, iron clad silver-plated or unplated.

| Ungar No. | Description | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-9 | 10-49 | 50 Up |
| **4037** | 800°–850° F, 47½-watt unit* | $3.67 | $3.01 | $2.75 |
| **1237** | 700°–750° F, 37½-watt unit* | 2.53 | 2.08 | 1.90 |
| **537** | 600°–650° F, 23½-watt unit* | 2.05 | 1.69 | 1.53 |
| **PL111** | Iron clad pencil, ¾" long | .93 | .77 | .70 |
| **PL113** | Iron clad chisel, ¾" long | .93 | .77 | .70 |
| **PL114** | Iron clad stepped micro-spade | .93 | .77 | .70 |
| **PL116** | Iron clad pyramid, 5/16" long | .93 | .77 | .70 |
| **111** | Unplated copper pencil | .48 | .40 | .36 |
| **113** | Unplated copper chisel | .48 | .40 | .36 |
| **116** | Unpltd copper pyramid 5/16" lg. | .48 | .40 | .36 |

*At 110 volts.

## INTERCHANGEABLE TIPS, ELEMENTS AND TIPLET THREAD-IN TIPS



**Note:** "Standard Line" components are interchangeable with each other; but, may NOT be used with "Imperial® Line" items.

*23½ W at 110 V AC/DC; 27 W at 120 V AC/DC. †37½ W at 110 V AC/DC; 44 W at 120 V AC/DC. ‡47½ W at 110 V AC/DC; 56½ W at 120 V AC/DC.

**Heating Units Temperature Range:** 850°–1000° F for **Super Hi-Heat** Series #4000 rated 47½–56½ W; 750°–800° F for **Hi-Heat** Series #1200 rated 37½–44 W; and 650°–750° F for **Standard** Series #500, rated 23½–27 W.

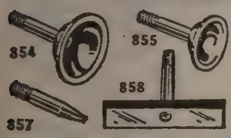
### INTEGRATED HEATING UNITS WITH TIPS

| Ungar No. | Description | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-9 | 10-49 | 50 Up |
| **533** | *23½–27 W copper, long taper chisel tip | $1.75 | $1.44 | $1.31 |
| **536** | *23½–27 W copper, pyramid tip | 1.75 | 1.44 | 1.31 |
| **539** | *23½–27 W copper, short taper chisel tip | 1.75 | 1.44 | 1.31 |
| **1233** | †37½–44 W copper, long taper chisel tip | 2.53 | 2.08 | 1.90 |
| **1236** | †37½–44 W silver-pltd., solid Armco iron pyramid tip | 2.53 | 2.08 | 1.90 |
| **1239** | †37½–44 W silver-pltd., solid Armco iron chisel tip | 2.53 | 2.08 | 1.90 |
| **4033** | ‡47½-56½ W iron clad, silver-plated, long chisel tip | 3.67 | 3.01 | 2.75 |
| **4036** | ‡47½–56½ W iron clad, silver-plated, pyramid tip | 3.67 | 3.01 | 2.75 |
| **4039** | ‡47½–56½ W iron clad, silver-plated, taper chisel tip | 3.67 | 3.01 | 2.75 |

### HEATING UNITS AND TIPLET THREAD-IN SOLDERING TIPS

| | | | | |
|---|---|---|---|---|
| **535** | *⅛" tap unit for 300 and 7100 Series Tiplets | $1.75 | $1.44 | $1.31 |
| **1235** | †⅛" tap unit for 300 and 7100 Series Tiplets | 2.53 | 2.08 | 1.90 |
| **4035** | ‡⅛" tap unit for 300 and 7100 Series Tiplets | 3.67 | 3.01 | 2.75 |
| **7062** | Precision point, iron clad, ⅛" dia. | 1.32 | 1.08 | .99 |
| **PL331** | Iron clad, silver-plated 1" pencil, ⅛" dia. | .72 | .59 | .54 |
| **331** | Plain copper version of PL331 Tiplets | .30 | .25 | .23 |
| **PL332** | Iron clad, silver-plated 1" offset pencil, ⅛" dia. | .72 | .59 | .54 |
| **332** | Plain copper version of PL332 Tiplets | .30 | .25 | .23 |
| **7154** | Iron clad, silver-plated stepped pencil | .72 | .59 | .54 |
| **PL333** | Iron clad, silver-plated 1" long chisel, ⅛" dia. | .72 | .59 | .54 |
| **333** | Plain copper version of PL333 Tiplets | .30 | .25 | .23 |
| **7155** | Iron clad, silver-plated stepped chisel | .72 | .59 | .54 |
| **PL338** | Iron clad, silver-plated 1¾" tapered needle, 1/16" dia. | .72 | .59 | .54 |
| **PL340** | Iron clad, silver-plated ¾" micro-needle, 3/64" dia. | .72 | .59 | .54 |
| **4045** | ‡47½–56½ W 3/16" tap unit for Series 800 Tiplets | 3.67 | 3.01 | 2.75 |
| **PL823** | Iron clad, silver-plated 1" pyramid, 3/16" dia. | .82 | .67 | .61 |
| **823** | Plain copper version of PL823 Tiplets | .35 | .29 | .26 |
| **PL824** | Iron clad, silver-plated 1" chisel, 3/16" dia. | .82 | .67 | .61 |
| **824** | Plain copper version of PL824 Tiplets | .35 | .29 | .26 |
| **PL833** | Iron clad, silver-plated 1¾" chisel, 3/16" dia. | 1.17 | .96 | .88 |
| **PL834** | Iron clad, silver-plated 1¾" offset chisel, 3/16" dia. | 1.17 | .96 | .88 |

## DE-SOLDERING TIPS & KIT



Removes components 70% faster than ordinary soldering iron tips. Melts solder on all terminals simultaneously. Avoids lug breakage, shorting and PC board rupturing. Use with 4045 heating unit.

| Ungar No. | Tip Type | Size, In. O.D. x L. | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-9 | 10-49 | 50 Up |
| 857 | Slotted | 1" x 3/16" | 98c | 81c | 74c |
| 856 | ⅝" Cup | ⅝" | 98c | 81c | 74c |
| 855 | ¾" Cup | ¾" | 98c | 81c | 74c |
| 854 | 1" Cup | 1" | 98c | 81c | 74c |
| 858 | Bar | 1½" x ⅜" | 98c | 81c | 74c |

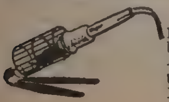
**Ungar No. 270 De-Soldering Kit**—With five most popular tips (Nos. 854, 855, 856, 857 and 858), No. 776 handle and No. 4045 heating unit in metal case. Net Each, 1–5 . . . . . . . . . . . . . . **$9.28**
Net Each, 6–11 . . . . . . . . . . . **$7.63** 12 Up . . . . . . . . . . . . . **6.96**

## UNGAR SOLDER-OFF BULB

Desoldering bulb with TFE tip facilitates accurate printed circuit soldering and cleaning. May be used with "Imperial" and "Standard Line" soldering irons. (Not illustrated.)

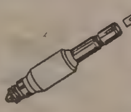
**Ungar No. 7805 Solder-Off Bulb**—Net Each, 1–9 . . . . . . . **$1.48**
Net Each, 10–49 . . . . . . . . . . . **$1.22** 50 Up . . . . . . . . . . . **1.10**

## SOLDERING IRON HOLDER

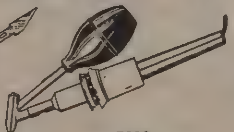


Protects operator from burns; prevents iron breakage. Use with Ungar 776 or 777 handle. Attaches easily to bench; angle adjustable.

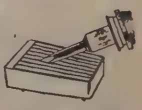
**Ungar No. 8000 Holder**—Net Ea., 1-9 . **$2.30**
Net Each, 10-49 . . **$1.86** 50 Up . . **1.73**



4025



7800



400, 455

## MODEL 4025 HOT KNIFE

Cuts and seals synthetic fabrics, vinyl film, styrofoam and other plastics. Easily cuts coatings on PC boards. Blade temp., 500° F. Replaceable, tempered steel blade.

**Ungar Model 4025 Hot Knife**—Net Each, 1–9 . . . . . . . . . . **$4.22**
Net Each, 10–49 . . . . . . . . . . . **$3.47** 50 Up . . . . . . . . . . . **3.16**
**Ungar Model 7930 Kit**—With 4025 knife and 777 handle.
Net Each, 1–9 . . . **$5.95** 10–49 . . . . **$5.10** 50 Up . . . . **$4.49**

## HOT-VAC DESOLDERING, CLEANING TOOL

For printed circuit desoldering and cleaning; also for heat shrinkable tubing. Tip uses coating to prevent solder clogging the orifice. For use with Model 777 handle.

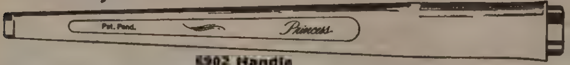
**Ungar Model 7800 Hot-Vac Tool**—Net Ea., 1–5 . . . . . . . **$13.95**
Net Each, 6–11 . . . . . . . . . **$11.47** 12 Up . . . . . . . . . . . **10.45**
**Ungar Model 7806** (.057") or **7813** (.069")—Replacement tips for above; hole dia. shown in parenthesis.
Net Ea., 1–9 . . . . . . **90c** 10–49 . . . . . . **74c** 50 Up . . . . . . . **69c**
**Ungar Model 7812** (.033")—Same as above. Net, 1–9 . . . . **$1.29**
Net Each, 10–49 . . . . . . . . . . . . **$1.04** 50 Up . . . . . . . . . . . . **.95**

## KLEEN-TIP SPONGE

Specially processed sponge provides the surest way to clean soldering tips. Removes oxidation, prevents contamination and insures soldering reliability. Phenolic tray. Fastens to bench.

**Ungar No. 400**—Net Each, 1–9 . . . . . . . . . . . . . . . . . . . . . . . **$1.32**
Net Each, 10–49 . . . . . . . . . . . . **$1.08** 50 Up . . . . . . . . . . **.99**
**Ungar No. 455 Refill Sponge**—Individually packaged.
Net Each, 1–9 . . . . . . **53c** 10–49 . . . . . . **44c** 50 Up . . . . . **40c**

# Ungar/Princess® SOLDERING TOOLS, ACCESSORIES



6902 Handle

Miniature soldering iron designed to meet requirements for precision micro-electronic circuitry and high density assembly. Offer thermo-efficiency and work capacity never before achieved in small feather-weight irons. Slim design, turquoise handle assures deft soldering. Choice of easy-to-assemble units thread together for versatility in tip shapes and temperature capabilities.

## PRINCESS HANDLES

Slim, cool design is molded of heat-resistant nylon pastel turquoise color. Midget thread-in socket accepts any Princess heat capsule. Choice of 2-conductor and 3-conductor (NEMA) vinyl-covered cords. For 120 VAC/DC operation. Weight: .05 oz., less cord; 3.0 oz., with cord.

| Ungar No. | Cord Type | Net Each, Lots of 1-9 | 10-49 | 50 Up |
|---|---|---|---|---|
| 6902 | 2-conductor with plug | $4.09 | $3.55 | $3.15 |
| 6903 | 3-conductor with NEMA plug | 5.45 | 4.75 | 4.19 |
| 6911 | Cool-grip fits all Princess handles | 1.05 | .86 | .79 |

## PRINCESS SOLDERING NIBS

Choice of 24 Kt. gold-plated iron clad or cadmium copper tips in four standard shapes. Finger-tip ⅛" thread-in use on any Princess heat capsule listed above. Ungar's ⅛" Standard Line tiplets may also be used (see listing on another page). Wt., .03 oz.

| Ungar No. | Shape | Lgth. In. | Tip Stepped to: | Net Each, Lots of 1-9 | 10-49 | 50 Up |
|---|---|---|---|---|---|---|
| 6950* | Pencil | .61 | .080" x .015" | $0.45 | $0.39 | $0.35 |
| 6951* | Screwdriver | .68 | .080" x .055" | .45 | .39 | .35 |
| 6952* | Spade, 45° | .61 | .080" dia. | .45 | .39 | .35 |
| 6953* | Precis. point | .61 | .095" x .005" | .83 | .72 | .64 |
| 6960 | Pencil | .62 | .090" x .015" | .78 | .68 | .60 |
| 6961 | Screwdriver | .62 | .090" x .060" | .78 | .68 | .60 |
| 6962 | Spade, 45° | .62 | .090" dia. | .78 | .68 | .60 |
| 6963 | Precis. point | .61 | .095" x .010" | 1.52 | 1.32 | 1.17 |

*Cadmium copper tips; all others, gold-plated iron-clad.

6910, 6915, 6918 Heat Capsules

Nib

6950, 6960

6951, 6961

6952, 6962

6953, 6963

Low initial investment, economical maintenance and inexpensive parts replacement.

## HEAT CAPSULES

Threaded to accept the special thread-in Princess soldering nibs and mating to the Princess handles with finger-tip ease. Also accept "Standard Line" ⅛" tiplets if desired (will not accept Imperial tips). Choice of three wattages and temperature ranges to suit most production requirements. For 120 VAC/DC operation. Size, 2¾" long; extends 1½" from handle. Wt., 0.2 oz.

| Ungar No. | Watts | Temperature Range | Net Each, Lots of 1-9 | 10-49 | 50 Up |
|---|---|---|---|---|---|
| 6910 | 10 | 550° F to 650° F | $5.00 | $4.35 | $3.85 |
| 6915 | 15 | 700° F to 800° F | 5.00 | 4.35 | 3.85 |
| 6918 | 18 | 900° F to 1000° F | 5.00 | 4.35 | 3.85 |

## PRE-ASSEMBLED PRINCESS COMBINATIONS

### MODEL 6975 SOLDERING IRON

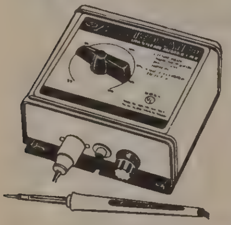
All-in-one package provides a complete Princess soldering iron with three interchangeable copper nibs. Includes one 6902 handle with 2-conductor cord and plug, one 6910 Heat Capsule rated 10 watts, one 6950 pencil nib, one 6951 screwdriver nib and one 6952 spade nib.

**Ungar No. 6975 Princess Assembly**—Net Each, 1–9.....**$9.98**
Net Each, 10–49..........**$8.65** 50 Up............ **7.69**

### MODEL 6900 SOLDERING STATION

Fully assembled iron with three interchangeable copper nibs, plus Princess holder with cleaning sponge. Includes: 6902 handle with 2-conductor cord and plug, 6910 heat capsule rated 10 watts, 6950 pencil nib, 6951 screwdriver nib, 6952 spade nib, and 6990 soldering iron holder complete with cleaning sponge.

**Ungar No. 6900 Soldering Station**—Net Each, 1–9.....**$13.69**
Net Each, 10–49.........**$11.89** 50 Up........... **10.49**



## PRINCESS ISOLATED, LOW VOLTAGE SOLDERING SYSTEM

Complete soldering system includes transformer, handle, heat capsule, plus three tips. Isolation protects semiconductor components from damage on voltage pulse or current leakage. **Transformer:** Completely isolated 12-volt system provides maximum thermal recovery for production soldering. Case is grounded with 3-wire cord and NEMA plug. UL Listed. Input, 120 VAC, 60 Hz. Output, 1.3 amps, 10 VAC, 60 Hz. Bayonet 3-amp fuse and pilot light. **Soldering Pencil:** Heat resistant nylon handle with flexible vinyl cord and 4-pin connector. Heat capsule provides tip temperatures 400° F to 900° F with fast recovery since heating unit located in tip for maximum transfer: rated 18 watts at 12 VAC. **Tips:** "Standard Line" Ungar ⅛" tiplets and Princess soldering nibs may be used; cadmium copper or iron-clad.

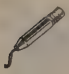
| Ungar Number | Description | Net Each, Lots of 1-3 | 4-11 | 12 Up |
|---|---|---|---|---|
| 6970 | Complete station with transformer, handle, heat capsule and 6961, 6950 and 6952 soldering nibs | $35.00 | $29.95 | $26.95 |
| 6971 | Replacement, low voltage heat capsule only (12 V, 18 W) | 5.85 | 5.09 | 4.49 |
| 6972 | Low voltage transformer | 22.50 | 19.50 | 17.29 |
| 6973 | Replacement handle only (2-wire) | 5.85 | 5.09 | 4.49 |

## PRINCESS IC DE-SOLDER KIT

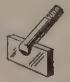
Ideally suited for PC boards 1/32" or less, using low-density circuitry, unplated eyelets or mounting holes. Includes 3-wire grounded Princess handle, 18-watt heat capsule and three (No. 6945, 6947, 6948) de-solder tips. (Not Illustrated.)

**Ungar No. 6939 De-Solder Kit**—Net Each, 1–3........**$16.12**
Net Each, 4–11..........**$14.01** 12 Up.......... **12.40**

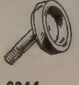
## DE-SOLDER TIPS



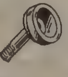
6940



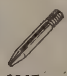
6941



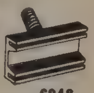
6944



6945



6947



6948

Iron-clad, nickel-plated and pre-tinned tips may be used with Ungar "Standard" line heating units No. 535, 1235 and 4035 or Princess heat capsules (for lower or higher tip temperatures).

| Ungar No. | Tip Temp., at 18 W | Description | Net Each, Lots of 1-9 | 10-49 | 50 Up |
|---|---|---|---|---|---|
| 6940 | 680° F | Flat pack (Hook) | $2.50 | $2.17 | $1.93 |
| 6941 | 720° F | Flat pack (Bar) | 2.37 | 2.06 | 1.82 |
| 6943 | 700° F | TO pkg. (cup) .6" dia. | 2.37 | 2.06 | 1.82 |
| 6944 | 710° F | TO pkg. (cup) .5" dia. | 2.37 | 2.06 | 1.82 |
| 6945 | 720° F | TO pkg. (cup) ⅜" dia. | 2.37 | 2.06 | 1.82 |
| 6946 | 780° F | TO pkg. (cup) .28" dia. | 2.37 | 2.06 | 1.82 |
| 6947 | 750° F | Slotted (lead and tab) straightener | 1.98 | 1.72 | 1.53 |
| 6948 | 570° F | Dual inline IC | 2.70 | 2.35 | 2.08 |

## PRINCESS SOLDERING IRON HOLDER

Plastic base for convenient holding of Princess iron. Comes with specially-processed slit sponge for tip cleaning. Weight, 3 oz.

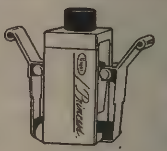
**Ungar Model 6990 Holder**—
Net Each, 1–9..**$3.93** 10–49..**$3.42**
Net Each, 50 Up.............. **3.03**
**Ungar No. 6991 Sponge Refill**—Replacement cleaning sponge for above holder.
Net Each, 1–9....**60c** 10–49....**52c**
Net Each, 50 Up.................**46c**

## PRINCESS DUAL INLINE AND TO-5 EXTRACTORS

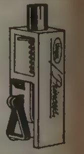
No. 6982 extracts up to 16-pin dual inline IC's; use 6948 de-solder tip. No. 6983 extracts most TO-5 encased devices; use with Nos. 6943, 6944, 6945, or 6946 TO de-solder tips.

**Ungar No. 6982 Dual Inline**—
Net Each, 1–9..........**$2.17**
10–49.**$1.88**; 50 Up. **1.67**

**Ungar No. 6983 TO-5**—
Net Each, 1–9........**$2.50**
10–49.**$2.25**; 50 Up. **1.95**

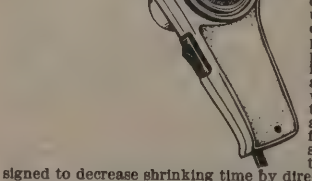


6982



6983

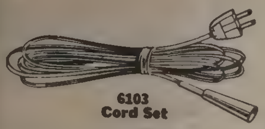
## NEW PRINCESS HEAT GUN

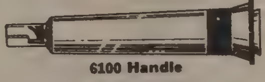


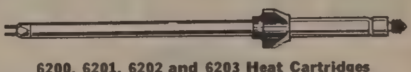
Hot air tool offers a unique combination of features and benefits to users of heat shrinkable products as well as many other lab and industry uses. Its light weight of only 18 oz. insures firm, positive control wherever precise hot air direction is required. Reduces operator fatigue. Air stream width at nozzle is ⅜"; two baffle reflectors, ¾" and 1½" long, included for solder sleeves and shrink tubing applications. Reflectors are designed to decrease shrinking time by directing hot air flow around all tubing surfaces simultaneously. Delivers an air flow temperature at the nozzle of approximately 750° F to 800° F in seconds. Designed for either hand-held use, or may be placed on table or workbench without need for holder. With 2 switches: On-off switch at trigger position and a hot or cold air selector switch. Allows cooling or drying as well as heat applications. For solder sleeves and all polyvinyl, olefins, silicone rubber and TFE heat shrink materials; also ideal for shrink film packaging, epoxy curing, and encapsulation. UL Listed. Rated 250 watts, 120 VAC.

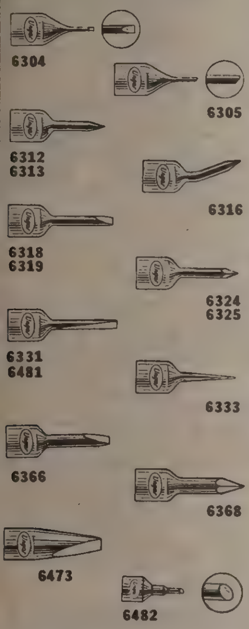
**Ungar No. 6955 Princess Heat Gun**—Net Each........**$39.95**

# Ungar® / Imperial® Soldering Tools


6103
Cord Set


6100 Handle


6200, 6201, 6202 and 6203 Heat Cartridges



Interchangeable cord sets, tips and heat cartridges ideal for critical micro-miniature components. Reliable, low wattage, high temperature performance. Perma-Cool handle has double cushion of air combined to 5 heat-transition surfaces for continuous cooling. Components individually packaged on cards; assemble to suit your needs. **Not interchangeable with "Standard Line".**

## PERMA-COOL COLORED HANDLE

Cool, pastel turquoise handle has been proven to reduce operator fatigue. Virtually indestructable, handle is made of high strength plastic resin. Diecast heat sink built-in. Pencil type design for easy handling. UL Listed. Size, 0.8" O.D. at grip; 4.7" lg. Weight, 1 oz.
**Ungar No. 6100-1**—Handle only. Net Each, 1–9.... **$1.87**; 10–99.... **$1.51**; 100 Up.... **$1.40**

## INTERCHANGEABLE CORD SETS

Instantly adapts your iron to any 2 or 3 wire outlet. Molded female connector plugs onto the Perma-Cool handle without tools. Vinyl-covered cord, 18 gauge, 65 strands extra-flexible copper; terminals and connectors molded polyvinyl chloride. Center conductor (3-wire type) is insulated with green polyvinyl. Weight: 2½ oz., 2-wire; 4 oz., 3-wire. Supplied in turquoise color only.

| Ungar No. | Description | Net Each, Lots of 1-9 | 10-99 | 100 Up |
|---|---|---|---|---|
| 6102 | Standard 2-wire cord set with plug | $2.70 | $2.19 | $2.03 |
| 6103 | 3-wire cord set with NEMA plug | 3.97 | 3.22 | 2.98 |

## INTERCHANGEABLE LONG-LIFE HEAT CARTRIDGES

Stainless steel, sealed cartridge with element at tip and threaded end for quick tip changes; keeps heat at tip where it belongs. Six ratings available: **6200:** 40 watts for 750-950° F; accepts all tip Nos. 6304 through 6482. Size, 7½" l. x .363" dia. (2½" l. from flange). Wt., 1.1 oz. **6201:** Same, but 30 watts for 650–850° F. **6202:** Same, but 25 watts for 600–800° F. **6203:** 60 watts for heat range, 850° to 1150° F. Accepts all iron clad gold-plated tips plus No. 6526 beryllium oxide tip, 750°–800° F; 7⅛" long; Wt., 1.2 oz.

| Ungar Number | Rated Watts | Net Each, Lots of 1-9 | 10-99 | 100 Up | Ungar Number | Rated Watts | Net Each, Lots of 1-9 | 10-99 | 100 Up |
|---|---|---|---|---|---|---|---|---|---|
| 6200 | 40 | $5.02 | $4.07 | $3.76 | 6202 | 25 | $5.02 | $4.07 | $3.76 |
| 6201 | 30 | 5.02 | 4.07 | 3.76 | 6203 | 60 | 5.75 | 4.66 | 4.31 |

## THREAD-ON SOLDERING TIPS

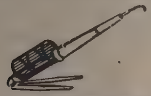
Completely interchangeable with the Imperial line (NOT interchangeable with Ungar "Standard Line"). Thread onto heat cartridge (either 25, 30, 40 or 60 watt models) with fingertip ease. Available in beryllium oxide (repels solder), copper alloy or long life, 24 kt. gold-plated iron clad types.

### MINI-TIP® FOR 6200, 6201, 6202 OR 6203 HEAT CARTRIDGES

| Ungar No. | Shape | Material | Size, In. O.D. x L. | Temp. (°F)*With Cartridge Rated 25 W | 30 W | 40 W | Net Each, Lots of 1-9 | 10-99 | 100 Up |
|---|---|---|---|---|---|---|---|---|---|
| 6304 | Micro-chisel | Iron clad | 3/64 x 1/2 | 750 | 800 | 890 | $1.30 | $1.05 | $0.98 |
| 6305 | Micro-spade | Iron clad | 3/64 x 1/2 | 750 | 800 | 890 | 1.30 | 1.05 | .98 |
| 6312 | Pencil | Copper | 1/8 x 3/4 | 750 | 800 | 910 | .58 | .47 | .44 |
| 6313 | Pencil | Iron clad | 1/8 x 3/4 | 690 | 750 | 860 | 1.30 | 1.05 | .98 |
| 6316 | Offset pencil | Iron clad | 1/8 x 3/4 | 690 | 750 | 860 | 1.30 | 1.05 | .98 |
| 6318 | Long taper chisel | Copper | 1/8 x 3/4 | 750 | 800 | 890 | .58 | .47 | .44 |
| 6319 | Long taper chisel | Iron clad | 1/8 x 3/4 | 690 | 750 | 860 | 1.30 | 1.05 | .98 |
| 6324 | Long taper pyramid | Copper | 1/8 x 3/4 | 750 | 800 | 890 | .58 | .47 | .44 |
| 6325 | Long taper pyramid | Iron clad | 1/8 x 3/4 | 690 | 750 | 860 | 1.30 | 1.05 | .98 |
| 6331 | Screwdriver | Iron clad | 1/8 x 3/4 | 690 | 750 | 860 | 1.30 | 1.05 | .98 |
| 6333 | Needle | Iron clad | 1/8 x 3/4 | 690 | 750 | 860 | 1.30 | 1.05 | .98 |
| 6366 | Long taper chisel | Iron clad | 3/16 x 3/4 | 680 | 730 | 850 | 1.53 | 1.24 | 1.15 |
| 6368 | Long taper pyramid | Copper | 3/16 x 3/4 | ...... | ...... | ...... | .72 | .58 | .54 |
| 6473 | Long taper chisel | Copper | 3/8 x 3/4 | ...... | ...... | ...... | .72 | .58 | .54 |
| 6481 | Tapered screwdriver | Iron clad | 3/4 x 3/32 | 690 | 750 | 860 | 1.30 | 1.05 | .98 |
| 6482 | Micro-spade | Iron clad | 3/64 x 1/2 | 700 | 770 | 860 | 1.30 | 1.05 | .98 |

*Slight variation in line voltage will give ±25° F deviation.

## SAFETY-GUARD HOLDER



**Ungar No. 6800**—Designed especially for Imperial irons. Protects against hot tip burns or handle damage. Attaches to top or underside of bench. Black with gold cage guard.
Net Each, 1–9.......... **$2.30**
10–49.. **$1.86** 50 Up.. **1.73**

## ANTI-SEIZE

Special lubricant lengthens tip and heating unit life. For use with Princess, Imperial and "Standard Line" tools. Reduces thread seizure. Improves heat transfer.
**Ungar No. 8001**—½ oz. tube.
Net Ea., 1-9.............. **89c**
10-49.... **76c** 50 Up.... **67c**

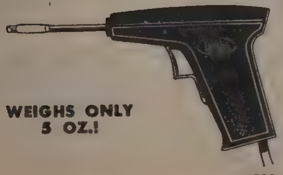
## IMPERIAL COMPLETE SOLDERING IRON

**Ungar No. 6010**—Includes one 6100 handle, one 6102 cord set, one 6200 heat cartridge and 6318, 6368, and 6473 Mini-Tips. Net Each, 1–5........ **$9.95**; 6–11........ **$7.95**; 12 Up........ **$7.50**

---

## UNGAR SOLID STATE SOLDER GUN

Designed for damage-free soldering of sensitive semiconductor devices by servicemen, lab technicians and electronic hobbyists. Electrically isolated tip. Heat cartridge locks into gun barrel—may be rotated to any desired position. Choice of 3 interchangeable tellurium copper soldering tips. Dual-heat selector switch for choice of 500° F or 900° F tip temp. All parts separately replaceable. Complete unit includes one 6753 tip, heat cartridge and 3-wire cord with NEMA plug. Wt., 5 oz. less cord.


**WEIGHS ONLY 5 OZ.!**
6760

6753

6754

6755

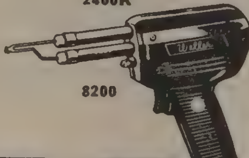
| Ungar No. | Description | Net Each, Lots of 1-3 | 4-11 | 12 Up |
|---|---|---|---|---|
| 6760 | Complete solder gun | $10.95 | $9.95 | $8.95 |
| 6763 | Handle and cord set | 6.95 | 6.12 | 5.60 |
| 6751 | Heat cartridge | 5.49 | 4.89 | 4.39 |
| 6755* | Long chisel tip, .535" length | .43 | .39 | .37 |
| 6753* | Short chisel tip, .410" length | .43 | .39 | .37 |
| 6754* | Pyramid tip, .410" length | .43 | .39 | .37 |

*Has .250" diameter.

# Weller® Professional Tools

Weller 2400 Automatic Glue Gun

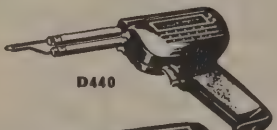
2400K



8200

Soldering Kit

8200PK



D440

D550

Soldering Kit

D550PK

SP-23

SP-40

SP-80

SP-120, SP-175

DS-40

## NEW MODEL 2400K AUTOMATIC GLUE GUN KIT

Automatic electric glue and caulk gun for fast, 30-second gluing. Features rapid hea up, work and indicator light, automatic glue feed, drip proof with automatic flow con trol valve. 120 volts; rated 150 watts. Two-wire cord. Kit includes Model 2400 glu gun, tool stand, 7 sticks of glue, 7 sticks of caulk. In fitted plastic storage case.

**Weller No. 2400K Automatic Glue Gun Kit**—Net Each, Lots of 1–2..........$9.1
Net Each, Lots of 3–11..................**$8.25**; 12 Up..................**7.3**

## WELLER SOLDERING GUNS, KITS

### MODEL 8200 DUAL HEAT SOLDERING GUN

Two trigger positions provide instant switching to high (140 watts) or low (100 watts heat. Tip heats instantly and spotlight comes on when trigger is pulled. UL Recognized

### MODEL 8200PK DUAL HEAT SOLDERING GUN KIT

Includes Weller dual heat 100/140 watt gun, rugged plastic utility case, three solderin tips, tip-changing wrench, flux brush, soldering aid and solder.

### SERIES "D" DUAL-HEAT PROFESSIONAL GUNS

Exclusive dual-heat feature saves time, adds convenience, and greatly increases tip life Triggermatic control switches instantly to high or low heat as the job requires. Tip lif is increased by using high heat only when necessary. No wasted time or current. Twi spotlights eliminate shadows on work. Carefully engineered design provides long reach handles difficult jobs with ease; slips between wiring without damage to insulation Exclusive tip grip assures full constant heat; wiping action of tip-fastened nut eliminate contact resistance and oxidation. **Model D440:** Light duty gun rated 145/210 watts **Model D550:** Heavy-duty gun rated 240/325 watts. UL Recognized.

### MODEL D550PK HEAVY-DUTY DUAL HEAT SOLDERING GUN KIT

Features 240/325 watt dual heat gun, break-proof plastic carrying case, soldering smoothing and cutting tips, tip-changing wrench and solder.

### SOLDERING GUN AND KITS—DEALER NET PRICES

| Weller No. | Rating, Watts | Net Each, Lots of 1 | 3-11 | 12 Up | Weller No. | Rating, Watts | Net Each, Lots of 1 | 3-11 | 12 Up |
|---|---|---|---|---|---|---|---|---|---|
| 8200 | 100/140 | $ 7.85 | $7.05 | $6.25 | D550 | 240/325 | $11.65 | $10.45 | $ 9.30 |
| 8200PK | 100/140 | 9.60 | 8.65 | 7.65 | D550PK | 240/325 | 14.15 | 12.75 | 11.30 |
| D440 | 145/210 | 10.80 | 9.75 | 8.65 | | | | | |

### SOLDERING GUN REPLACEMENT TIPS

| Weller No. | For Gun or Iron No. | Tip Type | Net Pkg. 2 | Weller No. | For Gun or Iron No. | Tip Type | Net Each |
|---|---|---|---|---|---|---|---|
| 8125* | 8100B, 8200 | Solder | 79c | 7135N† | 8100, 8100B, 8200, D-440 | Solder | 79c |
| 8125N‡ | 8100B, 8200 | Solder | 79c§ | 6120† | 8100B, 8200, D-440 | Smoothing | 79c |
| 7250 | 8250A, D-550 | Solder | 79c | 6140† | 8250A, D-550 | Smoothing | 79c |
| 7250N† | 8250A, D-550 | Solder | 79c§ | 6110† | 8100B, 8200, D-440 | Cutting | 79c |
| 7135 | 8100, D-440, 8100B, 8200 | Solder | 79c | 6130† | 8250A, D-550 | Cutting | 79c |

*Premium plated tip; all others copper. †With tip nuts. ‡Premium plated; with tip nuts. §Net Each.

## "MARKSMAN" SOLDERING IRONS

High efficiency irons with stainless steel barrels; heat and impact resistant handles. For 120 V. Complete with replaceable copper plated tip and instruction booklet packed in a vinyl pouch. UL Recognized.

| Weller No. | Watts | Type | Tip | Overall Length | Wt., Oz. | Net Each, Lots of 1-11 | 12-47 | 48 Up |
|---|---|---|---|---|---|---|---|---|
| SP-23 | 25 | Pencil | MT-1 cone | 8¼″ | 1¾ | $2.75 | $2.50 | $2.20 |
| SP-40 | 40 | Pencil | MT-10, ¼″ dia. | 8¼″ | 2 | 3.65 | 3.30 | 2.95 |
| SP-80 | 80 | Med. duty | MT-20, ⅜″ dia. | 9⅜″ | 4 | 4.55 | 4.15 | 3.65 |
| SP-120 | 120 | Med. duty | MT-30, ½″ dia. | 11⅜″ | 10 | 8.30 | 7.45 | 6.60 |
| SP-175 | 175 | Hvy. duty | MT-40, ⅝″ dia. | 12½″ | 16 | 9.95 | 8.95 | 7.95 |
| SP-23K | With SP-23 iron, 3 tips, 5′ rosin core solder and aid tool with instructions | | | | | 4.15 | 3.75 | 3.35 |
| SP23HK | Hot knife and soldering iron; includes blade, chuck, interchangeable soldering tip | | | | | 4.15 | 3.75 | 3.35 |

### PLATED REPLACEMENT TIPS FOR "MARKSMAN" IRONS

Pkg. of 2 tips, except MT-20 to MT-40, pkg. of 1.

| Weller No. | For Marksman Iron | Tip Type | Net Pkg. of 2, Lots of 1-11 | 12-47 | 48 Up |
|---|---|---|---|---|---|
| MT-1 | SP-23 | Cone shape | $0.65 | $0.59 | $0.52 |
| MT-2 | SP-23 | Screwdriver | .65 | .59 | .52 |
| MT-3 | SP-23 | Chisel | .65 | .59 | .52 |
| MT-4 | SP-23 | Spade | .65 | .59 | .52 |
| MT-10 | SP-40 | ¼″ chisel | .90 | .80 | .72 |
| MT-20 | SP-80 | ⅜″ chisel* | .90 | .80 | .72 |
| MT-30 | SP-120 | ½″ chisel* | 1.50 | 1.34 | 1.20 |
| MT-40 | SP-175 | ⅝″ chisel* | 2.25 | 2.00 | 1.80 |
| HK11 | SP23HK | Blade, chuck* | ........ | 1.35 | ........ |

*Price indicated is for single tip.

## NEW PROFESSIONAL DESOLDERING/RESOLDERING TOOL

A must for servicing modern printed circuit boards and solid state equipment. Complete with .063″ opening tip. 120 volts; rated 40 watts. Two-wire cord.

**Weller No. DS40 Desoldering/Resoldering Tool**—Net Each, Lots of 1–2......**$11.95**
Net Each, Lots of 3–11..................**$10.85**; 12 Up..................**9.65**

### REPLACEMENT DESOLDERING TIPS FOR DS40

| Weller No. | Hole Dia., In. | Net Each, Lots of 1-11 | 12-47 | 48 Up | Weller No. | Hole Dia., In. | Net Each, Lots of 1-11 | 12-47 | 48 Up |
|---|---|---|---|---|---|---|---|---|---|
| DST1 | .038 | $0.75 | $0.67 | $0.60 | DST4 | .063 | $0.75 | $0.67 | $0.60 |
| DST2 | .046 | .75 | .67 | .60 | DST5 | .078 | .75 | .67 | .60 |
| DST3 | .059 | .75 | .67 | .60 | DST6 | .090 | .75 | .67 | .60 |

**WELLER SOLDERING IRONS ARE AVAILABLE WITH 3-WIRE CORDS.**
**WRITE FOR PRICES.**

# Weller® Professional Tools

## NEW PROFESSIONAL SOLDERING IRONS

xtremely rugged, service grade tools. Stainless steel barrels, long life industrial grade ouble coated tips. Cool blue pencil handle of impact resistant plastic. Only 1¾ oz., ″ long. 120 volts. UL Listed.

**Weller No. WP25 Soldering Iron**—25 watts, with 1/16″ screwdriver tip.
Net Each, Lots 1–11.........**$4.95**; 12–47.........**$4.45**; 48 Up.........**$3.95**

**Weller No. WP40 Soldering Iron**—40 watts, with 1/8″ screwdriver tip.
Net Each, Lots 1–11.........**$5.80**; 12–47.........**$5.25**; 48 Up.........**$4.65**

### REPLACEMENT TIPS FOR WP25 AND WP40

| Weller No. | Tip Description | Net Each, Lots 1-14 | 15-49 | 50 Up | Weller No. | Tip Description | Net Each, Lots 1-14 | 15-49 | 48 Up |
|---|---|---|---|---|---|---|---|---|---|
| ST1 | 1/16″ screwdriver | $0.75 | $0.67 | $0.60 | ST3 | 1/8″ screwdriver | $0.75 | $0.67 | $0.60 |
| ST2 | 3/32″ screwdriver | .75 | .67 | .60 | ST4 | 3/16″ screwdriver | .75 | .67 | .60 |

## CONTROLLED OUTPUT INDUSTRIAL SOLDERING IRONS

Sensing device at tip assures reliable soldering; won't overheat; maintains selected maxinum temperature. Two-wire cord. With 700° F tips. "Temperature Sensing" tips are vailable in standard industrial configurations at 600°, 700° and 800° F; see listings below. Models W60 and W100 have new blue color.

| Weller No. | Watts | Type | Tip | Overall Length | Wt., Oz. | Net Each, Lots of 1-11 | 12-47 | 48 Up |
|---|---|---|---|---|---|---|---|---|
| W60 | 60 | Pencil | 1/4″ screwdriver | 7¼″ | 2½ | $11.60 | $10.50 | $ 9.30 |
| W100 | 100 | Pencil | 3/8″ screwdriver | 8¼″ | 3½ | 14.55 | 13.15 | 11.65 |
| W200 | 200 | Standard | 1/2″ chisel | 9½″ | 10 | 20.20 | 18.25 | 16.15 |

### PREMIUM PLATED REPLACEMENT TIPS FOR W60 SOLDERING IRON

For Model W60 blue series tools only.

| Point Size | Description | Reach | Weller Number 600° F | 700° F | 800° F | Net Each, Lots of 1-24 | 25-99 | 100 Up |
|---|---|---|---|---|---|---|---|---|
| 1/16″ | Screwdriver | 1 5/32″ | CT5A6 | CT5A7 | CT5A8 | $0.95 | $0.85 | $0.75 |
| 3/32″ | Screwdriver | 1 5/32″ | CT5B6 | CT5B7 | CT5B8 | .95 | .85 | .75 |
| 1/8″ | Screwdriver | 1 5/32″ | CT5C6 | CT5C7 | CT5C8 | .95 | .85 | .75 |
| 3/16″ | Screwdriver | 1 5/32″ | CT5D6 | CT5D7 | CT5D8 | .95 | .85 | .75 |
| 1/4″ | Screwdriver | 1 5/32″ | CT5E6 | CT5E7 | CT5E8 | .95 | .85 | .75 |

### PREMIUM PLATED REPLACEMENT TIPS FOR W100 SOLDERING IRON

For Model W100 blue series tools only.

| Point Size | Description | Reach | Weller Number 600° F | 700° F | 800° F | Net Each, Lots of 1-14 | 15-49 | 50 Up |
|---|---|---|---|---|---|---|---|---|
| 1/8″ | Screwdriver | 1 15/32″ | CT6C6 | CT6C7 | CT6C8 | $1.65 | $1.50 | $1.35 |
| 3/16″ | Screwdriver | 1 15/32″ | CT6D6 | CT6D7 | CT6D8 | 1.65 | 1.50 | 1.35 |
| 1/4″ | Screwdriver | 1 15/32″ | CT6E6 | CT6E7 | CT6E8 | 1.65 | 1.50 | 1.35 |
| 3/8″ | Screwdriver | 1 15/32″ | CT6F6 | CT6F7 | CT6F8 | 1.65 | 1.50 | 1.35 |

### PREMIUM PLATED REPLACEMENT TIPS FOR W200 SOLDERING IRON

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1/4″ | Screwdriver | 1 7/8″ | CT2E6 | CT2E7 | CT2E8 | $2.50 | $2.25 | $2.00 |
| 3/8″ | Screwdriver | 1 7/8″ | CT2F6 | CT2F7 | CT2F8 | 2.50 | 2.25 | 2.00 |
| 7/16″ | Chisel | 1 9/16″ | CT2G6 | CT2G7 | CT2G8 | 2.50 | 2.25 | 2.00 |
| 1/2″ | Chisel | 1 9/16″ | CT2H6 | CT2H7 | CT2H8 | 2.50 | 2.25 | 2.00 |

## CONTROLLED OUTPUT SOLDERING PENCILS AND TIPS

### MODEL W-TCP LOW VOLTAGE PENCIL

Precision-built, 60-watt soldering pencil. Features: Temperature controlling at tip, choice of interchangeable tip temperatures; low voltage (24 V) operation from power unit for component protection. Extremely small and lightweight, with cool handle of impact-resistant plastic. Soldering iron stand attached to power unit. With 3/16″, 700° F premium plated screwdriver tip. For 120 VAC, 50–400 Hz (230/250 V available on request). **Replacement tips available:** 1/32″, 3/64″, 1/16″, 5/64″, 3/32″, 1/8″, 3/16″, and 15/64″ sizes in screwdriver, long screwdriver, spade, conical, conical flat shapes for temperatures of 600°, 700° and 800° F. See complete listing below. New blue color.

**Weller No. W-TCP**—
Net Each, Lots 1–11.......**$24.05**; 12–23.......**$21.75**; 24 Up.......**$19.30**

**Weller No. W-TCP-L**—Same as above, but with on-off switch and pilot light on power unit. Net Each, Lots 1–11......**$27.70**; 12–23......**$24.95**; 24 Up......**$22.20**

### REPLACEMENT TIPS FOR W-TCP AND W-TCP-L

| Tip Description | Weller Number 600° F | 700° F | 800° F | Net Each, Lots of 1-24 | 25-99 | 100 Up |
|---|---|---|---|---|---|---|
| 1/16″ screwdriver | PTA6 | PTA7 | PTA8 | $0.95 | $0.85 | $0.75 |
| 1/16″ spade | PTAA6 | PTAA7 | PTAA8 | .95 | .85 | .75 |
| 3/32″ screwdriver | PTB6 | PTB7 | PTB8 | .95 | .85 | .75 |
| 3/32″ spade | PTBB6 | PTBB7 | PTBB8 | .95 | .85 | .75 |
| 1/8″ screwdriver | PTC6 | PTC7 | PTC8 | .95 | .85 | .75 |
| 1/8″ spade | PTCC6 | PTCC7 | PTCC8 | .95 | .85 | .75 |
| 3/16″ screwdriver | PTD6 | PTD7 | PTD8 | .95 | .85 | .75 |
| 3/16″ spade | PTDD6 | PTDD7 | PTDD8 | .95 | .85 | .75 |
| 1/32″ screwdriver | PTH6 | PTH7 | PTH8 | .95 | .85 | .75 |
| 1/32″ conical | PTP6 | PTP7 | PTP8 | .95 | .85 | .75 |
| 1/32″ conical flat | PTF6 | PTF7 | PTF8 | .95 | .85 | .75 |
| 15/64″ screwdriver | PTE6 | PTE7 | PTE8 | .95 | .85 | .75 |
| 3/64″ long screwdriver | PTK6 | PTK7 | PTK8 | .95 | .85 | .75 |
| 5/64″ long screwdriver | PTL6 | PTL7 | PTL8 | .95 | .85 | .75 |
| 1/8″ long screwdriver | PTM6 | PTM7 | PTM8 | .95 | .85 | .75 |

### MODEL W-TCP-2 CONTINUOUSLY VARIABLE TEMPERATURE PENCIL

Small and lightweight, ideal for low temperature, miniature soldering applications. Continuously variable temperature, controlled at tip, from 200° F to 450° F, with SCR and thermistor control circuit. Simply dial temperature needed for a specific job. Rated 30 watts; operates from 24 V isolated winding at power unit for safety. Complete with 1/16″ premium plated screwdriver tip and power unit. Operates from 120 VAC, 50–400 Hz (230/250 V available on request, at same price).

**Weller No. W-TCP-2**—
Net Each, Lots 1–11.......**$66.50**; 12–23.......**$60.10**; 24 Up.......**$53.25**

**Weller No. STA** (1/32″ conical flat) **or STB** (1/16″ screwdriver) **Replacement Tip**—For W-TCP-2. Net Each, Lots 1–24.....**$0.95**; 25–99.....**$0.85**; 100 Up.....**$0.75**

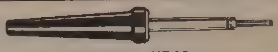
### MODEL W-MCP MINIATURE LOW VOLTAGE SOLDERING STATION

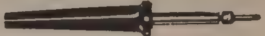
Ideal for microsoldering. Complete with iron, stand, sponge, and isolated power unit with electrostatic shield. Rated 20 W, 120 V, 50/400 Hz. On-off switch and indicator light on power unit. With 650° F element and 1/8″ chisel tip. New blue color.

**Weller No. W-MCP-650**—
Net Each, Lots 1–11.......**$33.10**; 12–23.......**$29.95**; 24 Up.......**$26.55**

**Weller No. W-MCP-550**—Same as above, but with 550° F control element.
Net Each, Lots 1–11.......**$33.10**; 12–23.......**$29.95**; 24 Up....... **26.55**

**Weller No. W-MCP-750**—Same as above, but with 750° F control element.
Net Each, Lots 1–11.......**$33.10**; 12–23.......**$29.95**; 24 Up....... **26.55**


WP25, WP40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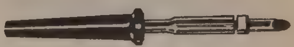
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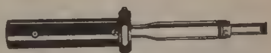
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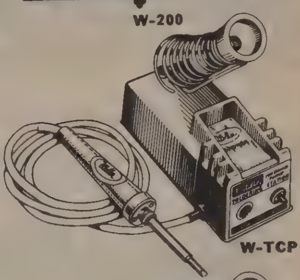
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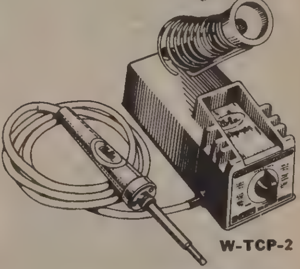
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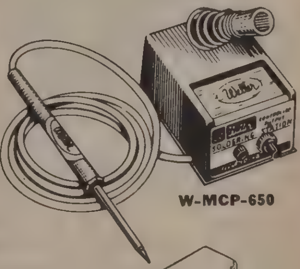
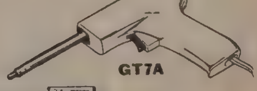

W-MCP-650


GT7A

6B

### TEMPMATIC® TEMPERATURE CONTROLLED SOLDERING TOOLS

Fast and reliable. Easy to handle, weighs 7 oz. Features quick change power head. Comes with 3/16″ chisel point, 700° F powerhead. 120 VAC.

**Weller No. GT7A**—Net, 1–2....**$10.95**
3–11......**$9.95**; 12 Up...... **8.95**

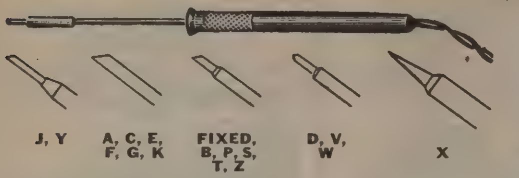
**Weller No. GT6B**—Same but with 1/8″ conical point, 600° F powerhead.
Net, 1–2....................**$10.95**
3–11......**$9.95**; 12 Up...... **8.95**

**Weller No. 6B**—Powerhead only, 1/8″ conical point, 600° F. Net Each..**$7.45**

**Weller No. 7A**—Powerhead only, 3/16″ chisel point, 700° F. Net Each...**$7.45**

**Weller No. GT**—Handle only, with trigger and cord. Net Each..............**$3.50**

# ORYX Precision Tools


J, Y
A, C, E, F, G, K
FIXED, B, P, S, T, Z
D, V, W
X

## MODEL 50 SOLDERING IRON

Built-in thermostatic control keeps tip at constant temperature. Temperature can be set from 400° to 700° F at 50 watts. Ideal for delicate semiconductors to heavy lugs and terminals. Indicator light in handle serves as a visual guide. Both 2-wire or 3-wire models available for 115 VAC use. 24 VAC/DC Model also available on order. Handle remains cool at all times.

**Oryx Model 50**—With long life iron-coated tip. Net Ea. . **$16.95**

**Write or Call for Specifications and Prices on Replacement Tips for Model 50 Iron.**

## MINIATURE LOW VOLTAGE IRONS

Feather-light miniature soldering pencils for production line or lab. Utilize unique element-in-the-tip design principle. Low power consumption. Light, flexible lead wire for further convenience Low free-air temperature extends tip life. Interchangeable, nickel-plated, precision tips reduce tinning, dressing time. Quick high heat on AC low voltage transformers, or, DC from batteries; ideal for mobile maintenance from 6 or 12 volt equipment batteries. Use Microcircuit Model 5S for joints having negligible mass; Printed Circuit Models 6A and 9-6 for diodes, transistors; Model 11-6 for special solder alloys; Heavy-Duty Models 12-6 and 18-6 for tube socket terminals, lugs. Weight, 1 oz. max.

| Oryx Model | Volts | Watts | Nom. ° F | Size, In. | Push-on Tip # | Push-on Tip Alternate | Net Ea., Lots of 1-11 | Net Ea., Lots of 12 Up |
|---|---|---|---|---|---|---|---|---|
| **5S** | 4.5 | 4.5 | 575 | 4¾ | S | T, Z | $6.95 | $6.25 |
| **6A** | 6 | 6 | 690 | 6 | B | P, T, W, V-PL, X-PL, Z-PL | 6.95 | 6.25 |
| **9-6†** | 6 | 8.3 | 750 | 6 | A | B, W, V-PL, X-PL, Z-PL | 6.95 | 6.25 |
| **11-6** | 6 | 10 | 835 | 6 | D | E | 8.95 | 7.95 |
| **12-6‡** | 6 | 12 | 700 | 6¼ | C | . . . . . . . . . . . . . | 6.95 | 6.25 |
| **18-6** | 6 | 18 | 800 | 7¼ | F | Y-PL | 9.95 | 8.95 |

Also available: †**9-12** (12 volts); ‡**12-12** (12 volts), at same price. #Supplied.

## 115-VOLT MINIATURE IRONS

Quick-heating 1 oz. soldering pencils ideal for production line, shop, caddy or design lab. No transformer required; 10 W, 675° F or 15 W, 725° F heat at tip a minute after connection to 115 V line. Tip J is supplied; also takes K and J-PL tips; and, SC-115 soldering cup.

| Oryx Model | Watts | Supplied With Tip | Supplied With Cord | Supplied With Plug | Net Each, Lots of 1-11 | Net Each, Lots of 12 Up |
|---|---|---|---|---|---|---|
| **115-15J*** | 15 | J | 2-wire | Yes | **$8.95** | . . . . . . . . |
| **115-15J-3** | 15 | J | 3-wire | No | **8.95** | . . . . . . . . |
| **115-10E** | 10 watt replacement element | | | | **5.50** | . . . . . . . . |
| **115-15E** | 15 watt replacement element | | | | **5.50** | . . . . . . . . |

*UL Approved 4½ ft. cord set.

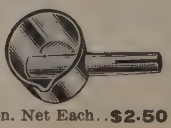
## SOLDERING IRON TIPS

Push-on tips for Oryx soldering pencils. Available in nickel-plated copper alloy, solid nickel or iron-plated copper.

| Oryx No. | Material | Dia. In. | Net Each | Oryx No. | Material | Dia. In. | Net Each |
|---|---|---|---|---|---|---|---|
| **A** | Copper | 5/32 | **$0.68** | **N** | Copper | 1/8 | **$1.55** |
| **B** | Copper | 3/32 | **.68** | **P** | Copper | 1/16 | **.68** |
| **C** | Copper | 3/16 | **.84** | **S** | Copper | 1/16 | **.70** |
| **D** | Nickel | 5/32 | **2.10** | **T** | Copper* | 1/25 | **3.35** |
| **E** | Nickel | 3/32 | **2.10** | **V-PL** | Copper† | 3/32 | **1.80** |
| **F** | Copper | 3/16 | **1.25** | **W** | Copper‡ | 3/32 | **.66** |
| **G** | Nickel# | 5/32 | **1.85** | **X-PL** | Copper† | .04§ | **1.85** |
| **J** | Copper | 3/32 | **1.55** | **Y-PL** | Copper† | 3/32 | **2.35** |
| **J-PL** | Copper† | 3/32 | **2.25** | **Z** | Copper | 1/25 | **.99** |
| **K** | Copper | 3/16 | **1.85** | **Z-PL** | Copper† | .04 | **1.80** |

*Gold end. †Iron-plated. ‡Bare (NASA). §At base. #End.

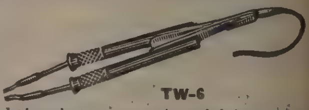
## MINIATURE SOLDER CUPS



For tinning wires and component leads, heating compounds, shellacs, etc. Slip over tips on Oryx Model 115-15 soldering iron. Nominal operating temperature, 550°–600° F. Capacity, 2½ cc.

**Oryx Model SC-115**—For Model 115-15 iron. Net Each. . **$2.50**

## MINIATURE SOLDERING TWEEZERS



Compact soldering tool with elements in both arms to speed soldering by heating both sides of joint. **Model TW-6** requires 6 V, AC or DC, 18 W for precision soldering of semiconductors, hairspring movements, miniature relays, etc. Solid nickel 3/32" fixed tips operate at 550° F. Weighs only 1 oz. **Model TW-12** requires 12 V, AC or DC, 25 W for heavy duty production soldering on radio, TV, switchboards, radar, etc. Supplied with Type N, ⅛" replaceable tips operating at 625° F. Weighs only 2 oz. Both models supplied with 4½' cord.

**Oryx Model TW-6 Tweezers**—Net Each. . . . . . . . . . . . . **$18.95**

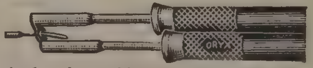
**Oryx Model TW-6E Replacement Assembly**—Heating element, tip and bushing for one tweezer arm only. Net Each. . . **$ 7.45**

**Oryx Model TW-12 Tweezers**—Net Each. . . . . . . . . . . . **22.95**

**Oryx Model N Solder Tip**—For TW-12 tweezer. Net Ea. . **1.55**

**Oryx Model TW-12E Replacement Assembly**—Heating element, tip and bushing for one tweezer arm only. Net Each. . . . . **$9.75**

## "PVC" MINIATURE WIRE STRIPPER

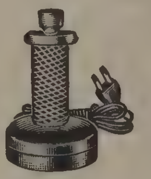


Compact, 6-volt thermal stripper for production line, tight-spot modification and repair wiring. Strips vinyl, nylon, rubber, PVC, polystyrene, etc. Separate heating element and stainless steel head on each arm of tweezer allows damage-free stripping of a variety of wire sizes and insulating materials to ⅛" dia. with 4½ ft. cord.

**Oryx Model ST-6 Stripper**—6 VAC/DC, 12 watts, 400° F. Net Each. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$18.95**

**Oryx Model ST-6E Replacement Assembly**—Heating element, blade and bushing for one stripper arm only. Net Each. . **$7.45**

## MINIATURE SOLDER POT



Quick-heating pot for production, service and lab use. Heats to approx. 550° F in just 4 minutes. Plugs in directly to 115V, AC or DC sources. For component leads and wire tinning; heating waxes and potting compounds. Shielded to prevent operator contact; 2½ cc capacity.

**Oryx Model SP-115-E-A**—New style element. Net Each. . . . . . . . . . . . . . . **$5.50**

**Solder Slugs**—High quality 60/40 solder slugs for use in Oryx cups or pots. Weight, 1 oz. each. Net Each . . . . . . . . . . . . . . . . **54c**

## SOLDERING TRANSFORMERS AND STAND

**Oryx Model 54204-T Transformer**—For use on 115 VAC with Model 5S Microcircuit iron and all 6-volt irons. **Tapped Output:** 4½ to 6 volts in ½-volt steps. Complete with clip-holder, cord and plug. Net Each. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$7.80**

**Oryx Model 54203-6V Transformer**—For use on 115 VAC with all 6-volt tools. **Output:** 18 watts; 3 amps at 6 volts. Iron support-clip. 4½ ft. cord and plug included. Net Each. . . . . . . . . . **$7.48**

**Oryx Model 5024 Transformer**—For use with ST-60 and other 12 and 24-volt tools. Output: 60 watts at 24 V; has 12 V tap for low temperature operation. Net Each. . . . . . . . . . . . . . . . . . . . . . **$8.95**

**Oryx Model S-1 Soldering Iron Stand**—Net Each. . . . . . . **3.35**

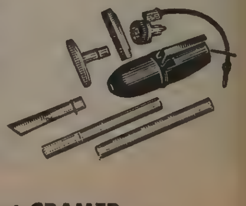
## TELVAC VACUUM TWEEZER SYSTEM

For handling parts varying in size from microscopic to those weighing several ounces. Avoids defects caused by pinching, marring or scratching. Vacuum is controlled with forefinger switch. For 115 VAC.

**Telvac Model K-150**—Complete system, includes vacuum generator and all parts described below. Net Each. . . . . . . . **$36.50**

| Telvac No. | Description | Net Each | Telvac No. | Description | Net Each |
|---|---|---|---|---|---|
| **1505** | Vacuum generator | **$24.50** | **1565** | Tip, #16 | **$0.49** |
| **1575** | Probe | **5.95** | **1580** | Cup, .5" dia. | **.90** |
| **1550** | Tip, #30 | **.49** | **1585** | Cup, .25" dia. | **.90** |
| **1555** | Tip, #25 | **.49** | **1510** | Tubing, 4' lg. | **1.00** |
| **1560** | Tip, #22 | **.49** | **1590** | Filter | **.90** |

## TELVAC VACUUM CLEANER



Miniature vacuum cleaner for lab, production line and industry. Tapered 5" nozzle for corners, tight spots, etc.; brush provided for flat surfaces. High impact polyethylene body. For 115 VAC.

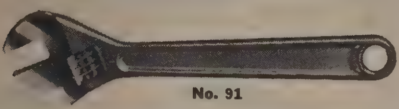
**Telvac Model TVM**—
Net Each. . . . . . . . . . . . . **$29.95**

# WRENCHES, SCREWDRIVERS AND SOCKET SETS BY UTICA

## ADJUSTABLE WRENCHES

Utica adjustable wrenches feature a thin jaw design, induction-hardened jaws, and large, hardened knurl for long life and ease of operation. Alloy plated.

### STANDARD WRENCHES



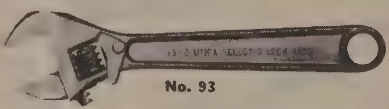
No. 91

Thin jaws designed to reach difficult spots. Drop forged from tough alloy steel, these wrenches will withstand rigorous breakage tests. Meet Fed. Spec. GGG-W-631a, Type 1.

| Utica No.* | Max. Head Thk. | Max. Jaw Open | List Price | Utica No.* | Max. Head Thk. | Max. Jaw Open | List Price |
|---|---|---|---|---|---|---|---|
| 91-4 | .335 | .510 | $3.75 | 91-12 | .705 | 1.322 | $ 7.90 |
| 91-6 | .383 | .760 | 3.75 | 91-15 | .949 | 1.698 | 12.00 |
| 91-8 | .445 | .947 | 4.20 | 91-18 | 1.156 | 2.062 | 20.00 |
| 91-10 | .610 | 1.135 | 5.40 | | | | |

*Suffix shows wrench length in inches; e.g., 91-4 is 4″ long.

### SELECT-O-LOCK® WRENCHES



No. 93

Locking adjustable wrenches operate with fingertip action. Provide positive lock in any position.

| Utica No.* | Max. Head Thk. | Max. Jaw Open | List Price | Utica No.* | Max. Head Thk. | Max. Jaw Open | List Price |
|---|---|---|---|---|---|---|---|
| 93-4 | .335 | .510 | $4.10 | 93-10 | .610 | 1.135 | $6.00 |
| 93-6 | .383 | .760 | 4.10 | 93-12 | .705 | 1.322 | 8.40 |
| 93-8 | .445 | .947 | 5.00 | | | | |

*Suffix shows wrench length in inches; e.g., 93-6 is 6″ long.
®Registered Utica trademark.

## ADJUSTABLE TORQUE SCREWDRIVERS

Designed for use where precision and accuracy are required. Utica adjustable screwdrivers have a linear micrometer type scale. Both models are torque-limiting: When the set torque is reached, the unit automatically releases and turns free. A complete line of screwdriver blades (hex, Phillips and slotted), holders, adapters and sockets is available. **Ask for the current Utica catalog.**

### JEWELER TYPE

### MINIATURE TORQUE SCREWDRIVER

Adjustable miniature screwdriver has universal drive. Adjusts from 1 to 20 oz.-in. in ¼-oz.-in. increments. Length, 3⅝″. Weight, 1 oz.

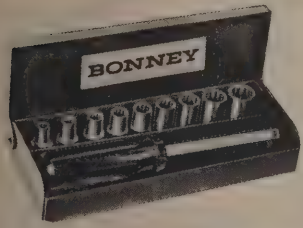
**Utica Model TT-1 Torque Screwdriver**—List Price..... **$52.80**

### STANDARD TORQUE SCREWDRIVERS

Fully adjustable, standard size torque screwdrivers feature ¼″ female hex drive. Length, 6½″. Weight, 8 oz.

**Utica Model TS-100**—Adjusts from 1 to 100 oz.-in. in 2-oz.-in. increments. List Price.............................. **$45.57**

**Utica Model TS-30**—Adjusts from 1 to 30 lb.-in. in 1-lb.-in. increments. List Price.................................. **$45.57**



No. B-80201 Set

## ¼″ SQUARE-DRIVE SOCKET SETS

Utica's two most popular sets for the electronic trade. All sockets incorporate the revolutionary LOC-RITE® lobular design which minimizes damage in critical fastener applications.

®Registered Utica trademark.

No. B-80202 Set

### 11-PIECE SOCKET SET

| Utica No. | Size Opening | Description | List Price |
|---|---|---|---|
| V-6 | 3/16″ | 12-lobe socket | $ 0.94 |
| V-7 | 7/32″ | 12-lobe socket | .94 |
| V-8 | ¼″ | 12-lobe socket | .94 |
| V-9 | 9/32″ | 12-lobe socket | .94 |
| V-10 | 5/16″ | 12-lobe socket | .94 |
| V-11 | 11/32″ | 12-lobe socket | .94 |
| V-12 | ⅜″ | 12-lobe socket | .94 |
| V-14 | 7/16″ | 12-lobe socket | .94 |
| V-16 | ½″ | 12-lobe socket | .94 |
| V-780 | ............ | 6″ spinner handle | 2.12 |
| MB-22 | ............ | Metal box, red: 6½″ w. x 2½″ d. x 1″ h. | 1.50 |
| B-80201 | Complete Set: 1 each of above parts | | 10.90 |

### 16-PIECE SOCKET SET

| Utica No. | Size Opening | Description | List Price |
|---|---|---|---|
| V-6 | 3/16″ | 12-lobe socket | $ 0.94 |
| V-7 | 7/32″ | 12-lobe socket | .94 |
| V-8 | ¼″ | 12-lobe socket | .94 |
| V-9 | 9/32″ | 12-lobe socket | .94 |
| V-10 | 5/16″ | 12-lobe socket | .94 |
| V-11 | 11/32″ | 12-lobe socket | .94 |
| V-12 | ⅜″ | 12-lobe socket | .94 |
| V-14 | 7/16″ | 12-lobe socket | .94 |
| V-16 | ½″ | 12-lobe socket | .94 |
| VS-8 | ¼″ | 8-point socket | .98 |
| VS-10 | 5/16″ | 8-point socket | .98 |
| V-602 | ............ | 2″ extension | 1.36 |
| V-606 | ............ | 6″ extension | 1.70 |
| V-720 | ............ | Hinge handle | 3.56 |
| V-702K | ............ | Reversible ratchet | 5.62 |
| MB-22 | ............ | Metal box, red: 6½″ w. x 2½″ d. x 1″ h. | 1.50 |
| B-80202 | Complete Set: 1 each of above parts | | 21.38 |

**FOR LARGER QUANTITY ORDERS**
**cramer OFFERS**
**MANUFACTURER-COMPETITIVE PRICING**
**IN MOST INSTANCES.**
**WRITE OR CALL FOR QUOTATION**

**GUARANTEE**

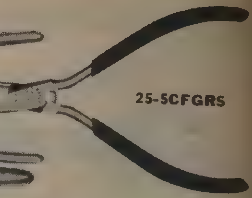
**The trademark "UTICA" is your unqualified guarantee against any defects in quality or workmanship. Each tool is designed and engineered with plus strength factors to perform the maximum service on the job for which it is intended. Any tool failing in normal use may be returned prepaid to the factory and if our inspection reveals the failure due to defective quality or workmanship, it will be repaired or replaced and returned without charge.**

# UTICA ELECTRONIC AND STANDARD PLIERS

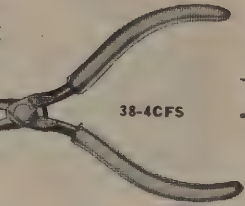
21-4,
21-5

22-4,
22-5

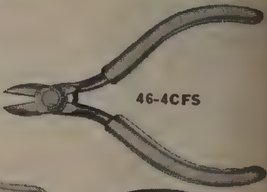
23-6CFGRS

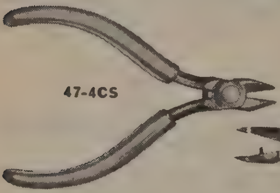

25-5CFGRS

34-6CFS

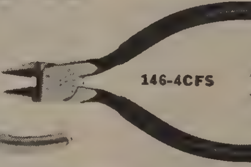

38-4CFS

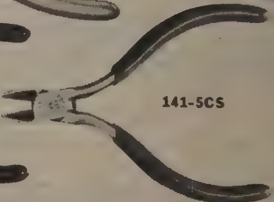
42-4CFS

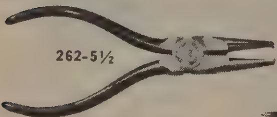

46-4CFS

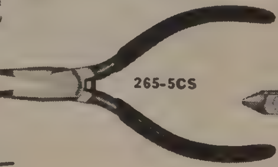

47-4CS

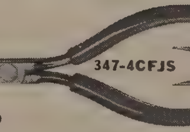
66-5CFJS

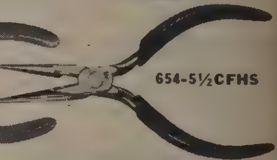

146-4CFS

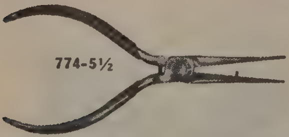

141-5CS


262-5½

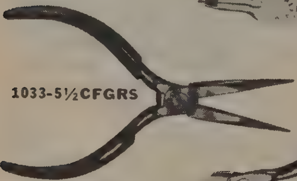

265-5CS

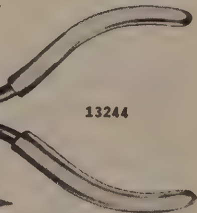

347-4CFJS


654-5½CFHS


774-5½

896-6CFS


1033-5½CFGRS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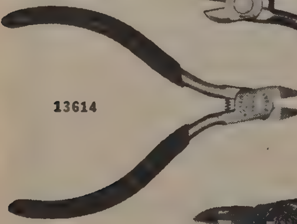
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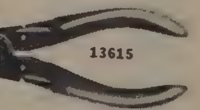

13615

13634

## FORGED PLIERS

These Utica Tool Company quality pliers are designed especially for the electronic industry. All cutting edges are induction hardened to give longer life and precision service. **Note:** Suffix C (e.g., 47-4**C**S) indicates cushion handles for extra comfort. Suffix S (e.g., 47-4C**S**) indicates coil spring is integral. Dielectric value is not guaranteed.

| Utica Number | Description | Length | List Price |
|---|---|---|---|
| **21-4** | Round nose pliers | 4″ | $ 4.04 |
| **21-5** | Round nose pliers | 5″ | 4.52 |
| **22-4** | Short chain nose pliers | 4″ | 3.68 |
| **22-5** | Short chain nose pliers | 5″ | 3.66 |
| **23-6CFGRS** | Short, thin chain nose with long handles | 6″ | 6.71 |
| **25-5CFGRS** | Bent chain nose for very fine wire | 5″ | 7.65 |
| **34-6CFS** | Semi-flush, long handle | 6″ | 7.65 |
| **38-4CFS** | Semi-flush, extra thin nose | 4″ | 7.21 |
| **42-4CFS** | Tapered nose, diagonal cutting | 4″ | 8.17 |
| **46-4CFS** | Semi-flush, diagonal cutting | 4″ | 5.50 |
| **47-4CS** | Flush edge, diagonal cutting | 4″ | 5.46 |
| **66-5CFJS** | Bent, flush edge, diagonal | 5″ | 7.56 |
| **141-5CS** | Flush edge tapered nose, diagonal | 5″ | 5.56 |
| **146-4CFS** | Carbide edges, semi-flush | 4″ | 22.65 |
| **262-5½** | Transverse end cutting nipper | 5½″ | 5.36 |
| **265-5CS** | Wiring plier with cutter | 5″ | 5.86 |
| **347-4CFJS** | Slim line flush edge | 4″ | 6.20 |
| **654-5½CFHS** | Long chain nose with cutter | 5½″ | 6.07 |
| **774-5½** | Slim needle nose | 5½″ | 6.20 |
| **896-6CFS** | Tapered nose, wiring plier with cutter | 6″ | 7.45 |
| **1033-5½CFGRS** | Long chain nose | 5½″ | 5.50 |
| **13244** | Snub nose, flush edge | 4″ | 5.29 |
| **13614** | Carbide edges with adjustable rivet | 4″ | 25.73 |
| **13615** | Compound action, carbide edges semi-flush | 6″ | 26.78 |
| **13634** | Carbide edges with adjustable rivet and heavy nose | 4″ | 25.73 |

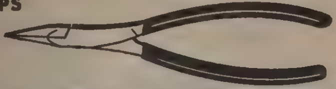
## SPECIAL FEATURES AVAILABLE

Coil spring (where not already designated), full flush and beveled cutting edges, radius on jaws, serrated or plain or underscored jaws are also available; full details on request. Utica offers the largest selection of electronic and standard pliers on the market. All are made to meet your exact requirements. **Ask for Utica's current, free catalog.**

# XCELITE® Professional Hand Tools

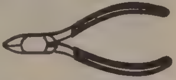
## LIERS AND SNIPS

### HAIN NOSE LECTRICIAN'S LIERS



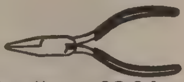
**Xcelite No. 59CG**—8″ pliers with long reach and high leverage. Rugged construction....................................**$3.69** ea.

### IAGONAL PLIERS



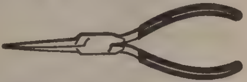
**Xcelite No. 64CG**—4″ electronic diagonal pliers......**$4.24** ea.
**Xcelite No. 54CG**—Midget 4″ size.................... **3.32** ea.
**Xcelite No. 55CG**—5″ pliers for most cutting needs... **3.40** ea.
**Xcelite No. 66CG**—6″ all-purpose.................... **3.69** ea.
**Xcelite No. 67CG**—7″ heavy duty.................... **3.69** ea.

### ONG NOSE PLIERS



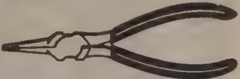
**Xcelite No. 41CG**—Midget 4″ without side cutters...**$3.04** ea.
**Xcelite No. 52CG**—6½″ long nose, without side cutters. **2.96** ea.
**Xcelite No. 51CG**—6½″ long nose, with side cutters.. **3.75** ea.

### NEEDLE NOSE PLIERS



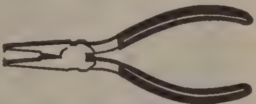
**Xcelite No. 56CG**—6″ size. Long slim jaws permit entry where regular long nose pliers won't work...................**$3.49** ea.
**Xcelite No. 57CG**—5½″ pliers with fine serrated jaws and coil spring. For firm gripping and looping of wire........**$4.12** ea.

### RADIO AND TV PLIERS



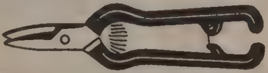
**Xcelite No. 58CG**—6″ pliers with extreme tip for gripping, sharp 5⁄16″ cutting edges 3⁄16″ back from tip...................**$4.49** ea.
**Xcelite No. 69CG**—5″ fine pointed pliers with serrated tips for delicate work. Sharp 5⁄16″ cutting edges ⅛″ back from tips for fine wires................................................**$5.41** ea.

### TRANSVERSE CUTTING PLIERS



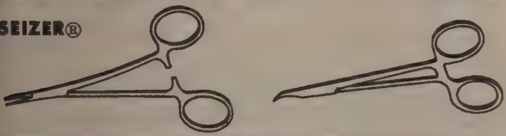
**Xcelite No. 62CG**—6″ cutter for flush cutoff and use where ordinary pliers won't reach. Coil spring opener.........**$4.09** ea.

### ELECTRONIC SNIPS



Designed to cut fine wire, filament and light sheet metal. Coil springs.
**Xcelite No. 85CG**—Short ¾″ blade.....................**$3.23** ea.
**Xcelite No. 86CG**—Pointed 1½″ blade.................. **3.23** ea.

### SEIZER®

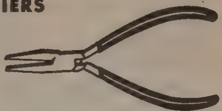


Versatile tools clamp wires for soldering, act as heat sinks.

| Xcelite No. | Description | Ea. |
|---|---|---|
| 42H | 6″ Straight Nose Seizer | $4.13 |
| 43H | 6″ Curved Nose Seizer | 4.27 |
| 32H | 5″ Straight Nose Jr. Seizer | 4.13 |
| 33H | 5″ Curved Nose Jr. Seizer | 4.27 |

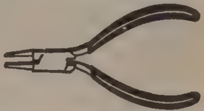
## MINIATURE ELECTRONIC PLIERS

### FLAT NOSE PLIERS



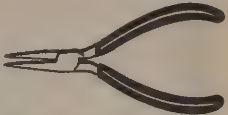
**Xcelite No. 70CG**—5″ long for fine work. No cutters..**$3.52** ea.

### ROUND NOSE PLIERS



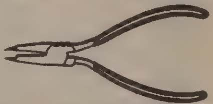
**Xcelite No. 71CG**—4½″ long. For looping and forming fine wires................................................**$4.04** ea.

### CHAIN NOSE PLIERS



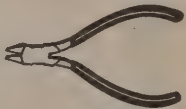
**Xcelite No. 72CG**—5″ long with thin chain nose......**$3.77** ea.

### SPECIAL TIP CUTTING PLIERS



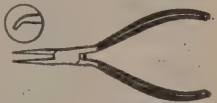
**Xcelite No. 73CG**—4½″ long. 45° oblique cutting tip.**$5.14** ea.

### DIAGONAL CLOSE AND FLUSH CUTTING PLIERS



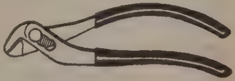
**Xcelite No. 74CG**—4″ long for fast, clean tip cutting. Fine tapered nose and near-flush cutting edges...................**$4.87** ea.
**Xcelite No. 84CG**—4″ full flush cutting, thin tapered jaws and pointed nose..........................................**$4.87** ea.
**Xcelite No. 95CG**—5″ full flush cutting with pointed nose ..........................................................**$4.92** ea.

### BENT THIN CHAIN NOSE PLIERS



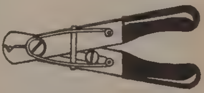
**Xcelite No. 79CG**—5″ long with fine serrated jaws, radius edges; 60° angle thin bent nose.........................**$4.48** ea.

### ADJUSTABLE UTILITY PLIERS



**Xcelite No. 50CG**—5″ slip joint ignition pliers.......**$2.40** ea.
**Xcelite No. 53CG**—7″ utility plier.................. **3.05** ea.
**Xcelite No. 63CG**—10″ utility plier................. **4.14** ea.

### WIRE STRIPPER AND CUTTER



**Xcelite No. 100**—Adjustable screw stop for different wire sizes, cushion grips. Cuts and strips both solid and stranded wire, cleanly and neatly. Hardened and ground blades.....**$1.00** ea.
**Xcelite No. 101-S**—Same as No. 100 except with spring equipped self-opening handles.................................**$1.36** ea.
**Xcelite No. 103-S**—Unique cam stop adjustment for different wire sizes..............................................**$1.64** ea.

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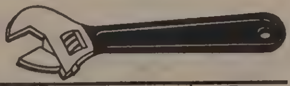
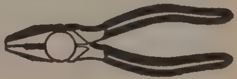
### ADJUSTABLE WRENCHES



| Xcelite No. | Length | Max. Opening | Ea. |
|---|---|---|---|
| 44C | 4″ | ½″ | $2.88 |
| 44CG | 4″ | ½″ | 3.13 |
| 46C | 6″ | ¾″ | 2.92 |
| 46CG | 6″ | ¾″ | 3.17 |
| 48C | 8″ | 15⁄16″ | 3.33 |
| 48CG | 8″ | 15⁄16″ | 3.59 |

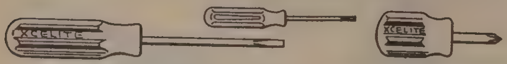
### SIDE CUTTING PLIERS



**Xcelite No. 60CG**—6″ Electrician's...................**$3.68** ea.
**Xcelite No. 68CG**—8″ Lineman's...................... **4.43** ea.

**ALL PLIERS, SNIPS AND WRENCHES AVAILABLE WITH COMFORTABLE "CUSHION GRIP" (CG) HANDLES AS STANDARD**

# XCELITE® Professional Hand Tools



## ROUND BLADE SCREWDRIVERS (For Slotted Screws)

Blades forged from tough AISI 6150 chrome vanadium steel. Shockproof, breakproof, amber plastic (UL) handles.

| Xcelite No. | Blade | Handle | Overall | 1-9, ea. | 10Up, ea. |
|---|---|---|---|---|---|
| **POCKET CLIP STYLE** | | | | | |
| R3322 | 3/32" x 2" | ½" x 2¼" | 4¼" | $0.41 | $0.36 |
| R3323 | 3/32" x 3" | ½" x 2¼" | 5¼" | .44 | .39 |
| R3324 | 3/32" x 4" | ½" x 2¼" | 6¼" | .47 | .42 |
| R181 | ⅛" x 2" | ½" x 2¼" | 4¼" | .41 | .36 |
| R183 | ⅛" x 3" | ½" x 2¼" | 5¼" | .44 | .39 |
| R184½ | ⅛" x 4" | ½" x 2¼" | 6¼" | .47 | .42 |
| **REGULAR** | | | | | |
| R182 | ⅛" x 2" | ¾" x 2⅝" | 4⅝" | $0.47 | $0.42 |
| R184 | ⅛" x 4" | ¾" x 2⅝" | 6⅝" | .54 | .48 |
| R186 | ⅛" x 6" | ¾" x 2⅝" | 8⅝" | .61 | .54 |
| R188 | ⅛" x 8" | ¾" x 2⅝" | 10⅝" | .71 | .63 |
| R1810 | ⅛" x 10" | ¾" x 2⅝" | 12⅝" | .81 | .72 |
| R5323 | 5/32" x 3" | ¾" x 2⅝" | 5⅝" | .61 | .54 |
| R5324 | 5/32" x 4" | ¾" x 2⅝" | 6⅝" | .61 | .54 |
| R5325 | 5/32" x 5" | ¾" x 2⅝" | 7⅝" | .64 | .57 |
| R5328 | 5/32" x 8" | ¾" x 2⅝" | 10⅝" | .81 | .72 |
| R3163 | 3/16" x 3" | ⅞" x 3⅝" | 6⅝" | .78 | .69 |
| R3164 | 3/16" x 4" | ⅞" x 3⅝" | 7⅝" | .84 | .75 |
| R3166 | 3/16" x 6" | ⅞" x 3⅝" | 9⅝" | .95 | .84 |
| R3168 | 3/16" x 8" | ⅞" x 3⅝" | 11⅝" | 1.05 | .93 |
| R31610 | 3/16" x 10" | ⅞" x 3⅝" | 13⅝" | 1.22 | 1.08 |
| R142 | ¼" x 2" | 1 1/16" x 4⅛" | 6⅛" | .95 | .84 |
| R144 | ¼" x 4" | 1 1/16" x 4⅛" | 8⅛" | 1.11 | .99 |
| R146 | ¼" x 6" | 1 1/16" x 4⅛" | 10⅛" | 1.22 | 1.08 |
| R148 | ¼" x 8" | 1 1/16" x 4⅛" | 12⅛" | 1.28 | 1.14 |
| R1410 | ¼" x 10" | 1 1/16" x 4⅛" | 14⅛" | 1.35 | 1.20 |
| R5164 | 5/16" x 4" | 1¼" x 4¼" | 7⅝" | 1.25 | 1.11 |
| R5166 | 5/16" x 6" | 1¼" x 4¼" | 9⅝" | 1.35 | 1.20 |
| R5168 | 5/16" x 8" | 1¼" x 4¼" | 12½" | 1.45 | 1.29 |
| R51610 | 5/16" x 10" | 1⅜" x 4½" | 14½" | 1.79 | 1.59 |
| R388 | ⅜" x 8" | 1⅜" x 4½" | 12½" | 1.96 | 1.74 |
| R3810 | ⅜" x 10" | 1⅜" x 4½" | 14½" | 2.13 | 1.89 |
| R3812 | ⅜" x 12" | 1⅜" x 4½" | 16½" | 2.46 | 2.19 |

## PHILLIPS TYPE SCREWDRIVERS

Chrome vanadium steel blades. Precision points. Shockproof, breakproof, amber plastic (UL) handles.

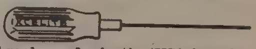
| Xcelite No. | Point | Blade | Handle | Overall | 1-9 ea. | 10 Up ea. |
|---|---|---|---|---|---|---|
| **POCKET CLIP STYLE** | | | | | | |
| P12S | #0 | ⅛" x 2" | ½" x 2¼" | 4¼" | $0.54 | $0.48 |
| **STUBBY STYLE** | | | | | | |
| SX101 | #1 | 3/16" x 1 7/16" | ⅞" x 1½" | 2 15/16" | $0.84 | $0.75 |
| SX102 | #2 | ¼" x 1 5/16" | 1 1/16" x 2" | 3 5/16" | .95 | .84 |
| **REGULAR** | | | | | | |
| X100 | #0 | ⅛" x 2" | ¾" x 2½" | 4⅝" | $0.61 | $0.54 |
| X101 | #1 | 3/16" x 3" | ⅞" x 3⅝" | 6⅝" | .91 | .81 |
| X108 | #1 | 3/16" x 6" | ⅞" x 3⅝" | 9⅝" | 1.08 | .96 |
| X102 | #2 | ¼" x 4" | 1 1/16" x 4⅛" | 8⅛" | 1.11 | .99 |
| X103 | #3 | 5/16" x 6" | 1 1/16" x 4⅛" | 10½" | 1.62 | 1.44 |
| X104 | #4 | ⅜" x 8" | 1⅜" x 4½" | 12½" | 2.03 | 1.80 |
| **EXTRA LONG** | | | | | | |
| X1010 | #1 | 3/16" x 10" | ⅞" x 3⅝" | 13⅝" | $1.35 | $1.20 |
| X1020 | #2 | ¼" x 10" | 1 1/16" x 4⅛" | 14⅛" | 1.52 | 1.35 |

## "SUPER-TRU" PHILLIPS SCREWDRIVERS

Precision made Phillips screwdrivers have "Super-Tru" tips for close fit, long wear, and reduced possibility of damage to screw head recesses, especially in small size fasteners. Bright nickel chrome blades with tips specially treated and black-oxide finished for ultimate dimensional control. Black plastic handles.

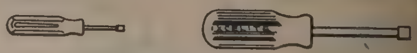
| Xcelite No. | Point | Blade | Handle | Overall | 1-9 ea. | 10 Up ea. |
|---|---|---|---|---|---|---|
| XST-100 | 0 | ⅛" x 2" | ¾" x 2⅝" | 4⅝" | $0.68 | $0.60 |
| XST-101 | 1 | 3/16" x 3" | ⅞" x 3⅝" | 6⅝" | 1.01 | .90 |
| XST-102 | 2 | ¼" x 4" | 1 1/16" x 4⅛" | 8⅛" | 1.25 | 1.11 |
| XST-1010 | 1 | 3/16" x 10" | ⅞" x 3⅝" | 13⅝" | 1.52 | 1.35 |
| XST-1020 | 2 | ¼" x 10" | 1 1/16" x 4⅛" | 14⅛" | 1.69 | 1.50 |

## ALLEN HEX TYPE SCREWDRIVERS



Alloy steel blades. Shockproof, breakproof, plastic (UL) handles.

| No. | Hex | Blade | Handle | Overall | 1-9 ea. | 10 Up ea. |
|---|---|---|---|---|---|---|
| LN-20 | .050" | 4" | ¾" x 2⅝" | 6⅝" | $0.88 | $0.78 |
| LN-21 | 1/16" | 4" | ¾" x 2⅝" | 6⅝" | .88 | .78 |
| LN-22 | 5/64" | 4" | ¾" x 2⅝" | 6⅝" | .88 | .78 |
| LN-23 | 3/32" | 4" | 1" x 3⅛" | 7⅛" | .88 | .78 |
| LN-764 | 7/64" | 4" | 1" x 3⅛" | 7⅛" | .88 | .78 |
| LN-24 | ⅛" | 4" | 1" x 3⅛" | 7⅛" | .95 | .84 |
| LN-964 | 9/64" | 4" | 1" x 3⅛" | 7⅛" | .95 | .84 |
| LN-25 | 5/32" | 6" | 1" x 3⅛" | 9⅛" | .95 | .84 |
| LN-26 | 3/16" | 6" | 1 1/16" x 4⅛" | 10⅛" | .95 | .84 |
| LN-27 | 7/32" | 6" | 1 1/16" x 4⅛" | 10⅛" | 1.08 | .96 |
| LN-28 | ¼" | 6" | 1 1/16" x 4⅛" | 10⅛" | 1.08 | .96 |



## COLOR-CODED NUTDRIVERS (1¼" Hole Depth)

Steel shafts with precision, cold-drawn, case-hardened sockets. Color-coded, plastic (UL) handles.

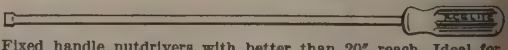
| Xcelite No. | Color | Hex | Blade | Handle | Overall | 1-9 ea. | 10 Up ea. |
|---|---|---|---|---|---|---|---|
| **MIDGET POCKET CLIP STYLE** | | | | | | | |
| P3 | Blue | 3/32" | 1¼" | ½" x 2¼" | 3½" | $0.64 | $0.57 |
| P4 | Red | ⅛" | 1¼" | ½" x 2¼" | 3½" | .64 | .57 |
| P5 | Amber | 5/32" | 1¼" | ½" x 2¼" | 3½" | .64 | .57 |
| P6 | Black | 3/16" | 1¼" | ½" x 2¼" | 3½" | .64 | .57 |
| P7 | Brown | 7/32" | 1¼" | ½" x 2¼" | 3½" | .64 | .57 |
| P8 | Red | ¼" | 1¼" | ½" x 2¼" | 3½" | .64 | .57 |
| P9 | Orange | 9/32" | 1¼" | ½" x 2¼" | 3½" | .64 | .57 |
| P10 | Amber | 5/16" | 1¼" | ½" x 2¼" | 3½" | .64 | .57 |
| P11 | Green | 11/32" | 1¼" | ½" x 2¼" | 3½" | .64 | .57 |
| P12 | Blue | ⅜" | 1¼" | ½" x 2¼" | 3½" | .64 | .57 |
| **REGULAR** | | | | | | | |
| 5 | Amber | 5/32" | 3" | 1" x 3⅛" | 6⅛" | $1.01 | $0.90 |
| 6 | Black | 3/16" | 3" | 1" x 3⅛" | 6⅛" | 1.01 | .90 |
| 7 | Brown | 7/32" | 3" | 1" x 3⅛" | 6⅛" | 1.01 | .90 |
| 8 | Red | ¼" | 3" | 1" x 3⅛" | 6⅛" | 1.01 | .90 |
| 9 | Orange | 9/32" | 3" | 1" x 3⅛" | 6⅛" | 1.01 | .90 |
| 10 | Amber | 5/16" | 3" | 1" x 3⅛" | 6⅛" | 1.01 | .90 |
| 11 | Green | 11/32" | 3" | 1" x 3⅛" | 6⅛" | 1.01 | .90 |
| 12 | Blue | ⅜" | 3" | 1" x 3⅛" | 6⅛" | 1.01 | .90 |
| 14 | Brown | 7/16" | 2⅝" | 1 1/16" x 4⅛" | 6¾" | 1.25 | 1.11 |
| 16 | Red | ½" | 2⅝" | 1 1/16" x 4⅛" | 6¾" | 1.25 | 1.11 |

## COLOR-CODED HOLLOW SHAFT NUTDRIVERS

General purpose nutdrivers especially useful where nuts must be installed over long protruding bolts or studs.

| Xcelite No. | Color | Hex | Blade | Handle | Overall | 1-9 ea. | 10 Up ea. |
|---|---|---|---|---|---|---|---|
| **REGULAR (HOLE DEPTHS: HS6 and 7, 5½"; HS8-12, 4⅜"; HS13-24, 6")** | | | | | | | |
| HS6 | Black | 3/16" | 3⅛" | 1" x 3⅛" | 6¼" | $1.15 | $1.02 |
| HS7 | Brown | 7/32" | 3⅛" | 1" x 3⅛" | 6¼" | 1.15 | 1.02 |
| HS8 | Red | ¼" | 3⅛" | 1 1/16" x 4⅛" | 7¼" | 1.15 | 1.02 |
| HS9 | Orange | 9/32" | 3⅛" | 1 1/16" x 4⅛" | 7¼" | 1.15 | 1.02 |
| HS10 | Amber | 5/16" | 3⅛" | 1 1/16" x 4⅛" | 7¼" | 1.15 | 1.02 |
| HS11 | Green | 11/32" | 3⅛" | 1 1/16" x 4⅛" | 7¼" | 1.15 | 1.02 |
| HS12 | Blue | ⅜" | 3⅛" | 1 1/16" x 4⅛" | 7¼" | 1.15 | 1.02 |
| HS13 | Amber | 13/32" | 3⅛" | 1 1/16" x 4⅛" | 7¼" | 1.32 | 1.17 |
| HS14 | Brown | 7/16" | 3⅛" | 1 1/16" x 4⅛" | 7¼" | 1.32 | 1.17 |
| HS15 | Amber | 15/32" | 3⅛" | 1 1/16" x 4⅛" | 7¼" | 1.32 | 1.17 |
| HS16 | Red | ½" | 3⅛" | 1 1/16" x 4⅛" | 7¼" | 1.32 | 1.17 |
| HS17 | Amber | 17/32" | 3⅛" | 1 1/16" x 4⅛" | 7¼" | 1.38 | 1.23 |
| HS18 | Orange | 9/16" | 3⅛" | 1 1/16" x 4⅛" | 7¼" | 1.38 | 1.23 |
| HS19 | Amber | 19/32" | 3⅛" | 1 1/16" x 4⅛" | 7¼" | 1.55 | 1.38 |
| HS20 | Amber | ⅝" | 3⅛" | 1⅛" x 4½" | 7⅝" | 1.55 | 1.38 |
| HS22 | Amber | 11/16" | 3⅛" | 1⅛" x 4½" | 7⅝" | 2.36 | 2.10 |
| HS24 | Amber | ¾" | 3⅛" | 1⅛" x 4½" | 7⅝" | 2.36 | 2.10 |
| **EXTRA LONG (HOLE DEPTH: A6-12, 6¾")** | | | | | | | |
| A6 | Black | 3/16" | 6½" | 1" x 3⅛" | 9⅛" | $1.38 | $1.23 |
| A7 | Brown | 7/32" | 6½" | 1" x 3⅛" | 9⅛" | 1.38 | 1.23 |
| A8 | Red | ¼" | 6½" | 1" x 3⅛" | 9⅛" | 1.38 | 1.23 |
| A9 | Orange | 9/32" | 6½" | 1" x 3⅛" | 9⅛" | 1.38 | 1.23 |
| A10 | Amber | 5/16" | 6½" | 1" x 3⅛" | 9⅛" | 1.38 | 1.23 |
| A11 | Green | 11/32" | 6½" | 1" x 3⅛" | 9⅛" | 1.38 | 1.23 |
| A12 | Blue | ⅜" | 6½" | 1" x 3⅛" | 9⅛" | 1.38 | 1.23 |

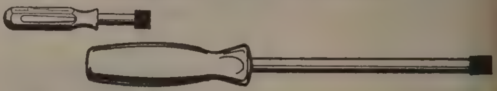
## SUPER LONG HOLLOW SHAFT NUTDRIVERS



Fixed handle nutdrivers with better than 20" reach. Ideal for removing color TV tuners, bezels, etc. Shafts are highest quality rigid steel tubing; will not twist. Precision cold drawn, case-hardened sockets. Color-coded plastic handles.

| Xcelite No. | Color | Hex | Blade | Handle | Overall | 1-4 ea. | 5 Up ea. |
|---|---|---|---|---|---|---|---|
| AA-8 | Red | ¼" | 16¾" | 1 1/16" x 4⅛" | 20⅞" | $4.05 | $3.60 |
| AA-10 | Amber | 5/16" | 16¾" | 1 1/16" x 4⅛" | 20⅞" | 4.05 | 3.60 |

## MAGNETIC HEX NUTDRIVERS

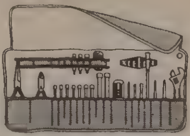


Nut and hex screw holding.

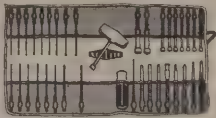
| Xcelite No. | Color | Hex | Blade | Overall | 1-9 ea. | 10 Up ea. |
|---|---|---|---|---|---|---|
| P-8M | Red | ¼" | 1½" | 3½" | $1.01 | $0.90 |
| P-10M | Amber | 5/16" | 1½" | 3½" | 1.01 | .90 |
| 8-M | Red | ¼" | 3" | 7" | 1.55 | 1.38 |
| 10-M | Amber | 5/16" | 3" | 7" | 1.55 | 1.38 |
| A-8M | Red | ¼" | 6" | 10" | 1.96 | 1.74 |
| A-10M | Amber | 5/16" | 6" | 10" | 1.96 | 1.74 |
| AA-8M | Red | ¼" | 16¾" | 20¾" | 4.59 | 4.08 |
| AA-10M | Amber | 5/16" | 16¾" | 20¾" | 4.59 | 4.08 |

# XCELITE® Professional Hand Tools

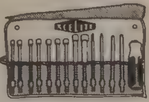
## SERIES 99 SERVICE KITS



**elite No. 99SM—23-Piece Service ster Kit**—Durable, plastic-coated ıvas case contains 6″ long nose 'ushion Grip'' pliers, 5″ diagonal 'ushion Grip'' pliers, 6″ thin-pat- n adjustable wrench, regular ⁄16″ x 4⅛″) and stubby (1 1/16″ x 2″) astic handles for interchangeable ades, 9 regular (3/16″ thru ½″) and stubby (¼″, 5/16″, ⅜″) nutdriver ades, a #1 Phillips screwdriver ade, 3/16″ and ¼″ slotted screwdriver blades, ⅛″ to ⅜″ and ¼″ ½″ reamer blades, 7″ extension blade..........**$27.90 ea.**

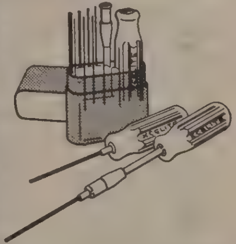


**elite No. 99MP—39-Piece Multi- irpose Kit**—Plastic-coated canvas se folds into compact package. Kit cludes regular (1 1/16″ x 4⅛″) and e (1″ x 3⅜″) plastic handles and lowing interchangeable blades: 10 itdriver (5/32″ thru ½″), 9 Allen hex pe screwdriver (.050″ thru 3/16″), 9 istol Multiple-Spline screwdriver )48″ thru .183″), 3 slotted screwdriver (3/16″, ¼″ and 5/16″), 2 illips screwdriver (#1 and #2), 2 reamers (⅛″ to ⅜″ and ¼″ to ″), awl and 4″ extension..........................**$29.25 ea.**



**celite No. 99PR—14-Piece Nutdriver/ rewdriver Kit**—Regular size (1 1/16″ x ⁄8″) Series 99 handle and following ades: 9 nutdriver (3/16″ thru ½″), 3/16″ id ¼″ slotted screwdriver, #1 and #2 iillips screwdriver. Roll-up plastic case. ..............................**$9.60 ea.**

## SERIES 99 COMPACT SETS



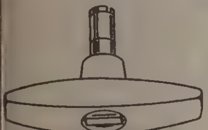
ocket size, plastic cases pack an ıusual number of tools into a small ace. Flat bottom of case permits s use as bench stand. Series 99 ades are interchangeable in handle ipplied with each set.

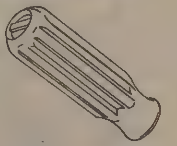
**celite No. 99PS-40—11-Piece llen Hex Type Screwdriver Set**—egular size (1 1/16″ x 4⅛″) Series 99 andle, 9 Allen hex type screwdriver ıades (.050″ thru 3/16″), 4″ extension lade.........................**$7.43 ea.**

**celite No 99PS-50—14-Piece lutdriver/Screwdriver Set**—Regu- ır size (1 1/16″ x 4⅛″) Series 99 handle nd following blades: 7 nutdriver ⁄16″ thru ⅜″), 3/16″ and ¼″ slotted crewdriver, #1 and #2 Phillips crewdriver, 4″ extension..............................**$9.15 ea.**

**celite No. 99PS-60—11-Piece Bristol Screwdriver Set**—For ristol Multiple-Spline socket screws. Regular size (1 1/16″ x 4⅛″) eries 99 handle, 9 Bristol screwdriver blades (.048″/4-flute thru 183″/6-flute), 4″ extension blade...................**$7.43 ea.**

## SERIES 99 REVERSIBLE RATCHET HANDLES

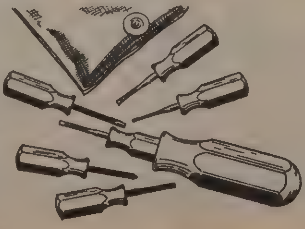




Jnique plastic ratcheting handles fit over 60 different Xcelite lades—nutdrivers, screwdrivers and special purpose interchange- ible blades—to speed up assembly and service work. Ratchet nechanism is fully enclosed to keep out dirt and grit. Recessed eversing shift is easily operated by a flick of the thumb; cannot ɔe accidentally tripped while driving. Light ratchet drag for easy urning. Mechanism is fully contained within handle.

| Xcelite No. | Description | Color | Size | 1-4 ea. | 5 Up ea. |
|---|---|---|---|---|---|
| 99-1-R | Regular handle | Black | 1¼″ x 4½″ | $5.57 | $4.95 |
| 99-4-R | Tee handle | Black | 3½″ x 2⅜″ | 5.57 | 4.95 |

## MINI SCREWDRIVER SETS



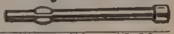
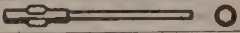
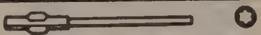
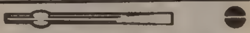
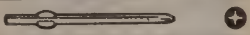
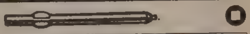
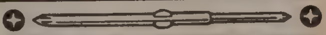
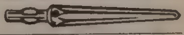
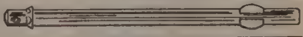
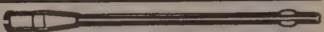
**Xcelite No. M-50**—Five piece miniature jewelers type slotted screwdriver set containing sizes .040″ thru .100″; ⅞″ blade lengths; 2½″ overall ..............**$1.50 ea.**

**Xcelite No. M-60**—Six piece miniature screwdriver set includes one #00 Phillips driver, 5 slotted drivers (.040″ thru .100″) and torque amplifier handle. ⅞″ blade lengths; 2½″ overall ............**$2.10 ea.**

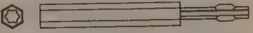
## SERIES 99 HANDLES & INTERCHANGEABLE BLADES

Shockproof, breakproof plastic (UL) handles have patented spring device that holds blades firmly yet permits easy insertion and removal.

### HANDLES

| Xcelite No. | Size and Description | Working Length | 1-4 ea. | 5 Up ea. |
|---|---|---|---|---|
| 99-1 | Regular, 1 1/16″ x 4⅛″ | .......... | $0.81 | $0.72 |
| 99-2 | Junior, 1″ x 3⅛″ | .......... | .78 | .69 |
| 99-3 | Stubby, 1 1/16″ x 2″ | .......... | .74 | .66 |
| 99-4 | Tee, 1″ x 3⅜″ | .......... | 1.08 | .96 |
| **NUTDRIVERS**  | | | | |
| 99-5 | 5/32″ | 3⅝″ | $0.74 | $0.66 |
| 99-6 | 3/16″ | 3⅝″ | .74 | .66 |
| 99-7 | 7/32″ | 3⅝″ | .74 | .66 |
| 99-8 | ¼″ | 3⅝″ | .74 | .66 |
| 99-S8 | ¼″ Stubby | 1⅜″ | .61 | .54 |
| 99-9 | 9/32″ | 3⅝″ | .74 | .66 |
| 99-10 | 5/16″ | 3⅝″ | .74 | .66 |
| 99-S10 | 5/16″ Stubby | 1⅜″ | .61 | .54 |
| 99-11 | 11/32″ | 3⅝″ | .74 | .66 |
| 99-12 | ⅜″ | 3⅝″ | .74 | .66 |
| 99-S12 | ⅜″ Stubby | 1⅜″ | .61 | .54 |
| 99-14 | 7/16″ | 4″ | .91 | .81 |
| 99-16 | ½″ | 4″ | .91 | .81 |
| **MAGNETIC NUTDRIVERS** | | | | |
| 99-8M | ¼″ | 3⅝″ | $1.18 | $1.05 |
| 99-10M | 5/16″ | 3⅝″ | 1.18 | 1.05 |
| **ALLEN HEX TYPE SCREWDRIVERS**  | | | | |
| 99-20 | .050″ | 4″ | $0.68 | $0.60 |
| 99-21 | 1/16″ | 4″ | .68 | .60 |
| 99-22 | 5/64″ | 4″ | .68 | .60 |
| 99-23 | 3/32″ | 4″ | .68 | .60 |
| 99-764 | 7/64″ | 4″ | .68 | .60 |
| 99-24 | ⅛″ | 4″ | .68 | .60 |
| 99-964 | 9/64″ | 4″ | .68 | .60 |
| 99-25 | 5/32″ | 4″ | .68 | .60 |
| 99-26 | 3/16″ | 4″ | .68 | .60 |
| **BRISTOL TYPE MULTIPLE-SPLINE SCREWDRIVERS**  | | | | |
| 99-61 | .048″, 4-flute | 4″ | $0.68 | $0.60 |
| 99-62 | .060″, 6-flute | 4″ | .68 | .60 |
| 99-63 | .069″, 4-flute | 4″ | .68 | .60 |
| 99-64 | .072″, 6-flute | 4″ | .68 | .60 |
| 99-65 | .076″, 4-flute | 4″ | .68 | .60 |
| 99-66 | .096″, 6-flute | 4″ | .68 | .60 |
| 99-67 | .111″, 6-flute | 4″ | .68 | .60 |
| 99-68 | .145″, 6-flute | 4″ | .68 | .60 |
| 99-69 | .183″, 6-flute | 4″ | .68 | .60 |
| **SLOTTED SCREWDRIVERS**  | | | | |
| 99-125 | ⅛″ | 3⅞″ | $0.74 | $0.66 |
| 99-811 | 3/16″ | 3⅞″ | .74 | .66 |
| 99-250 | ¼″ | 3⅞″ | .74 | .66 |
| 99-312 | 5/16″ | 3⅞″ | .74 | .66 |
| **PHILLIPS SCREWDRIVERS**  | | | | |
| 99-820 | #0 | 3⅞″ | $0.74 | $0.66 |
| 99-821 | #1 | 3⅞″ | .74 | .66 |
| 99-822 | #2 | 3⅞″ | .74 | .66 |
| **SCRULOX® SCREWDRIVERS**  | | | | |
| 99-SL-0 | #0 | 4″ | $0.74 | $0.66 |
| 99-SL-1 | #1 | 4″ | .74 | .66 |
| 99-SL-2 | #2 | 4″ | .74 | .66 |
| 99-SL-3 | #3 | 4″ | .74 | .66 |
| **REVERSIBLE SCREWDRIVERS**  | | | | |
| 99-83 | Frearson, 3/16″ and 9/32″ | 3¼″ | $1.25 | $1.11 |
| 99-84 | Clutch, 3/16″ and 5/32″ | 3¼″ | 1.25 | 1.11 |
| **REAMERS**  | | | | |
| 99-38 | ⅛″ to ⅜″ | 4⅛″ | $1.86 | $1.65 |
| 99-39 | ¼″ to ½″ | 4⅛″ | 2.36 | 2.10 |
| **AWL/SCRIBER** | | | | |
| 99-70 | Awl/Scriber | 4½″ | $0.74 | $0.66 |
| **ADAPTERS**<br>For use with ¼″ square drive sockets.  | | | | |
| 99-X2 | Extension | Adds 1″ | $0.57 | $0.51 |
| 99-X4 | Extension | Adds 3″ | .74 | .66 |
| **EXTENSION BLADES**  | | | | |
| 99-X5 | Extension | 4″ | $1.08 | $0.96 |
| 99-X10 | Extension | 7″ | 1.18 | 1.05 |

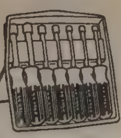
### INVERTED PALNUT DRIVER SHANK SET



Two interchangeable nutdriver shanks for Series 99 sets. Precision formed shanks are hollow to slip over projecting shafts. Includes 7/16″ and ½″ external hex sizes. Each, 4″ long.
**Xcelite No. 99-PAL**..........................**$2.10 ea.**

# XCELITE Professional Hand Tools

## "TRAY BIEN" NUTDRIVER SETS



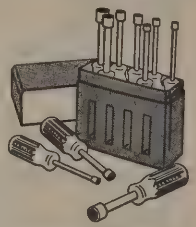
Durable, molded plastic trays with fold-away stand, wall-mounting holes and snap-lock arrangement to hold tools firmly. Nutdrivers have color-coded, shockproof, breakproof plastic (UL) handles. Precision, case-hardened sockets.

**Xcelite No. 127TB**—Seven nutdrivers (3/16" thru 3/8" hex sizes) with 1¼" deep bolt clearance hole in shaft.......... **$6.75 ea.**

**Xcelite No. 137TB**—Five nutdrivers (3/16" thru 3/8" hex sizes) with 1¼" deep bolt clearance hole; 2 hollow shaft (½" and 9/16" hex sizes) nutdrivers.......................................... **$7.65 ea.**

**Xcelite No. 147TB**—Seven hollow shaft (¼" thru ½" hex sizes) nutdrivers.......................................... **$8.94 ea.**

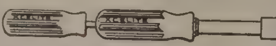
## "KEEP AND CARRY" NUTDRIVER SET



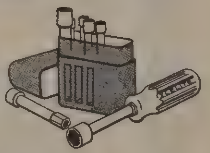
Sturdy yellow plastic case keeps color-coded nutdrivers in order on workbench. Tight fitting, snap-lock covers permit carry-out convenience without spilling or losing them in tool box.

**Xcelite No. HS6-18 Hollow Shaft Nutdriver Set**—Ten hex sizes 3/16" thru 9/16".................. **$11.94 ea.**

## INTERCHANGEABLE HOLLOW SHAFT NUTDRIVER SET



### ADJUSTS LOCKNUT SCREWS



Plastic handle is drilled to permit running screwdriver blade through center, and down through interchangeable hollow nutdriver shafts to speed setting of locknut/screw adjustments. Eight shafts, hex sizes 3/16" thru 9/16".

**Xcelite No. HSC-1**....... **$8.85 ea.**

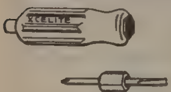
## NUTDRIVER SETS

Popular sizes of color-coded nutdrivers in handy plastic case with eyelet for hanging.

**Xcelite No. 157 7-Piece Nutdriver Set**—Shafts have 1¼" clearance hole depth. Includes 3/16", ¼", 5/16", 11/32", 3/8", 7/16" and ½" hex sizes. Overall length, 6⅛" except 7/16" and ½" sizes, 6¾" long. Color-coded handles.............................. **$6.80 ea.**

**Xcelite No. 177 7-Piece Hollow Shaft Nutdriver Set**—Includes 3/16, ¼", 5/16", 11/32", 3/8", 7/16" and ½" sizes. Overall, 7¼" except 3/16" size, 6¼". Shaft, 3⅛". Color-coded handles...... **$7.68 ea.**

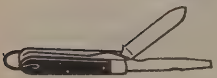
## COMBINATION SCREWDRIVER/NUTDRIVER SET



**Xcelite No. 600**—Handy 4-way tool with ¼" and 7/16" hex openings in handle. Stubby blade has #1 Phillips and 3/16" slotted ends.

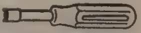
Lots 1–9.................. **$1.92 ea.**
Lots 10 Up.................. **1.71 ea.**

## ELECTRICIAN'S KNIFE



**Xcelite No. K22**—Combination knife and screwdriver. Screwdriver blade has sharp edge for scraping insulation. Has positive lock when open.................. **$2.59 ea.**

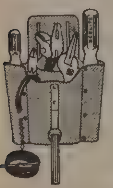
## TERMINAL WRENCHES



These wrenches fit spanner nuts on external antenna and earphone jacks of transistor radios and CB walkie-talkies. The TW-140 is used for adjusting the AccuMatic color level control on RCA sets.

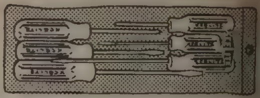
| Xcelite No. | Guide Pin | Spanner Nut O.D. | Blade | Handle | Overall | 1-9 ea. | 10 Up ea. |
|---|---|---|---|---|---|---|---|
| TW32 | .086" | ¼" | 1⅜" | ½" x 2¼" | 3⅝" | $0.61 | $0.54 |
| TW140 | .140" | 5/16" | 1⅜" | ½" x 2¼" | 3⅝" | .64 | .57 |

## TOOL HOLSTER



**Xcelite No. 150**—Handy tool holster has tape holder, knife clip, and five tool pockets. Durable construction of saddle leather with natural cowhide finish. Comfortable hip-contoured back, hot-waxed stitching, brass rivets. Tools not included.......................................... **$5.48 ea.**

## SCREWDRIVER SETS

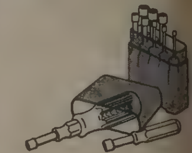


**Xcelite No. SDR-11 5-Piece Screwdriver Set**—Round blade for slotted screws. Includes ⅛", 5/32", 3/16", ¼" and 5/16" blade dia. Overall, 4⅝" to 10¼". Blade length, 2" to 6"........ **$4.26 ea.**

**Xcelite No. SDX-22 5-Piece Phillips Screwdriver Set**—Includes sizes 0, 1, 2 and 3 with blade lengths from 2" to 6", overall length from 4⅝" to 10½"; plus a #2 stubby Phillips, 1 5/16" blade, 3 5/16" overall.......................................... **$4.86 ea.**

**Xcelite No. SRX-33 6-Piece Screwdriver Set**—Includes four slotted types (⅛", 3/16", ¼" and 5/16" blade dia.; 4" and 6" blade lengths; 6⅝" to 10½" overall); #1 Phillips with 3" blade, 6⅝" overall; #2 Phillips with 4" blade, 8⅛" overall....... **$5.52 ea.**

## COMPACT SCREWDRIVER, NUTDRIVER AND HEX DRIVER SETS



Torque amplifier hollow handle slips over tops of midget tools (all 3½") for larger grip, extended reach and increased driving power. See-thru plastic case fits pocket.

**Xcelite No. PS6 Screwdriver/Nutdriver Set**—Contains 6 screwdrivers; 3 Phillips (#00, 0 and 1) and 3 slotted screwdrivers (3/32" thru 5/32") **$3.45 ea.**

**Xcelite No. PS7 Screwdriver/Nutdriver Set**—Two (¼", 5/16") nutdrivers; 2 slot-tip (3/32", 3/16") and 2 Phillips (#0, 1) screwdrivers.......................................... **$4.28 ea.**

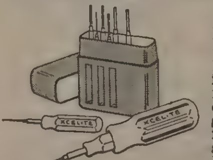
**Xcelite No. PS88 Screwdriver Set**—Five slot-tip (3/32", ⅛", 5/32", 3/16", ¼"), 3 Phillips (#0, 1 and 2)...................... **$4.47 ea.**

**Xcelite No. PS120 Nutdriver Set**—Ten (3/32" thru 3/8") nutdrivers. .......................................... **$6.15 ea.**

**Xcelite No. PS130 Screwdriver/Nutdriver Set**—Contains Phillips (#1, 2); 3 slotted (⅛", 3/16" and ¼") and 5 (3/16" thru 3/8") nutdrivers.......................................... **$5.85 ea.**

**Xcelite No. PS140 Screwdriver/Nutdriver Set**—Contains Phillips (#0, 1 and 2); 4 slotted screwdrivers (3/32" thru ¼") and 3 nutdrivers (¼" thru 3/8").............................. **$5.70 ea.**

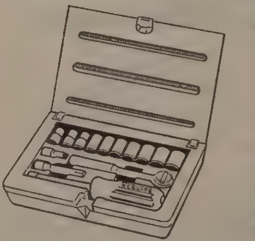
## CONVERTIBLE ALLEN HEX SCREWDRIVER SET



Contains eight midget Allen hex type screwdrivers in sizes from .028" to ⅛". Offers greater speed and easier turning than conventional keys. Red plastic handles are marked with hex size. Set includes a "piggyback" torque amplifier handle that slips over the top of each midget tool handle for larger gripping surface, extended reach and increased driving power. Pocket-size, sturdy see-thru plastic case.

**Xcelite No. PS-89**........ **$4.35 ea.**

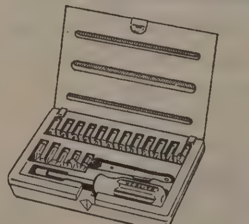
## 14-PIECE SOCKET WRENCH SET



Precision ¼" square drive socket set. Sockets are hot forged from alloy steel; heat treated for long, hard wear. Rugged, streamlined design with straight sidewalls; chamfered ends for easy insertion of ratchets. Reversible ratchet mechanism is fully enclosed. Short (¼" minimum) handle swing and small round head permits work in tight quarters. Includes nine 6-pt. sockets (3/16" to ½"), two 10-pt. sockets (¼" and 5/16") for hex and square nuts, 4¾" reversible ratchet, 2" extension, 5¾" spinner/extension, high-impact molded case.

**Xcelite No. 1001**. **$12.40 ea.**

## MIDGET REVERSIBLE RATCHET OFFSET SCREWDRIVER SET



All-purpose set for Allen hex type, Phillips and slotted screws. Reversible ratchet and spinner/extension can also be used with ¼" square drive sockets, with adapter included. Bits are precision made of chrome nickel molybdenum alloy steel. Knurled spinner tops for quick finger starting of screws. Heavy-duty 20-tooth, ¼" hex drive ratchet of stainless steel with quick action and short (18°) turning radius. Includes: 12 Allen hex type screw bits (.050" to 5/16"), two slotted screw bits, #1 and #2 Phillips bits, 3¾" reversible ratchet, 6" spinner extension, ¼" hex to ¼" square adapter; and molded, compartmented case.

**Xcelite No. XL-70**.......................................... **$9.73 ea.**

**Xcelite No. XL-75 Offset Screwdriver Kit**—Includes ratchet described above and four screwdriver bits (3/16" and ¼" slotted, #1 and #2 Phillips) in plastic pocket kit.............. **$3.09 ea.**

# J-B-T® VIBRATING REED FREQUENCY METERS

**B-T Vibrating Reed Frequency Meters are used extensively in radio, telephone and television rvice, on engine generator sets, in laboratories, in many types of electronic equipment—herever constant or known frequency is important to efficient operation of equipment.**

## MODERN FB SERIES VIBRATING REED FREQUENCY METERS

odern style; made for easy reading to full limit of accuracy. Permanently calibrated; no mperature compensation needed. Screw term. Typical models listed; others available on order.

| J-B-T Model | Range, Hz | No. of Reeds | Standard Voltage | Imped., Ohms | Accuracy ± % | Case Size | Net Each |
|---|---|---|---|---|---|---|---|
| **30-FB** | 48–52 & 58–62 | 10 | 100–130 | 16,500 | 0.3 | 3½″ | **$34.70** |
| **31-FB** | 58–62 | 5 | 100–130 | 16,500 | 0.3 | 3½″ | **28.85** |
| **33-FB** | 380–420 | 9 | 100–130 | 15,400 | 0.3 | 3½″ | **41.80** |
| **34-FB** | 56–64 | 9 | 100–130 | 16,500 | 0.3 | 3½″ | **34.30** |
| **34-FB-Z-11** | 57.5–62.5 | 11 | 100–130 | 16,500 | 0.3 | 3½″ | **37.75** |
| **34-FB-21** | 45–64 | 21 | 100–130 | 21,800 | 0.3 | 3½″ | **46.50** |
| **34-FB-21-115** | 380–420 | 21 | 100–130 | 15,400 | 0.3 | 3½″ | **51.25** |

## ROUND MOLDED AND METAL CASE REED METERS

**HXX** models, sealed meters, glass-to-metal construction with solder terminals and detachable ange; **F** models unsealed metal case; **FX** models molded case.

| J-B-T Model | Range, Hz | No. of Reeds | Standard Voltage | Ohms per Volt | Accuracy ± % | Case Size | Net Each |
|---|---|---|---|---|---|---|---|
| **0-FX** | 48–52 & 58–62 | 10 | 100–130 | 140 | 0.3 | 3½″ | **$32.50** |
| **1-F** | 58–62 | 5 | 100–130 | 115* | 0.3 | 3¼″ | **29.25** |
| **1-FX** | 58–62 | 5 | 100–130 | 120 | 0.3 | 3½″ | **27.40** |
| **1-FHXX** | 58–62 | 5 | 100–130 | 120 | 0.3 | 3½″ | **33.50** |
| **3-F** | 380–420 | 9 | 100–130 | 130* | 0.3 | 3¼″ | **40.75** |
| **3-FX** | 380–420 | 9 | 100–130 | 130 | 0.3 | 3½″ | **39.50** |
| **3-FHXX** | 380–420 | 9 | 100–130 | 130 | 0.3 | 3½″ | **46.00** |
| **4-FX** | 56–64 | 9 | 100–130 | 140 | 0.3 | 3½″ | **31.60** |
| **6-FHXX-21-115** | 380–420 | 21 | 100–130 | 130 | 0.3 | 3½″ | **57.10** |

At 120 VAC. †±0.1% accuracy available, quotation on request.

## MODERN DESIGN FG SERIES FREQUENCY METERS

Iodern appearance with bright textured metal insert below the dial, as illustrated for model 1-EGW-5 elapsed time meter. Has same accuracy and electrical characteristics as corresponding 'X frequency meters. Design easily installs in 3½″ wide, 3″ high hole. Three typical FG models sted below, others available on order.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **30-FG** | 48–52 & 58–62 | 10 | 100–130 | 140 | 0.3 | 3½″ | **$34.10** |
| **33-FG** | 380–420 | 9 | 100–130 | 130 | 0.3 | 3½″ | **41.20** |
| **34-FG** | 56–64 | 9 | 100–130 | 140 | 0.3 | 3½″ | **33.90** |

## NEW HIGH VISIBILITY EG SERIES ELAPSED TIME METERS

Iew modern style, matches the look of the new FG series frequency meters. Dimensions are ame as those for FG series meters, while mechanical specifications match 31-EXW series meters, see below). Models listed are examples; other voltages, frequencies and numerals on request.

**-B-T Model 31-EGW-5**—Five wide digits, 0–9,999.9 hours, 60 Hz, 110–125 V. Net Each. **$22.60**

**-B-T Model 31-EGW**—Six wide digits, 0–99,999.9 hours, 60 Hz, 110–125 V. Net Each.. **23.10**

**-B-T Model 13A-234**—Half bezel adapter, separate black molded frame and hardware for icture window appearance on any FG or EG meter. Net Each........................**$2.75**

**-B-T Model 13A-239**—Same as above, but metal construction for FG and EG meters. Iet Each..............................................**$2.75**

## ELAPSED TIME AND 5-REED FREQUENCY METERS 31-FE AND 31-FEX-1

Chis unique panel instrument combines the elapsed time or running time meter with frequency eeds. It is widely used on motor generator sets and on electrical equipment where maintenance outine calls for periodic servicing. Reads 0–9,999.9 hours; 58–62 hertz at 100–130 volts. Self-tarting. Tenths shown in red numerals, all others white numerals on black background. Meter anel $2\frac{9}{16}$″ ($2\frac{5}{8}$″ panel mounting hole recommended); depth behind flange, $4\frac{19}{32}$″. Front mounting ame as Model 31-F. Variations with 7, 9 or 11 reeds on special order only. 3¼″ metal case.

**-B-T Model 31-FE**— Iet Each.............................................. **$42.00**

**-B-T Model 31-FEX-1**—Same, but with 3½″ metal flange permanently attached for MIL-M-6B mounting. Net Each........................ **$43.75**

## 60-Hz ELAPSED TIME METERS 31-EX, 31-EX-200, 31-ES, AND 31-EHXX

Co record operating time of AC electrical and electronic equipment, instrument registers in 1/10th our steps to 9,999.9 hours, then automatically resets. Shows tenths in red numerals, all others vhite on black background. Molded case fully encloses all parts. Popular for tube life, TV equipment, punch presses, conveyors, oil burners, maintenance schedules, etc. Meter panel $2\frac{11}{16}$″ (2¾″ ole recommended); depth behind flange, $3\frac{7}{32}$″.

**-B-T Model 31-EX**—110–125 volt. Net Each........................ **$19.10**

**-B-T Model 31-EX-200**—200–240 volt. Net Each........................**$20.25**

**-B-T Model 31-ES**—(Square case 3″ x 3″) 110–125 volts. Iet Each........................ **$19.75**

**-B-T Model 31-EHXX**—Same as Model 31-EX, but ruggedized and sealed case. Has glass-to-netal sealed construction with flat front and 3½″ dia. separable flange. Heavy-duty solder erminals. Vacuum chamber checked. Max. 1000 V rms between terminals and case. Barrel dia. $2\frac{11}{16}$″ to fit 2¾″ panel hole with 2⅞″ depth behind panel. Three flange holes take 6-32 screws on 1.58″ radius. Net Each........................ **$25.00**

## 400-Hz SEALED, ELAPSED TIME METER MODEL 33-EHXX

Stable 400-Hz elapsed time meter in 3½″ flanged case. Fully enclosed design has sealed, glass-to-metal construction with flat glass front. Reads 0–9,999.9 hours in 1/10th-hour steps; 110–125 volts, 400 Hz. Case slightly larger than 31-EHXX.

**J-B-T Model 33-EHXX**—Net Each........................ **$80.00**

## WIDE NUMERAL, ELAPSED TIME METER MODELS 31-EXW AND 31-EXW-5

Combines basic Model 31-EX (see above) with easily-read, wide 6-digit face design. Distinctive, contemporary dial shows tenths in red on white; units in white on black. Six digits read 0–99,999.9 hours, then automatically resets; 110–125 volts, 60-Hz operation. Black, molded 3½″ case interchangeable with FX Series meters.

**J-B-T Model 31-EXW**—Net Each........................ **$19.50**

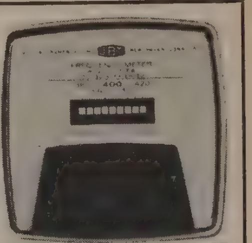
**J-B-T Model 31-EXW-5**—New model interchangeable electrically and mechanically with 31-EX and 31-EXW. Five wide digits, registers 0–9,999.9 and automatically resets. For 60 Hz, 110–125 volts. Net Each........................ **$18.25**

## 400-Hz BROAD AND VERNIER INDICATOR 41-FX-42 (NOT ILLUS.)

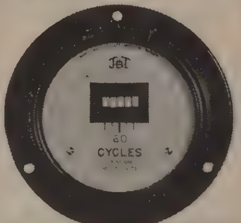
Widely used in commercial and military testing, this combination unit provides two windows: Broad 300–500 Hz, 21 reeds in 10-Hz steps; and, for a vernier effect, 380–420 Hz with 21 reeds in 2-Hz steps. Back molded case has flush front; $4\frac{3}{64}$″ w. x $4\frac{3}{64}$″ h. x $2\frac{17}{32}$″ depth behind panel, over studs.

**J-B-T Model 41-FX-42**—Standard model for 100–130 volts. Net Each............ **$137.95**

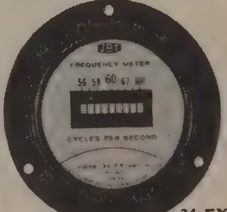
**J-B-T Model 41-FX-42**—Special, with 4 studs for 200–240 (7.7 watts), 115 (4.5 watts) and 30 volts (2 watts). Net Each........................ **$154.40**



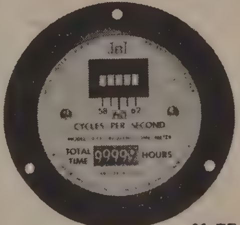
**33-FB**



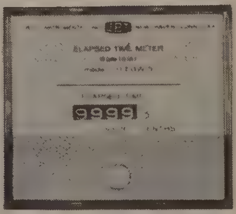
**31-FX**



**34-FX Series A**



**31-FE**

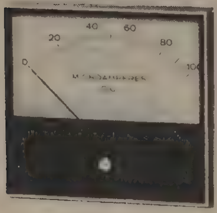


**31-EGW-5**

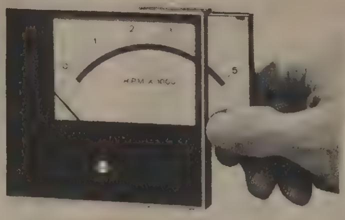
ELAPSED TIME
HOURS
TENTHS

**31-EXW**

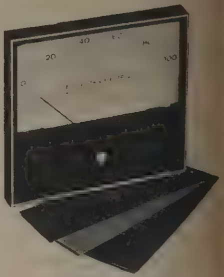
# api SERIES 7000 PANEL METERS



Series 7000 in four sizes



Field-changeable slide-in scales available



Optional front color plates

Completely new line of panel meters in four sizes, featuring phenolic cases and fronts with glass windows. Unique features for versatility, including field-changeable slide-in scales; optional front color plates; optional aluminum bezels or plastic lenses for high style rear panel mounting. Taut-band shielded movements are standard, with 1% tracking in most DC ranges. Full-scale accuracy: ±2% on DC ranges, ±3% on AC (rectifier type). Size: Model 7025, 2¾" w. x 2⅜" h.; Model 7035, 3½" w. x 3" h.; Model 7045, 4½" w. x 4" h.; Model 7055, 5⅗" w. x 4½" h. Optional bezels, plastic lenses and color inserts listed on following page. Write for full information and prices on slide-in scales. Shipping Weight, 1 lb.

### DC MICROAMMETERS

Taut-band except 0–200 μA and 500–0–500 μA.

| | Model 7035 | | | Model 7045 | | | Model 7055 | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Net Ea., Lots of | | | Net Ea., Lots of | | | Net Ea., Lots of | |
| Range | API Number* | 1-9 | 10-24 | API Number | 1-9 | 10-24 | API Number | 1-9 | 10-24 |
| 0–5 μA | 7035-0002-0000 | $46.50 | $41.85 | 7045-0002-0000 | $48.00 | $43.20 | 7055-0002-0000 | $49.50 | $44.55 |
| 0–10 μA | 7035-0402-0000 | 38.50 | 34.65 | 7045-0402-0000 | 40.00 | 36.00 | 7055-0402-0000 | 41.50 | 37.35 |
| 0–20 μA | 7035-0802-0000 | 31.50 | 28.35 | 7045-0802-0000 | 33.00 | 29.70 | 7055-0802-0000 | 34.50 | 31.05 |
| 0–50 μA | 7035-1802-0000 | 25.50 | 22.95 | 7045-1802-0000 | 27.00 | 24.30 | 7055-1802-0000 | 28.50 | 25.65 |
| 0–100 μA | 7035-3622-0000 | 22.50 | 20.25 | 7045-3622-0000 | 24.00 | 21.60 | 7055-3622-0000 | 25.50 | 22.95 |
| 0–200 μA | 7035-4702-0000 | 20.50 | 18.45 | 7045-4702-0000 | 22.00 | 19.80 | 7055-4702-0000 | 23.50 | 21.15 |
| 0–500 μA | 7035-5902-0000 | 18.00 | 16.20 | 7045-5902-0000 | 20.00 | 18.00 | 7055-5902-0000 | 21.50 | 19.35 |
| 25–0–25 μA | 7035-1802-0100 | 26.00 | 23.40 | 7045-1802-0100 | 27.50 | 24.75 | 7055-1802-0100 | 29.00 | 26.10 |
| 50–0–50 μA | 7035-3622-0100 | 23.00 | 20.70 | 7045-3622-0100 | 24.50 | 22.05 | 7055-3622-0100 | 26.00 | 23.40 |
| 100–0–100 μA | 7035-4702-0100 | 21.00 | 18.90 | 7045-4702-0100 | 22.50 | 20.25 | 7055-4702-0100 | 24.00 | 21.60 |
| 500–0–500 μA | 7035-0003-0100 | 18.50 | 16.65 | 7045-0003-0100 | 20.50 | 18.45 | 7055-0003-0100 | 22.00 | 19.80 |

### DC MILLIAMMETERS

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0–1 mA | 7035-0003-0000 | $18.50 | $16.65 | 7045-0003-0000 | $20.00 | $18.00 | 7055-0003-0000 | $21.50 | $19.35 |
| 0–3 mA | 7035-1403-0000 | 18.50 | 16.65 | 7045-1403-0000 | 20.00 | 18.00 | 7055-1403-0000 | 21.50 | 19.35 |
| 0–5 mA | 7035-1803-0000 | 18.50 | 16.65 | 7045-1803-0000 | 20.00 | 18.00 | 7055-1803-0000 | 21.50 | 19.35 |
| 0–10 mA | 7035-3303-0000 | 18.50 | 16.65 | 7045-3303-0000 | 20.00 | 18.00 | 7055-3303-0000 | 21.50 | 19.35 |
| 0–15 mA | 7035-4003-0000 | 18.50 | 16.65 | 7045-4003-0000 | 20.00 | 18.00 | 7055-4003-0000 | 21.50 | 19.35 |
| 0–25 mA | 7035-4703-0000 | 18.50 | 16.65 | 7045-4703-0000 | 20.00 | 18.00 | 7055-4703-0000 | 21.50 | 19.35 |
| 0–50 mA | 7035-5603-0000 | 20.50 | 18.45 | 7045-5603-0000 | 22.00 | 19.80 | 7055-5603-0000 | 23.50 | 21.15 |
| 0–100 mA | 7035-6903-0000 | 20.50 | 18.45 | 7045-6903-0000 | 22.00 | 19.80 | 7055-6903-0000 | 23.50 | 21.15 |
| 0–500 mA | 7035-8803-0000 | 20.50 | 18.45 | 7045-8803-0000 | 22.00 | 19.80 | 7055-8803-0000 | 23.50 | 21.15 |

### DC AMMETERS

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0–1 Amps | 7035-0004-0000 | $20.50 | $18.45 | 7045-0004-0000 | $22.00 | $19.80 | 7055-0004-0000 | $23.50 | $21.15 |
| 0–3 Amps | 7035-0804-0000 | 20.50 | 18.45 | 7045-0804-0000 | 22.00 | 19.80 | 7055-0804-0000 | 23.50 | 21.15 |
| 0–5 Amps | 7035-1104-0000 | 20.50 | 18.45 | 7045-1104-0000 | 22.00 | 19.80 | 7055-1104-0000 | 23.50 | 21.15 |
| 0–10 Amps | 7035-1704-0000 | 20.50 | 18.45 | 7045-1704-0000 | 22.00 | 19.80 | 7055-1704-0000 | 23.50 | 21.15 |
| 0–25 Amps | 7035-2204-0000 | 20.50 | 18.45 | 7045-2204-0000 | 22.00 | 19.80 | 7055-2204-0000 | 23.50 | 21.15 |
| 0–30 Amps | 7035-2404-0000 | 20.50 | 18.45 | 7045-2404-0000 | 22.00 | 19.80 | 7055-2404-0000 | 23.50 | 21.15 |

### DC VOLTMETERS

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0–5 Volts | 7035-1601-0000 | $20.50 | $18.45 | 7045-1601-0000 | $22.00 | $19.80 | 7055-1601-0000 | $23.50 | $21.15 |
| 0–10 Volts | 7035-3001-0000 | 20.50 | 18.45 | 7045-3001-0000 | 22.00 | 19.80 | 7055-3001-0000 | 23.50 | 21.15 |
| 0–15 Volts | 7035-3601-0000 | 20.50 | 18.45 | 7045-3601-0000 | 22.00 | 19.80 | 7055-3601-0000 | 23.50 | 21.15 |
| 0–30 Volts | 7035-5101-0000 | 20.50 | 18.45 | 7045-5101-0000 | 22.00 | 19.80 | 7055-5101-0000 | 23.50 | 21.15 |
| 0–50 Volts | 7035-5601-0000 | 20.50 | 18.45 | 7045-5601-0000 | 22.00 | 19.80 | 7055-5601-0000 | 23.50 | 21.15 |
| 0–100 Volts | 7035-6901-0000 | 20.50 | 18.45 | 7045-6901-0000 | 22.00 | 19.80 | 7055-6901-0000 | 23.50 | 21.15 |
| 0–150 Volts | 7035-7401-0000 | 20.50 | 18.45 | 7045-7401-0000 | 22.00 | 19.80 | 7055-7401-0000 | 23.50 | 21.15 |
| 0–300 Volts | 7035-8401-0000 | 20.50 | 18.45 | 7045-8401-0000 | 22.00 | 19.80 | 7055-8401-0000 | 23.50 | 21.15 |
| 0–500 Volts | 7035-8801-0000 | 20.50 | 18.45 | 7045-8801-0000 | 22.00 | 19.80 | 7055-8801-0000 | 23.50 | 21.15 |

### DC MILLIVOLTMETERS

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0–10 mV | 7035-0400-0000 | $30.50 | $27.45 | 7045-0400-0000 | $32.00 | $28.80 | 7055-0400-0000 | $33.50 | $30.15 |
| 0–50 mV | 7035-1800-0000 | 20.50 | 18.45 | 7045-1800-0000 | 22.00 | 19.80 | 7055-1800-0000 | 23.50 | 21.15 |

### AC VOLTMETERS (RECTIFIER TYPE)

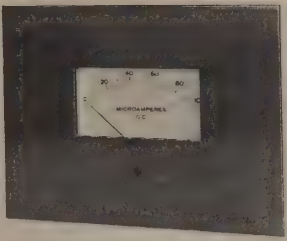
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0–5 Volts | 7035-1606-0000 | $24.50 | $22.05 | 7045-1606-0000 | $26.00 | $23.40 | 7055-1606-0000 | $27.50 | $24.75 |
| 0–10 Volts | 7035-3006-0000 | 24.50 | 22.05 | 7045-3006-0000 | 26.00 | 23.40 | 7055-3006-0000 | 27.50 | 24.75 |
| 0–15 Volts | 7035-3606-0000 | 24.50 | 22.05 | 7045-3606-0000 | 26.00 | 23.40 | 7055-3606-0000 | 27.50 | 24.75 |
| 0–50 Volts | 7035-5606-0000 | 24.50 | 22.05 | 7045-5606-0000 | 26.00 | 23.40 | 7055-5606-0000 | 27.50 | 24.75 |
| 0–150 Volts | 7035-7406-0000 | 24.50 | 22.05 | 7045-7406-0000 | 26.00 | 23.40 | 7055-7406-0000 | 27.50 | 24.75 |
| 0–300 Volts | 7035-8406-0000 | 24.50 | 22.05 | 7045-8406-0000 | 26.00 | 23.40 | 7055-8406-0000 | 27.50 | 24.75 |

*To order **Model 7025,** change third digit in API Number to 2 (e.g., 7025-0002-0000) and subtract **$1.00** from prices shown for Model 7035, in all quantities and for all ranges.

**SEE FOLLOWING PAGE FOR SERIES 7000 METER ACCESSORIES**

# SERIES 7000 PANEL METERS AND ACCESSORIES

Optional aluminum bezel for rear panel mounting



Optional plastic lens for rear panel mounting

0°F
100
200
300
400
500
50
100
150
200
250
0°C
Series 7000 Pyrometer

## SERIES 7000 PYROMETERS

Rugged taut-band pyrometers are both bimetal and thermistor compensated for ambient temperature changes. All ranges are calibrated for 10 ohms thermocouple resistance, and can be adjusted for use with lower resistance thermocouples by means of an external adjustable resistor strip supplied with each meter. Calibrated in both °F and °C. Mirrored scales are standard. Model 7045 has ±2% accuracy; Model 7055 has ±1% accuracy. Can be used with optional aluminum bezels, plastic lenses, or colored front panel inserts for high style mounting (listed below). Shipping Weight, 1 lb. Also available in Model 7025 and Model 7035 sizes.

| Range | | Thermocouple Type | Model 7045 (±2%) | | | Model 7055 (±1%) | | |
|---|---|---|---|---|---|---|---|---|
| | | | API Number | Net Each, Lots | | API Number | Net Each, Lots | |
| °F | °C | | | 1-9 | 10-24 | | 1-9 | 10-24 |
| −150° to +250° | −100° to +120° | T (Cu/C) | 7045-6424-0000 | $36.00 | $32.40 | 7055-6434-0000 | $46.00 | $41.40 |
| −75° to +225° | −60° to +110° | J (I/C) | 7045-5304-0000 | 36.00 | 32.40 | 7055-5324-0000 | 46.00 | 41.40 |
| 0° to +300° | 0° to +150° | J (I/C) | 7045-6004-0000 | 36.00 | 32.40 | 7055-6024-0000 | 46.00 | 41.40 |
| 0° to +500° | 0° to +260° | J (I/C) | 7045-6604-0000 | 36.00 | 32.40 | 7055-6624-0000 | 46.00 | 41.40 |
| 0° to +800° | 0° to +430° | J (I/C) | 7045-7804-0000 | 36.00 | 32.40 | 7055-7824-0000 | 46.00 | 41.40 |
| 0° to +1000° | 0° to +500° | J (I/C) | 7045-8204-0000 | 36.00 | 32.40 | 7055-8224-0000 | 46.00 | 41.40 |
| 0° to +1500° | 0° to +800° | K (C/A) | 7045-8504-0000 | 34.00 | 30.60 | 7055-8524-0000 | 44.00 | 39.60 |
| 0° to +2000° | 0° to +1100° | K (C/A) | 7045-8904-0000 | 34.00 | 30.60 | 7055-8924-0000 | 44.00 | 39.60 |
| 0° to +2500° | 0° to +1370° | K (C/A) | 7045-9304-0000 | 34.00 | 30.60 | 7055-9324-0000 | 44.00 | 39.60 |

## SERIES 7000 METER ACCESSORIES

### BEZEL AND LENS FOR REAR PANEL MOUNTING

Aluminum bezels and plastic lenses for high style rear panel mounting of Series 7000 meters.

| For Meter Model | Bezel Kit | | | Plastic Lens | | |
|---|---|---|---|---|---|---|
| | API Number | Net Each, Lots of | | API Number | Net Each, Lots of | |
| | | 1-9 | 10-24 | | 1-9 | 10-24 |
| 7025 | 1125-242 | $1.60 | $1.44 | 1125-241 | $1.25 | $1.12 |
| 7035 | 1125-226 | 1.75 | 1.57 | 1125-225 | 1.25 | 1.12 |
| 7045 | 1125-223 | 2.00 | 1.80 | 1125-222 | 1.25 | 1.12 |
| 7055 | 1125-229 | 2.25 | 2.02 | 1125-228 | 1.25 | 1.12 |

### COLOR INSERT PLATES

Attractive insert plates easily added in front recess on Series 7000 meters.

| For Meter Model | API Number | | | | | Net Each, Lots of | |
|---|---|---|---|---|---|---|---|
| | Tan | Flat Black | Light Gray | Dark Gray | Olive | 1-9 | 10-24 |
| 7025 | 1646-361 | 1646-365 | 1646-364 | 1646-363 | 1646-362 | $0.60 | $0.54 |
| 7035 | 1646-311 | 1646-315 | 1646-314 | 1646-313 | 1646-312 | .60 | .54 |
| 7045 | 1646-295 | 1646-299 | 1646-298 | 1646-297 | 1646-296 | .60 | .54 |
| 7055 | 1646-306 | 1646-310 | 1646-309 | 1646-308 | 1646-307 | .60 | .54 |

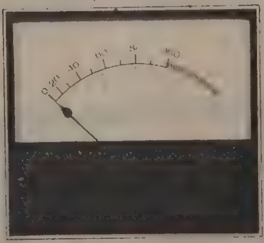
## VU METERS

Attractive VU meters, with phenolic cases and glass windows, conform to all specifications of ASA C16.5 (1954). Type A scale is for recording applications. Type B scale emphasizes percent modulation for broadcast use.

**Series 7000** offers all the features of 7000 panel meters, including optional front color plates; optional aluminum bezels or plastic lenses for rear panel mounting; and field-changeable slide-in scale. Sizes: Model 7035, 3½" x 3"; Model 7045, 4⅗" x 4".

**Models 361 and 561** are highly-styled VU meters that require minimal panel space. They may be easily illuminated from behind the panel through a Lucite* window at the top of the case. Sizes: Model 361, 3½" x 2"; requires 3$\frac{11}{32}$" x 1⅞" panel cutout. Model 561, 5" x 3"; requires 4$\frac{13}{16}$" x 2¾" panel cutout. Shipping Weight, 1 lb.

*Registered DuPont Corp. trademark.


Series 7000 VU Meter

### SERIES 7000 VU METERS

| Type | Model 7035 | | | Model 7045 | | |
|---|---|---|---|---|---|---|
| | API Number | Net Each, Lots of | | API Number | Net Each, Lots of | |
| | | 1-9 | 10-24 | | 1-9 | 10-24 |
| A Scale | 7035-0226-0050 | $33.00 | $29.70 | 7045-0226-0050 | $33.00 | $29.70 |
| B Scale | 7035-0236-0050 | 33.00 | 29.70 | 7045-0236-0050 | 33.00 | 29.70 |

### MODELS 361 AND 561 STANDARD VU METERS

| Type | Model 361 | | | Model 561 | | |
|---|---|---|---|---|---|---|
| | API Number | Net Each, Lots of | | API Number | Net Each, Lots of | |
| | | 1-9 | 10-24 | | 1-9 | 10-24 |
| A Scale | 36-0236-0050 | $33.00 | $29.70 | 56-0266-0050 | $33.00 | $29.70 |
| B Scale | 36-0246-0050 | 33.00 | 29.70 | 56-0236-0050 | 33.00 | 29.70 |

VU
-20
-10
-7
-5
-3
-2
-1
0
Model 561 VU Meter

### ACCESSORIES

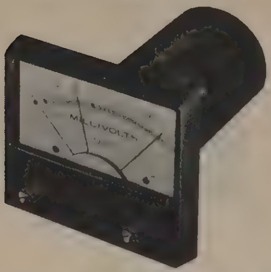
**API No. 266-55 Illumination Kit**—For Model 361 meter. Net Each..............95c

**API No. 221-115 Illumination Kit**—For Model 561 meter. Two required. Net.....30c

# api METER RELAY CONTROLLERS AND PANEL METERS

LFE CORPORATION

## COMPACK IV "ULTIMETER" METER RELAY CONTROLLERS



Solid state controllers, dimensionally and electrically interchangeable with most optic type meter relays. Integrated circuitry provides high performance level and reliability, with 1% accuracy and fast response. Switching is independent of meter. Uses no photocells or lamps. Provides continuous signal indication and direct set point adjustment. Basic sensitivity of 1 µA (1 megohm per V), chopper input; self-contained power supply. Geardrive slip clutch set pointers are 100% adjustable, on both single and double units. Can be used for automatic reset or latching. **Contacts:** SPDT relay output, rated 5 amps resistive at 115 VAC. **Indication Accuracy:** ±1% except 0–1 µA and 0–1 mV types, ±2%. **Minimum Span Between Set Pointers:** 3%. **Set Point Resolution:** ±0.3%. **Control Forms:** On-off, cycling, limit. **Ambient Temperature:** 0° C to 50° C. **Power Required:** 115 VAC, 50-60 Hz. **Size:** 4.71″ wide, 4.27″ high; body 2.79″ dia. x 5.500″ deep. **Panel Cutout:** 2.82″ dia. hole; four .161″ dia. mounting holes, 4.000″ x 3.560″. Shipping Weight, 1½ lbs.

### MODEL 503-X DC METER RELAY CONTROLLERS

| DC Range | Impedance, Ohms | High Set Point | | | Double Set Point | | |
|---|---|---|---|---|---|---|---|
| | | API Number | Net Each, Lots of | | API Number | Net Each, Lots of | |
| | | | 1-9 | 10-24 | | 1-9 | 10-24 |
| 0–1 µA | 10,000 | 53-9602-7502 | $157.00 | $141.30 | 53-9602-8502 | $182.00 | $163.80 |
| 0–5 µA | 2000 | 53-0002-7502 | 137.00 | 123.30 | 53-0002-8502 | 162.00 | 145.80 |
| 0–10 µA | 1000 | 53-0402-7502 | 122.00 | 109.80 | 53-0402-8502 | 147.00 | 132.30 |
| 0–20 µA | 500 | 53-0802-7502 | 122.00 | 109.80 | 53-0802-8502 | 147.00 | 132.30 |
| 0–50 µA | 200 | 53-1802-7502 | 117.00 | 105.30 | 53-1802-8502 | 142.00 | 127.80 |
| 0–100 µA | 100 | 53-3602-7502 | 117.00 | 105.30 | 53-3602-8502 | 142.00 | 127.80 |
| 0–500 µA | 20 | 53-5902-7502 | 117.00 | 105.30 | 53-5902-8502 | 142.00 | 127.80 |
| 50–0–50 µA | ........ | ........ | ........ | ........ | 53-3602-8502 | 152.00 | 136.80 |
| 0–1 mV | 1000 | 53-9600-7502 | 157.00 | 141.30 | 53-9600-8502 | 182.00 | 163.80 |
| 0–5 mV | 5000 | 53-0000-7502 | 137.00 | 123.30 | 53-0000-8502 | 162.00 | 145.80 |
| 0–10 mV | 10,000 | 53-0400-7502 | 122.00 | 109.80 | 53-0400-8502 | 147.00 | 132.30 |
| 0–50 mV | 50,000 | 53-1800-7502 | 117.00 | 105.30 | 53-1800-8502 | 142.00 | 127.80 |
| 0–1 mA | 10 | 53-0003-7502 | 117.00 | 105.30 | 53-0003-8502 | 142.00 | 127.80 |
| Over 1 mA | ........ | ........ | 117.00 | 105.30 | ........ | 142.00 | 127.80 |

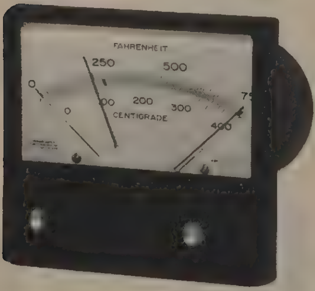
### MODEL 503-X ON-OFF TEMPERATURE CONTROLLERS

Same as above, calibrated for use with thermocouples. Electrical cold junction compensates for ambient temperature changes (±150 µV over 40° F to 120° F). Chopper amplifier input circuit accommodates thermocouple resistances from 1 to 30 ohms without need for calibration. Automatic full-scale thermocouple break protection.

| Range | | Thermo-couple Type | High Set Point | | | Double Set Point | | |
|---|---|---|---|---|---|---|---|---|
| ° F | ° C | | API Number | Net Each, Lots of | | API Number | Net Each, Lots of | |
| | | | | 1-9 | 10-24 | | 1-9 | 10-24 |
| 0° to 150° | −20° to +66° | J (I/C) | 53-5604-7502 | $140.00 | $126.00 | 53-5604-8502 | $160.00 | $144.00 |
| 0° to 300° | 0° to 150° | J (I/C) | 53-6004-7502 | 140.00 | 126.00 | 53-6004-8502 | 160.00 | 144.00 |
| 0° to 500° | 0° to 260° | J (I/C) | 53-6604-7502 | 140.00 | 126.00 | 53-6604-8502 | 160.00 | 144.00 |
| 0° to 800° | 0° to 430° | J (I/C) | 53-7824-7502 | 140.00 | 126.00 | 53-7824-8502 | 160.00 | 144.00 |
| 0° to 1000° | 0° to 500° | J (I/C) | 53-8204-7502 | 140.00 | 126.00 | 53-8204-8502 | 160.00 | 144.00 |
| 0° to 1500° | 0° to 800° | K (C/A) | 53-8504-7502 | 140.00 | 126.00 | 53-8504-8502 | 160.00 | 144.00 |
| 0° to 2500° | 0° to 1370° | K (C/A) | 53-9304-7502 | 140.00 | 126.00 | 53-9304-8502 | 160.00 | 144.00 |

### MODEL 503-E ELECTRONIC PANEL METERS

- **Interchangeable With Most Optic Type Meter Relays**
- **Continuous Signal Indication**
- **100% Adjustable Slip Clutch Set Pointers**



Dimensionally and electrically identical to Compack IV above, but without controller circuitry. Accuracy: ±1% (except as otherwise noted). Size: 4.71″ wide, 4.27″ high; body 2.79″ dia. x 5.500″ deep.

#### DC MILLIVOLTMETERS

| Range | Impedance, Ohms | API Number | Net Each, Lots of | |
|---|---|---|---|---|
| | | | 1-9 | 10-24 |
| 0–1 mV* | 1000 | 53-9600-0800 | $95.00 | $85.50 |
| 0–5 mV | 5000 | 53-0000-0800 | 95.00 | 85.50 |
| 0–10 mV | 10,000 | 53-0400-0800 | 95.00 | 85.50 |
| 0–50 mV | 50,000 | 53-1800-0800 | 95.00 | 85.50 |

#### DC MICROAMMETERS

| Range | Impedance, Ohms | API Number | Net Each, Lots of | |
|---|---|---|---|---|
| | | | 1-9 | 10-24 |
| 0–1 µA* | 10,000 | 53-9602-0800 | $95.00 | $85.50 |
| 0–5 µA | 2000 | 53-0002-0800 | 95.00 | 85.50 |
| 0–10 µA | 1000 | 53-0402-0800 | 95.00 | 85.50 |
| 5–0–5 µA | 1000 | 53-0422-0800 | 95.00 | 85.50 |
| 0–20 µA | 500 | 53-0802-0800 | 95.00 | 85.50 |
| 0–50 µA | 200 | 53-1802-0800 | 95.00 | 85.50 |
| 0–100 µA | 100 | 53-3602-0800 | 95.00 | 85.50 |
| 50–0–50 µA | 100 | 53-3622-0800 | 95.00 | 85.50 |

#### DC MILLIAMMETER

| Range | Impedance, Ohms | API Number | Net Each, Lots of | |
|---|---|---|---|---|
| | | | 1-9 | 10-24 |
| 0–1 mA | 10 | 53-0003-0800 | $95.00 | $85.50 |

#### PYROMETERS

| Range | | Thermocouple Type | API Number | Net Each, Lots of | |
|---|---|---|---|---|---|
| ° F | ° C | | | 1-9 | 10-24 |
| −25° to +125°* | −30° to +50°* | Type J (I/C) | 53-6344-0800 | $115.00 | $103.50 |
| 0° to +150°* | −20° to +66°* | Type J (I/C) | 53-6304-0800 | 115.00 | 103.50 |
| 0° to +300° | −15° to +150° | Type J (I/C) | 53-6904-0800 | 115.00 | 103.50 |
| 0° to +500° | 0° to +260° | Type J (I/C) | 53-7604-0800 | 115.00 | 103.50 |

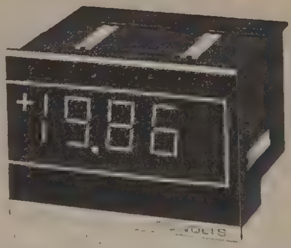
*Accuracy ±2%.

# api DIGITAL PANEL METERS AND TEMPERATURE CONTROLLERS

LFE CORPORATION

## MODEL 4304 DIGITAL PANEL METERS

recision digital panel meters with ⅞″ high neon 7-bar segmented display for excellent eadability. Offer high accuracy and distinctive styling in a compact unit, extending only ⅛″ behind panel (with remote-mounted power supply). Front mounting, or slim-line ear mounting with integral bezel. Power supply can be remote-mounted or attached to neter. Standard features include: T²L/DTL compatible BCD output with printed circuit onnector; autopolarity; up to 1000 megohms input impedance; display hold; print ommand; programmable decimal points; dual slope integration. Input connections by crew terminals or standard printed circuit card connector.



- 7½″ High Digital Segmented 7-bar Display
- Remote or Rear-mounted Power Supply

### SPECIFICATIONS

**ccuracy:** Voltage, ±0.1% of reading, ±1 digit; current, ±0.25% full-scale. **Reading ate:** 5 readings per second typical. **Display:** 3 digits with "1" over-range plus over-range ndicator; neon lamps have 3 years rated life. **Over-Range:** 100%. **Resolution:** 0.05%. **ommon Mode Rejection:** 100 dB (DC to 60 Hz with 1K ohm unbalance). **Normal lode Rejection:** 30 dB (60 Hz). **Input Isolation:** 500 volts DC. **Full-Scale Response:** .5 second. **Decimal Points:** Selected by jumper on BCD connector. **Output:** BCD, ogical "0" +0.4 V max.; logical "1" +4 V; print command; display hold; polarity; ver-range. **Operating Temperature:** 0° C to +45° C. **Controls:** Zero and full scale front panel). **Power Required:** 117 VAC (±10%), 50–60 Hz; 7 watts. **Size:** 4½″ wide x ″ high; 4¾″ deep behind panel (including power supply).

### MODEL 4304 3½-DIGIT PANEL METERS

| DC Range | Impedance, Ohms | API Number | Net Each, Lots of | |
|---|---|---|---|---|
| | | | 1-9 | 10-24 |
| 0–199.9 mV | 100 meg | 4304-4700-0200 | $245.00 | $220.00 |
| 0–1.999 V | 1000 meg | 4304-0401-0200 | 245.00 | 220.00 |
| 0–19.99 V | 10 meg | 4304-4301-0200 | 245.00 | 220.00 |
| 0–199.9 V | 10 meg | 4304-7701-0200 | 245.00 | 220.00 |
| 0–1000 V | 10 meg | 4304-9001-0200 | 245.00 | 220.00 |

| DC Range | Impedance, Ohms | API Number | Net Each, Lots of | |
|---|---|---|---|---|
| | | | 1-9 | 10-24 |
| 0–19.99 μA | 10,000 | 4304-0802-0200 | $245.00 | $220.00 |
| 0–199.9 μA | 1000 | 4304-4702-0200 | 245.00 | 220.00 |
| 0–1.999 mA | 100 | 4304-1003-0200 | 245.00 | 220.00 |
| 0–19.99 mA | 10 | 4304-4303-0200 | 245.00 | 220.00 |
| 0–199.9 mA | 1 | 4304-7703-0200 | 245.00 | 220.00 |

### DIGITAL PANEL METER ACCESSORIES

| | |
|---|---|
| **PI No. 1126-278 Interconnecting Cable**—Connects remote power upply to display. 12″ long. Net Each | **$8.50** |
| **PI No. 1126-279 Interconnecting Cable**—24″. Net Ea. | **8.50** |
| **API No. 345-207 Input Connector**—Net Each | **$3.50** |
| **API No. 345-215 BCD Connector**—Net Each | **3.50** |
| **API No. 1125-208 Bezel Trim**—For rear mtg. Net Each | **1.50** |

## MODEL 4340 SEGMENTED DIGITAL DISPLAYS

Complete translator in a compact modular package for low-cost counters and digital readouts. Offers superior readability combined with unique MOS integrated circuit, providing an up-down counter, memory and decoder-driver, all in one unit. Features 7-bar display with ⅞″ high digits that can be read over wide angles, at distances up to 40 feet; DTL/T²L compatible BCD output; serial or parallel input; decimal point; pulse count; count storage and direction control; carry output for cascading in multiple-digit displays. Neon lamps rated at 3 years life for high reliability. Mounting hardware available for displays up to 14 digits.

- 7-bar Display of ⅞″ Digits for Wide-Angle, Distant Readings
- MOS IC Up-Down Counter, Decoder-Driver and Memory
- Neon Lamp Has 3-year Life Reliability

### SPECIFICATIONS

**Supply Voltages:** +4.5 to 5.5 VDC at 10 mA; −12 V to −15 VDC at 22 mA with full BCD load; +175 V halfwave rectified DC at 20 mA. **BCD Code:** 8-4-2-1. **Input Driver:** Logical "0", 0 to +0.4 V at 0.3 mA; logical "1", 3.3 to 5 V at 0.4 mA. **BCD Output:** Logical "0", +0.4 V max., current sink at 1.6 mA; logical "1", +4 V at 50 μA. **Characters:** ⅞″ high x ½″ wide. **Operating Temp.:** 0° C to +60° C.

**Model 4340A**—Complete segmented digital display, including the integrated circuit. Size, ⅞″ w. x 3½″ d. x 1⅜″ h.

**Model 4340B**—Display for the digit one with decimal point.

**Model 4340C**—Polarity display.

| Model | API Number | Description | Net Each, Lots of | | |
|---|---|---|---|---|---|
| | | | 1-9 | 10-24 | 25-49 |
| 4340A | 1821-38 | Complete display | $40.00 | $36.00 | $34.00 |
| 4340B | 1821-40 | "1" digit display | 22.50 | 20.00 | 19.00 |
| 4340C | 1821-41 | Polarity display | 22.50 | 20.00 | 19.00 |
| .......... | 1125-212 | 8 digit mounting hardware | 4.00 | 3.60 | 3.40 |
| .......... | 1125-213 | 4 digit mounting hardware | 2.50 | 2.25 | 2.10 |
| .......... | 345-238 | Connector | 3.50 | 3.15 | 3.00 |

## MODEL 227 2-MODE PROPORTIONAL TEMPERATURE CONTROLLERS

All solid state proportional output controller with automatic reset circuit to eliminate process "droop". No adjustments required, except temperature setting. SCR power output handles resistive loads up to 10 amps at 240 VAC (field-convertible to 120 V). Can maintain ±1° F straight line control. Meter indication is independent of control function. Temperature is set on a calibrated dial. Analog meter displays true temperature, correct for room ambient temperature. Has fixed 5% proportional band; reset fixed at 5 minutes per reset (field changeable). Handles thermocouple resistance up to 100 ohms without adjustment. Electrical cold junction compensation; up-scale thermocouple break protection.

### SPECIFICATIONS

**Accuracy:** ±1% of span over operating range (approx. 30–70% of span) for both set point and indication. ±2% set point accuracy, ±3% indicating accuracy at other points. **Sensitivity:** 0.1° F. **Operating Temperature:** 0° to 120° F. **Size:** 6¾″ x 2¾″ x 7″. Shipping Weight, 4 lbs.

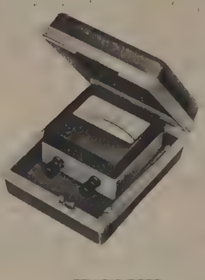
| Range, °F | Thermocouple Type | API Number | Net Each, Lots of | |
|---|---|---|---|---|
| | | | 1-9 | 10-24 |
| 0–300° | J (I/C) | 29-0227-0009 | $176.00 | $168.40 |
| 0–500° | J (I/C) | 29-0227-0011 | 176.00 | 168.40 |
| 0–800° | J (I/C) | 29-0227-0013 | 176.00 | 168.40 |
| 500–1500° | K (I/C) | 29-0227-0326 | 176.00 | 168.40 |

# PORTABLE PYROMETERS AND TEMPERATURE CONTROLLERS

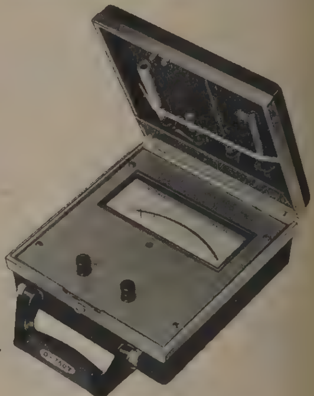
## PORTABLE PYROMETERS AND PROBES

### PORTABLE PYROMETERS

Thermocouple-actuated portable pyrometers in two sizes have rugged taut-band meters with 1% accuracy, full compensation for ambient temperature changes, mirrored scales calibrated in both ° F and ° C for easy reading. Completely self-contained; no power needed. Cases are aluminum trimmed gray ABS plastic with hair finish. Both models are calibrated for 3.85 ohms thermocouple resistance (Type E thermocouples, listed below). Bimetal and thermistor compensation. **Model 6020** has 6" meter for excellent readability. Carrying case lid has storage space for several probes. Thin-front meter is mounted behind a gasketed glass window. Size, 7.3" x 8" x 3.3". Shipping Weight, 1½ lbs. **Model 3030** is convenient pocket size, 5.5" x 2.3" x 5.8". Storage space beside meter for one probe and handle. Shipping Weight, 1 lb.

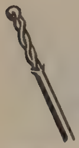

**Model 3030**

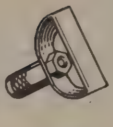
- **1% Accuracy, Taut-Band Meters With Mirrored Scales For Easy Reading**
- **Full Compensation For Ambient Temperature Changes**

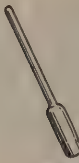

**Model 6020**

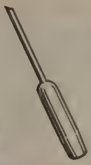
| Range | | Model 6020 | | Model 3030 | |
|---|---|---|---|---|---|
| ° F | ° C | API Number | Net Each | API Number | Net Each |
| −200° to +100° | −130° to +140° | 6020-5004-0000 | $85.00 | 3030-5004-0000 | $68.00 |
| −75° to +225° | −60° to +110° | 6020-5404-0000 | 85.00 | 3030-5404-0000 | 68.00 |
| 0° to +300° | −15° to +150° | 6020-6104-0000 | 85.00 | 3030-6104-0000 | 68.00 |
| 0° to +500° | 0° to +260° | 6020-6704-0000 | 85.00 | 3030-6704-0000 | 68.00 |
| −100° to +600° | −70° to +310° | 6020-7224-0000 | 85.00 | 3030-7224-0000 | 68.00 |
| 0° to +800° | −20° to +430° | 6020-8004-0000 | 85.00 | 3030-8004-0000 | 68.00 |
| −100° to +1100° | −70° to +550° | 6020-8334-0000 | 85.00 | 3030-8334-0000 | 68.00 |
| 0° to +1500° | 0° to +800° | 6020-8604-0000 | 85.00 | 3030-8604-0000 | 68.00 |

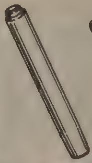
### THERMOCOUPLE PROBES

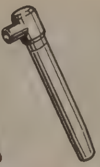

**Beaded wire**

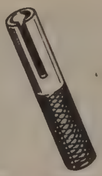

**Roller surface**


**General purpose**


**Needle**


**Straight surface**


**Rt.-angle surface**


**Extension handle**

Type E probes with resistance of 3.85 ohms, for Model 6020 or 3030 pyrometers, above. Chromel-Constantan stranded wire with stainless steel braided armor, approx. 3-foot lead length. Optional extension handle is knurled gold anodized aluminum. Completely interchangeable; can be used with any listed portable pyrometer.

| Description | API Number | Net Each |
|---|---|---|
| Beaded wire | 2057-11 | $ 6.00 |
| Roller surface | 2057-10 | 30.00 |
| Straight surface | 2057-7 | 30.00 |
| Right-angle surface | 2057-8 | 35.00 |
| Needle | 2057-9 | 30.00 |
| General purpose | 2057-6 | 30.00 |
| Extension handle | 1260-20 | 7.50 |

## MODEL 232 TEMPERATURE CONTROLLERS

### ON-OFF/LIMIT CONTROLLERS

An all solid state, thermocouple input, indicating controller with 250° 6.5-inch long indicator dial. Potentiometric set point. Has SPDT relay output rated 5 amperes 240 volts AC noninductive. Accommodates up to 100 ohm thermocouple without calibration. Upscale thermocouple break protection, electrical cold junction compensation. Failsafe wiring. Continuous indication with 2% accuracy. Control sensitivity of 0.1 degree, set point resolution 0.5% of scale length. Will operate as on-off controller or limit/alarm unit; field convertible. Power supply is 120/240 volts AC, field selectable. Weight, 2.5 lbs. In table, I/C is iron constantan, C/A is chromel alumel.

### TIME PROPORTIONING CONTROLLERS

Same basic unit as above but control circuitry provides proportional action from relay output; ratio of relay "on" time to "off" time is proportional to deviation from set point. Has 5% PR band, manual reset adjust, time base of 8 seconds. Will not operate in limit/alarm mode.

### MODEL 232 CONTROLLERS (WITH METER)

| Range, ° F | T/C | On-Off/Limit Alarm | | Time PR | |
|---|---|---|---|---|---|
| | | API Number | Net Each | API Number | Net Each |
| 0°–300° | I/C | 232-0321-1100 | $105.00 | 232-0321-2100 | $125.00 |
| 0°–500° | I/C | 232-0521-1100 | 105.00 | 232-0521-2100 | 125.00 |
| 0°–800° | I/C | 232-0821-1100 | 105.00 | 232-0821-2100 | 125.00 |
| 0°–1000° | I/C | 232-1021-1100 | 105.00 | 232-1021-2100 | 125.00 |
| 0°–2000° | C/A | 232-2022-1100 | 105.00 | 232-2022-2100 | 125.00 |
| 0°–2500° | C/A | 232-2522-1100 | 105.00 | 232-2522-2100 | 125.00 |

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# DIGITAL PANEL METERS, TEMPERATURE INDICATORS AND COMPARATORS

LFE CORPORATION

## MODEL 4352 DIGITAL PANEL METERS

emium model in this new low-cost line of digital panel meters. Planar 3½ digit seven-
ment readout is ½″ high and crisp blue-green for excellent readability. MOS-LSI
cuitry provides performance of higher-priced units in a panel cutout size interchange-
e with other popular digital panel meters. Standard features include: T²L/DTL
npatible BCD output option; autopolarity; high noise rejection; display hold; print
nmand; programmable decimal points; dual-slope integration. Input connections by
ndard printed circuit card connector.

api
DC MILLIVOLTS

### SPECIFICATIONS

**curacy:** Voltage: ±0.1% of reading, ±1 digit; current, ±0.25% of reading, ±1 digit.
**ading Rate:** 5 readings per second, typical. **Display:** 3 digits with "1" over-range plus
shing over-range indication; electrofluorescent tubes have 100,000 hour rated life.
**er-range:** 100%. **Resolution:** 0.05%. **Common Mode Rejection:** 120 dB (DC to 60 Hz
th 1K ohm unbalance). **Normal Mode Rejection:** 30 dB (60 Hz and 0.5 sec full scale
ponse time). **Decimal Points:** Selected by jumper on input connector. **Inputs:** Analog
nal, display hold, conversion command. **Outputs:** +5 V, ±5 V, ±12 VDC at 5 mA
ndard; optional BCD, logical "0" +0.8 V max.; logical "1" +2.4 V min.; print com-
nd, polarity; over-range. **Operating Temperature:** 0° C to 50° C. **Controls:** Zero and
l scale (accessible from front). **Power Required:** 115 VAC (±10%), 50–60 Hz, 6 watts.
**ze:** 4″ wide x 2⅛″ high; 4″ deep behind panel.

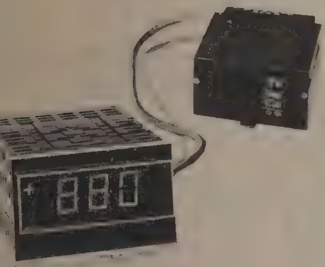
| DC Range | Impedance, Ohms | API Number | Net Each, Lots of 1-9 | Net Each, Lots of 10-24 |
|---|---|---|---|---|
| 0–19.99 mV | 100 meg | 4352-0830-0000 | $195.00 | $175.50 |
| 0–199.9 mV | 100 meg | 4352-4700-0000 | 195.00 | 175.50 |
| 0–1.999 Volts | 1000 meg | 4352-0401-0000 | 195.00 | 175.50 |
| 0–19.99 Volts | 10 meg | 4352-4301-0000 | 195.00 | 175.50 |
| 0–199.9 Volts | 10 meg | 4352-7701-0000 | 195.00 | 175.50 |
| 0–1000 Volts | 10 meg | 4352-9001-0000 | 195.00 | 175.50 |
| 0–19.99 μA | 10,000 | 4352-0802-0000 | 195.00 | 175.50 |
| 0–199.9 μA | 1,000 | 4352-4702-0000 | 195.00 | 175.50 |
| 0–1.999 mA | 100 | 4352-1003-0000 | 195.00 | 175.50 |
| 0–19.99 mA | 10 | 4352-4303-0000 | 195.00 | 175.50 |
| 0–199.9 mA | 1 | 4352-7703-0000 | 195.00 | 175.50 |

### ACCESSORIES

| API No. | Description | Net Ea. |
|---|---|---|
| 1125-252 | Input connector | $ 3.50 |
| 1125-253 | BCD connector | 3.50 |
| * | BCD option | 10.00 |
| 1502-50 | Green color filter | 1.00 |
| 1502-49 | Blue color filter | 1.00 |

*To order BCD option, change 10th digit in Model 4352 Panel Meter Numbers to **2** (e.g., 4352-0830-0200) and add **$10.00** to price.

## MODEL 4320 DIGITAL TEMPERATURE INDICATOR



Thermocouple-input and digital readout provides 1° F resolution in ranges from −80° F to +1999° F. Display features ⅞″ high neon 7-segment numerals for clarity. Isolated BCD output provides up to 250 VDC isolation between thermocouple inputs and logic ground to prevent catastrophic failures if thermocouple shorts against heating element or other power source. BCD output may be coupled directly to printer, comparator, computer and other data acquisition equipment; no buffering devices are needed. Thermocouple break is visually and digitally indicated by an over-range condition when the input circuit is broken. Other standard features include: Automatic cold junction compensation, high common mode rejection and lamp test. Display may be either front or rear panel mounted, with the linearizer module up to 24″ away. Thermocouple not included.

### SPECIFICATIONS

**Resolution:** 1° F. **Response Time:** 1 sec full scale, typical. **Reading Rate:** 5 readings/sec, typical. **Readout Module:** Type 4302 systems digital panel meter. **Lamp Test:** Connect "test" and "test set" inputs to "print command" output. **Cold Junction Compensation:** Automatic electrical reference 0° C to 45° C (still air) to 50° C (moving air). **Input Isolation:** 500 VDC. **Isolation Between Input and BCD Outputs:** 250 VDC. **Isolation Resistance:** 900K ohms minimum. **Common Mode Rejection:** 130 dB with digital section floating, 120 dB with digital section referenced to power line ground. **Normal Mode Rejection:** 80 dB at 60 Hz. **Input Impedance:** 50 meg ohms. Eliminates need to recalibrate for thermocouple resistance in nearly all applications. **Input Commands:** Hold, conversion command. **Outputs:** BCD levels: logical "1" = +3.5 V min.; logical "0" = +0.8 V max.; print command, polarity; over-range. **Power Required:** 105–125 VAC, 50–60 Hz, 15 watts. **Size:** 4½″ wide x 3″ high; 6″ deep behind panel (including power supply).

| Temperature Range | Thermocouple Type | Accuracy | Temperature | API Number | Net Each, Lots of 1-9 | Net Each, Lots of 10-24 |
|---|---|---|---|---|---|---|
| 0–750° F | T (Cu/C) | 0.4% FS, ±1 digit | 0.0093% FS/°F | 4320-7504-0200 | $675.00 | $607.50 |
| 0–1000° F | E (Cr/C) | 0.3% FS, ±1 digit | 0.007% FS/°F | 4320-8404-0200 | 675.00 | 607.50 |
| 0–1400° F | J (I/C) | 0.21% FS, ±1 digit | 0.005% FS/°F | 4320-8704-0200 | 675.00 | 607.50 |
| 0–1999° F | K (C/A) | 0.15% FS, ±1 digit | 0.0035% FS/°F | 4320-8904-0200 | 675.00 | 607.50 |
| −80° to +1000° F | J (I/C) | 0.15% FS, ±1 digit | 0.005% FS/°F | 4320-5304-0200 | 675.00 | 607.50 |

**I Model 4320-A**—Self-contained version of any indicator above. Net Each……………………**$750.00**

## MODEL 4310 DIGITAL COMPARATOR

ovides digital, algebraic comparison of preset thumbwheel input with BCD output
om digital panel meter, counter or accumulator. Relay output, logic level and indicator
mp signal if BCD input exceeds thumbwheel setting when a comparison has been
mmanded. Applications include Go/No Go testing and On/Off Control. Both 3½ digit
d 4 digit models are available with separable power supply where space is critical, and
th optional buffers where two to four comparators are to be driven from one digital
nel meter. Styling is compatible with Model 4300 series digital panel meters and permits
her front or rear panel mounting.

DIGITAL COMPARATOR

### SPECIFICATIONS

**put Code:** 1–2–4–8 parallel BCD; logic "1" +4 V max., logic "0" +0.4 V min. at 3.2
A. **Accuracy and Resolution:** Same as input. **Panel Controls:** Four thumbwheel switches
d polarity switch. **Status Display:** High lamp indicates input equal to or above set limit.
w lamp indicates input below set limit. **Outputs:** Logic: +4 V when input equal to or
ove set limit, +0.4 V when input below set limit; Relay: 2 amps, 120 VAC (non-
ductive), SPDT. **Operating Temperature:** 0° C to 50° C. **Power Required:** 105–125 or
0–250 VAC, 50–60 Hz, 5 watts. **Size:** 4½″ wide x 3″ high; 7″ deep behind panel.

### STOCK ITEMS AND ACCESSORIES

**I Number 4310-1020-0000**—Adjustable high single limit digital
mparator. ±0–1999 range. Net Each, Lots of 1–9 . . **$165.00**
ts of 10–24…………………………… **156.75**

**I Number 4310-2020-0000**—Adjustable high single limit digital
mparator. ±0–9999 range. Net Each, Lots of 1–9 . . **$195.00**
ts of 10–24…………………………… **185.25**

**I Number 1126-330**—Buffer. Used with API digital panel
eters when 2 to 4 comparators are used. Net Each . . . **$30.00**

**I Number 1126-307**—Interconnecting cable, 24″ long to con-
ct power supply and thumbwheel assembly when they are
art. Net Each…………………………… **$25.00**

**API Number 1126-401**—Interfacing cable, 24″ long. API Model 4302/4 DPM to one comparator. Net Each………… **$18.00**

**API Number 1126-402**—Interfacing cable, 24″ long. API Model 4302/4 DPM to two comparators. Net Each………… **$30.00**

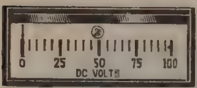
**API Number 345-240**—Input connector without cable. Net Each…………………………… **3.50**

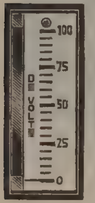
**API Number 345-215**—BCD output connector for API digital panel meter. Net Each…………………………… **$3.50**

**API Number 1125-208**—Bezel trim for rear panel mounting only. Net Each…………………………… **$1.50**

# GENERAL ELECTRIC Panel Meters

## TYPE 185 SERIES EDGEWISE METERS





Slim, miniature design can be mounted individually or in space-saving clusters. Choice of horizontal or vertical placement. Flush sides assure tight, case-to-case stacking without mechanism bulge. Magnetically shielded to prevent interaction between meters; no need for special calibration. Optional bezel and mounting brackets available for one, two or three-unit stacking. Meet applicable portions of ASA C-39.1. **Accuracy:** ±2% of full scale, DC meters; ±3% with 60-Hz sine wave at 25° C, AC rectifier-type meters. **Overload:** 20% momentary and sustained, voltmeter; 1000% momentary and 20% sustained, ammeter. **Insulation:** 1800 V rms hi-pot. **Scale:** 1.785″ long, 53° rotation. **Response Time and Damping:** Meet or exceed ASA requirements. Response time 3 sec. max., μA meters; 2 sec. max., all other DC ratings; 2.5 sec. max., AC ratings. Damping 40% max. overshoot; damping factor, 2.5 minimum. **Size:** 0.92″ w. x 2.258″ lg. x 3.44″ d., overall. Bezel 1.255″ w. x 3.005″ lg., single; 2.155″ w., double; 3.055″ w., triple-unit mounting.

### DC VOLTMETERS (SELF CONTAINED)

| Scale Range | Term. Resis., Ohms | Horizontal Zero-Left* Number | Vertical Zero-Bottom* Number | Net Ea., 1-9* |
|---|---|---|---|---|
| 0-10 | 1000 ohms/ volt | 185 011 MTMT | 185 013 MTMT | $22.62 |
| 0-15 | | 185 011 NDND | 185 013 NDND | 22.62 |
| 0-30 | | 185 011 NLNL | 185 013 NLNL | 22.62 |
| 0-50 | | 185 011 NTNT | 185 013 NTNT | 22.62 |
| 0-100 | | 185 011 PKPK | 185 013 PKPK | 22.62 |
| 0-150 | | 185 011 PZPZ | 185 013 PZPZ | 22.62 |
| 0-300 | | 185 011 RXRX | 185 013 RXRX | 23.49 |
| 15-0-15 | 2000 ohms/ volt | 185 012 NDND | 185 014 NDND | 22.62 |
| 50-0-50 | | 185 012 NTNT | 185 014 NTNT | 22.62 |
| 150-0-150 | | 185 012 PZPZ | 185 014 PZPZ | 23.49 |

### DC VOLTMETERS (FOR EXTERNAL RESISTORS)

Rated 0-1 mA for use with external resistor, not supplied.

| | | | | |
|---|---|---|---|---|
| 0-500 | 40 | 185 171 FASF | 185 173 FASF | $20.88 |
| 0-600 | 40 | 185 171 FASJ | 185 173 FASJ | 20.88 |
| 0-700 | 40 | 185 171 FASM | 185 173 FASM | 20.88 |

### DC MICROAMMETERS (SELF CONTAINED)

| | | | | |
|---|---|---|---|---|
| 0-20 | 2030 | 185 111 CFCF | 185 113 CFCF | $36.54 |
| 0-50 | 1625 | 185 111 CYCY | 185 113 CYCY | 29.58 |
| 0-100 | 1350 | 185 111 DRDR | 185 113 DRDR | 24.36 |
| 0-500 | 200 | 185 111 EMEM | 185 113 EMEM | 20.88 |
| 50-0-50 | 1350 | 185 112 CYCY | 185 114 CYCY | 24.36 |
| 500-0-500 | 40 | 185 112 EMEM | 185 114 EMEM | 20.88 |

### DC MILLIAMMETERS (SELF CONTAINED)

| | | | | |
|---|---|---|---|---|
| 0-1 | 40 | 185 111 FAFA | 185 113 FAFA | $20.88 |
| 0-5 | 2.0 | 185 111 FXFX | 185 113 FXFX | 20.88 |
| 0-10 | 1.0 | 185 111 GZGZ | 185 113 GZGZ | 20.88 |
| 0-20 | 0.5 | 185 111 HFHF | 185 113 HFHF | 20.88 |
| 0-50 | 1.0 | 185 111 HYHY | 185 113 HYHY | 20.88 |
| 0-100 | 0.5 | 185 111 JRJR | 185 113 JRJR | 20.88 |
| 0-300 | 0.167 | 185 111 KGKG | 185 113 KGKG | 20.88 |
| 0-500 | 0.099 | 185 111 KMKM | 185 113 KMKM | 20.88 |
| 5-0-5 | 1.0 | 185 112 FXFX | 185 114 FXFX | 20.88 |
| 10-0-10 | 0.5 | 185 112 GZGZ | 185 114 GZGZ | 20.88 |
| 50-0-50 | 0.5 | 185 112 HYHY | 185 114 HYHY | 20.88 |
| 500-0-500 | 0.049 | 185 112 KMKM | 185 114 KMKM | 20.88 |

### DC AMMETERS (SELF CONTAINED)

| | | | | |
|---|---|---|---|---|
| 0-1 | 0.049 | 185 111 LALA | 185 113 LALA | $20.88 |
| 0-5 | 0.0099 | 185 111 LSLS | 185 113 LSLS | 20.88 |
| 0-10 | 0.0049 | 185 111 MTMT | 185 113 MTMT | 20.88 |
| 5-0-5 | 0.0049 | 185 112 LSLS | 185 114 LSLS | 20.88 |

### DC AMMETERS (50 mV SHUNT-RATED)

Shunt not supplied. Calibrated for use with 2-way shunt-lead resistance of 0.065 ohm.

| | | | | |
|---|---|---|---|---|
| 0-20 | 12.5 | 185 121 ECNG | 185 123 ECNG | $20.88 |
| 0-50 | 12.5 | 185 121 ECNT | 185 123 ECNT | 20.88 |
| 0-200 | 12.5 | 185 121 ECRX | 185 123 ECRX | 20.88 |
| 0-500 | 12.5 | 185 121 ECSF | 185 123 ECSF | 20.88 |

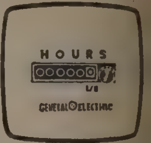
### AC RECTIFIER TYPE INSTRUMENTS

Self-contained with linear scale. Accuracy, ±3%.

| | | | | |
|---|---|---|---|---|
| 0-10 V | 1000 ohms/ volt | 185 051 MTMT | 185 053 MTMT | $27.84 |
| 0-15 V | | 185 051 NDND | 185 053 NDND | 27.84 |
| 0-30 V | | 185 051 NLNL | 185 053 NLNL | 27.84 |
| 0-50 V | | 185 051 NTNT | 185 053 NTNT | 27.84 |
| 0-100 V | | 185 051 PKPK | 185 053 PKPK | 29.58 |
| 0-150 V | | 185 051 PZPZ | 185 053 PZPZ | 29.58 |
| 0-500 μA | 985 | 185 151 EMEM | 185 153 EMEM | 26.97 |
| 0-1 mA | 570 | 185 151 FAFA | 185 153 FAFA | 26.97 |
| 0-5 mA | 139 | 185 151 FXFX | 185 153 FXFX | 26.97 |
| 0-10 mA | 90 | 185 151 GZGZ | 185 153 GZGZ | 26.97 |
| 0-20 mA | 62 | 185 151 HFHF | 185 153 HFHF | 26.97 |

*Zero-center as listed.

## TYPE 236 BIG LOOK® ELAPSED-TIME METERS



Offers distinctive appearance and excellent readability; designed to match ammeters and voltmeters with "Big Look" styling. Models are available for every time-measuring application. Both 2½″ and 3½″ sizes for panel mounting (conduit type case or portable case also available). All panel mounted timers meet requirements of ASA specification C 39.1 for four-stud mounting. Available in reset and non-reset types, measuring either minutes or hours. Types listed are 60 Hz operation, for 50 Hz, add **$2.49** to net price. For 208-volt type specify model desired and add **$2.49** to net price of 240-volt model.

### NONRESET TYPE

### COMMERCIAL CASE

| GE Model Number | | Size, In. | Voltage VAC | Net Ea., 1-9* |
|---|---|---|---|---|
| Minutes | Hours | | | |
| 50-236 401 AAAA | 50-236 402 AAAA | 2½ | 120 | $25.73 |
| 50-236 401 ABAA | 50-236 402 ABAA | 2½ | 240 | 26.56 |
| 50-236 401 ACAA | 50-236 402 ACAA | 2½ | 480 | 28.22 |
| 50-236 301 AAAA | 50-236 302 AAAA | 3½ | 120 | 25.73 |
| 50-236 301 ABAA | 50-236 302 ABAA | 3½ | 240 | 26.56 |
| 50-236 301 ACAA | 50-236 302 ACAA | 3½ | 480 | 28.22 |

### SEALED CASE TO MIL-M-6A

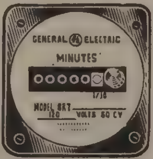
| | | | | |
|---|---|---|---|---|
| 50-236 421 AAAA | 50-236 422 AAAA | 2½ | 120 | $29.05 |
| 50-236 421 ABAA | 50-236 422 ABAA | 2½ | 240 | 29.88 |
| 50-236 421 ACAA | 50-236 422 ACAA | 2½ | 480 | 31.54 |
| 50-236 321 AAAA | 50-236 322 AAAA | 3½ | 120 | 29.05 |
| 50-236 321 ABAA | 50-236 322 ABAA | 3½ | 240 | 29.88 |
| 50-236 321 ACAA | 50-236 322 ACAA | 3½ | 480 | 31.54 |

### RESET KNOB TYPE

### COMMERCIAL CASE

| | | | | |
|---|---|---|---|---|
| 50-236 411 AAAA | 50-236 412 AAAA | 2½ | 120 | $34.86 |
| 50-236 411 ABAA | 50-236 412 ABAA | 2½ | 240 | 35.69 |
| 50-236 411 ACAA | 50-236 412 ACAA | 2½ | 480 | 37.35 |
| 50-236 311 AAAA | 50-236 312 AAAA | 3½ | 120 | 34.86 |
| 50-236 311 ABAA | 50-236 312 ABAA | 3½ | 240 | 35.69 |
| 50-236 311 ACAA | 50-236 312 ACAA | 3½ | 480 | 37.35 |

## TYPE KT ELAPSED-TIME METERS



Ideal indicator for proper servicing and preventive maintenance in industry or for indicating component life. Available in 2½″ and 3½″ sizes, round or square cases, for flush mounting on panel board or in equipment case. Diecast zinc bezel with aluminized dial face. Wide operating temperature range with 6-digit register. Extra large counter numbers, white on black background for excellent readability. Last digit in contrasting color to indicate tenths. Bezel and plastic case provide dust-resistant enclosure for mechanism. Available with or without reset knob. Meet ASA panel mounting specifications. For 60 Hz operation. For 50 Hz operation, add **$2.49** to net price. For 208-volt type specify model desired and add **$2.49** to net price of 240-volt model.

### NONRESET TYPE

Nonrest types also available in sealed cases, information on request.

### ROUND CASE

| GE Model Number | | Size, In. | Voltage VAC | Net Ea., 1-9* |
|---|---|---|---|---|
| Minutes | Hours | | | |
| 50-235 011 AAAA | 50-235 012 AAAA | 2½ | 120 | $29.05 |
| 50-235 011 ABAA | 50-235 012 ABAA | 2½ | 240 | 29.88 |
| 50-235 011 ACAA | 50-235 012 ACAA | 2½ | 480 | 31.54 |
| 50-235 091 AAAA | 50-235 092 AAAA | 3½ | 120 | 29.05 |
| 50-235 091 ABAA | 50-235 092 ABAA | 3½ | 240 | 29.88 |
| 50-235 091 ACAA | 50-235 092 ACAA | 3½ | 480 | 31.54 |

### SQUARE CASE

| | | | | |
|---|---|---|---|---|
| 50-235 051 AAAA | 50-235 052 AAAA | 2½ | 120 | $29.05 |
| 50-235 051 ABAA | 50-235 052 ABAA | 2½ | 240 | 29.88 |
| 50-235 051 ACAA | 50-235 052 ACAA | 2½ | 480 | 31.54 |
| 50-235 131 AAAA | 50-235 132 AAAA | 3½ | 120 | 29.05 |
| 50-235 131 ABAA | 50-235 132 ABAA | 3½ | 240 | 29.88 |
| 50-235 131 ACAA | 50-235 132 ACAA | 3½ | 480 | 31.54 |

### RESET KNOB TYPE

### ROUND CASE

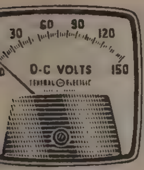
| | | | | |
|---|---|---|---|---|
| 50-235 021 AAAA | 50-235 022 AAAA | 2½ | 120 | $38.18 |
| 50-235 021 ABAA | 50-235 022 ABAA | 2½ | 240 | 39.01 |
| 50-235 021 ACAA | 50-235 022 ACAA | 2½ | 480 | 39.84 |
| 50-235 101 AAAA | 50-235 102 AAAA | 3½ | 120 | 38.18 |
| 50-235 101 ABAA | 50-235 102 ABAA | 3½ | 240 | 39.01 |
| 50-235 101 ACAA | 50-235 102 ACAA | 3½ | 480 | 40.67 |

### SQUARE CASE

| | | | | |
|---|---|---|---|---|
| 50-235 061 AAAA | 50-235 062 AAAA | 2½ | 120 | $38.18 |
| 50-235 061 ABAA | 50-235 062 ABAA | 2½ | 240 | 39.01 |
| 50-235 061 ACAA | 50-235 062 ACAA | 2½ | 480 | 40.67 |
| 50-235 141 AAAA | 50-235 142 AAAA | 3½ | 120 | 38.18 |
| 50-235 141 ABAA | 50-235 142 ABAA | 3½ | 240 | 39.01 |
| 50-235 141 ACAA | 50-235 142 ACAA | 3½ | 480 | 40.67 |

**★SEE LAST GE PANEL METER PAGE FOR QUANTITY NET PRICES**

# ENERAL ELECTRIC Panel Meters



BIG LOOK

Handsome, easy-to-read meters in two styles for all panel and control applications. All DC meters have self-shielded movement with pivot and jewel or taut-band suspension. Taut-band designs give great resistance to shock and increased sensitivity. Zener-diode, expanded-scale voltmeters available for improved narrow-range accuracy on 3½″ and 4½″ sizes. Snap-on, snap-off covers on meters. All types meet ASA Specification C-39.1. **Accuracy:** ±2% FS, all DC and AC iron vane; ±3% FS, AC rectifier type (with 60-Hz sine wave at 25° C); ±0.5% of midspan, expanded-scale types. **Overload:** 20% momentary and sustained, voltmeters; 10 times rated current for 10 consecutive intervals of ½-sec. with 1-min. interval between successive applications, momentary; 20% for 8 hours, sustained, ammeters. **Scale:** Pivot and jewel, 90° rotation; taut-band, 100°. **Insulation:** 2600 V rms hi-pot for all but 1½″ models (1600 V rms). **Response Time:** Meet or exceed ASA requirements: 3 sec. max. for microammeters; 2 sec. max. all other DC ratings; 2.5 sec. max. AC ratings. **Damping:** 40% max. overshoot; 2.5 min. damping factor. **Burden:** 5 amps, 0.5 VA, 0.5 power factor for AC ammeter; unity power factor, AC voltmeter.

0
.2
.4
.6
.8
1
D-C MILLIAMPERES

HORIZON LINE

## BIG LOOK® PANEL METERS

curate, quick reading with wide, border-to-border scales, free m shadows. Most popular meter design with low-profile, easy-read sense. Aluminum frame holds reflections to a minimum. , bold numerals over cleanly marked divisions for fast reading. pered pointers assure high accuracy. Taut-band suspension vided on all models except 1½″ size. Standard 2½″ and ″ models come with sealed cases to protect against hair, dust, emicals or other foreign particles. Self-shielded DC mechams. Stud extenders for surface mounting available.

| eter Size, Inches nd Type | Scale Length | | Max. Meter Dimensions, Inches | | | |
|---|---|---|---|---|---|---|
| | Pivot, Jewel | Taut-band | Face Size H. x W. | Cutout O.D. | Back* Depth | Front* Depth |
| Type 188 | 1.400″ | ........ | 1.750 x 1.750 | 1.530 | 1.230 | 0.375 |
| Type 152 | 2.100″ | 2.300″ | 2.702 x 2.702 | 2.195 | 2.002 | 0.478 |
| Type 162 | 2.900″ | 3.200″ | 3.512 x 3.512 | 2.786 | 2.002 | 0.478 |
| Type 171 | 3.930″ | 4.360″ | 4.408 x 4.846 | 2.786 | 1.965 | 0.573 |

ack-of-panel and front-of-panel, respectively.

## HORIZON LINE® PANEL METERS

Distinctive, low profile design for sophisticated styling. Best readability with swept-back windows to deflect light from line of sight. May be mounted back of panel with bezels and hardware to conserve space and improve readability or surface mounted with stud extenders (prices on request). DC types have core-magnet d'Arsonval movement with pivot and jewel, or taut-band suspensions; self-shielded for use on any panel. Snap-on, snap-off covers supplied on 4½″ size.

**GE No. 1012K11702 Bezel**—For 2½″ meter. Net Each..**$1.57***
**GE No. 1012K11700 Bezel**—For 3½″ meter. Net Each.. **1.74***
**GE No. 1012K11701 Bezel**—For 4½″ meter. Net Each.. **1.74***

| Meter Size, Inches and Type | Scale Length | | Max. Meter Dimensions, Inches | | | |
|---|---|---|---|---|---|---|
| | Pivot, Jewel | Taut-band | Face Size H. x W. | Cutout O.D. | Back* Depth | Front* Depth |
| 2½ Type 157 | 2.013″ | 2.284″ | 2.256 x 2.892 | 2.031 | 2.048 | 0.545 |
| 3½ Type 167 | 2.725″ | 3.060″ | 3.006 x 3.756 | 2.781 | 1.963 | 0.740 |
| 4½ Type 178 | 3.502″ | 3.800″ | 3.756 x 4.632 | 2.781 | 1.963 | 0.831 |

*Back-of-panel and front-of-panel, respectively.

## DC VOLTMETERS

### ZERO-LEFT, SELF CONTAINED

| cale olts | Scale Div. | Term. Resis., Ohms | § Add Suffix | BIG LOOK Net Each, Lots of 1-9* | | | | HORIZON LINE Net Each, Lots of 1-9* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1½-inch Type 188 GE Number 188 011§ | 2½-inch Type 152 GE Number 152 011§ | 3½-inch Type 162 GE Number 162 011§ | 4½-inch Type 171 GE Number 171 011§ | 2½-inch Type 157 GE Number 157 011§ | 3½-inch Type 167 GE Number 167 011§ | 4½-inch Type 178 GE Number 178 011§ |
| 1 | 50 | 1000 ohms per volt | LALA | $20.88 | $20.88 | $22.62 | $24.36 | $20.88 | $22.62 | $24.36 |
| 1.5 | 75† | | LCLC | 20.88 | 20.88 | 22.62 | 24.36 | 20.88 | 22.62 | 24.36 |
| 3 | 60 | | LJLJ | 20.88 | 20.88 | 22.62 | 24.36 | 20.88 | 22.62 | 24.36 |
| 5 | 50 | | LSLS | 20.88 | 20.88 | 22.62 | 24.36 | 20.88 | 22.62 | 24.36 |
| 8 | 40 | | MJMJ | 20.88 | 20.88 | 22.62 | 24.36 | 20.88 | 22.62 | 24.36 |
| 10 | 50 | | MTMT | 20.88 | 20.88 | 22.62 | 24.36 | 20.88 | 22.62 | 24.36 |
| 15 | 75† | | NDND | 20.88 | 20.88 | 22.62 | 24.36 | 20.88 | 22.62 | 24.36 |
| 30 | 60 | | NLNL | 20.88 | 20.88 | 22.62 | 24.36 | 20.88 | 22.62 | 24.36 |
| 50 | 50 | | NTNT | 20.88 | 20.88 | 22.62 | 24.36 | 20.88 | 22.62 | 24.36 |
| 80 | 40 | | PDPD | 20.88 | 20.88 | 22.62 | 24.36 | 20.88 | 22.62 | 24.36 |
| 100 | 50 | | PKPK | 20.88 | 20.88 | 22.62 | 26.10 | 20.88 | 22.62 | 26.10 |
| 150 | 75† | | PZPZ | 20.88 | 20.88 | 22.62 | 26.10 | 20.88 | 22.62 | 26.10 |
| 200 | 40 | | RLRL | 20.88 | 20.88 | 22.62 | 26.10 | 20.88 | 22.62 | 26.10 |
| 250 | 50 | | RSRS | 20.88 | 20.88 | 22.62 | 26.10 | 20.88 | 22.62 | 26.10 |
| 300 | 60 | | RXRX | 22.62 | 20.88 | 23.49 | 26.97 | 20.88 | 23.49 | 26.97 |
| 500 | 50 | | SFSF | ........ | ........ | 24.36 | 27.84 | ........ | 24.36 | 27.84 |
| 600 | 60 | | SJSJ | ........ | ........ | 24.36 | 27.84 | ........ | 24.36 | 27.84 |
| 500* | 50 | 125 | FASF | 20.01 | 20.01 | ........ | ........ | 20.01 | ........ | ........ |
| 600* | 60 | 125 | FASJ | 20.01 | 20.01 | ........ | ........ | 20.01 | ........ | ........ |
| 750* | 75† | 125 | FASM | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |

### ZERO-CENTER, SELF CONTAINED

| Scale Volts | Scale Div. | Term. Resis., Ohms | § Add Suffix | BIG LOOK Net Each, Lots of 1-9* | | | | HORIZON LINE Net Ea., Lots 1-9* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1½-inch Type 188 GE Number 188 012§ | 2½-inch Type 152 GE Number 152 012§ | 3½-inch Type 162 GE Number 162 012§ | 4½-inch Type 171 GE Number 171 012§ | 2½-inch Type 157 GE Number 157 012§ | 3½-inch Type 167 GE Number 167 012§ | 4½-inch Type 178 GE Number 178 012§ |
| 5-0-5 | 50 | 1000 ohms per volt | LSLS | $20.88 | $20.88 | $22.62 | $24.36 | $20.88 | $22.62 | $24.36 |
| 0-0-10 | 40 | | MTMT | 20.88 | 20.88 | 22.62 | 24.36 | 20.88 | 22.62 | 24.36 |
| 0-0-30 | 60 | | NLNL | 20.88 | 20.88 | 22.62 | 24.36 | 20.88 | 22.62 | 24.36 |
| 0-0-50 | 50 | | NTNT | 20.88 | 20.88 | 22.62 | 24.36 | 20.88 | 22.62 | 24.36 |
| 0-0-80 | 40 | | PDPD | 20.88 | 20.88 | 22.62 | 24.36 | 20.88 | 22.62 | 24.36 |
| 0-0-150 | 60 | | PZPZ | 20.88 | 20.88 | 22.62 | 26.10 | 20.88 | 22.62 | 26.10 |
| 0-0-300 | 60 | | RXRX | 22.62 | 22.62 | 23.49 | 26.97 | 22.62 | 23.49 | 26.97 |
| 0-0-500 | 50 | | SFSF | ........ | ........ | 24.36 | 27.84 | ........ | 24.36 | 27.84 |
| 0-0-600 | 60 | | SJSJ | ........ | ........ | 24.36 | 27.84 | ........ | 24.36 | 27.84 |
| 0-0-500* | 50 | 64 | FASF | 20.01 | 20.01 | ........ | ........ | 20.01 | ........ | ........ |
| 0-0-600* | 60 | 64 | FASJ | 20.01 | 20.01 | ........ | ........ | 20.01 | ........ | ........ |
| 0-0-750* | 60 | 64 | FASM | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |

### EXPANDED-SCALE, SELF CONTAINED

ener diode type. Accuracy ±0.5% of mid-span.

| Scale Volts | Scale Div. | Term. Resis., Ohms | § Add Suffix | BIG LOOK Net Each, Lots of 1-9* | | | | HORIZON LINE Net Ea., Lots 1-9* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1½-inch Type 188 Not Available‡ | 2½-inch Type 152 Not Available‡ | 3½-inch Type 162 GE Number 162 091§ | 4½-inch Type 171 GE Number 171 091§ | 2½-inch Type 157 Not Available‡ | 3½-inch Type 167 GE Number 167 091§ | 4½-inch Type 178 GE Number 178 091§ |
| 24-30 | 60 | 100 ohms/ volt | NNNN | ........ | ........ | $60.90 | $64.38 | ........ | $60.90 | $64.38 |
| 110-130 | 40 | | PNPN | ........ | ........ | 60.90 | 64.38 | ........ | 60.90 | 64.38 |
| 220-260 | 40 | | RTRT | ........ | ........ | 60.90 | 64.38 | ........ | 60.90 | 64.38 |

Not self contained, for use with external resistor, not supplied; rated 0-1 mADC (or 1-0-1 mADC, center scale types); when ordering, ange last prefix indicator to **1**11 or **1**12 (i.e., 152 **1**11 FASF; 162 **1**12 FASM; etc). †75 divisions on all 3½″ and 4½″ meters; 30 divisions 2½″ and 1½″. ‡External zener-diode circuit board types available on special order.

**how full number when ordering;** example: **157-012 LSLS** for 5-0-5 self contained 2½″ HORIZON LINE DC voltmeter.

**★SEE LAST GE PANEL METER PAGE FOR QUANTITY NET PRICES**

# GENERAL ELECTRIC Panel Meters

## DC MICROAMMETERS

### ZERO-LEFT, PIVOT AND JEWEL TYPE

| | | | | BIG LOOK® Net Each, Lots of 1-9* | | | | HORIZON LINE® Net Ea., Lots 1-9* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Scale µA | Scale Div. | Term. Resis., Ohms | § Add Suffix | 1½-inch Type 188 GE Number 188 111§ | 2½-inch Type 152 GE Number 152 111§ | 3½-inch Type 162 GE Number 162 111§ | 4½-inch Type 171 GE Number 171 111§ | 2½-inch Type 157 GE Number 157 111§ | 3½-inch Type 167 GE Number 167 111§ | 4½-inch Type 178 GE Numbe 178 111§ |
| 0-20 | 40 | 3400 | CFCF | $35·67 | $35·67 | $36·54 | ........ | $35·67 | $36·54 | ........ |
| 0-50 | 50 | 1600 | CYCY | 27·84 | 27·84 | 29·58 | $33·06 | 27·84 | 29·58 | $33·06 |
| 0-100 | 50 | 1525 | DRDR | 23·49 | 23·49 | 24·36 | 27·84 | 23·49 | 24·36 | 27·84 |
| 0-200 | 40 | 690 | EAEA | 20·88 | 20·88 | 22·62 | 26·10 | 20·88 | 22·62 | 26·10 |
| 0-500 | 50 | 220 | EMEM | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |

### ZERO-LEFT, TAUT-BAND TYPE

Taut-band suspension is also available in other DC ratings; prices on request.

| | | | | BIG LOOK Net Each, Lots of 1-9* | | | | HORIZON LINE Net Ea., Lots 1-9* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Scale µA | Scale Div. | Term. Resis., Ohms | § Add Suffix | 1½-inch Not Available | 2½-inch Type 156 GE Number 156 111§ | 3½-inch Type 166 GE Number 166 111§ | 4½-inch Type 173 GE Number 173 111§ | 2½-inch Type 192 GE Number 192 111§ | 3½-inch Type 193 GE Number 193 111§ | 4½-inch Type 194 GE Numbe 194 111§ |
| 0-20 | 40 | 3400 | CFCF | ........ | $39·15 | $40·02 | $43·50 | $39·15 | $40·02 | $43·50 |
| 0-50 | 50 | 2600 | CYCY | ........ | 31·32 | 33·06 | 36·54 | 31·32 | 33·06 | 36·54 |
| 0-100 | 50 | 1170 | DRDR | ........ | 26·97 | 27·84 | 31·32 | 26·97 | 27·84 | 31·32 |

### ZERO-CENTER, PIVOT AND JEWEL TYPE

| | | | | BIG LOOK Net Each, Lots of 1-9* | | | | HORIZON LINE Net Ea., Lots 1-9* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Scale µA | Scale Div. | Term. Resis., Ohms | § Add Suffix | 1½-inch Type 188 GE Number 188 112§ | 2½-inch Type 152 GE Number 152 112§ | 3½-inch Type 162 GE Number 162 112§ | 4½-inch Type 171 GE Number 171 112§ | 2½-inch Type 157 GE Number 157 112§ | 3½-inch Type 167 GE Number 167 112§ | 4½-inch Type 178 GE Numbe 178 112§ |
| 20-0-20 | 40 | 3330 | CFCF | $31·32 | $31·32 | $33·06 | ........ | $31·32 | $33·06 | ........ |
| 50-0-50 | 50 | 1525 | CYCY | 23·49 | 23·49 | 24·36 | $27·84 | 23·49 | 24·36 | $27·84 |
| 100-0-100 | 40 | 690 | DRDR | 20·01 | 20·88 | 22·62 | 26·10 | 20·88 | 22·62 | 26·10 |
| 200-0-200 | 40 | 221 | EAEA | 20·01 | 20·01 | 20·88 | 24·36 | 20·01 | 20·88 | 24·36 |
| 500-0-500 | 50 | 64 | EMEM | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |

## DC MILLIAMMETERS

### ZERO-LEFT, PIVOT AND JEWEL TYPE

| | | | | BIG LOOK Net Each, Lots of 1-9* | | | | HORIZON LINE Net Ea., Lots 1-9* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Scale mA | Scale Div. | Term. Resis., Ohms | § Add Suffix | 1½-inch Type 188 GE Number 188 111§ | 2½-inch Type 152 GE Number 152 111§ | 3½-inch Type 162 GE Number 162 111§ | 4½-inch Type 171 GE Number 171 111§ | 2½-inch Type 157 GE Number 157 111§ | 3½-inch Type 167 GE Number 167 111§ | 4½-inch Type 178 GE Number 178 111§ |
| 0-1 | 50 | 64 | FAFA | $20·01 | $20·01 | $20·88 | $23·49 | $20·01 | $20·88 | $23·49 |
| 0-1.5 | 75† | 64 | FDFD | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 0-3 | 60 | 2.5 | FNFN | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 0-5 | 50 | 2.5 | FXFX | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 0-10 | 50 | 1.8 | GZGZ | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 0-20 | 40 | 1.5 | HFHF | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 0-25 | 50 | 2.0 | HJHJ | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 0-30 | 60 | 1.67 | HMHM | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 0-50 | 50 | 1.00 | HYHY | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 0-80 | 40 | 0.62 | JJJJ | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 0-100 | 50 | 0.50 | JRJR | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 0-150 | 75† | 0.33 | JXJX | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 0-200 | 40 | 0.25 | KAKA | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 0-250 | 50 | 0.20 | KDKD | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 0-300 | 60 | 0.167 | KGKG | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 0-500 | 50 | 0.100 | KMKM | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 0-800 | 40 | 0.062 | KWKW | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |

### ZERO-CENTER, PIVOT AND JEWEL TYPE

| | | | | BIG LOOK Net Each, Lots of 1-9* | | | | HORIZON LINE Net Ea., Lots 1-9* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Scale mA | Scale Div. | Term. Resis., Ohms | § Add Suffix | 1½-inch Type 188 GE Number 188 112§ | 2½-inch Type 152 GE Number 152 112§ | 3½-inch Type 162 GE Number 162 112§ | 4½-inch Type 171 GE Number 171 112§ | 2½-inch Type 157 GE Number 157 112§ | 3½-inch Type 167 GE Number 167 112§ | 4½-inch Type 178 GE Number 178 112§ |
| 1-0-1 | 40 | 64 | FAFA | $20·01 | $20·01 | $20·88 | $23·49 | $20·01 | $20·88 | $23·49 |
| 3-0-3 | 60 | 2.6 | FNFN | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 5-0-5 | 50 | 1.8 | FXFX | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 10-0-10 | 40 | 1.5 | GZGZ | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 20-0-20 | 40 | 1.25 | HFHF | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 25-0-25 | 50 | 1.0 | HJHJ | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 30-0-30 | 60 | 0.83 | HMHM | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 50-0-50 | 50 | 0.50 | HYHY | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 100-0-100 | 40 | 0.25 | JRJR | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 150-0-150 | 60 | 0.167 | JXJX | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 200-0-200 | 40 | 0.125 | KAKA | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 250-0-250 | 50 | 0.100 | KDKD | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 300-0-300 | 60 | 0.083 | KGKG | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 500-0-500 | 50 | 0.050 | KMKM | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |

## DC AMMETERS

### ZERO-LEFT, SELF-CONTAINED

| | | | | BIG LOOK Net Each, Lots of 1-9* | | | | HORIZON LINE Net Ea., Lots 1-9* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Scale Amps | Scale Div. | Term. Resis., Ohms | § Add Suffix | 1½-inch Type 188 GE Number 188 111§ | 2½-inch Type 152 GE Number 152 111§ | 3½-inch Type 162 GE Number 162 111§ | 4½-inch Type 171 GE Number 171 111§ | 2½-inch Type 157 GE Number 157 111§ | 3½-inch Type 167 GE Number 167 111§ | 4½-inch Type 178 GE Number 178 111§ |
| 0-1 | 50 | .0500 | LALA | $20·01 | $20·01 | $20·88 | $23·49 | $20·01 | $20·88 | $23·49 |
| 0-1.5 | 75† | .0333 | LCLC | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 0-2 | 40 | .0250 | LELE | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 0-3 | 60 | .0167 | LJLJ | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 0-5 | 50 | .0100 | LSLS | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 0-10 | 50 | .0050 | MTMT | 20·01 | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 0-15 | 75† | .0033 | NDND | ........ | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 0-20 | 40 | .0025 | NGNG | ........ | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 0-30 | 60 | .00167 | NLNL | ........ | 20·01 | 20·88 | 23·49 | 20·01 | 20·88 | 23·49 |
| 0-50 | 50 | .00100 | NTNT | ........ | ........ | 20·88 | 23·49 | ........ | 20·88 | 23·49 |

†75 divisions on 3½″ and 4½″ sizes; 30 divisions on 1½″ and 2½″ sizes.
§**When ordering show complete number**; example: **188-111 LALA** for BIG LOOK 1½″ Type 188 zero-left, self-contained DC ammeter with 0-1 scale.

**★SEE LAST GE PANEL METER PAGE FOR QUANTITY NET PRICES**

# GENERAL ELECTRIC Panel Meters

## DC AMMETERS (CONT'D)

### ZERO-LEFT, SHUNT-RATED

For use with 2-way shunt-lead resistance .065 ohm. Does not include shunt or shunt leads.

| | | | | BIG LOOK® Net Each, Lots of 1-9* | | | | HORIZON LINE® Net Ea., Lots 1-9* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Scale Amps | Scale Div. | Term. Resis., Ohms | § Add Suffix | 1½-inch Type 188 GE Number 188 121§ | 2½-inch Type 152 GE Number 152 121§ | 3½-inch Type 162 GE Number 162 121§ | 4½-inch Type 171 GE Number 171 121§ | 2½-inch Type 157 GE Number 157 121§ | 3½-inch Type 167 GE Number 167 121§ | 4½-inch Type 178 GE Number 178 121§ |
| 0-20 | 40 | 50 mV shunt-rated 12.5 ohms | ECNG | $20.01 | $20.01 | $20.88 | ...... | ...... | ...... | ...... |
| 0-30 | 60 | | ECNL | 20.01 | 20.01 | 20.88 | ...... | ...... | ...... | ...... |
| 0-50 | 50 | | ECNT | 20.01 | 20.01 | 20.88 | $23.49 | $20.01 | $20.88 | $23.49 |
| 0-75 | 75† | | ECPB | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-100 | 50 | | ECPK | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-150 | 75† | | ECPZ | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-200 | 40 | | ECRL | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-250 | 50 | | ECRS | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-300 | 60 | | ECRX | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-400 | 40 | | ECSC | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-500 | 50 | | ECSF | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-600 | 60 | | ECSJ | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-800 | 40 | | ECSN | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-1000 | 50 | | ECVA | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-1500 | 75† | | ECVC | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-2000 | 40 | | ECVE | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-20 | 40 | 100 mV shunt-rated, 25 ohms | GBNG | 20.01 | 20.01 | 20.88 | ...... | ...... | ...... | ...... |
| 0-40 | 40 | | GBNP | 20.01 | 20.01 | 20.88 | ...... | ...... | ...... | ...... |
| 0-50 | 50 | | GBNT | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-75 | 75† | | GBPB | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-100 | 50 | | GBPK | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-150 | 75† | | GBPZ | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-200 | 40 | | GBRL | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-250 | 50 | | GBRS | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-300 | 60 | | GBRX | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-400 | 40 | | GBSC | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-500 | 50 | | GBSF | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-600 | 60 | | GBSJ | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-800 | 40 | | GBSN | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-1000 | 50 | | GBVA | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 0-2000 | 40 | | GBVE | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |

### ZERO-CENTER, SELF CONTAINED

| | | | | BIG LOOK Net Each, Lots of 1-9* | | | | HORIZON LINE Net Ea., Lots 1-9* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Scale Amps | Scale Div. | Term. Resis., Ohms | § Add Suffix | 1½-inch Type 188 GE Number 188 112§ | 2½-inch Type 152 GE Number 152 112§ | 3½-inch Type 162 GE Number 162 112§ | 4½-inch Type 171 GE Number 171 112§ | 2½-inch Type 157 GE Number 157 112§ | 3½-inch Type 167 GE Number 167 112§ | 4½-inch Type 178 GE Number 178 112§ |
| 1-0-1 | 40 | .0500 | LALA | $20.01 | $20.01 | $20.88 | $23.49 | $20.01 | $20.88 | $23.49 |
| 2-0-2 | 40 | .0250 | LELE | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 5-0-5 | 50 | .010 | LSLS | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 10-0-10 | 40 | .0050 | MTMT | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 15-0-15 | 60 | .0033 | NDND | ...... | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 20-0-20 | 40 | .0025 | NGNG | ...... | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 30-0-30 | 60 | .00167 | NLNL | ...... | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 50-0-50 | 50 | .00100 | NTNT | ...... | ...... | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |

### ZERO-CENTER, 50 mV SHUNT-RATED

For use with 2-way shunt-lead resistance of .065 ohm. Does not include shunt or shunt leads.

| | | | | BIG LOOK Net Each, Lots of 1-9* | | | | HORIZON LINE Net Ea., Lots 1-9* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Scale Amps | Scale Div. | Term. Resis., Ohms | § Add Suffix | 1½-inch Type 188 GE Number 188 122§ | 2½-inch Type 152 GE Number 152 122§ | 3½-inch Type 162 GE Number 162 122§ | 4½-inch Type 171 GE Number 171 122§ | 2½-inch Type 157 GE Number 157 122§ | 3½-inch Type 167 GE Number 167 122§ | 4½-inch Type 178 GE Number 178 122§ |
| 20-0-20 | 40 | 25 ohms | ECNG | $20.01 | $20.01 | $20.88 | ...... | ...... | ...... | ...... |
| 50-0-50 | 50 | | ECNT | 20.01 | 20.01 | 20.88 | $23.49 | $20.01 | $20.88 | $23.49 |
| 75-0-75 | 60 | | ECPB | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 100-0-100 | 40 | | ECPK | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |
| 150-0-150 | 60 | | ECPZ | 20.01 | 20.01 | 20.88 | 23.49 | 20.01 | 20.88 | 23.49 |

## AC VOLTMETERS

### SELF CONTAINED, 60 Hz

| | | | | BIG LOOK Net Each, Lots of 1-9* | | | | HORIZON LINE Net Ea., Lots 1-9* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Scale Volts | Scale Div. | Term. Resis., Ohms | § Add Suffix | 1½-inch Not Available | 2½-inch Type 152 GE Number 152 031§ | 3½-inch Type 162 GE Number 162 031§ | 4½-inch Type 171 GE Number 171 031§ | 2½-inch Type 157 GE Number 157 031§ | 3½-inch Type 167 GE Number 167 031§ | 4½-inch Type 178 GE Number 178 031§ |
| 0-3 | 60 | 11.1 | LJLJ | ...... | $19.14 | $20.01 | $23.49 | $19.14 | $20.01 | $23.49 |
| 0-5 | 50‡ | 29 | LSLS | ...... | 19.14 | 20.01 | 23.49 | 19.14 | 20.01 | 23.49 |
| 0-10 | 50 | 110 | MTMT | ...... | 19.14 | 20.01 | 23.49 | 18.14 | 20.01 | 23.49 |
| 0-15 | 75† | 251 | NDND | ...... | 19.14 | 20.01 | 23.49 | 19.14 | 20.01 | 23.49 |
| 0-30 | 60 | 779 | NLNL | ...... | 19.14 | 20.01 | 23.49 | 19.14 | 20.01 | 23.49 |
| 0-50 | 50 | 2,500 | NTNT | ...... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0-150 | 75† | 15,000 | PZPZ | ...... | 20.88 | 22.62 | 26.10 | 20.88 | 22.62 | 26.10 |
| 0-300 | 60 | 70,260 | RXRX | ...... | 23.49 | 24.36 | 27.84 | 23.49 | 24.36 | 27.84 |
| 0-500 | 50 | 117,260 | SFSF | ...... | ...... | 30.45 | 33.93 | ...... | 30.45 | 33.93 |
| 0-600 | 60 | 140,000 | SJSJ | ...... | ...... | 30.45 | 33.93 | ...... | 30.45 | 33.93 |

### SELF CONTAINED, 400 Hz

| | | | | BIG LOOK Net Each, Lots of 1-9* | | | | HORIZON LINE Net Ea., Lots 1-9* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Scale Volts | Scale Div. | Term. Resis., Ohms | § Add Suffix | 1½-inch Not Available | 2½-inch Type 152 GE Number 152 061§ | 3½-inch Type 162 GE Number 162 061§ | 4½-inch Type 171 GE Number 171 061§ | 2½-inch Type 157 GE Number 157 061§ | 3½-inch Type 167 GE Number 167 061§ | 4½-inch Type 178 GE Number 178 061§ |
| 0-150 | 75† | 15,000 | PZPZ | ...... | $20.88 | $22.62 | $26.10 | $20.88 | $22.62 | $26.10 |
| 0-300 | 60 | 70,260 | RXRX | ...... | 23.49 | 24.36 | 27.84 | 23.49 | 24.36 | 27.84 |

†75 divisions, 3½" and 4½" sizes; 30 divisions, 1½" and 2½" sizes. ‡50 divisions, 3½" and 4½" sizes; 25 divisions, 2½" size. **§Show full number when ordering**; example: **171 031 LJLJ** for 4½" BIG LOOK 0-3 voltmeter.

**★SEE LAST GE PANEL METER PAGE FOR QUANTITY NET PRICES**

# GENERAL ELECTRIC Panel Meters

## AC VOLTMETERS (CONT'D)

### TRANSFORMER-RATED, 0–150 VOLTS

| Scale Volts | Scale Div. | Term. Resis., Ohms | § Add Suffix | BIG LOOK® Net Each, Lots of 1-9★<br>1½-inch Type 188 Not Available | 2½-inch Type 152 GE Number 152 031§ | 3½-inch Type 162 GE Number 162 031§ | 4½-inch Type 171 GE Number 171 031§ | HORIZON LINE® Net Ea., Lots 1-9★<br>2½-inch Type 157 GE Number 157 031§ | 3½-inch Type 167 GE Number 167 031§ | 4½-inch Type 178 GE Number 178 031§ |
|---|---|---|---|---|---|---|---|---|---|---|
| 0–600 | 60 | 15,000 | PZSJ | ........... | $20.88 | $22.62 | $26.10 | $20.88 | $22.62 | $26.10 |
| 0–750 | 75† | 15,000 | PZSM | ........... | 20.88 | 22.62 | 26.10 | 20.88 | 22.62 | 26.10 |
| 0–3000 | 60 | 15,000 | PZVJ | ........... | 20.88 | 22.62 | 26.10 | 20.88 | 22.62 | 26.10 |

### SELF CONTAINED, RECTIFIER TYPE*

| Scale Volts | Scale Div. | Term. Resis., Ohms | § Add Suffix | GE Number 188 051§ | GE Number 152 051§ | GE Number 162 051§ | GE Number 171 051§ | GE Number 157 051§ | GE Number 167 051§ | GE Number 178 051§ |
|---|---|---|---|---|---|---|---|---|---|---|
| 0–10 | 50 | 1000 ohms per volt | MTMT | $26.97 | $26.97 | $27.84 | $31.32 | $26.97 | $27.84 | $31.32 |
| 0–15 | 75† | | NDND | 26.97 | 26.97 | 27.84 | 31.32 | 26.97 | 27.84 | 31.32 |
| 0–20 | 40 | | NGNG | 26.97 | 26.97 | 27.84 | 31.32 | 26.97 | 27.84 | 31.32 |
| 0–25 | 50 | | NJNJ | 26.97 | 26.97 | 27.84 | 31.32 | 26.97 | 27.84 | 31.32 |
| 0–30 | 60 | | NLNL | 26.97 | 26.97 | 27.84 | 31.32 | 26.97 | 27.84 | 31.32 |
| 0–50 | 50 | | NTNT | 26.97 | 26.97 | 27.84 | 31.32 | 26.97 | 27.84 | 31.32 |
| 0–80 | 40 | | PDPD | 26.97 | 26.97 | 27.84 | 31.32 | 26.97 | 27.84 | 31.32 |
| 0–100 | 50 | | PKPK | 27.84 | 27.84 | 29.58 | 33.06 | 27.84 | 29.58 | 33.06 |
| 0–150 | 75† | | PZPZ | 27.84 | 27.84 | 29.58 | 33.06 | 27.84 | 29.58 | 33.06 |
| 0–200 | 40 | | RLRL | ........... | ........... | 29.58 | 33.06 | ........... | 29.58 | 33.06 |
| 0–250 | 50 | | RSRS | ........... | ........... | 29.58 | 33.06 | ........... | 29.58 | 33.06 |
| 0–300 | 60 | | RXRX | ........... | ........... | 30.45 | 33.93 | ........... | 30.45 | 33.93 |

### EXPANDED SCALE, SELF-CONTAINED

Zener diode type. Accuracy ±0.5% of mid-span.

| Scale Volts | Scale Div. | Term. Resis., Ohms | § Add Suffix | Not Available# | Not Available# | GE Number 162 071§ | GE Number 171 071§ | Not Available# | GE Number 167 071§ | GE Number 178 071§ |
|---|---|---|---|---|---|---|---|---|---|---|
| 110–130 | 40 | 100 ohms/V | PNPN | ........... | ........... | $60.90 | $64.38 | ........... | $60.90 | $64.38 |
| 105–125 | 40 | | PTPT | ........... | ........... | 60.90 | 64.38 | ........... | 60.90 | 64.38 |

## AC AMMETERS

### SELF CONTAINED, 25–400 Hz

| Scale Amps | Scale Div. | Term. Resis., Ohms | § Add Suffix | BIG LOOK Net Each, Lots of 1-9★<br>1½-inch Type 188 Not Available | 2½-inch Type 152 GE Number 152 141§ | 3½-inch Type 162 GE Number 162 141§ | 4½-inch Type 171 GE Number 171 141§ | HORIZON LINE Net Ea., Lots 1-9★<br>2½-inch Type 157 GE Number 157 141§ | 3½-inch Type 167 GE Number 167 141§ | 4½-inch Type 178 GE Number 178 141§ |
|---|---|---|---|---|---|---|---|---|---|---|
| 0–1 | 50 | 0.16 | LALA | ........... | $20.01 | $20.88 | $24.36 | $20.01 | $20.88 | $24.36 |
| 0–3 | 60 | 0.015 | LJLJ | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–5 | 50‡ | 0.007 | LSLS | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–8 | 40 | 0.003 | MJMJ | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–10 | 50 | 0.0024 | MTMT | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–15 | 75† | 0.0016 | NDND | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–20• | 40 | 0.001 | NGNG | ........... | 20.88 | 22.62 | 26.10 | 20.88 | 22.62 | 26.10 |
| 0–30• | 60 | 0.0006 | NLNL | ........... | 20.88 | 22.62 | 26.10 | 20.88 | 22.62 | 26.10 |
| 0–50• | 50 | 0.0004 | NTNT | ........... | ........... | 24.36 | 27.84 | ........... | 24.36 | 27.84 |
| 0–80• | ........ | 0.0004 | PDPD | ........... | ........... | 27.84 | 31.32 | ........... | 27.84 | 31.32 |

### TRANSFORMER-RATED, 0–5 AMPERES, 25–400 Hz

| Scale Amps | Scale Div. | Term. Resis., Ohms | § Add Suffix | 1½-inch Type 188 Not Available | GE Number 152 141§ | GE Number 162 141§ | GE Number 171 141§ | GE Number 157 141§ | GE Number 167 141§ | GE Number 178 141§ |
|---|---|---|---|---|---|---|---|---|---|---|
| 0–10 | 50 | 0.007 | LSMT | ........... | $20.01 | $20.88 | $24.36 | $20.01 | $20.88 | $24.36 |
| 0–15 | 75† | | LSND | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–20 | 40 | | LSNG | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–30 | 60 | | LSNL | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–40 | 40 | | LSNP | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–50 | 50 | | LSNT | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–75 | 75† | | LSPB | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–80 | 40 | | LSPD | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–100 | 50 | | LSPK | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–150 | 75† | | LSPZ | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–200 | 40 | | LSRL | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–300 | 60 | | LSRX | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–400 | 40 | | LSSC | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–500 | 50 | | LSSF | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–600 | 60 | | LSSJ | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–800 | 40 | | LSSN | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–1000 | 50 | | LSVA | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–1200 | 60 | | LSVB | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–1500 | 75† | | LSVC | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–2000 | 40 | | LSVE | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–3000 | 60 | | LSVJ | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |

### AC MILLIAMMETERS (SELF-CONTAINED, 25-400 Hz)

| Scale | Scale Div. | Term. Resis., Ohms | § Add Suffix | 1½-inch Type 188 Not Available | GE Number 152 141§ | GE Number 162 141§ | GE Number 171 141§ | GE Number 157 141§ | GE Number 167 141§ | GE Number 178 141§ |
|---|---|---|---|---|---|---|---|---|---|---|
| 0–10 mA | 50 | 2158 | GZGZ | ........... | $20.01 | $20.88 | $24.36 | $20.01 | $20.88 | $24.36 |
| 0–25 mA | 50 | 341 | HJHJ | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–50 mA | 50 | 84 | HYHY | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–100 mA | 50 | 21 | JRJR | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–200 mA | 40 | 4.1 | KAKA | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |
| 0–500 mA | 50 | 0.7 | KMKM | ........... | 20.01 | 20.88 | 24.36 | 20.01 | 20.88 | 24.36 |

### AC MILLIAMMETERS AND MICROAMMETERS RECTIFIER TYPE*

| Scale | Scale Div. | Term. Resis., Ohms | § Add Suffix | BIG LOOK Net Each, Lots of 1-9★<br>1½-inch Type 188 Not Available | 2½-inch Type 152 GE Number 152 151§ | 3½-inch Type 162 GE Number 162 151§ | 4½-inch Type 171 GE Number 171 151§ | HORIZON LINE Net Ea., Lots 1-9★<br>2½-inch Type 157 GE Number 157 151§ | 3½-inch Type 167 GE Number 167 151§ | 4½-inch Type 178 GE Number 178 151§ |
|---|---|---|---|---|---|---|---|---|---|---|
| 0–1 mA | 50 | 570 | FAFA | ........... | $26.10 | $26.97 | $30.45 | $26.10 | $26.97 | $30.45 |
| 0–1.5 mA | 75† | 375 | FDFD | ........... | 26.10 | 26.97 | 30.45 | 26.10 | 26.97 | 30.45 |
| 0–2 mA | 40 | 325 | FGFG | ........... | 26.10 | 26.97 | 30.45 | 26.10 | 26.97 | 30.45 |
| 0–3 mA | 60 | 197 | FNFN | ........... | 26.10 | 26.97 | 30.45 | 26.10 | 26.97 | 30.45 |
| 0–5 mA | 50 | 139 | FXFX | ........... | 26.10 | 26.97 | 30.45 | 26.10 | 26.97 | 30.45 |
| 0–10 mA | 50 | 90 | GZGZ | ........... | 26.10 | 26.97 | 30.45 | 26.10 | 26.97 | 30.45 |
| 0–20 mA | 40 | 62 | HFHF | ........... | 26.10 | 26.97 | 30.45 | 26.10 | 26.97 | 30.45 |
| 0–500 µA | 50 | 985 | EMEM | ........... | 26.10 | 26.97 | 30.45 | 26.10 | 26.97 | 30.45 |
| 0–800 µA | 40 | 655 | EWEW | ........... | 26.10 | 26.97 | 30.45 | 26.10 | 26.97 | 30.45 |

*Accuracy, ±3% 60 Hz sine wave, 25–10,000 Hz. †75 div. except 30 on 1½" and 2½" sizes. ‡50 div. except 25 on 2½" size. #External zener diode circuit board types available on special order. •With external magnetic shield assembled to meter base. §**Show full number when ordering**; example: **171 151 EMEM** for 0–500 µA 4½" BIG LOOK AC ammeter.

**★SEE LAST GE PANEL METER PAGE FOR QUANTITY NET PRICES**

# GENERAL ELECTRIC Meter Relays

Features same as BIG LOOK® meters except taut-band not available. All 2½" meter relays include 6-ft. cable with plug and connectors attached, mounting bracket and hardware. (Available as accessory kit.) Prices listed are for meter relays with single high or low set-point, specify when ordering. For double set-point, specify and add **$27.54** to price shown.

### ORDER BY DESCRIPTION

**Example:** Single high set-point, 2½" DC voltmeter, 0–1 scale; single low set-point, 4½" DC milliammeter, 0–20 scale.

### DC VOLTMETERS
### ZERO-LEFT, SELF CONTAINED

| Scale | Net Each<br>2½" Meter | 3½" Meter | 4½" Meter |
|---|---|---|---|
| 0–1.0 V | $133.11 | $127.89 | $130.50 |
| 0–1.5 | 133.11 | 127.89 | 130.50 |
| 0–3 | 133.11 | 127.89 | 130.50 |
| 0–5 | 133.11 | 127.89 | 130.50 |
| 0–8 | 133.11 | 127.89 | 130.50 |
| 0–10 | 133.11 | 127.89 | 130.50 |
| 0–15 | 133.11 | 127.89 | 130.50 |
| 0–30 | 133.11 | 127.89 | 130.50 |
| 0–50 | 133.11 | 127.89 | 130.50 |
| 0–80 | 133.11 | 127.89 | 130.50 |
| 0–100 | 133.11 | 127.89 | 130.50 |
| 0–150 | 133.11 | 127.89 | 130.50 |
| 0–200 | 133.11 | 127.89 | 130.50 |
| 0–250 | 133.11 | 127.89 | 130.50 |
| 0–300 | 133.98 | 129.63 | 133.11 |
| 0–500 | ........ | 130.50 | 133.98 |
| 0–600 | ........ | 130.50 | 133.98 |
| 0–500* | 131.37 | ........ | ........ |
| 0–600* | 131.37 | ........ | ........ |
| 0–750* | 131.37 | 127.02 | 129.63 |

*Not self contained, for use with external resistor, not supplied.

### ZERO-CENTER, SELF CONTAINED

| | | | |
|---|---|---|---|
| 5–0–5 V | $133.11 | $127.89 | $130.50 |
| 10–0–10 | 133.11 | 127.89 | 130.50 |
| 30–0–30 | 133.11 | 127.89 | 130.50 |
| 50–0–50 | 133.11 | 127.89 | 130.50 |
| 80–0–80 | 133.11 | 127.89 | 130.50 |
| 150–0–150 | 133.11 | 127.89 | 131.37 |
| 300–0–300 | 133.98 | 127.89 | 133.11 |
| 500–0–500 | ........ | 130.50 | 133.98 |
| 600–0–600 | ........ | 130.50 | 133.98 |
| 500–0–500* | 131.37 | ........ | ........ |
| 600–0–600* | 131.37 | ........ | ........ |
| 750–0–750* | 131.37 | 127.02 | 129.63 |

*Not self contained, for use with external resistor, not supplied.

### EXPANDED-SCALE, ZENER DIODE

| | | | |
|---|---|---|---|
| 24–30 V | ........ | $167.04 | $200.10 |
| 110–130* | ........ | 167.04 | 200.10 |
| 220–260* | ........ | 167.04 | 200.10 |

*Available in AC models; external zener-diode circuit board available in both AC and DC models.

### DC MICROAMMETERS
### ZERO LEFT

| | | | |
|---|---|---|---|
| 0–20 μA | $144.42 | ........ | ........ |
| 0–50 | 140.07 | $134.85 | ........ |
| 0–100 | 134.85 | 130.50 | $133.98 |
| 0–200 | 133.11 | 127.89 | 131.37 |
| 0–500 | 131.37 | 127.02 | 129.63 |

### ZERO CENTER

| | | | |
|---|---|---|---|
| 50–0–50 μA | $134.84 | $130.50 | $133.98 |
| 100–0–100 | 133.11 | 127.89 | 131.37 |
| 200–0–200 | 131.37 | 127.02 | 129.63 |
| 500–0–500 | 131.37 | 127.02 | 129.63 |

### DC MILLIAMMETERS
### ZERO-LEFT

| | | | |
|---|---|---|---|
| 0–1 mA | $131.37 | $127.02 | $129.63 |
| 0–1.5 | 131.37 | 127.02 | 129.63 |
| 0–3 | 131.37 | 127.02 | 129.63 |
| 0–5 | 131.37 | 127.02 | 129.63 |
| 0–10 | 131.37 | 127.02 | 129.63 |
| 0–20 | 131.37 | 127.02 | 129.63 |
| 0–25 | 131.37 | 127.02 | 129.63 |
| 0–30 | 131.37 | 127.02 | 129.63 |
| 0–50 | 131.37 | 127.02 | 129.63 |
| 0–80 | 131.37 | 127.02 | 129.63 |
| 0–100 | 131.37 | 127.02 | 129.63 |
| 0–150 | 131.37 | 127.02 | 129.63 |
| 0–200 | 131.37 | 127.02 | 129.63 |
| 0–250 | 131.37 | 127.02 | 129.63 |
| 0–300 | 131.37 | 127.02 | 129.63 |
| 0–500 | 131.37 | 127.02 | 129.63 |
| 0–800 | 131.37 | 127.02 | 129.63 |

## TYPE 195 METER RELAYS
### DC MILLIAMMETERS (CONT'D)
### ZERO CENTER

| Scale | Net Each, Lots of 1-9<br>2½" Meter | 3½" Meter | 4½" Meter |
|---|---|---|---|
| 1–0–1 mA | $131.37 | $127.02 | $129.63 |
| 3–0–3 | 131.37 | 127.02 | 129.63 |
| 5–0–5 | 131.37 | 127.02 | 129.63 |
| 10–0–10 | 131.37 | 127.02 | 129.63 |
| 20–0–20 | 131.37 | 127.02 | 129.63 |
| 25–0–25 | 131.37 | 127.02 | 129.63 |
| 30–0–30 | 131.37 | 127.02 | 129.63 |
| 50–0–50 | 131.37 | 127.02 | 129.63 |
| 100–0–100 | 131.37 | 127.02 | 129.63 |
| 150–0–150 | 131.37 | 127.02 | 129.63 |
| 200–0–200 | 131.37 | 127.02 | 129.63 |
| 250–0–250 | 131.37 | 127.02 | 129.63 |
| 300–0–300 | 131.37 | 127.02 | 129.63 |
| 500–0–500 | 131.37 | 127.02 | 129.63 |

### DC AMMETERS
### ZERO-LEFT, SELF CONTAINED

| | | | |
|---|---|---|---|
| 0–1 A | $131.37 | $127.02 | $129.63 |
| 0–1.5 | 131.37 | 127.02 | 129.63 |
| 0–2 | 131.37 | 127.02 | 129.63 |
| 0–3 | 131.37 | 127.02 | 129.63 |
| 0–4 | 131.37 | 127.02 | 129.63 |
| 0–5 | 131.37 | 127.02 | 129.63 |
| 0–10 | 131.37 | 127.02 | 129.63 |
| 0–15 | 131.37 | 127.02 | 129.63 |
| 0–20 | 131.37 | 127.02 | 129.63 |
| 0–30 | 131.37 | 127.02 | 129.63 |
| 0–50 | 131.37 | 127.02 | 129.63 |

### ZERO-LEFT, 50 mV SHUNT-RATED

Shunt and leads not included.

| | | | |
|---|---|---|---|
| 0–20 A | $131.37 | $127.02 | $129.63 |
| 0–30 | 131.37 | 127.02 | 129.63 |
| 0–50 | 131.37 | 127.02 | 129.63 |
| 0–75 | 131.37 | 127.02 | 129.63 |
| 0–100 | 131.37 | 127.02 | 129.63 |
| 0–150 | 131.37 | 127.02 | 129.63 |
| 0–200 | 131.37 | 127.02 | 129.63 |
| 0–250 | 131.37 | 127.02 | 129.63 |
| 0–300 | 131.37 | 127.02 | 129.63 |
| 0–400 | 131.37 | 127.02 | 129.63 |
| 0–500 | 131.37 | 127.02 | 129.63 |
| 0–600 | 131.37 | 127.02 | 129.63 |
| 0–800 | 131.37 | 127.02 | 129.63 |
| 0–1000 | 131.37 | 127.02 | 129.63 |
| 0–1500 | 131.37 | 127.02 | 129.63 |
| 0–2000 | 131.37 | 127.02 | 129.63 |

### ZERO-LEFT, 100 mV SHUNT-RATED

Shunt and leads not included.

| | | | |
|---|---|---|---|
| 0–20 A | $131.37 | $127.02 | $129.63 |
| 0–30 | 131.37 | 127.02 | 129.63 |
| 0–50 | 131.37 | 127.02 | 129.63 |
| 0–75 | 131.37 | 127.02 | 129.63 |
| 0–100 | 131.37 | 127.02 | 129.63 |
| 0–150 | 131.37 | 127.02 | 129.63 |
| 0–200 | 131.37 | 127.02 | 129.63 |
| 0–250 | 131.37 | 127.02 | 129.63 |
| 0–300 | 131.37 | 127.02 | 129.63 |
| 0–400 | 131.37 | 127.02 | 129.63 |
| 0–500 | 131.37 | 127.02 | 129.63 |
| 0–600 | 131.37 | 127.02 | 129.63 |
| 0–800 | 131.37 | 127.02 | 129.63 |
| 0–1000 | 131.37 | 127.02 | 129.63 |
| 0–1500 | 131.37 | 127.02 | 129.63 |
| 0–2000 | 131.37 | 127.02 | 129.63 |

### ZERO-CENTER

| | | | |
|---|---|---|---|
| 1–0–1 A | $131.37 | $127.02 | $129.63 |
| 2–0–2 | 131.37 | 127.02 | 129.63 |
| 5–0–5 | 131.37 | 127.02 | 129.63 |
| 10–0–10 | 131.37 | 127.02 | 129.63 |
| 15–0–15 | 131.37 | 127.02 | 129.63 |
| 20–0–20 | 131.37 | 127.02 | 129.63 |
| 30–0–30 | 131.37 | 127.02 | 129.63 |
| 50–0–50 | 131.37 | 127.02 | 129.63 |

### AC RECTIFIER TYPES
### AC MILLIAMMETERS

Accuracy ±3%.

| | | | |
|---|---|---|---|
| 0–1 mA | $137.46 | $133.11 | $136.59 |
| 0–1.5 | 137.46 | 133.11 | 136.59 |
| 0–2 | 137.46 | 133.11 | 136.59 |
| 0–3 | 137.46 | 133.11 | 136.59 |
| 0–5 | 137.46 | 133.11 | 136.59 |
| 0–10 | 137.46 | 133.11 | 136.59 |
| 0–20 | 137.46 | 133.11 | 136.59 |

**Write for information on other type 195 meter relay pyrometers available.**

### AC RECTIFIER TYPES (CONT'D)
### AC MICROAMMETERS

Accuracy ±3%.

| Scale | Net Each, Lots of 1-9<br>2½" Meter | 3½" Meter | 4½" Meter |
|---|---|---|---|
| 0–500 μA | $137.46 | $133.11 | $136.59 |
| 0–800 | 137.46 | 133.11 | 136.59 |

### AC VOLTMETERS

Accuracy ±3%.

| | | | |
|---|---|---|---|
| 0–10 V | $138.33 | $133.98 | $137.46 |
| 0–15 | 138.33 | 133.98 | 137.46 |
| 0–20 | 138.33 | 133.98 | 137.46 |
| 0–25 | 138.33 | 133.98 | 137.46 |
| 0–30 | 138.33 | 133.98 | 137.46 |
| 0–50 | 138.33 | 133.98 | 137.46 |
| 0–80 | 138.33 | 133.98 | 137.46 |
| 0–100 | 140.07 | 134.85 | 138.33 |
| 0–150 | 140.07 | ........ | 138.33 |
| 0–200 | ........ | 134.85 | 138.33 |
| 0–250 | ........ | 136.59 | 140.07 |
| 0–300 | ........ | 136.59 | 140.07 |

### AC AMMETERS, RECTIFIER TYPE

Rectifier-type milliammeter with external 5A/20 mA auxiliary transformer. Accuracy ±3%. Combined rating 5 amps.

2½" Meter–Net Ea., Lots 1-9..**$151.38**
3½" Meter–Net Ea., Lots 1-9.. **147.03**
4½" Meter–Net Ea., Lots 1-9.. **150.51**

### TRANSFORMER-RATED AMMETERS

Same as above except for scale marking.

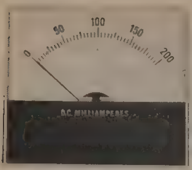
| | | | |
|---|---|---|---|
| 0–10 A | $151.38 | $147.03 | $150.51 |
| 0–15 | 151.38 | 147.03 | 150.51 |
| 0–20 | 151.38 | 147.03 | 150.51 |
| 0–30 | 151.38 | 147.03 | 150.51 |
| 0–40 | 151.38 | 147.03 | 150.51 |
| 0–50 | 151.38 | 147.03 | 150.51 |
| 0–75 | 151.38 | 147.03 | 150.51 |
| 0–80 | 151.38 | 147.03 | 150.51 |
| 0–100 | 151.38 | 147.03 | 150.51 |
| 0–150 | 151.38 | 147.03 | 150.51 |
| 0–200 | 151.38 | 147.03 | 150.51 |
| 0–300 | 151.38 | 147.03 | 150.51 |
| 0–400 | 151.38 | 147.03 | 150.51 |
| 0–500 | 151.38 | 147.03 | 150.51 |
| 0–600 | 151.38 | 147.03 | 150.51 |
| 0–800 | 151.38 | 147.03 | 150.51 |
| 0–1000 | 151.38 | 147.03 | 150.51 |
| 0–1200 | 151.38 | 147.03 | 150.51 |
| 0–1500 | 151.38 | 147.03 | 150.51 |
| 0–2000 | 151.38 | 147.03 | 150.51 |
| 0–3000 | 151.38 | 147.03 | 150.51 |

### ★QUANTITY NET PRICES

Use this table to determine larger discounts for quantities indicated.

| Net Ea., Lots 1-9 | Net Each, Lots of<br>10-24 | 25-49 | 50-99 |
|---|---|---|---|
| $ 1.57 | $ 1.31 | $ 1.19 | $ 1.10 |
| 1.74 | 1.46 | 1.32 | 1.22 |
| 19.14 | 16.06 | 14.52 | 13.42 |
| 20.01 | 16.79 | 15.18 | 14.03 |
| 20.88 | 17.52 | 15.84 | 14.64 |
| 22.62 | 18.98 | 17.16 | 15.86 |
| 23.49 | 19.71 | 17.82 | 16.47 |
| 24.36 | 20.44 | 18.48 | 17.08 |
| 25.73 | 21.39 | 19.22 | 17.05 |
| 26.10 | 21.90 | 19.80 | 18.30 |
| 26.56 | 22.08 | 19.84 | 17.60 |
| 26.97 | 22.63 | 20.46 | 18.91 |
| 27.84 | 23.36 | 21.12 | 19.52 |
| 28.22 | 23.46 | 21.08 | 18.70 |
| 29.05 | 24.15 | 21.70 | 19.25 |
| 29.58 | 24.82 | 22.44 | 20.74 |
| 29.88 | 24.84 | 22.32 | 19.80 |
| 30.45 | 25.55 | 23.10 | 21.35 |
| 31.32 | 26.28 | 23.76 | 21.96 |
| 31.54 | 26.22 | 23.56 | 20.90 |
| 33.06 | 27.74 | 25.08 | 23.18 |
| 33.93 | 28.47 | 25.74 | 23.79 |
| 34.86 | 28.98 | 26.04 | 23.10 |
| 35.67 | 29.93 | 27.06 | 25.01 |
| 35.69 | 29.67 | 26.66 | 23.65 |
| 36.54 | 30.66 | 27.72 | 25.62 |
| 37.35 | 31.05 | 27.90 | 24.75 |
| 38.18 | 31.74 | 28.52 | 25.30 |
| 39.01 | 32.43 | 29.14 | 25.85 |
| 39.15 | 32.85 | 29.70 | 27.45 |
| 39.84 | 33.12 | 29.76 | 26.40 |
| 40.02 | 33.58 | 30.36 | 28.06 |
| 40.67 | 33.81 | 30.38 | 26.95 |
| 43.50 | 36.50 | 33.00 | 30.50 |
| 60.90 | 51.10 | 46.20 | 42.70 |
| 64.38 | 54.02 | 48.84 | 45.14 |

# Jewell Panel Meters



Series MS

0
2
4
6
8
10
DC MILLIAMPERES

Series 80

MCE1

20
40
60
80
100
microamperes
DIRECT CURRENT

Series MM

Series HS,
Series 50

0
10
20
30
40
50
60
70
80
90
100
D C MICROAMPERES

45

The JEWELL line offers fine quality meters in every shape and size. Suffix **T** indicates Auto-Torque taut band meters, frictionless and machine made for greater reliability; no suffix **T** indicates pivot and jewel types. Neat, contemporary styling enhances any equipment. Convenient, off-the-shelf delivery on most items. **Accuracy:** ±2% of full scale resistance tolerance; ±10% on current meters; ±5% on voltmeters. Meet or exceed requirements of ASA C39T.

## SERIES MS METERS

Perfect for use on contemporary equipment. Clean-cut, easy-to-read, and precisely marked dials. Crystal-clear Plexiglass cover. Comes in three sizes, longer scale length and lance type pointer aid readability. Model MS1, 1½"; Model MS2, 2½"; Model MS3, 3½". **Panel Drilling:** Standard 3-hole.

## SERIES 80 METERS

Maximum display in minimum of space. Mounts from behind panel without extra bezel; dial and flange attached directly to mechanism reducing space required behind panel. Plexiglass cover, 100° arc scale and tubular or knife edge pointer. Core-magnet type taut band mechanism is self-shielded. Meter can be mounted horizontally or vertically thru rectangular openings in panel. Model 81T, 1½"; Model 82T, 2½".

## SERIES MM METERS

Brings appealing medallion shape to the instrument or panel. Special wedge-shaped scale markings and lance pointer add to the "different look" of meter. Plexiglass cover is unpainted along top edge to admit added light to dial. Available in three sizes; Model MM1, 1½"; Model MM2, 2½"; Model MM3, 3½". **Panel Drilling:** Standard 3-hole.

## SERIES HS METERS

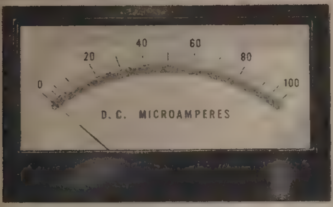
Rugged meters for heavy duty use. Mechanisms are mounted on rubber at three points. Special pivots, hair-springs and fastening techniques reduce effects of hard usage. One-piece sturdy steel case provides magnetic and electrostatic shielding; glass window is hermetically sealed to case. Model HS2Z, 2½" and Model HS3Z, 3½" round shaped meters conform to MIL-M-10304.

## DC MICROAMMETERS

| | Net Each | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1½" | | | | 2½" | | | | 3½" | | |
| Range | MS1T or MM1T | MS1 or MM1 | 81T | HS1 | MS2T or MM2T | MS2 or MM2 | 82T | HS2Z | MS3T or MM3T | MS3 or MM3 | HS3Z |
| 0-20 | .......... | .......... | .......... | * | .......... | $20.70 | .......... | $41.95 | .......... | $22.45 | $42.85 |
| 0-50 | $13.75 | $21.90 | $15.00 | $24.25 | $15.00 | 17.40 | $15.90 | 25.15 | $15.90 | 18.25 | 26.10 |
| 0-100 | 13.35 | 19.25 | 14.60 | 21.90 | 14.60 | 15.85 | 15.50 | 22.80 | 15.50 | 16.70 | 23.75 |
| 0-200 | 12.75 | 15.00 | 14.00 | 19.55 | 14.00 | 14.40 | 14.90 | 21.90 | 14.90 | 15.15 | 22.85 |
| 0-500 | 11.95 | 15.25 | 13.20 | 18.85 | 13.20 | 14.00 | 14.10 | 20.50 | 14.10 | 14.85 | 21.45 |
| 50-0-50 | 13.55 | 19.75 | 14.80 | 22.55 | 14.80 | 16.15 | 15.70 | 23.50 | 15.70 | 16.70 | 24.45 |
| 100-0-100 | 12.95 | 15.40 | 14.20 | 20.15 | 14.20 | 14.45 | 15.10 | 22.55 | 15.10 | 15.30 | 23.50 |
| 500-0-500 | 11.65 | 14.25 | 12.90 | 18.25 | 12.90 | 13.75 | 13.80 | 20.65 | 13.80 | 14.15 | 21.60 |
| **DC MILLIAMMETERS** | | | | | | | | | | | |
| 0-1 | $11.45 | $13.75 | $12.70 | $17.40 | $12.70 | $13.15 | $13.60 | $19.60 | $13.60 | $14.00 | $20.45 |
| 0-5 | 11.45 | 13.75 | 12.70 | 17.40 | 12.70 | 13.15 | 13.60 | 19.60 | 13.60 | 14.00 | 20.45 |
| 0-10 | 11.45 | 13.75 | 12.70 | 17.40 | 12.70 | 13.15 | 13.[illegible] | 19.60 | 13.60 | 14.00 | 20.45 |
| 0-25 | 12.25 | 14.25 | * | 17.80 | 13.50 | 13.15 | * | 21.05 | 14.40 | 14.00 | 21.80 |
| 0-50 | 12.25 | 14.25 | * | 17.80 | 13.50 | 13.15 | * | 21.05 | 14.40 | 14.00 | 21.80 |
| 0-100 | 12.25 | 14.25 | * | 17.80 | 13.50 | 13.15 | * | 21.05 | 14.40 | 14.00 | 21.80 |
| 0-200 | 12.25 | 14.25 | * | 17.80 | 13.50 | 13.15 | * | 21.05 | 14.40 | 14.00 | 21.80 |
| 0-500 | 12.25 | 14.25 | * | 17.80 | 13.50 | 13.15 | * | 21.05 | 14.40 | 14.00 | 21.80 |
| **DC AMMETERS** | | | | | | | | | | | |
| 0-1 | $12.25 | $14.25 | * | $17.70 | $13.50 | $13.55 | * | $22.95 | $14.40 | $14.40 | $23.90 |
| 0-5 | 12.25 | 14.55 | * | 17.70 | 13.50 | 13.55 | * | 22.95 | 14.40 | 14.40 | 23.90 |
| 0-10 | 12.25 | 14.55 | * | 17.70 | 13.50 | 13.55 | * | 22.95 | 14.40 | 14.40 | 23.90 |
| 0-15 | 12.45 | .......... | * | .......... | 13.75 | .......... | * | .......... | 14.65 | .......... | .......... |
| 0-25 | 12.45 | 14.55 | * | 17.70 | 13.75 | 13.55 | * | 20.95 | 14.65 | 14.40 | 21.90 |
| 0-50 | 12.45 | 14.55 | * | 17.70 | 13.75 | 13.55 | * | 20.95 | 14.65 | 14.40 | 21.90 |
| **DC VOLTMETERS** | | | | | | | | | | | |
| 0-1 | $12.05 | .......... | $13.20 | .......... | $13.20 | .......... | $14.10 | .......... | $14.10 | .......... | .......... |
| 0-5 | 12.05 | $15.30 | 13.20 | $17.40 | 13.20 | $14.40 | 14.10 | $21.90 | 14.10 | $15.25 | $22.85 |
| 0-10 | 12.05 | 15.30 | 13.20 | 17.40 | 13.20 | 14.40 | 14.10 | 21.90 | 14.10 | 15.25 | 22.85 |
| 0-15 | 12.05 | 15.30 | 13.20 | 17.40 | 13.20 | 14.40 | 14.10 | 21.90 | 14.10 | 15.25 | 22.85 |
| 0-25 | 12.05 | 15.30 | 13.20 | 17.40 | 13.20 | 14.40 | 14.10 | 21.90 | 14.10 | 15.25 | 22.85 |
| 0-30 | 12.05 | 16.55 | 13.20 | 17.40 | 13.20 | 14.40 | 14.10 | 21.90 | 14.10 | 15.25 | 22.85 |
| 0-50 | 12.05 | 16.55 | 13.20 | 17.40 | 13.20 | 14.40 | 14.10 | 21.90 | 14.10 | 15.25 | 22.85 |
| 0-100 | 12.05 | 16.55 | 13.20 | 17.40 | 13.20 | 14.40 | 14.10 | 21.90 | 14.10 | 15.25 | 22.85 |
| 0-150 | 12.05 | 16.55 | 13.20 | 17.40 | 13.20 | 14.40 | 14.10 | 21.90 | 14.10 | 15.25 | 22.85 |
| 0-200 | 12.05 | 16.55 | 13.20 | 17.40 | 13.20 | 14.40 | 14.10 | 21.90 | 14.10 | 15.25 | 22.85 |
| 0-500 | 12.05 | 17.70 | 13.20 | 17.40 | 13.20 | 14.40 | 14.10 | 19.60 | 14.10 | 15.25 | 22.85 |
| **DC MILLIVOLTMETERS** | | | | | | | | | | | |
| 0-50 | $12.05 | $14.55 | $13.20 | $17.70 | $13.30 | $13.55 | $14.10 | $20.95 | $14.10 | $14.40 | $21.90 |
| **AC VOLTMETERS (RECTIFIED)** | | | | | | | | | | | |
| 0-150 | $16.05 | $18.75 | * | * | $17.20 | $17.60 | * | $24.25 | $18.10 | $19.60 | $25.15 |
| 0-300 | 16.05 | * | * | * | 17.20 | 17.60 | * | 25.15 | 18.10 | 19.60 | 26.10 |

*Not normally available; consult factory.

# Jewell Panel Meters



65

0
.2
.4
.6
.8
1
D. C. MILLIAMPERES

Series 70

0
1
2
3
4
5
6
7
8
9
1
D. C MILLIAMPERES

Series 70 (Bezel)

## MODEL MCE1 METERS

Space saving, 1½″ edgewise meter fits into panel cutout. Metal mounting bezel is adjustable for panel thickness up to ¼″. Curved Plexiglass cover in black thermosetting plastic case. Vertical or horizontal mounting.

## MODEL 45 METERS

Large, easy-to-read dial is framed like a picture. 5″ rectangular meter mounts easily on front of panel with four studs. Knife-edge pointer and fine-line scale add to readability. Dull black thermosetting plastic case and cover, glass window.

## SERIES 50 METERS

Black-cased meters used for many years on all kinds of high quality equipment. Round or square design. Come in three sizes: Model 52, 2½″; Model 53, 3½″; Model 55, 5″.

## MODEL 65 METERS

Beautifully-styled rectangular meter is mounted from behind the panel. Zero adjustment screw is in front of panel. Almost flush dial avoids any tunneling effect. Knife-edge pointer, mirrored scale and fine division lines add to readability and appearance. Dull black thermosetting plastic cover has glass window.

## SERIES 70 METERS

Meters with the "just plain" look, do not draw attention away from other elements on the panel. Clear Plexiglass cover has slightly rounded corners. Serrated area covers only unusable parts of dial. Meters can be mounted on front of panel in all sizes. Bezel mounted meters can be illuminated. Comes in five sizes: Model 71, 1½″; Model 72, 2½″; Model 73, 3½″; Model 75, 4½″; Model 76, 6″.

### DC MICROAMMETERS

| | Net Each | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1½″ | | 2½″ | | 3½″ | | 4½″ | 5″ | | | 6″ |
| Range | MCE1 | 71T | 52T or 52 | 72T or 72 | 53T or 53 | 73T or 73 | 75T or 75 | 45T or 45 | 55T or 55 | 65 | 76 |
| 0–20 | ...... | ...... | $24.50 | ...... | $26.50 | ...... | ...... | $28.50 | $28.50 | ...... | ...... |
| 0–50 | $24.25 | $13.10 | 19.50 | $13.80 | 21.50 | $14.60 | $15.65 | 23.25 | 23.25 | $23.50 | $22.40 |
| 0–100 | 21.15 | 12.80 | 18.25 | 13.40 | 19.25 | 14.20 | 15.25 | 21.00 | 21.00 | 21.25 | 20.75 |
| 0–200 | 16.40 | 12.20 | 15.50 | 12.80 | 16.50 | 13.60 | 14.65 | 19.50 | 19.50 | 19.75 | 18.95 |
| 0–500 | 16.00 | 11.40 | 15.50 | 12.00 | 16.50 | 12.80 | 13.95 | 19.50 | 19.50 | 19.75 | 17.45 |
| 50–0–50 | 21.85 | 13.00 | 18.35 | 13.60 | 19.25 | 14.40 | 15.45 | 21.00 | 21.00 | 21.25 | 21.30 |
| 100–0–100 | 16.85 | 12.40 | 15.50 | 13.00 | 16.50 | 13.80 | 14.95 | 19.50 | 19.50 | 19.75 | 19.10 |
| 500–0–500 | 15.55 | 11.10 | 14.75 | 11.70 | 16.00 | 12.50 | 13.55 | 19.00 | 19.00 | 19.25 | 17.40 |

### DC MILLIAMMETERS

| Range | MCE1 | 71T | 52T or 52 | 72T or 72 | 53T or 53 | 73T or 73 | 75T or 75 | 45T or 45 | 55T or 55 | 65 | 76 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0–1 | $15.05 | $10.90 | $14.75 | $11.50 | $16.00 | $12.30 | $13.35 | $17.50 | $17.50 | $17.75 | $16.90 |
| 0–5 | 15.05 | 10.90 | 14.75 | 11.50 | 16.00 | 12.30 | 13.35 | 17.50 | 17.50 | 17.75 | 16.90 |
| 0–10 | 15.05 | 10.90 | 14.75 | 11.50 | 16.00 | 12.30 | 13.35 | 17.50 | 17.50 | 17.75 | 16.90 |
| 0–25 | 15.55 | 11.70 | 14.75 | 12.30 | 16.00 | 13.10 | 14.15 | 17.50 | 17.50 | 17.75 | 16.90 |
| 0–50 | 15.55 | 11.70 | 14.75 | 12.30 | 16.00 | 13.10 | 14.15 | 17.50 | 17.50 | 17.75 | 16.90 |
| 0–100 | 15.55 | 11.70 | 14.75 | 12.30 | 16.00 | 13.10 | 14.15 | 17.50 | 17.50 | 17.75 | 16.90 |
| 0–200 | 15.55 | 11.70 | 14.75 | 12.30 | 16.00 | 13.10 | 14.15 | 17.50 | 17.50 | 17.75 | 16.90 |
| 0–500 | 15.55 | 11.70 | 14.75 | 12.30 | 16.00 | 13.10 | 14.15 | 17.50 | 17.50 | 17.75 | 16.90 |

### DC AMMETERS

| Range | MCE1 | 71T | 52T or 52 | 72T or 72 | 53T or 53 | 73T or 73 | 75T or 75 | 45T or 45 | 55T or 55 | 65 | 76 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0–1 | $15.55 | $11.70 | $14.75 | $12.30 | $16.00 | $13.10 | $14.15 | $18.00 | $18.00 | $18.25 | $18.00 |
| 0–5 | 16.00 | 11.70 | 14.75 | 12.30 | 16.00 | 13.10 | 14.15 | 18.00 | 18.00 | 18.25 | 18.00 |
| 0–10 | 16.00 | 11.70 | 14.75 | 12.30 | 16.00 | 13.10 | 14.15 | 18.00 | 18.00 | 18.25 | 18.00 |
| 0–15 | ...... | 11.95 | ...... | 12.55 | ...... | 13.35 | 14.40 | ...... | ...... | 19.25 | 18.00 |
| 0–25 | 16.00 | 11.95 | 16.00 | 12.55 | 17.25 | 13.35 | 14.40 | 19.00 | 19.00 | 19.25 | 18.00 |
| 0–50 | 16.00 | 11.95 | 16.00 | 12.55 | 17.25 | 13.35 | 14.40 | 19.00 | 19.00 | 19.25 | 18.00 |

### DC VOLTMETERS

| Range | MCE1 | 71T | 52T or 52 | 72T or 72 | 53T or 53 | 73T or 73 | 75T or 75 | 45T or 45 | 55T or 55 | 65 | 76 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0–1 | ...... | $11.40 | ...... | $12.00 | ...... | $12.80 | $13.85 | ...... | ...... | $19.25 | $19.00 |
| 0–5 | $16.85 | 11.40 | $15.50 | 12.00 | $16.50 | 12.80 | 13.85 | $19.00 | $19.00 | 19.25 | 19.00 |
| 0–10 | 16.85 | 11.40 | 15.50 | 12.00 | 16.50 | 12.80 | 13.85 | 19.00 | 19.00 | 19.25 | 19.00 |
| 0–15 | 16.85 | 11.40 | 15.50 | 12.00 | 16.50 | 12.80 | 13.85 | 19.00 | 19.00 | 19.25 | 19.00 |
| 0–25 | 16.85 | 11.40 | 15.50 | 12.00 | 16.50 | 12.80 | 13.85 | 19.00 | 19.00 | 19.25 | 19.00 |
| 0–30 | 18.05 | 11.40 | 15.50 | 12.00 | 16.50 | 12.80 | 13.85 | 19.00 | 19.00 | 19.25 | 19.00 |
| 0–50 | 18.05 | 11.40 | 15.50 | 12.00 | 16.50 | 12.80 | 13.85 | 19.00 | 19.00 | 19.25 | 19.00 |
| 0–100 | 18.05 | 11.40 | 15.50 | 12.00 | 16.50 | 12.80 | 13.85 | 19.00 | 19.00 | 19.25 | 19.00 |
| 0–150 | 18.05 | 11.40 | 15.50 | 12.00 | 16.50 | 12.80 | 13.85 | 19.00 | 19.00 | 19.25 | 19.00 |
| 0–200 | 18.05 | 11.40 | 16.00 | 12.00 | 17.00 | 12.80 | 13.85 | 19.00 | 19.50 | 19.25 | 19.00 |
| 0–500 | 19.60 | 11.40 | 16.50 | 12.00 | 17.50 | 12.80 | 13.85 | 20.00 | 20.00 | 20.25 | 19.00 |

### DC MILLIVOLTMETERS

| Range | MCE1 | 71T | 52T or 52 | 72T or 72 | 53T or 53 | 73T or 73 | 75T or 75 | 45T or 45 | 55T or 55 | 65 | 76 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0–50 | $16.00 | $11.40 | $14.75 | $12.00 | $16.00 | $12.80 | $13.85 | $18.00 | $18.00 | $18.25 | $18.00 |

### AC VOLTMETERS (RECTIFIED)

| Range | MCE1 | 71T | 52T or 52 | 72T or 72 | 53T or 53 | 73T or 73 | 75T or 75 | 45T or 45 | 55T or 55 | 65 | 76 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0–150 | $20.30 | $15.40 | $21.75 | $16.00 | $23.25 | $16.80 | $17.85 | $25.00 | $25.00 | $25.25 | $24.00 |
| 0–300 | * | 15.40 | 21.75 | 16.00 | 23.25 | 16.80 | 17.85 | 25.00 | 25.00 | 25.25 | 24.00 |

*Not normally available; consult factory.

## VU METERS

For monitoring volume levels in broadcast, recording and communication applications. Meter is essentially a rectifier-type AC voltmeter of high sensitivity.

| Model | Size | Net Each |
|---|---|---|
| MM1 or MS1 | 1½″ | $32.80 |
| MM2 or MS2 | 2½″ | 28.35 |
| MM3 or MS3 | 3½″ | 29.35 |
| 55 or 55T | 5″ | 29.90 |
| 45 or 45T | 5 | 29.90 |
| HS2Z | 2½″ | 40.50 |
| HS3Z | 3½″ | 41.55 |

## NULL INDICATORS

Specifically designed to give null determination over a wide range of unbalance than a standard center zero meter used in a nulling circuit. Large amount of unbalance in a bridge or other detection circuit can be observed. No danger of overloading the meter.

| Model | Size | Net Each |
|---|---|---|
| MCE1 | 1½″ | $32.80 |
| MM1 or MS1 | 1½″ | 32.80 |
| MM2 or MS2 | 2½″ | 32.80 |
| HS2Z | 2½″ | 42.50 |
| HS3Z | 3½″ | 51.65 |

## MODEL HM2ET
## ELAPSED TIME INDICATOR

Provide continuous indication of time in 1/10 and/or 1 hour increments. Often used to show operating time for machine tools, business machines and production equipment. Built in some of the conventional meter case designs. **Specify voltage when ordering.**

| Voltage | Size | Net Each |
|---|---|---|
| 110 volts | 2½″ | $31.85 |
| 220 volts | 2½″ | 33.10 |

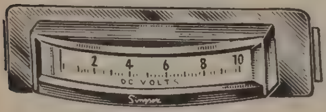
**FOR FULL DETAILS ASK FOR CATALOG 35**

# Simpson Panel Meters

INSTRUMENTS THAT STAY ACCURATE

Simpson
D.C. MILLIAMPERES
0 .2 .4 .6 8 1

3623, 3643



1521, 1522, 1541, 1542

D.C. MILLIAMPERES
0 .2 .4 .6 .8 1.0

1622, 1642, 1921, 1941

## CURRENT TRANSFORMERS

Inverted one-turn primary type. For use with AC ammeters. Secondary, 5 amps.

| Model | Primary Amps | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 |
| 1293 | 50 | $28.35 | $25.52 | $24.10 |
| 1306 | 75 | 20.85 | 18.77 | 17.72 |
| 1297 | 100 | 17.25 | 15.53 | 14.66 |
| 1298 | 150 | 15.30 | 13.77 | 13.01 |
| 1299 | 200 | 15.30 | 13.77 | 13.01 |
| 1313 | 250 | 15.30 | 13.77 | 13.01 |
| 1300 | 300 | 17.25 | 15.53 | 14.66 |
| 1305 | 400 | 19.20 | 17.28 | 16.32 |
| 1301 | 500 | 20.85 | 18.77 | 17.72 |
| 2303 | 600 | 20.85 | 18.77 | 17.72 |
| 2459 | 750 | 24.60 | 22.14 | 20.91 |
| 2304 | 1000 | 26.55 | 23.90 | 22.57 |

## PORTABLE SHUNTS

For DC panel ammeters requiring external shunt. Drop, 50 mV. Accuracy, ±1%. Phenolic base; with 5-ft. leads.

| Model | Amps | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 |
| 6700 | 1 | $11.70 | $10.53 | $9.95 |
| 6703 | 5 | 11.70 | 10.53 | 9.95 |
| 6704 | 10 | 11.70 | 10.53 | 9.95 |
| 6705 | 15 | 11.70 | 10.53 | 9.95 |
| 6707 | 25 | 11.70 | 10.53 | 9.95 |
| 6708 | 30 | 11.70 | 10.53 | 9.95 |
| 6709 | 50 | 11.70 | 10.53 | 9.95 |
| 6711 | 75 | 11.70 | 10.53 | 9.95 |
| 6713 | 100 | 11.70 | 10.53 | 9.95 |
| 6714 | 150 | 11.70 | 10.53 | 9.95 |
| 6715 | 200 | 11.70 | 10.53 | 9.95 |

## SWITCHBOARD SHUNTS

For DC switchboard ammeters. Drop, 50 mV. Accuracy, ±1%. With 5-ft. leads.

| | | | | |
|---|---|---|---|---|
| 6500 | 100 | $ 11.70 | $ 10.53 | $ 9.95 |
| 6503 | 150 | 12.60 | 11.34 | 10.71 |
| 6504 | 200 | 12.60 | 11.34 | 10.71 |
| 6505 | 250 | 12.60 | 11.34 | 10.71 |
| 6506 | 300 | 12.60 | 11.34 | 10.71 |
| 6507 | 400 | 15.30 | 13.77 | 13.01 |
| 6508 | 500 | 18.15 | 16.34 | 15.43 |
| 6509 | 600 | 21.45 | 19.31 | 18.23 |
| 6510 | 750 | 27.45 | 24.71 | 23.34 |
| 6511 | 800 | 29.10 | 26.19 | 24.73 |
| 6512 | 1000 | 35.40 | 31.86 | 30.09 |
| 6513 | 1200 | 42.15 | 37.94 | 35.83 |
| 6514 | 1500 | 52.50 | 47.25 | 44.63 |
| 6515 | 2000 | 58.35 | 52.52 | 49.60 |
| 6516 | 2500 | 73.80 | 66.42 | 62.73 |
| 6517 | 3000 | 87.45 | 78.71 | 74.33 |
| 6518 | 3500 | 122.25 | 110.03 | 103.91 |
| 6519 | 4000 | 146.55 | 131.90 | 124.57 |
| 6520 | 4500 | 160.65 | 144.59 | 136.55 |
| 6521 | 5000 | 180.60 | 162.54 | 153.51 |
| 6522 | 6000 | 199.20 | 179.28 | 169.32 |
| 6523 | 7000 | 239.10 | 215.19 | 203.24 |

## EDGEWISE PANEL METERS MODELS 3623 AND 3643

Molded polycarbonate case with top and bottom formed steel covers; two-piece offset scale for parallax-free readings; self-contained mounting lock eliminates need for external hardware; from bezel zero adjust. **Accuracy:** 2% of full scale with standard pivot and jewel suspension; 1% of full scale with taut band suspension available on special order. **Scale Length:** 2.6″. **Size:** 3:60″ w. x 1.23″ h. Specify vertical or horizontal mounting type.

### 3623 DC PANEL METERS

| Model | Scale | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 |
| 16862 | 0–25 μA | $29.85 | $26.87 | $25.37 |
| 16863 | 0–50 μA | 29.55 | 26.60 | 25.12 |
| 16864 | 0–100 μA | 27.30 | 24.57 | 23.21 |
| 16865 | 0–200 μA | 25.50 | 22.95 | 21.68 |
| 16866 | 0–500 μA | 25.20 | 22.68 | 21.42 |
| 16867 | 25–0–25 μA | 29.85 | 26.87 | 25.37 |
| 16868 | 0–1 mA | 24.90 | 22.41 | 21.17 |
| 16869 | 4–20 mA | 27.30 | 24.57 | 23.21 |
| 16870 | 0–50 mV | 25.50 | 22.95 | 21.68 |
| 16873 | 0–25 V | 25.50 | 22.95 | 21.68 |
| 16874 | 0–50 V | 25.50 | 22.95 | 21.68 |
| 16880 | 0–10 V | 25.50 | 22.95 | 21.68 |
| 16881 | 0–15 V | 25.50 | 22.95 | 21.68 |

### 3643 AC PANEL METERS

| | | | | |
|---|---|---|---|---|
| 16871 | 0–5 A* | $37.50 | $33.75 | $31.88 |
| 16879 | 100–130 V† | 46.50 | 41.85 | 39.53 |

*Rectifier type. †Segmental.

## STACKING EDGEWISE PANEL METERS—MODELS 1622, 1642, 1921 AND 1941

Stacks horizontally or vertically. Features self-shielding core magnet meter movement to eliminate protruding barrel. Scale extends nearly to full width and height of meter. Steel housing, plastic window, dustproof construction. Insulated terminals. **Accuracy:** ±2% FS. **Dielectric:** 1,500 V rms. **Terminals:** 1622 and 1642 have 6-32 studs; 1942 and 1941, solder type. **Size:** 1622 and 1642: 2⁵⁄₁₆″ w. x ⁹⁄₁₆″ h.; mtg. ctrs. 2¹¹⁄₁₆″; cutout .562″ x 2.312″; scale 1.85″ lg. 1921 and 1941: 1.81″ w. x 2.51″ d. x .50″ h.; mtg. ctrs. 2.28; cutout .525″ x 1.718″; scale 1.370″ lg.

### DC VOLTMETERS—5,000 OHMS/V

| Range Volts | Net Each, Lots of 1-9* | |
|---|---|---|
| | 1921—1½″ | 1622—2½″ |
| 0–10, 0–15 | $22.50 | $23.85 |
| 0–25, 0–50, 0–150 | 22.50 | 23.85 |
| 0–500 | — | 24.00 |

### DC MILLIVOLTMETERS

| Range mV | Net Each, Lots of 1-9* | |
|---|---|---|
| | 1921—1½″ | 1622—2½″ |
| 0–50 | $23.55 | $24.90 |

### DC MILLIAMMETERS

| Range mA | Net Each, Lots of 1-9* | |
|---|---|---|
| | 1921—1½″ | 1622—2½″ |
| 0–1, 0–5, 0–10 | $22.05 | $23.70 |
| 0–25, 0–50 | 23.25 | 24.60 |
| 0–100, 0–500 | 23.25 | 24.60 |

### DC MICROAMMETERS

| Range μA | Net Each, Lots of 1-9* | |
|---|---|---|
| | 1921—1½″ | 1622—2½″ |
| 0–25 | $28.95 | $30.15 |
| 0–50 | 28.65 | 29.85 |
| 0–100 | 25.65 | 27.15 |
| 0–200 | 23.55 | 24.90 |
| 0–500 | 22.95 | 24.15 |

### RECTIFIER TYPE AC VOLTMETERS—5,000 OHMS/V

| Range Volts | Net Each, Lots of 1-9* | |
|---|---|---|
| | 1941—1½″ | 1642—2½″ |
| 0–150 | $28.05 | $29.40 |

## EDGEWISE PANEL INSTRUMENTS—MODELS 1521, 1522, 1541 AND 1542

For mounting wherever space is a problem. Supplied with mounting hardware, including bezel with two speed nuts for quick, easy mounting. **Types:** DC and AC rectifier. **Accuracy:** DC, ±2% of full scale; AC, ±3% of full scale at 25° and 60 Hz sine wave. **Meter Movement:** Self-shielded. **Case:** Dustproof, molded acrylic. **Marking:** Black numbers, white background. **Terminals:** Stud type, ammeters; solder, all others. **Size:** 1521 and 1541: 1¾″ w. x 2″ d. x 1.13″ h., overall; mtg. ctrs. 2″; cutout 1.94″ x .53″, scale 1⅜″ lg. 1522 and 1542: 2½″ w. x 3½″ d. x 1.22″ h. overall; mtg. ctrs., 2¹⁵⁄₁₆″; cutout 2.56″ x .68″; scale 1⅞″ lg.

### VOLUME LEVEL INDICATORS

| Range VU | Net Each, Lots of 1-9* | |
|---|---|---|
| | 1541—1½″ | 1542—2½″ |
| A or B Scale | — | $34.65 |

### DC MILLIVOLTMETERS

| Range mV | Net Each, Lots of 1-9* | |
|---|---|---|
| | 1521—1½″ | 1522—2½″ |
| 0–50 | $20.25 | $22.35 |

### DC VOLTMETERS

**Ranges Available:** 0–10, 0–15, 0–25, 0–50, 0–150 and 0–500. All 1,000 ohms/volt, except 0–500 V, 2,000 ohms/V.

| Range Volts | Net Each, Lots of 1-9* | |
|---|---|---|
| | 1521—1½″ | 1522—2½″ |
| 0–10 to 0–150 | $19.20 | $21.15 |
| 0–500 | 19.50 | 21.45 |

### DC MICROAMMETERS

| Range μA | Net Each, Lots of 1-9* | |
|---|---|---|
| | 1521—1½″ | 1522—2½″ |
| 0–25 | $29.10 | $31.20 |
| 0–50 | 25.50 | 27.30 |
| 0–100 | 22.50 | 24.60 |
| 0–200 | 20.25 | 22.35 |
| 0–500 | 19.80 | 21.60 |

### DC MILLIAMMETERS

| Range mA | Net Each, Lots of 1-9* | |
|---|---|---|
| | 1521—1½″ | 1522—2½″ |
| 0–1, 0–5 | $18.90 | $20.85 |
| 0–10 | 18.90 | 20.85 |
| 0–25, 0–50, 0–100 | 19.80 | 21.75 |
| 0–500 | 19.80 | 21.75 |

### DC AMMETERS

| Range Amps | Net Each, Lots of 1-9* | |
|---|---|---|
| | 1521—1½″ | 1522—2½″ |
| 0–5, 0–25 | — | $22.35 |

### RECTIFIER TYPE AC VOLTMETER

**Resistance:** 1,000 ohms per volt.

| Range Volts | Net Each, Lots of 1-9* | |
|---|---|---|
| | 1541—1½″ | 1542—2½″ |
| 0-150 | $25.05 | $27.00 |
| 0-300 | — | 27.00 |

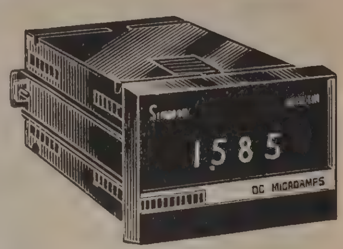
### ★QUANTITY DISCOUNTS

| Lots of | Discount | Multiplier |
|---|---|---|
| 1–9 | None | ............ |
| 10–24 | – 10% | .90 |
| 25-49 | – 15% | .85 |

# Simpson Panel & Portable Meters

INSTRUMENTS THAT STAY ACCURATE

## MODEL 2800 DIGITAL PANEL INSTRUMENTS



Reliable miniature instruments are ideal for new equipment; provide easier readouts, better accuracy, plus up-to-date appearance. Features non-blinking display with storage circuitry to hold the number until input changes, assuring fast, clear readings. Solid state circuitry with IC's (except readout tubes) for high reliability. Compact, modern design with front panel zero adjustment; mounts easily on equipment panels. Bezel has an attractive black matte finish with tinted window.

### SPECIFICATIONS

**Accuracy:** ±0.1% full-scale, ± 1 digit. **Resolution:** 1 part in 1000. **Sample Rate:** 5 readings per second, continuous. **Display:** Non-blinking, with storage. **Number of Full-Time Readout Digits:** Three. **Readout Tubes:** Cold-gas glow tubes; 200,000 hour rated life. **Overrange:** 100%. Number "1" automatically lights to the left of other digits to indicate overrange; when measured value exceeds overrange capacity, the "1" flashes, preventing erroneous readouts. **Underrange:** Reverse polarity is automatically indicated by a light to the right of other digits. Linear 15% underrange permits reading negative values; readout is a complement of actual reading. **Common Mode Rejection:** Greater than 90 dB at 60 Hz with 1000-ohm unbalance. **Series Mode Rejection:** Greater than 35 dB at 60 Hz. **Ambient Temperature Range:** +15° C to +35° C for rated accuracy. **Power Required:** 117 V, 60 Hz AC; 9 VA nominal. **Size:** Flange 4.87" wide x 3.00" high; 7.934" deep behind panel. Requires 4.37" x 2.80" mounting hole.

### DC VOLTAGE INSTRUMENTS

| DC Range | Max. Indication* | Input Impedance | Net Each |
|---|---|---|---|
| 00.0–99.9 mV | 199.9 mV | 10K ohms | $210.00 |
| .000–.999 V | 1.999 V | 100K ohms | |
| 0.00–9.99 V | 19.99 V | 1 megohm | |
| 00.0–99.9 V | 199.9 V | 1 megohm | |
| 000.–999. V | 1010 V† | 1 megohm | |

### DC CURRENT INSTRUMENTS

| DC Range | Max. Indication* | Voltage Drop | Net Each |
|---|---|---|---|
| 0.00–9.99 μA | 19.99 μA | 50 mV | $210.00 |
| 00.0–99.9 μA | 199.9 μA | 50 mV | |
| .000–.999 mA | 1.999 mA | 50 mV | |
| 0.00–9.99 mA | 19.99 mA | 50 mV | |
| 00.0–99.9 mA | 199.9 mA | 50 mV | |

*With overrange. †Overrange limited to 10%; all others 100%.

## MODEL 2100 4½" PORTABLE INSTRUMENT WITH BUILT-IN CENTURY SERIES METERS

Best suited for electric measurements in schools, labs and industry. Features large, easy to read scale, knife-edge pointer; non-fogging glass lens. Self-shielded DC and AC rectifier movements. Four color-coded, multi-range binding posts, one common and 3 for range selection. Rear hole permits mounting fuse holder; nylon plug covers hole when not in use. **Accuracy:** DC instruments, ±2% full-scale; AC instruments, ±3% full-scale. **Size:** 5.15" w. x 5.55" d. x 5.70" h.

**Simpson Model 2100 Portable Instrument**—Comes in white case with black and white panel. Built-in Century meters with following ranges are stock items.

**Wide-Vue meters, other ranges available on special order.**

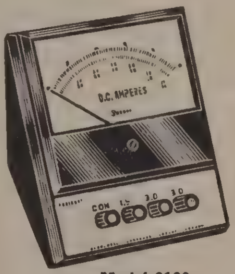
### DC METERS

| Model | Ranges | Net Each |
|---|---|---|
| **17950** | 0–1.5–3–30 Amps | **$34.80** |
| **17951** | 0–1–10–100 mA | **34.80** |
| **17952** | 0–25–50–500 mA | **34.80** |
| **17953** | 0–10–50–250 μA | **66.90** |
| **17954** | 0–1.5–3–30 V | **34.80** |
| **17955** | 0–10–25–100 V | **35.70** |

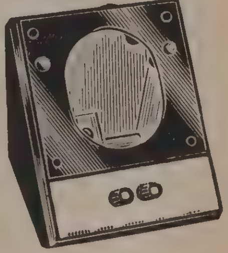
### AC METERS

| Model | Ranges | Net Each |
|---|---|---|
| **17956** | 0–3–15–150 V | **$49.80** |
| **17957** | 0–30–150–300 V | **49.80** |
| **17958** | 0–150–300–600 V | **49.80** |

**Simpson Model 2100, Catalog No. 17949 Case Kit**—Case assembly for mounting a 4½" meter to meet specific needs. Includes case, panel assembly, legend overlay, two binding posts, nylon plug and hardware. Net Each.......................................**$7.50**



**Model 2100**



**Model 2100 Case Kit**

## BOLD-VUE PANEL METERS

.2
.4
.6
.8
0
1
D.C.
MILLIAMPERES

Bold looking panel meters for 3-hole mounting. Made for easy reading, with bold numbers and wide tapered red lance pointer. DC meters have self-shielded annular movements; AC meters have magnetically damped iron vane movements. **Accuracy:** ±2% of full-scale. **Scale Length:** 2½" meters, 2.207"; 3½" meters, 3.047". **Size:** 2½" meters have 2¾" x 2$^{11}/_{16}$" flange; body, 2.17" dia. x 1.19" deep. 3½" meters have 3½" x 3½" flange; body, 2.75" dia. x 1.19" deep.

### DC VOLTMETERS—SELF-SHIELDED METER MOVEMENT

| Range Volts | Approx. Resis., Ohms | Model 1222—2½" Net Each, Lots of | | | Model 1223—3½" Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 1-9 | 10-24 | 25-49 |
| 0–5 | 1000 ohms/ volt | — | — | — | $21.90 | $19.71 | $18.62 |
| 0–10 | | $21.15 | $19.04 | $17.98 | 21.90 | 19.71 | 18.62 |
| 0–15 | | 21.15 | 19.04 | 17.98 | 21.90 | 19.71 | 18.62 |
| 0–25 | | 21.15 | 19.04 | 17.98 | — | — | — |
| 0–30 | | 21.15 | 19.04 | 17.98 | 21.90 | 19.71 | 18.62 |
| 0–50 | | 21.15 | 19.04 | 17.98 | 21.90 | 19.71 | 18.62 |
| 0–100 | | — | — | — | 21.90 | 19.71 | 18.62 |
| 0–150 | | — | — | — | 21.90 | 19.71 | 18.62 |

### DC AMMETERS—SELF-SHIELDED METER MOVEMENT

| Range Volts | Approx. Resis., Ohms | Model 1222—2½" Net Each, Lots of | | | Model 1223—3½" Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 1-9 | 10-24 | 25-49 |
| 0–1 | .050 | — | — | — | $19.20 | $17.28 | $16.32 |
| 0–5 | .010 | $20.25 | $18.23 | $17.21 | 19.20 | 17.28 | 16.32 |
| 0–10 | .005 | 20.25 | 18.23 | 17.21 | 19.20 | 17.28 | 16.32 |

### DC MILLIAMMETERS—SELF-SHIELDED METER MOVEMENT

| Range Volts | Approx. Resis., Ohms | Model 1222—2½" Net Each, Lots of | | | Model 1223—3½" Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 1-9 | 10-24 | 25-49 |
| 0–1 mA | 43.0 | $19.95 | $17.96 | $16.96 | $20.55 | $18.50 | $17.47 |
| 0–50 | 2.0 | — | — | — | 20.55 | 18.50 | 17.47 |
| 0–100 | 1.0 | — | — | — | 21.15 | 19.04 | 17.98 |
| 0–500 | 0.2 | — | — | — | 21.15 | 19.04 | 17.98 |

### DC MICROAMMETERS—SELF-SHIELDED METER MOVEMENT

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0–50 μA | 1800 | $25.65 | $23.09 | $21.80 | $26.10 | $23.49 | $22.19 |
| 0–100 | 1800 | 22.95 | 20.66 | 19.51 | 24.00 | 21.60 | 20.40 |
| 0–200 | 1100 | — | — | — | 21.90 | 19.71 | 18.62 |
| 25–0–25 | 1800 | — | — | — | 26.40 | 23.76 | 22.44 |
| 50–0–50 | 1800 | 23.40 | 21.06 | 19.89 | 24.00 | 21.60 | 20.40 |
| 100–0–100 | 1100 | — | — | — | 22.05 | 19.85 | 18.74 |

### AC AMMETERS—IRON VANE TYPE MOVEMENT

| Range | Approx. Resis., Ohms | Model 1252—2½" Net Each, Lots of | | | Model 1253—3½" Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 | 1-9 | 10-24 | 25-49 |
| 0–5 Amps | .008 | $16.50 | $14.85 | $14.03 | $17.40 | $15.66 | $14.79 |
| 0–10 | .004 | 16.50 | 14.85 | 14.03 | 17.40 | 15.66 | 14.79 |
| 0–15 | .0025 | 16.50 | 14.85 | 14.03 | 17.40 | 15.66 | 14.79 |
| 0–25 | .002 | 17.25 | 15.53 | 14.66 | 18.00 | 16.20 | 15.30 |
| 0–50 | .001 | — | — | — | 18.00 | 16.20 | 15.30 |

### AC VOLTMETERS—IRON VANE TYPE MOVEMENT

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0–150 V | 25,000 | $20.10 | $18.09 | $17.09 | $21.60 | $19.44 | $18.36 |
| 0–300 | 50,000 | — | — | — | 21.60 | 19.44 | 18.36 |

# Simpson Century Panel Meters

INSTRUMENTS THAT STAY ACCURATE

10
20
30
40
50
D.C. MICROAMPERES

Century Series panel meters offer attractive design and easy reading. DC meters have self-shielded movements, with calibration unaffected by stray magnetic fields or magnetic mounting. AC meters have iron vane type movement. AC milliammeters and ammeters are calibrated for use on 25 through 800 Hz; AC voltmeters, 25–125 Hz. Calibration for frequencies up to 800 Hz available on request. **Flange Size:** 1½″ meters, 1.75″ sq.; 2½″ meters, 2.38″ sq.; 3½″ meters, 3.00″ sq.; 4½″ meters, 4.66″ x 4.20″. **Depth Behind Panel:** 1.34″ except 1½″ meters, .90″; wattmeters, 1.75″.

## SPECIFICATIONS

| Size | Model | Accuracy, Full Scale | Scale Lgth. | Mtg. Hole | 4 Mtg. Studs on |
|---|---|---|---|---|---|
| 1½″ | 2121<br>2141 | ±2%<br>±3% | 1.50″ | 1.51″ dia. | 1.32″ centers #4-40 |
| 2½″ | 2122, T<br>2142<br>2152 | ±2%<br>±3%<br>±2% | 2.30″ | 2.16″ dia. | 1.88″ centers #4-40 |
| 3½″ | 2123, T<br>2143<br>2153, 2133 | ±2%<br>±3%<br>±2% | 3.14″ | 2.69″ dia. | 2.24″ centers #4-40 |
| | 2173 | ±3% | | 2.75″ | |
| 4½″ | 2124, T<br>2144<br>2154, 2134 | ±2%<br>±3%<br>±2% | 3.93″ | 2.69″ dia. | 4″ x 3.57″ centers #6-32 |
| | 2174 | ±3% | | 2.75″ | |

## DC VOLTMETERS—SELF-SHIELDED METER MOVEMENT (1000 OHMS/VOLT EXCEPT AS NOTED)

### MODEL 2121—1½″

| Range | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–5 Volts | $19.80 | $17.82 | $16.83 |
| 0–8 | — | — | — |
| 0–10 | 19.80 | 17.82 | 16.83 |
| 0–15 | 19.80 | 17.82 | 16.83 |
| 0–25 | 19.80 | 17.82 | 16.83 |
| 0–30 | 19.80 | 17.82 | 16.83 |
| 0–50 | 19.80 | 17.82 | 16.83 |
| 0–100 | 19.80 | 17.82 | 16.83 |
| 0–150 | 19.80 | 17.82 | 16.83 |
| 0–200 | — | — | — |
| 0–250 | — | — | — |
| 0–300 | — | — | — |
| 0–300* | 19.80 | 17.82 | 16.83 |
| 0–500*† | 24.60 | 22.14 | 20.91 |

### MODEL 2122—2½″

| Range | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–5 Volts | $21.15 | $19.04 | $17.98 |
| 0–8 | — | — | — |
| 0–10 | 21.15 | 19.04 | 17.98 |
| 0–15 | 21.15 | 19.04 | 17.98 |
| 0–25 | 21.15 | 19.04 | 17.98 |
| 0–30 | 21.15 | 19.04 | 17.98 |
| 0–50 | 21.15 | 19.04 | 17.98 |
| 0–100 | 21.15 | 19.04 | 17.98 |
| 0–150 | 21.15 | 19.04 | 17.98 |
| 0–200 | — | — | — |
| 0–250 | — | — | — |
| 0–300 | 21.15 | 19.04 | 17.98 |
| 0–300* | — | — | — |
| 0–500* | 21.90 | 19.71 | 18.62 |
| 0–750*† | 26.70 | 24.03 | 22.70 |
| 0–1000*† | 27.45 | 24.71 | 23.33 |

### MODEL 2123—3½″

| Range | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–5 Volts | $21.90 | $19.71 | $18.62 |
| 0–8 | — | — | — |
| 0–10 | 21.90 | 19.71 | 18.62 |
| 0–15 | 21.90 | 19.71 | 18.62 |
| 0–25 | 21.90 | 19.71 | 18.62 |
| 0–30 | 21.90 | 19.71 | 18.62 |
| 0–50 | 21.90 | 19.71 | 18.62 |
| 0–100 | 21.90 | 19.71 | 18.62 |
| 0–150 | 21.90 | 19.71 | 18.62 |
| 0–200 | 21.90 | 19.71 | 18.62 |
| 0–250 | 21.90 | 19.71 | 18.62 |
| 0–300 | 21.90 | 19.71 | 18.62 |
| 0–300* | — | — | — |
| 0–500* | 22.95 | 20.66 | 19.51 |
| 0–750* | 22.95 | 20.66 | 19.51 |
| 0–1000*† | 28.35 | 25.52 | 24.10 |

### MODEL 2124—4½″

| Range | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–5 Volts | $24.00 | $21.60 | $20.40 |
| 0–8 | 24.00 | 21.60 | 20.40 |
| 0–10 | 24.00 | 21.60 | 20.40 |
| 0–15 | 24.00 | 21.60 | 20.40 |
| 0–25 | 24.00 | 21.60 | 20.40 |
| 0–30 | 24.00 | 21.60 | 20.40 |
| 0–50 | 24.00 | 21.60 | 20.40 |
| 0–100 | 24.00 | 21.60 | 20.40 |
| 0–150 | 24.00 | 21.60 | 20.40 |
| 0–200 | 24.00 | 21.60 | 20.40 |
| 0–250 | — | — | — |
| 0–300 | 24.00 | 21.60 | 20.40 |
| 0–300* | — | — | — |
| 0–500* | 24.75 | 22.28 | 21.04 |
| 0–750* | 24.75 | 22.28 | 21.04 |
| 0–1000*† | 30.30 | 27.27 | 25.76 |

*2000 ohms/volt. †External multiplier furnished; all others self-contained.

## DC AMMETERS—SELF-SHIELDED METER MOVEMENT

Self-contained types are: 1½″ through 10 amps; 2½″, 3½″ and 4½″ through 50 amps. All other ranges require external shunts.

### MODEL 2121—1½″

| | | | |
|---|---|---|---|
| 0–1 Amps | $19.80 | $17.82 | $16.83 |
| 0–1.5 | — | — | — |
| 0–2 | 19.80 | 17.82 | 16.83 |
| 0–3 | 19.80 | 17.82 | 16.83 |
| 0–5 | 19.80 | 17.82 | 16.83 |
| 0–10 | 19.80 | 17.82 | 16.83 |
| 0–15 | 19.80 | 17.82 | 16.83 |
| 0–25 | 19.80 | 17.82 | 16.83 |
| 0–30 | — | — | — |
| 0–50 | 19.80 | 17.82 | 16.83 |
| 0–100 | — | — | — |
| 0–150 | — | — | — |
| 0–200 | — | — | — |
| 0–300 | — | — | — |
| 0–500 | — | — | — |
| 15–0–15 | — | — | — |
| 30–0–30 | — | — | — |

### MODEL 2122—2½″

| | | | |
|---|---|---|---|
| 0–1 Amps | $20.25 | $18.23 | $17.21 |
| 0–1.5 | 20.25 | 18.23 | 17.21 |
| 0–2 | 20.25 | 18.23 | 17.21 |
| 0–3 | 20.25 | 18.23 | 17.21 |
| 0–5 | 20.25 | 18.23 | 17.21 |
| 0–10 | 20.25 | 18.23 | 17.21 |
| 0–15 | 20.25 | 18.23 | 17.21 |
| 0–25 | 20.25 | 18.23 | 17.21 |
| 0–30 | 20.25 | 18.23 | 17.21 |
| 0–50 | 20.25 | 18.23 | 17.21 |
| 0–100 | 20.25 | 18.23 | 17.21 |
| 0–150 | — | — | — |
| 0–200 | 20.25 | 18.23 | 17.21 |
| 0–300 | — | — | — |
| 0–500 | — | — | — |
| 15–0–15 | — | — | — |
| 30–0–30 | — | — | — |

### MODEL 2123—3½″

| | | | |
|---|---|---|---|
| 0–1 Amps | $21.15 | $19.04 | $17.97 |
| 0–1.5 | 21.15 | 19.04 | 17.97 |
| 0–2 | 21.15 | 19.04 | 17.97 |
| 0–3 | 21.15 | 19.04 | 17.97 |
| 0–5 | 21.15 | 19.04 | 17.97 |
| 0–10 | 21.15 | 19.04 | 17.97 |
| 0–15 | 21.15 | 19.04 | 17.97 |
| 0–25 | 21.15 | 19.04 | 17.97 |
| 0–30 | 21.15 | 19.04 | 17.97 |
| 0–50 | 21.15 | 19.04 | 17.97 |
| 0–100 | 21.15 | 19.04 | 17.97 |
| 0–150 | 21.15 | 19.04 | 17.97 |
| 0–200 | 21.15 | 19.04 | 17.97 |
| 0–300 | 21.15 | 19.04 | 17.97 |
| 0–500 | 21.15 | 19.04 | 17.97 |
| 15–0–15 | 22.35 | 20.12 | 19.00 |
| 30–0–30 | 22.35 | 20.12 | 19.00 |

### MODEL 2124—4½″

| | | | |
|---|---|---|---|
| 0–1 Amps | $22.95 | $20.66 | $19.51 |
| 0–1.5 | — | — | — |
| 0–2 | 22.95 | 20.66 | 19.51 |
| 0–3 | 22.95 | 20.66 | 19.51 |
| 0–5 | 22.95 | 20.66 | 19.51 |
| 0–10 | 22.95 | 20.66 | 19.51 |
| 0–15 | 22.95 | 20.66 | 19.51 |
| 0–25 | 22.95 | 20.66 | 19.51 |
| 0–30 | 22.95 | 20.66 | 19.51 |
| 0–50 | 22.95 | 20.66 | 19.51 |
| 0–100 | 22.95 | 20.66 | 19.51 |
| 0–150 | 22.95 | 20.66 | 19.51 |
| 0–200 | 22.95 | 20.66 | 19.51 |
| 0–300 | 22.95 | 20.66 | 19.51 |
| 0–500 | 22.95 | 20.66 | 19.51 |
| 15–0–15 | — | — | — |
| 30–0–30 | — | — | — |

## DC MILLIAMMETERS—SELF-SHIELDED METER MOVEMENT

### MODEL 2121—1½″

| | | | |
|---|---|---|---|
| 0–1 mA | $18.90 | $17.01 | $16.06 |
| 0–3 | — | — | — |
| 0–5 | 18.90 | 17.01 | 16.06 |
| 0–10 | 18.90 | 17.01 | 16.06 |
| 0–15 | 18.90 | 17.01 | 16.06 |
| 0–20 | — | — | — |
| 0–25 | 19.80 | 17.82 | 16.83 |
| 0–50 | 19.80 | 17.82 | 16.83 |
| 0–100 | 19.80 | 17.82 | 16.83 |
| 0–150 | 19.80 | 17.82 | 16.83 |
| 0–200 | 19.80 | 17.82 | 16.83 |
| 0–250 | 19.80 | 17.82 | 16.83 |
| 0–300 | 19.80 | 17.82 | 16.83 |
| 0–500 | 19.80 | 17.82 | 16.83 |
| 0–750 | — | — | — |
| 0–1000 | — | — | — |

### MODEL 2122—2½″

| | | | |
|---|---|---|---|
| 0–1 mA | $19.95 | $17.96 | $16.96 |
| 0–3 | 19.95 | 17.96 | 16.96 |
| 0–5 | 19.95 | 17.96 | 16.96 |
| 0–10 | 19.95 | 17.96 | 16.96 |
| 0–15 | 19.95 | 17.96 | 16.96 |
| 0–20 | — | — | — |
| 0–25 | 20.25 | 18.23 | 17.21 |
| 0–50 | 20.25 | 18.23 | 17.21 |
| 0–100 | 20.25 | 18.23 | 17.21 |
| 0–150 | 20.25 | 18.23 | 17.21 |
| 0–200 | 20.25 | 18.23 | 17.21 |
| 0–250 | 20.25 | 18.23 | 17.21 |
| 0–300 | 20.25 | 18.23 | 17.21 |
| 0–500 | 20.25 | 18.23 | 17.21 |
| 0–750 | — | — | — |
| 0–1000 | 20.25 | 18.23 | 17.21 |

### MODEL 2123—3½″

| | | | |
|---|---|---|---|
| 0–1 mA | $20.55 | $18.50 | $17.48 |
| 0–3 | 20.55 | 18.50 | 17.48 |
| 0–5 | 20.55 | 18.50 | 17.48 |
| 0–10 | 20.55 | 18.50 | 17.48 |
| 0–15 | — | — | — |
| 0–20 | 20.55 | 18.50 | 17.48 |
| 0–25 | 21.15 | 19.04 | 17.98 |
| 0–50 | 21.15 | 19.04 | 17.98 |
| 0–100 | 21.15 | 19.04 | 17.98 |
| 0–150 | 21.15 | 19.04 | 17.98 |
| 0–200 | 21.15 | 19.04 | 17.98 |
| 0–250 | 21.15 | 19.04 | 17.98 |
| 0–300 | 21.15 | 19.04 | 17.98 |
| 0–500 | 21.15 | 19.04 | 17.98 |
| 0–750 | 21.15 | 19.04 | 17.98 |
| 0–1000 | — | — | — |

### MODEL 2124—4½″

| | | | |
|---|---|---|---|
| 0–1 mA | $21.90 | $19.71 | $18.62 |
| 0–3 | 21.90 | 19.71 | 18.62 |
| 0–5 | 21.90 | 19.71 | 18.62 |
| 0–10 | 21.90 | 19.71 | 18.62 |
| 0–15 | — | — | — |
| 0–20 | — | — | — |
| 0–25 | 22.95 | 20.66 | 19.51 |
| 0–50 | 22.95 | 20.66 | 19.51 |
| 0–100 | 22.95 | 20.66 | 19.51 |
| 0–150 | 22.95 | 20.66 | 19.51 |
| 0–200 | 22.95 | 20.66 | 19.51 |
| 0–250 | 22.95 | 20.66 | 19.51 |
| 0–300 | 22.95 | 20.66 | 19.51 |
| 0–500 | 22.95 | 20.66 | 19.51 |
| 0–750 | 22.95 | 20.66 | 19.51 |
| 0–1000 | 22.95 | 20.66 | 19.51 |

## DC MICROAMMETERS—SELF-SHIELDED METER MOVEMENT

### MODEL 2121—1½″

| | | | |
|---|---|---|---|
| 0–50 μA | $24.75 | $22.28 | $21.04 |
| 0–100 | 22.05 | 19.85 | 18.74 |
| 0–200 | 20.10 | 18.09 | 17.09 |
| 0–500 | 19.80 | 17.82 | 16.83 |
| 25–0–25 | 24.90 | 22.41 | 21.17 |
| 50–0–50 | 22.35 | 20.12 | 19.00 |
| 100–0–100 | 20.25 | 18.23 | 17.21 |
| 500–0–500 | 19.20 | 17.28 | 16.32 |

### MODEL 2122—2½″

| | | | |
|---|---|---|---|
| 0–50 μA | $25.65 | $23.09 | $21.80 |
| 0–100 | 22.95 | 20.66 | 19.51 |
| 0–200 | 20.85 | 18.77 | 17.72 |
| 0–500 | 20.55 | 18.50 | 17.48 |
| 25–0–25 | — | — | — |
| 50–0–50 | 23.40 | 21.06 | 19.89 |
| 100–0–100 | 21.15 | 19.04 | 17.98 |
| 500–0–500 | 20.10 | 18.09 | 17.09 |

### MODEL 2123—3½″

| | | | |
|---|---|---|---|
| 0–50 μA | $26.10 | $23.49 | $22.19 |
| 0–100 | 24.00 | 21.60 | 20.40 |
| 0–200 | 21.90 | 19.71 | 18.62 |
| 0–500 | 21.90 | 19.71 | 18.62 |
| 25–0–25 | 26.40 | 23.76 | 22.44 |
| 50–0–50 | 24.00 | 21.60 | 20.40 |
| 100–0–100 | 22.05 | 19.85 | 18.74 |
| 500–0–500 | 20.85 | 18.77 | 17.72 |

### MODEL 2124—4½″

| | | | |
|---|---|---|---|
| 0–50 μA | $28.20 | $25.38 | $23.97 |
| 0–100 | 26.70 | 24.03 | 22.70 |
| 0–200 | 30.00 | 27.00 | 25.50 |
| 0–500 | 23.40 | 21.06 | 19.89 |
| 25–0–25 | 28.35 | 25.52 | 24.10 |
| 50–0–50 | 26.85 | 24.17 | 22.82 |
| 100–0–100 | 24.30 | 21.87 | 20.66 |
| 500–0–500 | 22.05 | 19.85 | 18.74 |

## DC MILLIVOLTMETERS—SELF-SHIELDED METER MOVEMENT

### MODEL 2122—2½″

| Range mV | Approx. Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|---|
| 0–50 | 10 | $20.25 | $18.23 | $17.21 |
| 50–0–50 | 20 | — | — | — |

### MODEL 2123—3½″

| Range mV | Approx. Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|---|
| 0–50 | 10 | $21.15 | $19.04 | $17.98 |
| 50–0–50 | 20 | 21.15 | 19.04 | 17.98 |

### MODEL 2124—4½″

| Range mV | Approx. Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|---|
| 0–50 | 10 | $22.95 | $20.66 | $19.51 |
| 50–0–50 | 20 | 22.95 | 20.66 | 19.51 |

**RANGES LISTED WITHOUT PRICES (—) ARE AVAILABLE ON SPECIAL ORDER ONLY.**

**(CONTINUED ON NEXT PAGE)**

# Simpson Century Panel Meters

INSTRUMENTS THAT STAY ACCURATE

## DC MICROAMMETERS—SELF-SHIELDED TAUT BAND METER MOVEMENT

### MODEL 2122T—2½″

| Range µA | Approx. Ohms | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 |
| 0–5 | 5750 | — | — | — |
| 0–10 | 4900 | $40.95 | $36.86 | $34.81 |
| 0–15 | 1960 | 37.20 | 33.48 | 31.62 |
| 0–25 | 1960 | 35.40 | 31.86 | 30.09 |
| 0–50 | 960 | 27.75 | 24.98 | 23.59 |
| 0–100 | 500 | 25.20 | 22.68 | 21.42 |
| 0–200 | 234 | 23.70 | 21.33 | 20.15 |

### MODEL 2123T—3½″

| Range µA | Approx. Ohms | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 |
| 0–5 | 5750 | $48.60 | $43.74 | $41.31 |
| 0–10 | 4900 | 42.75 | 38.48 | 36.34 |
| 0–15 | 1960 | 38.25 | 34.43 | 32.51 |
| 0–25 | 1960 | 37.05 | 33.35 | 31.49 |
| 0–50 | 960 | 28.35 | 25.52 | 24.10 |
| 0–100 | 500 | 26.10 | 23.49 | 22.19 |
| 0–200 | 234 | — | — | — |

### MODEL 2124T—4½″

| Range µA | Approx. Ohms | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 |
| 0–5 | 5750 | $51.00 | $45.90 | $43.35 |
| 0–10 | 4900 | 46.20 | 41.58 | 39.27 |
| 0–15 | 1960 | 41.70 | 37.53 | 35.45 |
| 0–25 | 1960 | 40.20 | 36.18 | 34.17 |
| 0–50 | 960 | 30.45 | 27.41 | 25.88 |
| 0–100 | 500 | 28.80 | 25.92 | 24.48 |
| 0–200 | 234 | 27.15 | 24.44 | 23.08 |

## RECTIFIER TYPE AC VOLTMETERS—SELF-SHIELDED METER MOVEMENT (2000 OHMS/VOLT)

### MODEL 2141—1½″

| Range Volts | Net Each, Lots of | | |
|---|---|---|---|
| | 1-9 | 10-24 | 25-49 |
| 0–5 | $27.15 | $24.44 | $23.08 |
| 0–10 | 27.15 | 24.44 | 23.08 |
| 0–15 | — | — | — |
| 0–50 | — | — | — |
| 0–150 | 27.15 | 24.44 | 23.08 |
| 0–300 | 27.15 | 24.44 | 23.08 |

### MODEL 2142—2½″

| Range Volts | Net Each, Lots of | | |
|---|---|---|---|
| | 1-9 | 10-24 | 25-49 |
| 0–5 | $25.20 | $22.68 | $21.42 |
| 0–10 | — | — | — |
| 0–15 | — | — | — |
| 0–50 | — | — | — |
| 0–150 | 25.20 | 22.68 | 21.42 |
| 0–300 | — | — | — |

### MODEL 2143—3½″

| Range Volts | Net Each, Lots of | | |
|---|---|---|---|
| | 1-9 | 10-24 | 25-49 |
| 0–5 | $28.80 | $25.92 | $24.48 |
| 0–10 | 28.80 | 25.92 | 24.48 |
| 0–15 | 28.80 | 25.92 | 24.48 |
| 0–50 | 28.80 | 25.92 | 24.48 |
| 0–150 | 28.80 | 25.92 | 24.48 |
| 0–300 | — | — | — |

### MODEL 2144—4½″

| Range Volts | Net Each, Lots of | | |
|---|---|---|---|
| | 1-9 | 10-24 | 25-49 |
| 0–5 | $31.95 | $28.76 | $27.17 |
| 0–10 | 31.95 | 28.76 | 27.17 |
| 0–15 | 31.95 | 28.76 | 27.17 |
| 0–50 | 31.95 | 28.76 | 27.17 |
| 0–150 | 31.95 | 28.76 | 27.17 |
| 0–300 | 31.95 | 28.76 | 27.17 |

## AC VOLTMETERS—IRON VANE TYPE MOVEMENT (SELF-CONTAINED EXCEPT 0—500 V)

### MODEL 2152—2½″

| Range | Imped., Ohms | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 |
| 0–5 Volts | 33 | — | — | — |
| 0–10 | 133 | $19.20 | $17.28 | $16.32 |
| 0–15 | 300 | 19.20 | 17.28 | 16.32 |
| 0–25 | 833 | 19.20 | 17.28 | 16.32 |
| 0–50 | 3,333 | 19.20 | 17.28 | 16.32 |
| 0–100 | 16,666 | — | — | — |
| 0–150 | 25,000 | 20.10 | 18.09 | 17.09 |
| 0–250 | 41,166 | 20.10 | 18.09 | 17.09 |
| 0–300 | 50,000 | 20.10 | 18.09 | 17.09 |
| 0–500 | 83,333 | — | — | — |

### MODEL 2153—3½″

| Range | Imped., Ohms | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 |
| 0–5 Volts | 33 | $20.10 | $18.09 | $17.09 |
| 0–10 | 133 | 20.10 | 18.09 | 17.09 |
| 0–15 | 300 | 20.10 | 18.09 | 17.09 |
| 0–25 | 833 | 20.10 | 18.09 | 17.09 |
| 0–50 | 3,333 | 20.10 | 18.09 | 17.09 |
| 0–100 | 16,666 | 20.85 | 18.77 | 17.72 |
| 0–150 | 25,000 | 21.60 | 19.44 | 18.36 |
| 0–250 | 41,166 | 21.60 | 19.44 | 18.36 |
| 0–300 | 50,000 | 21.60 | 19.44 | 18.36 |
| 0–500 | 83,333 | 27.30 | 24.57 | 23.21 |

### MODEL 2154—4½″

| Range | Imped., Ohms | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-9 | 10-24 | 25-49 |
| 0–5 Volts | 33 | — | — | — |
| 0–10 | 133 | $22.50 | $20.25 | $19.13 |
| 0–15 | 300 | 22.50 | 20.25 | 19.13 |
| 0–25 | 833 | 22.50 | 20.25 | 19.13 |
| 0–50 | 3,333 | 22.50 | 20.25 | 19.13 |
| 0–100 | 16,666 | 22.50 | 20.25 | 19.13 |
| 0–150 | 25,000 | 22.95 | 20.66 | 19.51 |
| 0–250 | 41,166 | 22.95 | 20.66 | 19.51 |
| 0–300 | 50,000 | 22.95 | 20.66 | 19.51 |
| 0–500 | 83,333 | 29.25 | 26.33 | 24.86 |

## AC AMMETERS—IRON VANE TYPE MOVEMENT

The following meters are self-contained: 2½″ through 50 amps, 3½″ and 4½″ through 75 amps. Higher range AC ammeters are 5-amp type to be used with external current transformer (listed on another page).

### MODEL 2152—2½″

| | | | | |
|---|---|---|---|---|
| 0–1 Amps | .213 | $18.15 | $16.34 | $15.43 |
| 0–1.5 | .105 | 18.15 | 16.34 | 15.43 |
| 0–2 | .065 | — | — | — |
| 0–3 | .028 | 18.15 | 16.34 | 15.43 |
| 0–5 | .008 | 18.15 | 16.34 | 15.43 |
| 0–10 | .004 | 18.15 | 16.34 | 15.43 |
| 0–15 | .0025 | 18.15 | 16.34 | 15.43 |
| 0–25 | .002 | 18.90 | 17.01 | 16.07 |
| 0–30 | .0015 | 18.90 | 17.01 | 16.07 |
| 0–50 | .001 | 18.90 | 17.01 | 16.07 |
| 0–75 | .008 | — | — | — |
| 0–100 | .008 | 18.00 | 16.20 | 15.30 |
| 0–150 | .008 | — | — | — |
| 0–200 | .008 | — | — | — |
| 0–300 | .008 | — | — | — |

### MODEL 2153—3½″

| | | | | |
|---|---|---|---|---|
| 0–1 Amps | .213 | $19.20 | $17.28 | $16.32 |
| 0–1.5 | .105 | — | — | — |
| 0–2 | .065 | 19.20 | 17.28 | 16.32 |
| 0–3 | .028 | 19.20 | 17.28 | 16.32 |
| 0–5 | .008 | 19.20 | 17.28 | 16.32 |
| 0–10 | .004 | 19.20 | 17.28 | 16.32 |
| 0–15 | .0025 | 19.20 | 17.28 | 16.32 |
| 0–25 | .002 | 19.95 | 17.96 | 16.96 |
| 0–30 | .0015 | 19.95 | 17.96 | 16.96 |
| 0–50 | .001 | 19.95 | 17.96 | 16.96 |
| 0–75 | .008 | 19.20 | 17.28 | 16.32 |
| 0–100 | .008 | 19.20 | 17.28 | 16.32 |
| 0–150 | .008 | 19.20 | 17.28 | 16.32 |
| 0–200 | .008 | 19.20 | 17.28 | 16.32 |
| 0–300 | .008 | 19.20 | 17.28 | 16.32 |

### MODEL 2154—4½″

| | | | | |
|---|---|---|---|---|
| 0–1 Amps | .215 | $20.40 | $18.36 | $17.34 |
| 0–1.5 | .105 | — | — | — |
| 0–2 | .065 | 20.40 | 18.36 | 17.34 |
| 0–3 | .028 | 20.40 | 18.36 | 17.34 |
| 0–5 | .008 | 20.40 | 18.36 | 17.34 |
| 0–10 | .004 | 20.40 | 18.36 | 17.34 |
| 0–15 | .0025 | 20.40 | 18.36 | 17.34 |
| 0–25 | .002 | 21.15 | 19.04 | 17.98 |
| 0–30 | .0015 | 21.15 | 19.04 | 17.98 |
| 0–50 | .001 | 21.15 | 19.04 | 17.98 |
| 0–75 | .008 | 22.95 | 20.66 | 19.51 |
| 0–100 | .008 | 20.40 | 18.36 | 17.34 |
| 0–150 | .008 | 20.40 | 18.36 | 17.34 |
| 0–200 | .008 | 20.40 | 18.36 | 17.34 |
| 0–300 | .008 | 20.40 | 18.36 | 17.34 |

## AC MILLIAMMETERS—IRON VANE TYPE MOVEMENT

**Ranges Available:** 0–10 (Model 2153 not available), 0–50, 0–100, 0–250, 0–500 mA; specify when ordering.

### MODEL 2152—2½″

| Range, mA (Specify) | Net Each, Lots of | | |
|---|---|---|---|
| | 1-9 | 10-24 | 25-49 |
| Any range | $18.00 | $16.20 | $15.30 |

### MODEL 2153—3½″

| Range, mA (Specify) | Net Each, Lots of | | |
|---|---|---|---|
| | 1-9 | 10-24 | 25-49 |
| Any range | $19.20 | $17.28 | $16.32 |

### MODEL 2154—4½″

| Range, mA (Specify) | Net Each, Lots of | | |
|---|---|---|---|
| | 1-9 | 10-24 | 25-49 |
| Any range | $20.40 | $18.36 | $17.34 |

## VOLUME LEVEL INDICATORS—SELF-SHIELDED METER MOVEMENT

| Range | Model 2141—1½″ | | | Model 2142—2½″ | | |
|---|---|---|---|---|---|---|
| | Net Each, Lots of | | | Net Each, Lots of | | |
| | 1-9 | 10-24 | 25-49 | 1-9 | 10-24 | 25-49 |
| General Purpose dB* | — | — | — | $28.20 | $25.38 | $23.97 |
| A Scale VU† | $30.30 | $27.27 | $25.76 | 33.45 | 30.11 | 28.44 |
| B Scale VU† | — | — | — | — | — | — |

| Range | Model 2143—3½″ | | | Model 2144—4½″ | | |
|---|---|---|---|---|---|---|
| | Net Each, Lots of | | | Net Each, Lots of | | |
| | 1-9 | 10-24 | 25-49 | 1-9 | 10-24 | 25-49 |
| General Purpose dB* | $30.00 | $27.00 | $25.50 | $30.90 | $27.81 | $26.27 |
| A Scale VU† | 34.20 | 30.78 | 29.07 | 37.20 | 33.48 | 31.62 |
| B Scale VU† | 34.20 | 30.78 | 29.07 | 37.20 | 33.48 | 31.62 |

*Zero power level, 6 mW, 500-ohm line; 5000-ohm range. †Reference level, 1 mW, 600-ohm line; meet all electrical and ballistic specifications by Bell Labs and ASA as required by broadcasting, communication and sound engineers. Impedance, 3900 ohms at "0" VU.

## WATTMETERS—DYNAMOMETER TYPE SINGLE PHASE

Accuracy, ±2% F.S. Maximum volts, 150 except 0–600 and up, 300 V. Calibrated for magnetic or non-magnetic panels; 25–125 Hz.

| Range Watts | Max. Amps | Model 2173—3½″ | | | Model 2174—4½″ | | |
|---|---|---|---|---|---|---|---|
| | | Net Each, Lots of | | | Net Each, Lots of | | |
| | | 1-9 | 10-24 | 25-49 | 1-9 | 10-24 | 25-49 |
| 0–75 | 1.0 | $42.75 | $38.48 | $36.34 | $53.10 | $47.79 | $45.14 |
| 0–150 | 2.0 | 19.65 | 17.69 | 16.70 | 53.10 | 47.79 | 45.14 |
| 0–300 | 4.0 | 42.75 | 38.48 | 36.34 | 53.10 | 47.79 | 45.14 |
| 0–750 | 10.0 | 42.75 | 38.48 | 36.34 | 53.10 | 47.79 | 45.14 |
| 0–600 | 4.0 | 46.35 | 41.72 | 39.40 | 56.70 | 51.03 | 48.20 |
| 0–1500 | 10.0 | 46.35 | 41.72 | 39.40 | 56.70 | 51.03 | 48.20 |
| 0–3000 | 20.0 | 46.35 | 41.72 | 39.40 | 56.70 | 51.03 | 48.20 |

## WATTMETERS—COMPENSATED TYPE (±3% F.S. ACCURACY)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0–10 | .175 | $68.25 | $61.43 | $58.01 | $70.95 | $63.86 | $60.31 |
| 0–20 | .400 | 68.25 | 61.43 | 58.01 | 70.95 | 63.86 | 60.31 |
| 0–20* | .175 | 68.25 | 61.43 | 58.01 | 70.95 | 63.86 | 60.31 |
| 0–30 | .650 | 68.25 | 61.43 | 58.01 | 70.95 | 63.86 | 60.31 |
| 0–30* | .300 | 68.25 | 61.43 | 58.01 | 70.95 | 63.86 | 60.31 |
| 0–50* | .500 | 68.25 | 61.43 | 58.01 | 70.95 | 63.86 | 60.31 |

*Maximum volts, 500; all others 300 volts maximum.

## RF AMMETERS—SELF-SHIELDED METER MOVEMENT

| Range Amps | Approx. Resis., Ohms | Model 2133—3½″ | | | Model 2134—4½″ | | |
|---|---|---|---|---|---|---|---|
| | | Net Each, Lots of | | | Net Each, Lots of | | |
| | | 1-9 | 10-24 | 25-49 | 1-9 | 10-24 | 25-49 |
| 0–1 | .343 | — | — | — | $27.75 | $24.98 | $23.59 |
| 0–2 | .120 | $24.30 | $21.87 | $20.66 | 27.75 | 24.98 | 23.59 |
| 0–3 | .08 | 24.30 | 21.87 | 20.66 | — | — | — |
| 0–5 | .045 | 24.30 | 21.87 | 20.66 | — | — | — |
| 0–10 | .023 | 24.30 | 21.87 | 20.66 | 27.75 | 24.98 | 23.59 |

## DC GALVANOMETERS—SELF-SHIELDED METER MOVEMENT

| Range | Sensitivity µA | Model 2122—2½″ | | | Model 2123—3½″ | | |
|---|---|---|---|---|---|---|---|
| | | Net Each, Lots of | | | Net Each, Lots of | | |
| | | 1-9 | 10-24 | 25-49 | 1-9 | 10-24 | 25-49 |
| 50–0–50 | 500–0–500 | $19.95 | $17.96 | $16.96 | $20.85 | $18.77 | $17.72 |
| 50–0–50 | 75–0–75 | — | — | — | 23.40 | 21.06 | 19.89 |

**RANGES LISTED WITHOUT PRICES (—) ARE AVAILABLE ON SPECIAL ORDER ONLY. WRITE FOR INFORMATION.**

# Simpson Wide-Vue Panel Meters

INSTRUMENTS THAT STAY ACCURATE

DC MILLIAMPERES
Simpson

Modern styling with durable, open face plastic cover for wide-angle readability and protection of meter face. DC meters have self-shielded meter movement (calibration not affected by stray magnetic fields or magnetic mounting). AC meters have iron-vane type movement. AC Milliammeters and Ammeters are calibrated for 25–800 Hz; Voltmeters are calibrated for use on 25–125 Hz; Wattmeters calibrated for either magnetic or non-magnetic panels and frequency range of 25–125 Hz. Other calibrations at frequencies up to 800 Hz, available on request.

**Simpson Part Nos. 1123** (4½") or **1253** (3½") **Bezels**—For behind-the-panel mounting of "Wide-Vue" Meters. Net Each. . .**$2.25**

### SPECIFICATIONS

| Size | Model | Accuracy, Full Scale | Scale Lgth. | Mtg. Hole | 4 Mtg. Studs on |
|---|---|---|---|---|---|
| 1½" | 1212, T<br>1214 | ±2%<br>±3%** | 1.5" | 1.5" dia. | 1.32" centers #4-40 |
| 2½" | 1227, T<br>1247<br>1257 | ±2%<br>±3%**<br>±2% | 2.3" | 2.17" dia. | 1.88" centers #4-40 |
| 3½" | 1327, T<br>1337<br>1347<br>1357 | ±2%<br>±2%<br>±3%**<br>±2% | 3.14" | 2.73" dia. | 2.24" centers #4-40 |
| 4½" | 1329, T<br>1339<br>1349<br>1359<br>1379 | ±2%<br>±2%<br>±3%**<br>±2%<br>±2% | 3.93" | 2.75" dia. | 4" x 3.56" centers #6-32 |

**At 25° C and 60 Hz sine wave.

## DC PANEL METERS—MODELS 1212, 1227, 1227T, 1327, 1327T, 1329 AND 1329T

### DC VOLTMETERS—SELF-SHIELDED METER MOVEMENT (1000 OHMS/VOLT EXCEPT AS NOTED)

**MODEL 1212—1½"**

| Range | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–5 Volts | $19.80 | $17.82 | $16.83 |
| 0–8 | — | — | — |
| 0–10 | 19.80 | 17.82 | 16.83 |
| 0–15 | 19.80 | 17.82 | 16.83 |
| 0–25 | 19.80 | 17.82 | 16.83 |
| 0–30 | 19.80 | 17.82 | 16.83 |
| 0–50 | 19.80 | 17.82 | 16.83 |
| 0–100 | 19.80 | 17.82 | 16.83 |
| 0–150 | 19.80 | 17.82 | 16.83 |
| 0–200 | — | — | — |
| 0–250 | — | — | — |
| 0–300 | — | — | — |
| 0–300* | 19.80 | 17.82 | 16.83 |
| 0–500*† | 24.60 | 22.14 | 20.91 |
| 0–750* | — | — | — |
| 0–1000* | — | — | — |

**MODEL 1227—2½"**

| Range | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–5 Volts | $21.15 | $19.04 | $17.98 |
| 0–8 | — | — | — |
| 0–10 | 21.15 | 19.04 | 17.98 |
| 0–15 | 21.15 | 19.04 | 17.98 |
| 0–25 | 21.15 | 19.04 | 17.98 |
| 0–30 | 21.15 | 19.04 | 17.98 |
| 0–50 | 21.15 | 19.04 | 17.98 |
| 0–100 | 21.15 | 19.04 | 17.98 |
| 0–150 | 21.15 | 19.04 | 17.98 |
| 0–200 | 21.15 | 19.04 | 17.98 |
| 0–250 | 21.15 | 19.04 | 17.98 |
| 0–300 | 21.15 | 19.04 | 17.98 |
| 0–300* | — | — | — |
| 0–500* | 21.90 | 19.71 | 18.62 |
| 0–750*† | 26.70 | 24.03 | 22.70 |
| 0–1000*† | 27.45 | 24.71 | 23.33 |

**MODEL 1327—3½"**

| Range | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–5 Volts | $21.90 | $19.71 | $18.62 |
| 0–8 | 21.90 | 19.71 | 18.62 |
| 0–10 | 21.90 | 19.71 | 18.62 |
| 0–15 | 21.90 | 19.71 | 18.62 |
| 0–25 | 21.90 | 19.71 | 18.62 |
| 0–30 | 21.90 | 19.71 | 18.62 |
| 0–50 | 21.90 | 19.71 | 18.62 |
| 0–100 | 21.90 | 19.71 | 18.62 |
| 0–150 | 21.90 | 19.71 | 18.62 |
| 0–200 | 21.90 | 19.71 | 18.62 |
| 0–250 | 21.90 | 19.71 | 18.62 |
| 0–300 | 21.90 | 19.71 | 18.62 |
| 0–300* | — | — | — |
| 0–500* | 22.95 | 20.66 | 19.51 |
| 0–750* | 22.95 | 20.66 | 19.51 |
| 0–1000*† | 28.35 | 25.52 | 24.10 |

**MODEL 1329—4½"**

| Range | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–5 Volts | $24.00 | $21.60 | $20.40 |
| 0–8 | 24.00 | 21.60 | 20.40 |
| 0–10 | 24.00 | 21.60 | 20.40 |
| 0–15 | 24.00 | 21.60 | 20.40 |
| 0–25 | 24.00 | 21.60 | 20.40 |
| 0–30 | 24.00 | 21.60 | 20.40 |
| 0–50 | 24.00 | 21.60 | 20.40 |
| 0–100 | 24.00 | 21.60 | 20.40 |
| 0–150 | 24.00 | 21.60 | 20.40 |
| 0–200 | 24.00 | 21.60 | 20.40 |
| 0–250 | 24.00 | 21.60 | 20.40 |
| 0–300 | 24.00 | 21.60 | 20.40 |
| 0–300* | — | — | — |
| 0–500* | 24.75 | 22.28 | 21.04 |
| 0–750* | 24.75 | 22.28 | 21.04 |
| 0–1000*† | 30.30 | 27.27 | 25.76 |

### DC AMMETERS—SELF-SHIELDED METER MOVEMENT

Self-contained types are: 1½" through 10 amps; 2½", 3½" and 4½" through 50 amps. All others require external shunts.

**MODEL 1212—1½"**

| | | | |
|---|---|---|---|
| 0–1 Amps | $19.80 | $17.82 | $16.83 |
| 0–1.5 | — | — | — |
| 0–2 | 19.80 | 17.82 | 16.83 |
| 0–3 | 19.80 | 17.82 | 16.83 |
| 0–5 | 19.80 | 17.82 | 16.83 |
| 0–10 | 19.80 | 17.82 | 16.83 |
| 0–15 | 19.80 | 17.82 | 16.83 |
| 0–25 | 19.80 | 17.82 | 16.83 |
| 0–30 | — | — | — |
| 0–50 | 19.80 | 17.82 | 16.83 |
| 0–100 | — | — | — |
| 0–150 | — | — | — |
| 0–200 | — | — | — |
| 0–300 | — | — | — |
| 0–500 | — | — | — |
| 15–0–15 | — | — | — |
| 30–0–30 | — | — | — |
| 50–0–50 | — | — | — |

**MODEL 1227—2½"**

| | | | |
|---|---|---|---|
| 0–1 Amps | $20.25 | $18.23 | $17.21 |
| 0–1.5 | 20.25 | 18.23 | 17.21 |
| 0–2 | 20.25 | 18.23 | 17.21 |
| 0–3 | 20.25 | 18.23 | 17.21 |
| 0–5 | 20.25 | 18.23 | 17.21 |
| 0–10 | 20.25 | 18.23 | 17.21 |
| 0–15 | 20.25 | 18.23 | 17.21 |
| 0–25 | 20.25 | 18.23 | 17.21 |
| 0–30 | 20.25 | 18.23 | 17.21 |
| 0–50 | 20.25 | 18.23 | 17.21 |
| 0–100 | 20.25 | 18.23 | 17.21 |
| 0–150 | 20.25 | 18.23 | 17.21 |
| 0–200 | 20.25 | 18.23 | 17.21 |
| 0–300 | 20.25 | 18.23 | 17.21 |
| 0–500 | — | — | — |
| 15–0–15 | — | — | — |
| 30–0–30 | — | — | — |
| 50–0–50 | — | — | — |

**MODEL 1327—3½"**

| | | | |
|---|---|---|---|
| 0–1 Amps | $21.15 | $19.04 | $17.98 |
| 0–1.5 | 21.15 | 19.04 | 17.98 |
| 0–2 | 21.15 | 19.04 | 17.98 |
| 0–3 | 21.15 | 19.04 | 17.98 |
| 0–5 | 21.15 | 19.04 | 17.98 |
| 0–10 | 21.15 | 19.04 | 17.98 |
| 0–15 | 21.15 | 19.04 | 17.98 |
| 0–25 | 21.15 | 19.04 | 17.98 |
| 0–30 | 21.15 | 19.04 | 17.98 |
| 0–50 | 21.15 | 19.04 | 17.98 |
| 0–100 | 21.15 | 19.04 | 17.98 |
| 0–150 | 21.15 | 19.04 | 17.98 |
| 0–200 | 21.15 | 19.04 | 17.98 |
| 0–300 | 21.15 | 19.04 | 17.98 |
| 0–500 | 21.15 | 19.04 | 17.98 |
| 15–0–15 | 22.35 | 20.12 | 19.00 |
| 30–0–30 | 22.35 | 20.12 | 19.00 |
| 50–0–50 | 22.35 | 20.12 | 19.00 |

**MODEL 1329—4½"**

| | | | |
|---|---|---|---|
| 0–1 Amps | $22.95 | $20.66 | $19.51 |
| 0–1.5 | 22.95 | 20.66 | 19.51 |
| 0–2 | 22.95 | 20.66 | 19.51 |
| 0–3 | 22.95 | 20.66 | 19.51 |
| 0–5 | 22.95 | 20.66 | 19.51 |
| 0–10 | 22.95 | 20.66 | 19.51 |
| 0–15 | 22.95 | 20.66 | 19.51 |
| 0–25 | 22.95 | 20.66 | 19.51 |
| 0–30 | 22.95 | 20.66 | 19.51 |
| 0–50 | 22.95 | 20.66 | 19.51 |
| 0–100 | 22.95 | 20.66 | 19.51 |
| 0–150 | 22.95 | 20.66 | 19.51 |
| 0–200 | 22.95 | 20.66 | 19.51 |
| 0–300 | 22.95 | 20.66 | 19.51 |
| 0–500 | 22.95 | 20.66 | 19.51 |
| 15–0–15 | — | — | — |
| 30–0–30 | — | — | — |
| 50–0–50 | — | — | — |

### DC MILLIAMMETERS—SELF-SHIELDED METER MOVEMENT

Self contained. Voltage drop, 150 mV or less.

**MODEL 1212—1½"**

| | | | |
|---|---|---|---|
| 0–1 mA | $18.90 | $17.01 | $16.07 |
| 0–3 | — | — | — |
| 0–5 | 18.90 | 17.01 | 16.07 |
| 0–10 | 18.90 | 17.01 | 16.07 |
| 0–15 | 18.90 | 17.01 | 16.07 |
| 0–20 | — | — | — |
| 0–25 | 19.80 | 17.82 | 16.83 |
| 0–50 | 19.80 | 17.82 | 16.83 |
| 0–100 | 19.80 | 17.82 | 16.83 |
| 0–150 | 19.80 | 17.82 | 16.83 |
| 0–200 | 19.80 | 17.82 | 16.83 |
| 0–250 | 19.80 | 17.82 | 16.83 |
| 0–300 | 19.80 | 17.82 | 16.83 |
| 0–500 | 19.80 | 17.82 | 16.83 |

**MODEL 1227—2½"**

| | | | |
|---|---|---|---|
| 0–1 mA | $19.95 | $17.96 | $16.96 |
| 0–3 | 19.95 | 17.96 | 16.96 |
| 0–5 | 19.95 | 17.96 | 16.96 |
| 0–10 | 19.95 | 17.96 | 16.96 |
| 0–15 | 19.95 | 17.96 | 16.96 |
| 0–20 | 19.95 | 17.96 | 16.96 |
| 0–25 | 20.25 | 18.23 | 17.21 |
| 0–50 | 20.25 | 18.23 | 17.21 |
| 0–100 | 20.25 | 18.23 | 17.21 |
| 0–150 | 20.25 | 18.23 | 17.21 |
| 0–200 | 20.25 | 18.23 | 17.21 |
| 0–250 | 20.25 | 18.23 | 17.21 |
| 0–300 | 20.25 | 18.23 | 17.21 |
| 0–500 | 20.25 | 18.23 | 17.21 |
| 0–750 | — | — | — |
| 0–1000 | 20.25 | 18.23 | 17.21 |

**MODEL 1327—3½"**

| | | | |
|---|---|---|---|
| 0–1 mA | $20.55 | $18.50 | $17.48 |
| 0–3 | 20.55 | 18.50 | 17.48 |
| 0–5 | 20.55 | 18.50 | 17.48 |
| 0–10 | 20.55 | 18.50 | 17.48 |
| 0–15 | 20.55 | 18.50 | 17.48 |
| 0–20 | 20.55 | 18.50 | 17.48 |
| 0–25 | 21.15 | 19.04 | 17.98 |
| 0–50 | 21.15 | 19.04 | 17.98 |
| 0–100 | 21.15 | 19.04 | 17.98 |
| 0–150 | 21.15 | 19.04 | 17.98 |
| 0–200 | 21.15 | 19.04 | 17.98 |
| 0–250 | 21.15 | 19.04 | 17.98 |
| 0–300 | 21.15 | 19.04 | 17.98 |
| 0–500 | 21.15 | 19.04 | 17.98 |
| 0–750 | 21.15 | 19.04 | 17.98 |
| 0–1000 | 21.15 | 19.04 | 17.98 |

**MODEL 1329—4½"**

| | | | |
|---|---|---|---|
| 0–1 mA | $21.90 | $19.71 | $18.62 |
| 0–3 | 21.90 | 19.71 | 18.62 |
| 0–5 | 21.90 | 19.71 | 18.62 |
| 0–10 | 21.90 | 19.71 | 18.62 |
| 0–15 | 21.90 | 19.71 | 18.62 |
| 0–20 | 21.90 | 19.71 | 18.62 |
| 0–25 | 22.95 | 20.66 | 19.51 |
| 0–50 | 22.95 | 20.66 | 19.51 |
| 0–100 | 22.95 | 20.66 | 19.51 |
| 0–150 | 22.95 | 20.66 | 19.51 |
| 0–200 | 22.95 | 20.66 | 19.51 |
| 0–250 | 22.95 | 20.66 | 19.51 |
| 0–300 | 22.95 | 20.66 | 19.51 |
| 0–500 | 22.95 | 20.66 | 19.51 |
| 0–750 | 22.95 | 20.66 | 19.51 |
| 0–1000 | 22.95 | 20.66 | 19.51 |

### DC MICROAMMETERS—SELF-SHIELDED TAUT BAND METER MOVEMENT

**MODEL 1212T—1½"**

| | | | |
|---|---|---|---|
| 0–5 μA | — | — | — |
| 0–10 | — | — | — |
| 0–15 | $37.20 | $33.48 | $31.62 |
| 0–25 | 34.65 | 31.19 | 29.45 |
| 0–50 | 27.15 | 24.44 | 23.08 |
| 0–100 | 24.30 | 21.87 | 20.66 |
| 0–200 | 22.50 | 20.25 | 19.13 |

**MODEL 1227T—2½"**

| | | | |
|---|---|---|---|
| 0–5 μA | — | — | — |
| 0–10 | $40.95 | $36.86 | $34.81 |
| 0–15 | 37.20 | 33.48 | 31.62 |
| 0–25 | 35.40 | 31.86 | 30.09 |
| 0–50 | 27.75 | 24.98 | 23.59 |
| 0–100 | 25.20 | 22.68 | 21.42 |
| 0–200 | 23.70 | 21.33 | 20.15 |

**MODEL 1327T—3½"**

| | | | |
|---|---|---|---|
| 0–5 μA‡ | $48.60 | $43.74 | $41.31 |
| 0–10 | 42.75 | 38.48 | 36.34 |
| 0–15 | 38.25 | 34.43 | 32.51 |
| 0–25 | 37.05 | 33.35 | 31.49 |
| 0–50 | 28.35 | 25.52 | 24.10 |
| 0–100 | 26.10 | 23.49 | 22.19 |
| 0–200 | 24.60 | 22.14 | 20.91 |

**MODEL 1329T—4½"**

| | | | |
|---|---|---|---|
| 0–5 μA‡ | $51.60 | $46.44 | $43.86 |
| 0–10 | 46.20 | 41.58 | 39.27 |
| 0–15 | 41.70 | 37.53 | 35.45 |
| 0–25 | 40.20 | 36.18 | 34.17 |
| 0–50 | 30.45 | 27.41 | 25.88 |
| 0–100 | 28.80 | 25.92 | 24.48 |
| 0–200 | 27.15 | 24.44 | 23.08 |

### DC MICROAMMETERS—SELF-SHIELDED METER MOVEMENT

**MODEL 1212—1½"**

| | | | |
|---|---|---|---|
| 0–50 μA | $24.75 | $22.28 | $21.04 |
| 0–100 | 22.05 | 19.85 | 18.74 |
| 0–200 | 20.10 | 18.09 | 17.09 |
| 0–500 | 19.80 | 17.82 | 16.83 |
| 25–0–25 | 24.90 | 22.41 | 21.17 |
| 50–0–50 | 22.35 | 20.12 | 19.00 |
| 100–0–100 | 20.25 | 18.23 | 17.21 |
| 500–0–500 | 19.20 | 17.28 | 16.32 |

**MODEL 1227—1½"**

| | | | |
|---|---|---|---|
| 0–50 μA | $25.65 | $23.09 | $21.80 |
| 0–100 | 22.95 | 20.66 | 19.51 |
| 0–200 | 20.85 | 18.77 | 17.72 |
| 0–500 | 20.55 | 18.50 | 17.48 |
| 25–0–25 | — | — | — |
| 50–0–50 | 23.40 | 21.06 | 19.89 |
| 100–0–100 | 21.15 | 19.04 | 17.98 |
| 500–0–500 | 20.10 | 18.09 | 17.09 |

**MODEL 1327—3½"**

| | | | |
|---|---|---|---|
| 0–50 μA | $26.10 | $23.49 | $22.19 |
| 0–100 | 24.00 | 21.60 | 20.40 |
| 0–200 | 21.90 | 19.71 | 18.62 |
| 0–500 | 21.60 | 19.44 | 18.36 |
| 25–0–25 | 26.40 | 23.76 | 22.44 |
| 50–0–50 | 24.00 | 21.60 | 20.40 |
| 100–0–100 | 22.05 | 19.85 | 18.74 |
| 500–0–500 | 20.85 | 18.77 | 17.72 |

**MODEL 1329—4½"**

| | | | |
|---|---|---|---|
| 0–50 μA | $28.20 | $25.38 | $23.97 |
| 0–100 | 26.70 | 24.03 | 22.70 |
| 0–200 | 24.00 | 21.60 | 20.40 |
| 0–500 | 23.40 | 21.06 | 19.89 |
| 25–0–25 | 28.35 | 25.52 | 24.10 |
| 50–0–50 | 26.85 | 24.17 | 22.82 |
| 100–0–100 | 24.30 | 21.87 | 20.66 |
| 500–0–500 | 22.05 | 19.85 | 18.74 |

*2000 ohms/volt. †External multiplier furnished; all others self-contained. ‡High flux annular.

**RANGES LISTED WITHOUT PRICES (—) ARE AVAILABLE ON SPECIAL ORDER ONLY. CONTINUED, NEXT PAGE**

# Simpson Wide-Vue Panel Meters

INSTRUMENTS THAT STAY ACCURATE

## DC PANEL METERS—MODELS 1212, 1227, 1327 AND 1329 (CONT'D)

### DC MILLIVOLTMETERS—SELF-SHIELDED METER MOVEMENT

**MODEL 1212—1½″**

| Range mV | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–50 | $19.80 | $17.82 | $16.83 |
| 50–0–50 | — | — | — |

**MODEL 1227—2½″**

| Range mV | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–50 | $20.25 | $18.23 | $17.21 |
| 50–0–50 | — | — | — |

**MODEL 1327—3½″**

| Range mV | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–50 | $21.15 | $19.04 | $17.98 |
| 50–0–50 | 21.15 | 19.04 | 17.98 |

**MODEL 1329—4½″**

| Range mV | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–50 | $22.95 | $20.66 | $19.51 |
| 50–0–50 | 22.95 | 20.66 | 19.51 |

### DC GALVANOMETERS—SELF-SHIELDED METER MOVEMENT

| Range | Sensitivity µA | Model 1212—1½″ Net Each, Lots of 1-9 | 10-24 | 25-49 | Model 1227—2½″ Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|---|---|---|---|
| 50–0–50 | 500–0–500 | $19.20 | $17.28 | $16.32 | $19.95 | $17.96 | $16.96 |
| 50–0–50 | 75–0–75 | 20.25 | 18.23 | 17.21 | 21.60 | 19.44 | 18.36 |

| Range | Sensitivity µA | Model 1327—3½″ Net Each, Lots of 1-9 | 10-24 | 25-49 | Model 1329—4½″ Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|---|---|---|---|
| 50–0–50 | 500–0–500 | $19.95 | $17.96 | $16.96 | $22.05 | $19.85 | $18.74 |
| 50–0–50 | 75–0–75 | 23.40 | 21.06 | 19.89 | 25.65 | 23.09 | 21.80 |

## AC PANEL METERS—MODELS 1257, 1357, AND 1359

### AC VOLTMETERS—IRON VANE TYPE MOVEMENT (SELF-CONTAINED EXCEPT 0-500 V)

**MODEL 1257—2½″**

| Range Volts | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–5 | — | — | — |
| 0–10 or 0–15 | $19.20 | $17.28 | $16.32 |
| 0–25 or 0–50 | 19.20 | 17.28 | 16.32 |
| 0–100 | 19.80 | 17.82 | 16.83 |
| 0–150 | 20.10 | 18.09 | 17.09 |
| 0–250 or 0–300 | 20.10 | 18.09 | 17.09 |
| 0–500 | 25.65 | 23.09 | 21.80 |

**MODEL 1357—3½″**

| Range Volts | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–5 | $20.10 | $18.09 | $17.09 |
| 0–10 or 0–15 | 20.10 | 18.09 | 17.09 |
| 0–25 or 0–50 | 20.10 | 18.09 | 17.09 |
| 0–100 | 20.85 | 18.77 | 17.72 |
| 0–150 | 21.60 | 19.04 | 18.36 |
| 0–250 or 0–300 | 21.60 | 19.44 | 18.36 |
| 0–500 | 27.30 | 24.57 | 23.21 |

**MODEL 1359—4½″**

| Range Volts | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–5 | $22.50 | $20.25 | $19.13 |
| 0–10 or 0–15 | 22.50 | 20.25 | 19.13 |
| 0–25 or 0–50 | 22.50 | 20.25 | 19.13 |
| 0–100 | 22.50 | 20.25 | 19.13 |
| 0–150 | 22.95 | 20.66 | 19.51 |
| 0–250 or 0–300 | 22.95 | 20.66 | 19.51 |
| 0–500 | 29.25 | 26.33 | 24.86 |

### AC AMMETERS—IRON VANE TYPE MOVEMENT

The following meters are self contained: 2½″ through 50 amps, 3½″ and 4½″ through 75 amps. Higher range AC ammeters are 5-amp meters to be used with external current transformer.

**MODEL 1257—2½″**

| Range Amps | Approx. Resis., Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|---|
| 0–1 | .213 | $18.15 | $16.34 | $15.43 |
| 0–1.5 | .105 | 18.15 | 16.34 | 15.43 |
| 0–2 | .065 | — | — | — |
| 0–3 | .028 | 18.15 | 16.34 | 15.43 |
| 0–5 | .008 | 18.15 | 16.34 | 15.43 |
| 0–10 | .004 | 18.15 | 16.34 | 15.43 |
| 0–15 | .0025 | 18.15 | 16.34 | 15.43 |
| 0–25 | .002 | 18.15 | 16.34 | 15.43 |
| 0–30 | .0015 | 18.15 | 16.34 | 15.43 |
| 0–50 | .001 | 18.15 | 16.34 | 15.43 |
| 0–75 | .008 | — | — | — |
| 0–100 | .008 | 18.15 | 16.34 | 15.43 |
| 0–150 | .008 | 18.15 | 16.34 | 15.43 |
| 0–200 | .008 | 18.15 | 16.34 | 15.43 |
| 0–300 | .008 | 18.15 | 16.34 | 15.43 |

**MODEL 1357—3½″**

| Range Amps | Approx. Resis., Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|---|
| 0–1 | .213 | $19.20 | $17.28 | $16.32 |
| 0–1.5 | .105 | 19.20 | 17.28 | 16.32 |
| 0–2 | .065 | 19.20 | 17.28 | 16.32 |
| 0–3 | .028 | 19.20 | 17.28 | 16.32 |
| 0–5 | .008 | 19.20 | 17.28 | 16.32 |
| 0–10 | .004 | 19.20 | 17.28 | 16.32 |
| 0–15 | .0025 | 19.20 | 17.28 | 16.32 |
| 0–25 | .002 | 19.95 | 17.96 | 16.96 |
| 0–30 | .0015 | 19.95 | 17.96 | 16.96 |
| 0–50 | .001 | 19.95 | 17.96 | 16.96 |
| 0–75 | .008 | 21.60 | 19.44 | 18.36 |
| 0–100 | .008 | 19.20 | 17.28 | 16.32 |
| 0–150 | .008 | 19.20 | 17.28 | 16.32 |
| 0–200 | .008 | 19.20 | 17.28 | 16.32 |
| 0–300 | .008 | 19.20 | 17.28 | 16.32 |

**MODEL 1359—4½″**

| Range Amps | Approx. Resis., Ohms | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|---|
| 0–1 | .213 | $20.40 | $18.36 | $17.34 |
| 0–1.5 | .105 | 20.40 | 18.36 | 17.34 |
| 0–2 | .065 | 20.40 | 18.36 | 17.34 |
| 0–3 | .028 | 20.40 | 18.36 | 17.34 |
| 0–5 | .008 | 20.40 | 18.36 | 17.34 |
| 0–10 | .004 | 20.40 | 18.36 | 17.34 |
| 0–15 | .0025 | 20.40 | 18.36 | 17.34 |
| 0–25 | .002 | 21.15 | 19.04 | 17.98 |
| 0–30 | .0015 | 21.15 | 19.04 | 17.98 |
| 0–50 | .001 | 21.15 | 19.04 | 17.98 |
| 0–75 | .008 | 22.95 | 20.66 | 19.51 |
| 0–100 | .008 | 20.40 | 18.36 | 17.34 |
| 0–150 | .008 | 20.40 | 18.36 | 17.34 |
| 0–200 | .008 | 20.40 | 18.36 | 17.34 |
| 0–300 | .008 | 20.40 | 18.36 | 17.34 |

### AC MILLIAMMETERS—IRON VANE TYPE MOVEMENT

**Ranges:** 0–10, 0–50, 0–100, 0–250, 0–500 mA; specify.

**MODEL 1257—2½″**

| Range, mA (Specify) | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| Any range | $18.15 | $16.34 | $15.43 |

**MODEL 1357—3½″**

| Range, mA (Specify) | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| Any range | $19.20 | $17.28 | $16.32 |

**MODEL 1359—4½″**

| Range, mA (Specify) | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| Any range | $20.40 | $18.36 | $17.34 |

## RECTIFIER TYPE AC VOLTMETERS—SELF-SHIELDED METER MOVEMENT

### 2,000 OHMS/VOLT RESISTANCE

**MODEL 1214—1½″**

| Range Volts | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–5 | $27.15 | $24.44 | $23.08 |
| 0–10 | 27.15 | 24.44 | 23.08 |
| 0–15 | — | — | — |
| 0–50 | — | — | — |
| 0–150 | 27.15 | 24.44 | 23.08 |
| 0–300 | 27.15 | 24.44 | 23.08 |

**MODEL 1247—2½″**

| Range Volts | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–5 | $25.20 | $22.68 | $21.42 |
| 0–10 | 25.20 | 22.68 | 21.42 |
| 0–15 | — | — | — |
| 0–50 | — | — | — |
| 0–150 | 25.20 | 22.68 | 21.42 |
| 0–300 | 25.20 | 22.68 | 21.42 |

**MODEL 1347—3½″**

| Range Volts | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–5 | $28.80 | $25.92 | $24.48 |
| 0–10 | 28.80 | 25.92 | 24.48 |
| 0–15 | 28.80 | 25.92 | 24.48 |
| 0–50 | 28.80 | 25.92 | 24.48 |
| 0–150 | 28.80 | 25.92 | 24.48 |
| 0–300 | 28.80 | 25.92 | 24.48 |

**MODEL 1349—4½″**

| Range Volts | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–5 | $31.95 | $28.76 | $27.17 |
| 0–10 | 31.95 | 28.76 | 27.17 |
| 0–15 | 31.95 | 28.76 | 27.17 |
| 0–50 | 31.95 | 28.76 | 27.17 |
| 0–150 | 31.95 | 28.76 | 27.17 |
| 0–300 | 31.95 | 28.76 | 27.17 |

## VOLUME LEVEL INDICATORS—SELF-SHIELDED METER MOVEMENT

| Range | Model 1214—1½″ Net Each, Lots of 1-9 | 10-24 | 25-49 | Model 1247—2½″ Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|---|---|---|
| General Purpose dB* | — | — | — | $28.20 | $25.38 | $23.97 |
| A Scale VU† | $30.30 | $27.27 | $25.76 | 33.45 | 30.11 | 28.43 |
| B Scale VU† | — | — | — | — | — | — |

| Range | Model 1347—3½″ Net Each, Lots of 1-9 | 10-24 | 25-49 | Model 1349—4½″ Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|---|---|---|
| General Purpose dB* | $30.00 | $27.00 | $25.50 | $30.90 | $27.81 | $26.26 |
| A Scale VU† | 34.20 | 30.78 | 29.07 | 37.20 | 33.48 | 31.62 |
| B Scale VU† | 34.20 | 30.78 | 29.07 | 37.20 | 33.48 | 31.62 |

*Reference level, 1 mW 600-ohm line. †Reference level, 1 mW 600-ohm line; meet all electrical and ballistic specifications by Bell Labs and ASA as required by broadcasting, communication and sound engineers. Impedance 3900 ohms at "0" VU deflection.

## RF AMMETERS—SELF-SHIELDED METER MOVEMENT

| Range | Approx. Resis., Ohms | Model 1337—3½″ Net Each, Lots of 1-9 | 10-24 | 25-49 | Model 1339—4½″ Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|---|---|---|---|
| 0–1 | .343 | $24.30 | $21.87 | $20.66 | $27.75 | $24.98 | $23.59 |
| 0–1.5 | .200 | 24.30 | 21.87 | 20.66 | 27.75 | 24.98 | 23.59 |
| 0–2 | .120 | 24.30 | 21.87 | 20.66 | 27.75 | 24.98 | 23.59 |
| 0–2.5 | .10 | 24.30 | 21.87 | 20.66 | 27.75 | 24.98 | 23.59 |
| 0–3 | .08 | 24.30 | 21.87 | 20.66 | 27.75 | 24.98 | 23.59 |
| 0–5 | .045 | 24.30 | 21.87 | 20.66 | 27.75 | 24.98 | 23.59 |
| 0–8 | .031 | 24.30 | 21.87 | 20.66 | 27.75 | 24.98 | 23.59 |
| 0–10 | .023 | 24.30 | 21.87 | 20.66 | 27.75 | 24.98 | 23.59 |

## RF MILLIAMMETERS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0–500 | .63 | $28.65 | $25.79 | $24.35 | $32.40 | $29.16 | $27.54 |

## WATTMETERS—MODEL 1379—4½″

### DYNAMOMETER TYPE SINGLE PHASE

| Range Watts | Range Volts | Max. Amps | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|---|---|
| 0–75 | 150 | 1.0 | $53.10 | $47.79 | $45.14 |
| 0–150 | 150 | 2.0 | 53.10 | 47.79 | 45.14 |
| 0–300 | 150 | 4.0 | 53.10 | 47.79 | 45.14 |
| 0–750 | 150 | 10.0 | 53.10 | 47.79 | 45.14 |
| 0–600 | 300 | 4.0 | 56.70 | 51.03 | 48.20 |
| 0–1500 | 300 | 10.0 | 56.70 | 51.03 | 48.20 |
| 0–3000 | 300 | 20.0 | 56.70 | 51.03 | 48.20 |
| **COMPENSATED TYPE** | | | | | |
| 0–10 | 300 | .175 | $70.95 | $63.86 | $60.31 |
| 0–20 | 300 | .400 | 70.95 | 63.86 | 60.31 |
| 0–30 | 300 | .650 | 70.95 | 63.86 | 60.31 |

RANGES LISTED WITHOUT PRICES (—) ARE AVAILABLE ON SPECIAL ORDER ONLY.

# Simpson Panel Meters

INSTRUMENTS THAT STAY ACCURATE

## RECTANGULAR AND ROUND PANEL METER

### ACCURACY AND SCALE LENGTH

DC meters for AC iron vane type meters, ±2% full scale ex mirrored 1150-1, ±1% full scale; dB and rectifier types, ±3% scale at 25° C, 60 Hz sine wave; VU meters per ASA specs.

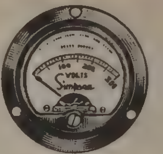
| Size | Models | Scale | Size | Models | S |
|---|---|---|---|---|---|
| 2½" | 125, 125T, 127, 127T, 135, 137, 145, 147 | 1.8" | 3½" | 55, 57, 75, 77 | |
| | | | 4½" | 29, 29T, 39, 49, 142 | |
| 2½" | 155, 157, 175, 177 | 1.6" | 4½" | 59, 79 | |
| 3½" | 25, 25T, 27, 27T, 35, 37, 45, 47 | 2.5" | 6" | 1150, 1150-1 | |

### CALIBRATION AND DIMENSIONS

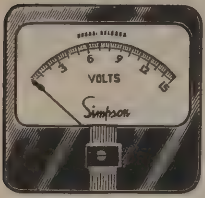
| Model | Fig. | Size, Inches |
|---|---|---|
| 127, 127T, 137, 147, 157 | A | 2.37 sq.; body, 2.17 dia. x 1.45 d. |
| 177 | A | 2.37 sq.; body, 2.17 dia. x 2.02 d. |
| 125, 125T, 135, 145, 155 | B | Flange, 2.69 dia.; body, 2.17 dia. x 1.3 |
| 175 | B | Flange, 2.69 dia.; body, 2.17 dia. x 1.9 |
| 27, 27T, 37, 47 | A | 3 w. x 3.12 h.; body, 2.75 dia. x 1.36 d. |
| 57 | A | 3 w. x 3.12 h.; body, 2.75 dia. x 1.45 d. |
| 77 | A | 3 w. x 3.12 h.; body, 2.75 dia. x 2.11 d. |
| 25, 25T, 35, 45 | B | Flange, 3.5 dia.; body, 2.75 dia. x 1.31 |
| 55 | B | Flange, 3.5 dia.; body, 2.75 dia. x 1.31 |
| 75 | B | Flange, 3.5 dia.; body, 2.75 dia. x 2.06 |
| 29, 29T, 39, 49 | C | 4.66 w. x 4.2 h.; body, 2.75 dia. x 1 d. |
| 59 | C | 4.66 w. x 4.2 h.; body, 2.75 dia. x 1.09 |
| 79 | C | 4.66 w. x 4.2 h.; body, 2.75 dia. x 1.68 |
| 142 | C | 4.25 w. x 3.94 h.; body, 3.25 dia. x 1 d. |
| 1150 | D | 5.75 w. x 4.63 h.; body, 3 dia. x 1 d. |

MILLIAMPERES
Simpson

A



B



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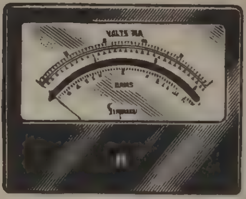


D

**DC meters:** All have self-shielded movement. Calibration not affected by strong magnetic fields or magnetic mounting.

**AC meters:** All have iron vane type movement. AC Milliammeters and Ammeters, except 0–10 amps, are calibrated for use on 25–800 Hz; 0–10 AC Ammeters and all AC Voltmeters calibrated for use on 25–125 Hz. Wattmeters have dynamometer movement magnetic or non-magnetic panels; calibrated for 25–125 Hz. Voltmeters available for other frequencies; specify and requ prices. **Note**—Special dials are available for substitution; write availability and prices before ordering.

## DC VOLTMETERS—SELF-SHIELDED METER MOVEMENT, 1,000 OHMS/VOLT

### MODELS 125, 127—2½"

| Range | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–1.5, –3V | $21.15 | $19.04 | $17.98 |
| 0–5, –8 | 21.15 | 19.04 | 17.98 |
| 0–10, –15 | 21.15 | 19.04 | 17.98 |
| 0–25, –30 | 21.15 | 19.04 | 17.98 |
| 0–50, –100 | 21.15 | 19.04 | 17.98 |
| 0–150 | 21.15 | 19.04 | 17.98 |
| 0–200 | 21.15 | 19.04 | 17.98 |
| 0–250 | 21.15 | 19.04 | 17.98 |
| 0–300† | 21.15 | 19.04 | 17.98 |
| 0–500*† | 21.90 | 19.71 | 18.62 |
| 0–750* | — | — | — |
| 0–1000* | — | — | — |
| 0–1500* | — | — | — |
| 0–2000*† | 27.30 | 24.57 | 23.21 |
| 0–2500* | — | — | — |
| 0–3000* | — | — | — |
| 0–4000* | — | — | — |
| 0–5000* | — | — | — |

### MODELS 25, 27—3½"

| Range | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–1.5†, –3V | $21.90 | $19.71 | $18.62 |
| 0–5, –8† | 21.90 | 19.71 | 18.62 |
| 0–10, –15 | 21.90 | 19.71 | 18.62 |
| 0–25, –30 | 21.90 | 19.71 | 18.62 |
| 0–50, –100 | 21.90 | 19.71 | 18.62 |
| 0–150 | 21.90 | 19.71 | 18.62 |
| 0–200 | 21.90 | 19.71 | 18.62 |
| 0–250 | 21.90 | 19.71 | 18.62 |
| 0–300 | 21.90 | 19.71 | 18.62 |
| 0–500* | 22.95 | 20.66 | 19.51 |
| 0–750* | 22.95 | 20.66 | 19.51 |
| 0–1000* | 28.35 | 25.52 | 24.10 |
| 0–1500* | 28.35 | 25.52 | 24.10 |
| 0–2000* | 29.40 | 26.46 | 24.99 |
| 0–2500*† | 29.85 | 26.87 | 25.37 |
| 0–3000* | 30.15 | 27.14 | 25.63 |
| 0–4000* | — | — | — |
| 0–5000* | 30.90 | 27.81 | 26.27 |

### MODEL 29—4½"

| Range | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–1.5, –3V | $24.00 | $21.60 | $20.40 |
| 0–5, –8 | 24.00 | 21.60 | 20.40 |
| 0–10, –15 | 24.00 | 21.60 | 20.40 |
| 0–25,–30 | 24.00 | 21.60 | 20.40 |
| 0–50,–100 | 24.00 | 21.60 | 20.40 |
| 0–150 | 24.00 | 21.60 | 20.40 |
| 0–200 | 24.00 | 21.60 | 20.40 |
| 0–250 | 24.00 | 21.60 | 20.40 |
| 0–300 | 24.00 | 21.60 | 20.40 |
| 0–500* | 24.75 | 22.28 | 21.04 |
| 0–750* | 24.75 | 22.28 | 21.04 |
| 0–1000* | 30.30 | 27.27 | 25.76 |
| 0–1500* | 30.60 | 27.54 | 26.01 |
| 0–2000* | 31.20 | 28.08 | 26.52 |
| 0–2500* | 31.80 | 28.62 | 27.03 |
| 0–3000* | 32.10 | 28.89 | 27.29 |
| 0–4000* | 32.40 | 29.16 | 27.54 |
| 0–5000* | 33.90 | 30.51 | 28.82 |

### MODEL 1150—6" (2%)

All ranges self-shielded mo ment. Other ranges available special order.

| Range | Net Each, Lots 1-9 | 10-24 | 25- |
|---|---|---|---|
| 0–10 V | $29.40 | $26.46 | $24. |
| 0–25 | 29.40 | 26.46 | 24. |
| 0–50 | 29.40 | 26.46 | 24. |
| 0–100 | 29.40 | 26.46 | 24. |
| 0–150 | 29.40 | 26.46 | 24. |
| 0–300 | 29.40 | 26.46 | 24. |
| 0–500* | 30.30 | 27.27 | 25. |

**Note:** External multiplie (Model 183) are furnished 2½" DC meters 750 V higher; and on 3½" and 4½ DC meters 1,000 V or highe All others are self-contained.

## DC MILLIAMMETERS—SELF-SHIELDED METER MOVEMENT

### MODELS 125, 127—2½"

| | | | |
|---|---|---|---|
| 0–1 mA | $19.95 | $17.96 | $16.96 |
| 0–1.5 | 19.95 | 17.96 | 16.96 |
| 0–3†, –5 | 19.95 | 17.96 | 16.96 |
| 0–10 | 19.95 | 17.96 | 16.96 |
| 0–15 | 19.95 | 17.96 | 16.96 |
| 0–20 | — | — | — |
| 0–25 | 20.25 | 18.23 | 17.21 |
| 0–50 | 20.25 | 18.23 | 17.21 |
| 0–75‡ | 20.25 | 18.23 | 17.21 |
| 0–100 | 20.25 | 18.23 | 17.21 |
| 0–150 | 20.25 | 18.23 | 17.21 |
| 0–200 | 20.25 | 18.23 | 17.21 |
| 0–250 | 20.25 | 18.23 | 17.21 |
| 0–300 | 20.25 | 18.23 | 17.21 |
| 0–500 | 20.25 | 18.23 | 17.21 |
| 0–750 | — | — | — |
| 0–1000† | 20.25 | 18.23 | 17.21 |

### MODELS 25, 27—3½"

| | | | |
|---|---|---|---|
| 0–1 mA | $20.55 | $18.50 | $17.48 |
| 0–1.5 | 20.55 | 18.50 | 17.48 |
| 0–3, –5 | 20.55 | 18.50 | 17.48 |
| 0–10 | 20.55 | 18.50 | 17.48 |
| 0–15 | 20.55 | 18.50 | 17.48 |
| 0–20 | 20.55 | 18.50 | 17.48 |
| 0–25 | 21.15 | 19.04 | 17.98 |
| 0–50 | 21.15 | 19.04 | 17.98 |
| 0–75† | 21.15 | 19.04 | 17.98 |
| 0–100 | 21.15 | 19.04 | 17.98 |
| 0–150 | 21.15 | 19.04 | 17.98 |
| 0–200 | 21.15 | 19.04 | 17.98 |
| 0–250 | 21.15 | 19.04 | 17.98 |
| 0–300 | 21.15 | 19.04 | 17.98 |
| 0–500 | 21.15 | 19.04 | 17.98 |
| 0–750† | 21.15 | 19.04 | 17.98 |
| 0–1000 | 21.15 | 19.04 | 17.98 |

### MODEL 29—4½"

| | | | |
|---|---|---|---|
| 0–1 mA | $21.90 | $19.71 | $18.62 |
| 0–1.5 | 21.90 | 19.71 | 18.62 |
| 0–3, –5 | 21.90 | 19.71 | 18.62 |
| 0–10 | 21.90 | 19.71 | 18.62 |
| 0–15 | 21.90 | 19.71 | 18.62 |
| 0–20 | 21.90 | 19.71 | 18.62 |
| 0–25 | 22.95 | 20.66 | 19.51 |
| 0–50 | 22.95 | 20.66 | 19.51 |
| 0–75 | 22.95 | 20.66 | 19.51 |
| 0–100 | 22.95 | 20.66 | 19.51 |
| 0–150 | 22.95 | 20.66 | 19.51 |
| 0–200 | 22.95 | 20.66 | 19.51 |
| 0–250 | 22.95 | 20.66 | 19.51 |
| 0–300 | 22.95 | 20.66 | 19.51 |
| 0–500 | 22.95 | 20.66 | 19.51 |
| 0–750 | 22.95 | 20.66 | 19.51 |
| 0–1000 | 22.95 | 20.66 | 19.51 |

### MODEL 1150—6" (2%)

All meters use self-shielde movement. Other ranges avai able on special order.

| | | | |
|---|---|---|---|
| 0–1 mA | $29.40 | $26.46 | $24.9 |
| 0–10 | 29.40 | 26.46 | 24.9 |
| 0–50 | 29.40 | 26.46 | 24.9 |
| 0–100 | 29.40 | 26.46 | 24.9 |
| 0–500 | 29.40 | 26.46 | 24.9 |

### MIRRORED-SCALE MODEL 1150-1—6" (1%)

| | | | |
|---|---|---|---|
| 0–1 mA | $37.20 | $33.48 | $31.6 |
| 0–100 | 37.20 | 33.48 | 31.6 |
| 0–500 | 37.20 | 33.48 | 31.6 |

## DC MICROAMMETERS—SELF-SHIELDED METER MOVEMENT MODELS 25, 27, 29, 125, 127, 1150, 1150-1

### MODELS 125, 127—2½"

| Range | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–50 μA | $25.65 | $23.09 | $21.80 |
| 0–100 | 22.95 | 20.66 | 19.51 |
| 0–200 | 20.85 | 18.77 | 17.72 |
| 0–500 | 20.55 | 18.50 | 17.48 |
| 25–0–25 | 26.70 | 24.03 | 22.70 |
| 50–0–50 | 23.40 | 21.06 | 19.89 |
| 100–0–100 | 21.15 | 19.04 | 17.98 |
| 500–0–500† | 20.10 | 18.09 | 17.09 |

### MODELS 25, 27—3½"

| Range | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–50 μA | $26.00 | $23.40 | $22.10 |
| 0–100 | 24.00 | 21.60 | 20.40 |
| 0–200 | 21.90 | 19.71 | 18.62 |
| 0–500 | 21.60 | 19.44 | 18.36 |
| 25–0–25 | 26.40 | 23.76 | 22.44 |
| 50–0–50 | 24.00 | 21.60 | 20.40 |
| 100–0–100 | 22.05 | 19.85 | 18.74 |
| 500–0–500 | 19.95 | 17.96 | 16.96 |

### MODEL 29—4½"

| Range | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|
| 0–50 μA | $28.20 | $25.38 | $23.97 |
| 0–100 | 26.70 | 24.03 | 22.70 |
| 0–200 | 24.00 | 21.60 | 20.40 |
| 0–500 | 23.40 | 21.06 | 19.89 |
| 25–0–25 | 28.35 | 25.52 | 24.10 |
| 50–0–50 | 26.85 | 24.17 | 22.82 |
| 100–0–100 | 24.30 | 21.87 | 20.66 |
| 500–0–500 | 28.35 | 25.52 | 24.10 |

### MODEL 1150—6" (2%)

| | | | |
|---|---|---|---|
| 0–15 μA | $46.35 | $41.72 | $39.4 |
| 0–25 | 41.55 | 37.40 | 35.3 |
| 0–50 | 37.80 | 34.02 | 32.1 |
| 0–100 | 36.30 | 32.67 | 30.8 |
| 0–200 | 31.80 | 28.62 | 27.0 |
| 0–500 | 30.90 | 27.81 | 26.2 |

### MIRRORED-SCALE MODEL 1150-1—6" (1%)

| | | | |
|---|---|---|---|
| 0–50 | $45.60 | $41.04 | $38.76 |
| 0–100 | 43.80 | 39.42 | 37.23 |
| 0–200 | 39.30 | 35.37 | 33.41 |
| 0–500 | 38.40 | 34.56 | 32.64 |

*2000 ohms/volt. †Models 27 or 127 only. ‡Models 25 or 125 only.

## DC MICROAMMETERS—SELF-SHIELDED TAUT BAND METER MOVEMENT MODELS 25T, 27T, 29T, 125T, 127T AND 728T

### MODELS 125T, 127T—2½"

| | | | |
|---|---|---|---|
| 0–5 μA | — | — | — |
| 0–10 | $40.95 | $36.86 | $34.81 |
| 0–15 | 37.20 | 33.48 | 31.62 |
| 0–25 | 35.40 | 31.86 | 30.09 |
| 0–50 | 27.75 | 24.98 | 23.59 |
| 0–100 | 25.20 | 22.68 | 21.42 |

### MODELS 25T, 27T—3½"

| | | | |
|---|---|---|---|
| 0–5 μA | $48.60 | $43.74 | $41.31 |
| 0–10 | 42.75 | 38.48 | 36.34 |
| 0–15 | 38.25 | 34.43 | 32.52 |
| 0–25 | 37.05 | 33.35 | 31.49 |
| 0–50 | 28.35 | 25.52 | 24.10 |
| 0–100 | 26.10 | 23.49 | 22.19 |

### MODEL 29T—4½"

| | | | |
|---|---|---|---|
| 0–5 μA | $51.75 | $46.58 | $43.99 |
| 0–10 | 46.20 | 41.58 | 39.27 |
| 0–15 | 41.70 | 37.53 | 35.45 |
| 0–25 | 40.20 | 36.18 | 34.17 |
| 0–50 | 30.45 | 27.41 | 25.88 |
| 0–100 | 28.80 | 25.92 | 24.48 |

### MODEL 728T—8" WIDE-VUE

See previous pages for "Wide-Vue" styling. Accuracy, ±2% F.S. Scale, 6.9" lg. Bezel, 8" w. x 6.5" h. Body, 3" dia. x 1.23" d.

| | | | |
|---|---|---|---|
| 0-25 μA | $46.35 | $41.72 | $39.40 |
| 0-50 μA | 40.80 | 36.72 | 34.68 |
| 0-100 μA | 39.45 | 35.51 | 33.53 |
| 0-1 mA | 37.20 | 33.48 | 31.62 |

**RANGES LISTED WITHOUT PRICES (—) ON SPECIAL ORDER ONLY.** CONTINUED, NEXT PAGE

# Simpson Meter Relays, Accessories

INSTRUMENTS THAT STAY ACCURATE

## RUGGED SEAL CONTACTLESS METER RELAYS

Set points are 100% (single), 90% (dual) adjustable on scale by front panel knobs thru a gear drive; indication, by separate lance pointers, within 1% of actual switching. Sensing is done through an infinite life lamp and photoconductors. Solid state switching circuit and DPDT slave relay provided internally for each control point; both slaves open in case of power failure. Slaves will switch to 10 amps per set of contacts at 115 VAC. **Power Required:** 115 VAC, 50–500 Hz. DC required for sensing and switching is provided by external power module furnished with dual control models; self-contained, single control models. **Size:** (Single Control Models) 3½″ units, 3.25″ sq. x 2.20″ d. behind panel; 4½″ models, 4.68″ w. x 4.15″ h. x 2.20″ d. behind panel; 4″ x 6″ models, 5.84″ w. x 4.62″ h. x 2.20″ d. behind panel.

| Range | 3½″ Single Control* Net Each, Lots 1-9* | | 4½″ Single Control* Net Each, Lots 1-9* | | 4″ x 6″ Single Cont.* Net Each, Lots 1-9* | |
|---|---|---|---|---|---|---|
| | 3323XA Pivot & Jewel | 3323TXA Taut Band | 3324XA Pivot & Jewel | 3324TXA Taut Band | 3326XA Pivot & Jewel | 3326TXA Taut Band |
| 0–10 μADC | ............ | $134.70 | ............ | $138.00 | ............ | $141.30 |
| 0–25 μADC | ............ | 124.80 | ............ | 128.10 | ............ | 131.40 |
| 0–50 μADC | ............ | 116.55 | ............ | 119.85 | ............ | 123.15 |
| 0–100 μADC | ............ | 113.10 | ............ | 116.40 | ............ | 119.70 |
| 0–200 μADC | ............ | ............ | $116.40 | ............ | ............ | ............ |
| 0–500 μADC | ............ | ............ | 116.40 | ............ | ............ | ............ |
| 0–1 mADC | $111.90† | ............ | 115.20† | ............ | $118.50† | ............ |
| 0–50 mVDC | 112.20† | ............ | 115.50† | ............ | 118.80† | ............ |
| 0–5 AAC | ............ | ............ | 127.05†§ | ............ | ............ | ............ |
| 0–10 VAC | ............ | ............ | 124.35§ | ............ | ............ | ............ |

*For dual control, add **$30.15** to price shown except: †add **$30.30.** §Model 3344XA. ***Larger quantity prices on request.**

## RUGGED SEAL TEMPERATURE CONTROL METER RELAYS

Contactless type, as above; thermocouples not supplied. 4½″ meter.

| Range | Approx. Resis., Ohms | Model 3324XA 4½″ Net Each, Lots 1-9* Single Control | Model 3324XA 4½″ Net Each, Lots 1-9* Dual Control | Range | Approx. Resis., Ohms | Model 3324XA 4½″ Net Each, Lots 1-9* Single Control | Model 3324XA 4½″ Net Each, Lots 1-9* Dual Control |
|---|---|---|---|---|---|---|---|
| −75° to +225° F | 5 | $120.00 | $156.00 | 0° to +750° F | 10 | $117.00 | $153.00 |
| 0° to +300° F | 5 | 120.00 | 156.00 | 0° to +1000° F | 10 | 117.00 | 153.00 |
| 0° to +500° F | 10 | 117.00 | 153.00 | 0° to +1500° F | 10* | 117.00 | 153.00 |

*Requires C/A type thermocouple; all others require I/C type thermocouple (listed on another page). ***Larger quantity prices on request.**

## MODELS 29XA AND 49XA CONTACTLESS METER RELAYS

Feature contactless control point sensing for high control accuracy, smaller "dead band", absolute freedom from interference with indicating meter. Solid state high gain amplifier for maximum reliability. Self-shielding annular movement. DPDT relay contacts for each control point, rated 10 amps at 115 VAC. **Accuracy:** ±2% of full scale. **Control Point Adjustment:** 0–100% of arc. Double control types have low limit of 0–95% of arc, high limit 95–100% of arc. **Control Point Switching:** Within 1% of indication. **Control Point Differential:** Within 0.5% of full scale. **Differential:** Difference between "on" and "off", within 0.5% of full scale. **Size:** 4.66″ x 4.21″; body, 2.72″ dia. x 4.25″ deep.

| Range | Model | Net Each, Lots 1-9* Single Control | Net Each, Lots 1-9* Dual Control |
|---|---|---|---|
| 0–10 μA DC | 29TXA* | $120.60 | $150.75 |
| 0–25 μA DC | 29TXA* | 110.70 | 140.85 |
| 0–50 μA DC | 29TXA* | 105.75 | 135.90 |
| 0–100 μA DC | 29TXA* | 102.30 | 132.60 |
| 0–200 μA DC | 29XA | 99.00 | 129.15 |
| 0–500 μA DC | 29XA | 99.00 | 129.15 |
| 0–1 mA DC | 29XA | 97.80 | 128.10 |
| 0–50 mV DC | 29XA | 98.10 | 128.40 |
| 0–5 Amps AC | 49XA | 109.65 | 139.95 |
| 0–10 V AC | 49XA | 106.95 | 137.10 |

*Taut band types. ***Larger quantity prices on request.**

## MODELS 3623XA, 3643XA CONTACTLESS METER RELAYS

Single and double set point models with mode indication lamps; each set point has SPDT relay rated 5 A resistive, 115 VAC, 50–500 Hz per pole; removable set point knobs to prevent tampering; relays are field-replaceable. **Power Ratings:** 4 VA max. single set point, 6 VA max. double set point; life, 1,000,000 operations. **Set Points:** Single, 0–100% of full scale; double, 0–98% low and 2–100% high, can be set within 2° of each other; control switching within 1.0% of set points; dead band less than 0.5% of full scale. Also available as temperature controller or as photocell output meter relay.

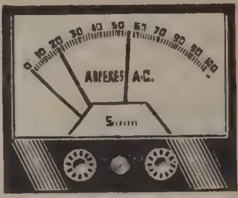
### 3623XA DC METER RELAYS

| Model | Scale | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|---|
| 16839 | 0–50 μA | $122.00 | $109.80 | $103.70 |
| 16840* | 0–50 μA | 153.00 | 137.70 | 130.05 |
| 16841 | 0–100 μA | 116.00 | 104.40 | 98.60 |
| 16842* | 0–100 μA | 147.00 | 132.30 | 124.95 |
| 16847 | 0–1 mA | 110.00 | 99.00 | 93.50 |
| 16848* | 0–1 mA | 141.00 | 126.90 | 119.85 |
| 16849 | 0–50 mV | 113.00 | 101.70 | 96.05 |
| 16850* | 0–50 mV | 144.00 | 129.60 | 122.40 |

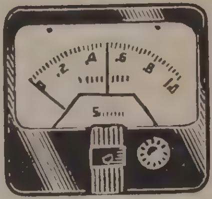
### 3643XA AC METER RELAYS

| Model | Scale | 1-9 | 10-24 | 25-49 |
|---|---|---|---|---|
| 16851 | 0–5 A | $119.00 | $107.10 | $101.15 |
| 16852* | 0–5 A | 150.00 | 135.00 | 127.50 |
| 16853 | 0–10 V | 116.00 | 104.40 | 98.60 |
| 16854* | 0–10 V | 147.00 | 132.30 | 124.95 |
| 16855 | 0–150 V | 116.00 | 104.40 | 98.60 |
| 16856* | 0–150 V | 147.00 | 132.30 | 124.95 |

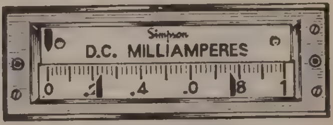
*Double set point meters; all others have single set points.



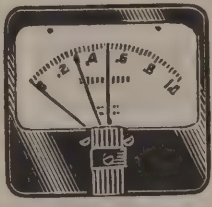
3326TXA Contactless Type



29XA Contactless Type



3623XA, 3643XA



29XA Contact Type

## 29XA CONTACT METER RELAYS

D'Arsonval movement. **Contacts:** Externally adjustable over 95° of 100° scale arc, within 5° of each other. Non-locking; for use in circuits with external locking provisions or in non-locking uses. Will close within 2% and break within 10% of full scale value. Gold alloy. For use at 15 VDC 10 mA max. on resistive or diode protected inductive loads. **Accuracy:** ±2% of full scale. **Insulation Breakdown:** 300 VAC from relay contacts to meter circuit; 3 kV AC, relay terminals to mounting panel (all at 60 Hz). **Size:** 4.66″ x 4.21″; body, 2.77″ dia. x 0.99″ deep.

| Range | Model No. | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|---|
| 0–50 μA | 7032 | $58.95 | $53.06 | $50.11 |
| 0–100 μA | 7034 | 56.40 | 50.76 | 47.94 |
| 0–200 μA | 7036 | 52.80 | 47.52 | 44.88 |
| 0–500 μA | 7038 | 52.05 | 46.85 | 44.24 |
| 0–1 mA | 7040 | 50.85 | 45.77 | 43.22 |
| 0–50 mV | 7050 | 51.00 | 45.90 | 43.35 |

## MODEL 186 CURRENT TRANSFORMERS FOR CONTACTLESS METER RELAYS

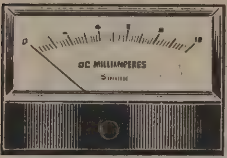
Convert 0–10 volt Model 3344XA, above, to AC current control unit. Frequency Range, 30 Hz to 5 kHz. Accuracy, ±2%.

| Model | Range | VA | Net Each, Lots of 1-9 | 10-24 | 25-49 | Model | Range | VA | Net Each, Lots of 1-9 | 10-24 | 25-49 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01294 | 0–50 mA | 0.40 | $16.05 | $14.45 | $13.64 | 01312 | 0–5 amp | 0.75 | $13.35 | $12.02 | $11.35 |
| 01295 | 0–100 mA | 0.50 | 14.85 | 13.37 | 12.62 | 01314 | 0–10 amp | 1.45 | 13.35 | 12.02 | 11.35 |
| 01296 | 0–200 mA | 0.37 | 14.85 | 13.37 | 12.62 | 01315 | 0–15 amp | 1.05 | 13.35 | 12.02 | 11.35 |
| 01303 | 0–300 mA | 0.48 | 14.85 | 13.37 | 12.62 | 01316 | 0–20 amp | 1.04 | 13.35 | 12.02 | 11.35 |
| 01304 | 0–500 mA | 0.53 | 14.85 | 13.37 | 12.62 | 01317 | 0–25 amp | 1.50 | 13.35 | 12.02 | 11.35 |
| 01307 | 0–750 mA | 0.37 | 14.85 | 13.37 | 12.62 | 01318 | 0–30 amp | 1.10 | 13.35 | 12.02 | 11.35 |
| 01308 | 0–1 amp | 0.42 | 13.35 | 12.02 | 11.35 | 01319 | 0–40 amp | 1.09 | 13.35 | 12.02 | 11.35 |
| 01309 | 0–2 amp | 0.54 | 13.35 | 12.02 | 11.35 | 01321 | 0–50 amp | 1.90 | 13.35 | 12.02 | 11.35 |
| 01311 | 0–3 amp | 0.66 | 13.35 | 12.02 | 11.35 | | | | | | |

# Simpson Special Panel Meters

INSTRUMENTS THAT STAY ACCURATE

## DESIGNER SERIES PANEL METERS



Molded black phenolic-cased panel meters for compact equipment designs. Clean, professional styling. All have self-shielded spring backed jewel movement with ±2% accuracy and utilize maximum scale length for full readability. **Size:** Models 523, 543 and 553: 3.95″ w. x 1.81″ d. (behind panel) x 2.67″ h.; mtg. ctrs., 2.936″. Models 524, 544 and 554: 4½″ w. x 1.81″ d. (behind panel) x 2.9″ h.; mtg. ctrs., 3½″. All models supplied with necessary mounting and terminal hardware. Knife-edge pointer.

### DC VOLTMETERS

| Range | Model 523—3½″ Net Each, Lots of | | | Model 524—4½″ Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 1-9 | 10-24 | 25-49 |
| 0–5 V | $21.90 | $19.71 | $18.62 | $24.00 | $21.60 | $20.40 |
| 0–10 | 21.90 | 19.71 | 18.62 | 24.00 | 21.60 | 20.40 |
| 0–15 | 21.90 | 19.71 | 18.62 | 24.00 | 21.60 | 20.40 |
| 0–30 | 21.90 | 19.71 | 18.62 | 24.00 | 21.60 | 20.40 |
| 0–50 | 21.90 | 19.71 | 18.62 | 24.00 | 21.60 | 20.40 |
| 0–100 | 21.90 | 19.71 | 18.62 | 24.00 | 21.60 | 20.40 |
| 0–150 | 21.90 | 19.71 | 18.62 | 24.00 | 21.60 | 20.40 |

### DC MILLIVOLTMETERS

| | | | | | | |
|---|---|---|---|---|---|---|
| 0–50 mV | $20.85 | $18.77 | $17.72 | $22.95 | $20.66 | $19.51 |

### DC AMMETERS

| | | | | | | |
|---|---|---|---|---|---|---|
| 0–1 A | $21.15 | $19.04 | $17.98 | $22.95 | $20.66 | $19.51 |
| 0–3 | 21.15 | 19.04 | 17.98 | 22.95 | 20.66 | 19.51 |
| 0–5 | 21.15 | 19.04 | 17.98 | 22.95 | 20.66 | 19.51 |
| 0–10 | 21.15 | 19.04 | 17.98 | 22.95 | 20.66 | 19.51 |
| 0–15 | 21.15 | 19.04 | 17.98 | 22.95 | 20.66 | 19.51 |
| 0–25 | 21.15 | 19.04 | 17.98 | 22.95 | 20.66 | 19.51 |
| 0–50 | 21.15 | 19.04 | 17.98 | 22.95 | 20.66 | 19.51 |

### DC MILLIAMMETERS

| Range | Model 523—3½″ Net Each, Lots of | | | Model 524—4½″ Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 1-9 | 10-24 | 25-49 |
| 0–1 mA | $20.55 | $18.50 | $17.48 | $21.90 | $19.71 | $18.62 |
| 0–5 | 20.55 | 18.50 | 17.48 | 21.90 | 19.71 | 18.62 |
| 0–10 | 20.55 | 18.50 | 17.48 | 21.90 | 19.71 | 18.62 |
| 0–50 | 21.15 | 19.04 | 17.98 | 22.95 | 20.66 | 19.51 |
| 0–100 | 21.15 | 19.04 | 17.98 | 22.95 | 20.66 | 19.51 |
| 0–200 | 21.15 | 19.04 | 17.98 | 22.95 | 20.66 | 19.51 |
| 0–300 | 21.15 | 19.04 | 17.98 | 22.95 | 20.66 | 19.51 |
| 0–500 | 21.15 | 19.04 | 17.98 | 22.95 | 20.66 | 19.51 |

### DC MICROAMMETERS

| | | | | | | |
|---|---|---|---|---|---|---|
| 0–15 μA* | $38.25 | $34.43 | $32.51 | $41.70 | $37.53 | $35.45 |
| 0–25 | 32.40 | 29.16 | 27.54 | 35.70 | 32.13 | 30.35 |
| 0–50 | 26.10 | 23.49 | 22.19 | 28.20 | 25.38 | 23.97 |
| 0–100 | 24.00 | 21.60 | 20.40 | 26.70 | 24.03 | 22.70 |
| 0–200 | 21.90 | 19.71 | 18.62 | 24.00 | 21.60 | 20.40 |
| 0–500 | 21.60 | 19.44 | 18.36 | 23.40 | 21.06 | 19.89 |
| 25–0–25 | 26.40 | 23.76 | 22.44 | 28.35 | 25.52 | 24.10 |
| 50–0–50 | 24.00 | 21.60 | 20.40 | 26.85 | 24.17 | 22.82 |
| 100–0–100 | 22.05 | 19.85 | 18.74 | 24.30 | 21.87 | 20.66 |
| 500–0–500 | 20.85 | 18.77 | 17.72 | 22.05 | 19.85 | 18.74 |

*Taut band.

### AC VOLTMETERS

| Range | Model 553—3½″ Net Each, Lots of | | | Model 554—4½″ Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 1-9 | 10-24 | 25-49 |
| 0–150 V | $21.60 | $19.44 | $18.36 | $22.95 | $20.66 | $19.51 |
| 0–250 | 21.60 | 19.44 | 18.36 | 22.95 | 20.66 | 19.51 |
| 0–300 | 21.60 | 19.44 | 18.36 | 22.95 | 20.66 | 19.51 |

### AC AMMETERS

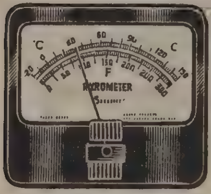
| | | | | | | |
|---|---|---|---|---|---|---|
| 0–1 A | $19.20 | $17.28 | $16.32 | $22.35 | $20.12 | $19.00 |
| 0–5 | 19.20 | 17.28 | 16.32 | 22.35 | 20.12 | 19.00 |
| 0–10 | 19.20 | 17.28 | 16.32 | 22.35 | 20.12 | 19.00 |
| 0–15 | 19.20 | 17.28 | 16.32 | 22.35 | 20.12 | 19.00 |
| 0–25 | 19.20 | 17.28 | 16.32 | 22.95 | 20.66 | 19.51 |
| 0–50 | 19.20 | 17.28 | 16.32 | 22.95 | 20.66 | 19.51 |
| 0–100 | 19.20 | 17.28 | 16.32 | 22.35 | 20.12 | 19.00 |
| 0–150 | 19.20 | 17.28 | 16.32 | 22.35 | 20.12 | 19.00 |

### VOLUME LEVEL INDICATOR

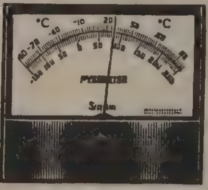
| Range, VU | Model 543—3½″ Net Each, Lots of | | | Model 544—4½″ Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | 1-9 | 10-24 | 25-49 | 1-9 | 10-24 | 25-49 |
| "A" Scale | $34.20 | $30.78 | $29.07 | $37.20 | $33.48 | $31.62 |
| "A" Scale* | 37.65 | 33.89 | 32.01 | 40.65 | 36.59 | 34.55 |
| "B" Scale* | 37.65 | 33.89 | 32.00 | 40.65 | 36.59 | 34.55 |

*Illuminated.

## PYROMETERS AND THERMOCOUPLES



**Model 29**



**Model 3324**

### PYROMETERS

Fully compensated for ambient temperature changes and include copper circuit compensation. Calibrated for use with Simpson iron constantan thermocouples which are available as accessory items. Pyrometers with 0° F to +300° F range are calibrated for 5-ohm thermocouple resistance; all others for 10 ohms. Each pyrometer is supplied with an external, adjustable series resistor to permit use of lower resistance thermocouples in the field. Accuracy: 2%. Size: Model 29, 4.66″ w. x 1.70″ d. (behind panel) x 4.20″ h.; mtg. ctrs., 4″ x 3.56″. Model 3324, 4.68″ w. x 1.89″ d. (behind panel) x 4.15″ h.; mtg. centers, 4″ x 3.56″.

### STANDARD BAKELITE® MODEL 29

| Model No. | Temperature Range | | Res., Ohms* | Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | °F | °C | | 1-9 | 10-24 | 25-49 |
| 21200 | −150 to +250 | −100 to +120 | 10 | $38.25 | $34.43 | $32.51 |
| 21202 | 0–300 | −20 to +150 | 5 | 38.25 | 34.43 | 32.51 |
| 21204 | 0–500 | −20 to +260 | 10 | 38.25 | 34.43 | 32.51 |
| 21206 | 0–750 | −20 to +400 | 10 | 38.25 | 34.43 | 32.51 |
| 21208 | 0–1000 | −20 to +540 | 10 | 38.25 | 34.43 | 32.51 |
| 21209 | 0–1500 | −20 to +820 | 10 | 35.55 | 32.00 | 30.22 |
| 21210 | 0–2000 | −20 to +1200 | 10 | 35.55 | 32.00 | 30.22 |
| 21211 | 0–2500 | −20 to +1380 | 10 | 35.55 | 32.00 | 30.22 |

### RUGGED SEAL MODEL 3324

| | | | | | | |
|---|---|---|---|---|---|---|
| 21201 | −150 to +250 | −100 to +120 | 10 | $52.05 | $46.85 | $44.25 |
| 21203 | 0–300 | −20 to +150 | 5 | 52.05 | 46.85 | 44.25 |
| 21205 | 0–500 | −20 to +260 | 10 | 52.05 | 46.85 | 44.25 |
| 21207 | 0–750 | −20 to +400 | 10 | 52.05 | 46.85 | 44.25 |
| 21212 | 0–1000 | −20 to +540 | 10 | 52.05 | 46.85 | 44.25 |
| 21213 | 0–1500 | −20 to +820 | 10 | 49.35 | 44.42 | 41.95 |
| 21214 | 0–2000 | −20 to +1200 | 10 | 49.35 | 44.42 | 41.95 |
| 21215 | 0–2500 | −20 to +1380 | 10 | 49.35 | 44.42 | 41.95 |

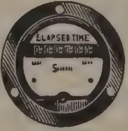
*Max., external. ®Bakelite Corp. trademark.

### IRON CONSTANTAN THERMOCOUPLES

Stainless steel overbraid for extra-rugged service, or glass cloth for general purpose or permanent mtg. in protected sheaths. Pyrometers for 0–300° F take 5-ohm; all others, 10-ohm.

| Model No. | Res., Ohms | Overbraid | Length Inches | Ga. | Net Each, Lots of | | |
|---|---|---|---|---|---|---|---|
| | | | | | 1-9 | 10-24 | 25-49 |
| 21221 | 5 | Stainless steel | 162 | 20 | $14.85 | $13.37 | $12.62 |
| 21222 | 10 | Glass cloth | 137 | 24 | 5.25 | 4.73 | 4.46 |
| 21223 | 10 | Glass cloth | 34 | 30 | 4.50 | 4.05 | 3.83 |
| 21224 | 10 | Stainless steel | 325 | 20 | 27.00 | 24.30 | 22.95 |

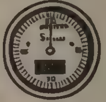
## ELAPSED TIME METERS



**55ET**

ELAPSED TIME
Simpson

**57ET**



**106**

Simpson
HOURS

**107**

ELAPSED TIME
Simpson

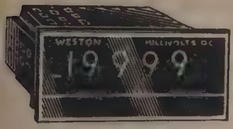
**1357ET**

New model 108ET supplied with separate round and square interchangeable metal bezels; operating temp., −55° to +85° C; convex glass window solder-sealed to case; 5-digit readout. Model 1357ET matches Wide-Vue meters. Model 107 has clear lucite cover. Models 55ET and 57ET are similar to standard 3½″ meters. Use self-starting synchronous clock motors, except Model 106 which gives accurate (±2%) time from DC power; has sweep minute hands as well as hour indication, withstands ambient from −40° to +65° C. **Size:** Model 108ET, 2.675″ dia. round flange (sim. to 55ET), 2.75″ sq. flange (sim. to 57ET), body 2.14″ dia. x 2.368″ deep, three mtg. studs; Model 1357ET, 3.25″ sq. flange, body 2.75″ dia. x 2.37″ deep, four mtg. studs; Model 107, 1.77″ sq. flange, body 2.05″ dia. x 1.85″ deep; Model 55ET, 3½″ dia. flange, body 2.75″ dia. x 2.55″ deep, three mtg holes; Model 57ET, 3.00″ w. x 3.12″ h. flange, body 2.75″ dia. x 2.60″ deep, four mtg. studs; Model 106, 2.32″ dia. flange, body 2.64″ dia. x 2.12″ deep, "U" mtg. bracket for panels to ¼″ thick.

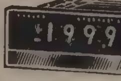
| Model | Oper. Volts | Size | Max. Hour Indication | Net Each, Lots of | | |
|---|---|---|---|---|---|---|
| | | | | 1-9 | 10-24 | 25-49 |
| 108ET | 120 VAC | 2½″ | 9999.9 | $33.90 | $30.51 | $28.82 |
| 108ET | 240 VAC | 2½″ | 9999.9 | 34.50 | 31.05 | 29.33 |
| 1357ET | 120 VAC | 3½″ | 99999.9 | 26.70 | 24.03 | 22.70 |
| 1357ET | 240 VAC | 3½″ | 99999.9 | 27.00 | 24.30 | 22.95 |
| 107 | 120 VAC | 2½″ | 9999.99 | 15.75 | 14.18 | 13.39 |
| 107 | 240 VAC | 2½″ | 9999.99 | 15.75 | 14.18 | 13.39 |
| 55ET | 120 VAC | 3½″ | 99999.9 | 26.70 | 24.03 | 22.70 |
| 55ET | 240 VAC | 3½″ | 99999.9 | 27.00 | 24.30 | 22.95 |
| 57ET | 120 VAC | 3½″ | 99999.9 | 26.70 | 24.03 | 22.70 |
| 57ET | 240 VAC | 3½″ | 99999.9 | 27.00 | 24.30 | 22.95 |
| 106 | 6 VDC | 2½″ | 99999 | 21.00 | 18.90 | 17.85 |
| 12 VDC Adapter for Model 106 | | | | 1.05 | .95 | .89 |
| 24 VDC Adapter for Model 106 | | | | 1.05 | .95 | .89 |

# WESTON® PRECISION PANEL INSTRUMENTS

## DIGITAL PANEL METERS



Model 1294



Models 1292, 1290, 1260

Combine digital accuracy with solid state reliability in compact, panel-mounting form. Dual-slope integration for accuracy and stability comparable to costly resistive ladder units. Standard features include: 1–2–4–8 BCD output (optional with Model 1260); readout on plug-in Nixie† tubes replaceable from front of panel (except soldered in Model 1260); circularly polarizing viewing window; zero and range adjustment accessible from front of panel; "repairable" non-potted PC boards; out-of-range indication; full storage display. When ordering, use complete Weston Number from tables below. †Reg. Burroughs Corp. trademark.

### MODEL 1294 4½-DIGIT NON-BLINKING METER

4½ digit bipolar digital panel meter features a display of 19999 and 10 mV sensitivity. Utilizes state-of-the-art T$^2$L logic and unique time sharing circuitry that limits power consumption to less than 6 watts, making battery operation possible. Other features include high impedance, out-of-range indication, dual slope A/D conversion for long term stability, plug-in Nixie tubes, repairable circuit boards and 10 standard voltages and current ranges. Occupies only 7 sq. in. of panel space and can be interchanged with other Weston DPM's. **Accuracy:** ±0.05% full-scale, ±1 digit. **Readings:** 5 per second. **Common Mode Rejection:** 80 dB at 60 Hz. **Normal Mode Rejection:** 40 dB at 60 Hz. **Response Time:** Less than 1 second. **Overrange:** 100% (reads 19999). **Power Required:** 117 VAC (±10%), 50 or 60 Hz., less than 6 W; 220 V, 50 Hz optional. **Size:** Front, 4.00" w. x 0.56" d. x 1.75" h.; behind panel, 4.25" d.; panel cut-out, 3.924" w. x 1.682" h. Weight, 2 lbs. approx.

**Weston Model 1294-0270600**—0–100 mV at 10 megohms input. List Price........................................**$375.00***

**Weston Model 1294-0270601**—0–1 V at 10 megohms input. List Price........................................**$350.00***

**Weston Model 1294-0270602**—0–10 V at 10 megohms input. List Price........................................**$350.00***

**Weston Model 1294-0270605**—0–10 μA at 100 mV input. List Price........................................**$350.00***

**Ask about 0–100 V, 0–1000 V, 0–100 μA, 0–1 mA, 0–10 mA and 0–100 mA meters, available on special order.**

### MODEL 1290 3½-DIGIT NON-BLINKING METER

Provides 100% overrange; available in 10 voltage and current ranges. Chassis can be removed from front of panel and replaced in less than 30 seconds. Fits in 7 sq. in. of panel space. Plug-in Nixie tubes. Continuous systems operation. **Accuracy:** ±0.1% full-scale, ±1 digit. **Readings:** 6 per second. **Common Mode Rejection:** 80 dB at 60 Hz. **Normal Mode Rejection:** 35 dB at 60 Hz. **Response Time:** Less than 1 second to full scale. **Overrange:** 100%. **Power Required:** 117 VAC (±10%), 60–400 Hz; 5 watts. **Size:** 4" w. x 4$\frac{13}{16}$" d. (4¼" behind panel) x 1¾" h. Weight, 1¼ lbs.

**Weston Model 1290**—Specify range. List Price......**$260.00***

| Weston 1290- | DC Voltage Range | Input Ohms | Weston 1290- | DC Current Range | Input mV |
|---|---|---|---|---|---|
| 0267290 | 0–100 mV | 10K | 0267295 | 0–10 μA | 100 |
| 0267291 | 0–1 V | 100K | 0267296 | 0–100 μA | 100 |
| 0267292 | 0–10 V | 1 meg | 0267297 | 0–1 mA | 100 |
| 0267293 | 0–100 V | 1 meg | 0267298 | 0–10 mA | 100 |
| 0267294 | 0–1000 V | 1 meg | 0267299 | 0–100 mA | 100 |

### MODEL 1292 BI-POLAR 3½-DIGIT NON-BLINKING METER

Provides automatic bi-polar operation with extremely high input impedance and 100% overrange. Chassis mounts and removes from front of panel for easy servicing and replacement. Plug-in Nixie tubes can be replaced from front of panel. Fits 7 sq. in. panel space. **Accuracy:** ±0.1% full-scale, ±1 digit. **Readings:** 5 per second. **Common Mode Rejection:** 80 dB at 60 Hz. **Normal Mode Rejection:** 35 dB at 60 Hz. **Response Time:** Less than 2 seconds to full scale. **Overrange:** 100%. **Power Required:** 117 VAC (±10%), 60–400 Hz; 7 watts. **Size:** 4" w. x 4$\frac{13}{16}$" d. (4¼" behind panel) x 1¾" h. Weight, 1¼ lbs.

**Weston Model 1292**—Specify range. List Price......**$283.00***

| Weston 1292- | DC Voltage Range | Input Ohms | Weston 1292- | DC Current Range | Input Ohms |
|---|---|---|---|---|---|
| 0270200 | 0–100 mV | 100 meg | 0270205 | 0–1 μA | 100K |
| 0270201 | 0–1 V | 1000 meg | 0270206 | 0–10 μA | 10K |
| 0270202 | 0–10 V | 10 meg | 0270207 | 0–100 μA | 1K |
| 0270203 | 0–100 V | 10 meg | 0270208 | 0–1 mA | 100 |
| 0270204 | 0–1000 V | 10 meg | 0270210 | 0–10 mA | 10 |
|  |  |  | 0270211 | 0–100 mA | 1 |

### MODEL 1260 2½-DIGIT NON-BLINKING METER

Economy digital panel meter uses a unique voltage-to-time converter, packaged with complete power supply and readout on one side of a PC board. Fits in 7 sq. in. panel space, mounts from front of panel. Chassis removed from front of panel for servicing. Nixie tubes are soldered. Out-of-range indication. BDC output available on special order. **Accuracy:** ±0.5% full-scale, ±1 digit. **Readings:** 10 per second. **Common Mode Rejection:** 80 dB with 1000 ohms unbalanced at 60 Hz. **Normal Mode Rejection:** 35 dB at 60 Hz. **Response Time:** Approx. 1 second, to full scale. **Overrange:** 25%. **Power Required:** 117 VAC (±10%), 50–400 Hz; 5 watts. **Size:** 4" w. x 4$\frac{13}{16}$" d. (4¼" behind panel) x 1¾" h. Weight, less than 1 lb.

**Weston Model 1260**—Specify range. List Price......**$133.00***

| Weston 1260- | DC Voltage Range | Input Ohms | Weston 1260- | DC Current Range | Input Ohms |
|---|---|---|---|---|---|
| 0267381 | 0–199 mV | 20K | 0267386 | 0–19.9 μA | 10K |
| 0267382 | 0–1.99 V | 200K | 0267387 | 0–199 μA | 1K |
| 0267383 | 0–19.9 V | 2 meg | 0267388 | 0–1.99 mA | 100 |
| 0267384 | 0–199 V | 2 meg | 0267389 | 0–19.9 mA | 10 |
| 0267385 | 0–1000 V | 2 meg | 0267390 | 0–199 mA | 1 |

### PC BOARD CONNECTORS FOR DIGITAL METERS

| Weston Number | For Meter Models | List Price* |
|---|---|---|
| 9760-0267432* | 1260, 1292† | $3.00 |
| 9790-0267253 | 1290, 1292‡ | 3.75 |

*Mounting screws not included. †BCD output. ‡Analog/power.

**★QUANTITY DISCOUNTS: LOTS OF 1-4, LIST; 5-9, —5%; 10-24, —15%; 25 UP, —25%.**

## MODEL 1316 OPTICAL RIBBON INDICATOR

First ribbon indicator for use with electronic systems. Ideal wherever simultaneous readoff of multiple parameters is necessary, as for temperature profiles, medical patient-station monitoring, inspection histograms, gauging liquid or material levels, or monitoring a roomful of machining operations. Optical projection eliminates parallax; scale can be changed freely without exposing mechanism. Flat design permits side-by-side mounting for group display; self-shielding (per ASA C39.1) eliminates interaction of units. Scale: 4½" long; white figures and divisions on black background, red ribbon. **Accuracy:** 2% F.S. **Lamp:** No. 561 operating at 11 V, .8 amp AC or DC; 8,000 hrs. min. expected life. **Size:** 1.84" w. x 5.80" d. x 5.43" h. behind panel; removable bezel is 2.26" w. x .25" th. x 6.00" h. Wt., approx. 2 lbs. Panel cutout, 1.875" w. x 5.50" h.; for group display, allow 2.2" of panel cutout width per meter for 2–4 meters, 2.25" per meter for 5–10. When ordering, specify horizontal or vertical mounting; most ranges stocked for vertical mounting.

### MODEL 9960 SCALES

Fifty-division, captionless scales can be used to replace those integral with stock Series 1316 meters for readout in different units of measurement.

| Scale Range | Weston No. 9960- | List Price* |
|---|---|---|
| 0–1 | 0266933 | $2.00 |
| 0–5 | 0266934 | 2.00 |
| 0–10 | 0266935 | 2.00 |
| 0–50 | 0266848 | 2.00 |
| 0–100 | 0266812 | 2.00 |

### ★QUANTITY DISCOUNTS

| 1-9 | 10-24 | 25-49 |
|---|---|---|
| List | List —10% | List —15% |

### DC VOLTMETERS/MILLIVOLTMETERS

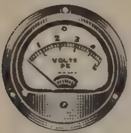
| Weston No. 1316- |  |  | Approx. Res., Ohms/Volt | List Price* |
|---|---|---|---|---|
| Horiz. | Vertical | Range |  |  |
| ............ | 9912050 | 0–50 mV | 500 | $87.15 |
| ............ | 9912100 | 0–100 mV | 500 | 87.15 |
| ............ | 1912001 | 0–1 V | 1000 | 86.65 |
| ............ | 1912005 | 0–5 V | 1000 | 86.65 |
| ............ | 1912010 | 0–10 V | 1000 | 86.65 |
| ............ | 1912020 | 0–20 V | 1000 | 86.65 |
| ............ | 1912050 | 0–50 V | 1000 | 86.65 |
| ............ | 1912100 | 0–100 V | 1000 | 86.65 |
| ............ | 1912150 | 0–150 V | 1000 | 86.65 |
| ............ | 1912200 | 0–200 V | 1000 | 86.65 |
| ............ | 1912300 | 0–300 V | 1000 | 86.65 |
| ............ | 1912500 | 0–500 V | 1000 | 86.65 |

### DC MILLI/MICROAMMETERS

| Weston No. 1316- |  |  | Approx. Res., Ohms | List Price* |
|---|---|---|---|---|
| Horiz. | Vertical | Range |  |  |
| ............ | 5912020 | 0–20 μA | 8350.0 | $93.45 |
| ............ | 5912050 | 0–50 μA | 815.0 | 87.15 |
| ............ | 5912100 | 0–100 μA | 184.0 | 86.10 |
| ............ | 5912200 | 0–200 μA | 131.0 | 86.10 |
| ............ | 5912500 | 0–500 μA | 19.8 | 86.10 |
| ............ | 4912920 | 4–20 mA* | 2.5 | 85.60 |
| ............ | 4912950 | 10–50 mA* | 1.0 | 85.60 |
| ............ | 4912001 | 0–1 mA | 13.8 | 85.60 |
| ............ | 4912005 | 0–5 mA | 10.0 | 85.60 |
| ............ | 4912010 | 0–10 mA | 5.0 | 85.60 |
| ............ | 4912020 | 0–20 mA | 2.5 | 85.60 |
| ............ | 4912025 | 0–25 mA | 2.0 | 85.60 |
| ............ | 4912050 | 0–50 mA | 1.0 | 85.60 |
| ............ | 4912100 | 0–100 mA | 0.5 | 85.60 |
| ............ | 4912250 | 0–250 mA | 0.2 | 85.60 |
| ............ | 4912500 | 0–500 mA | 0.1 | 85.60 |

*Suppressed zero.

# WESTON® PRECISION PANEL INSTRUMENTS



## SERIES 201/301 ROUND PANEL INSTRUMENTS

Pacesetter 2½″ and 3½″ panel instruments for longer, better performance. **Features:** Spring-back jewels with locking nuts for fine adjustments; Alnico 5 magnets; Cormag® mechanism fully shielded from electrostatic effects; Bakelite§ cases, sealed against dust. Diecast parts in critical structural members assure complete interchangeability and permanent alignment. Designed for minimum power consumption minimum response time. Cormag mechanism permit mounting on magnetic or non-magnetic panels without special adjustments. Affords excellent shielding from external magnetic fields and eliminates the possibility of intereffect of instruments in close proximity.

§Bakelite Corp. Trademark.

## MODELS 201/301 DC METERS

Mechanism is DC Cormag self-shielded units and are suitable for use on most standard applications. **Model 201:** Rated accuracy, 2% of full-scale value. Scale, 1.57″ (40 mm), core-magnet moving coil mechanism. Size: 2.68″ dia. (overall) x .31″ front of panel x 1.87″ back of panel. Mtg. hole, 2.20″ dia. **Model 301:** Rated accuracy, 2% of full-scale value. Scale, 2.46″ (60 mm), core-magnet moving coil mechanism. Size: 3.50″ dia. (overall) x .36″ front of panel x 1.81″ back of panel. Mtg. hole, 2.75″ dia.

### DC VOLTMETERS (1000 OHMS/VOLT)

| Range | Model 201 (2½″) Weston No. 201- | List Price* | Model 301 (3½″) Weston No. 301- | List Price* |
|---|---|---|---|---|
| 1.5 | | | 1301114 | $19.30 |
| 3 | | | 1301104 | 19.30 |
| 5 | | | 1301101 | 19.30 |
| 8 | | | 1301105 | 19.30 |
| 10 | | | 1301106 | 19.30 |
| 15 | 1301104 | $18.20 | 1301107 | 19.30 |
| 25 | 1301117 | 18.20 | | |
| 30 | 1301105 | 18.20 | 1301108 | 19.30 |
| 50 | 1301106 | 18.20 | 1301102 | 19.30 |
| 100 | 1301107 | 18.20 | 1301111 | 19.30 |
| 150 | | | 1301112 | 19.30 |
| 200 | | | 1301113 | 20.10 |
| 300 | 1301111 | 18.75 | 1301103 | 20.10 |
| 500 | 1301112 | 19.30 | 1301115 | 20.10 |

### DC AMMETERS

Self-contained shunts up through 50 amps; higher ranges require external shunting. MIL-S-61 shunts available on request.

| | | | | |
|---|---|---|---|---|
| 1 | 2301101 | $17.40 | 2301101 | $18.75 |
| 1.5 | 2301102 | 17.40 | 2301105 | 18.75 |
| 2 | 2301109 | 17.40 | 2301102 | 18.75 |
| 3 | 2301103 | 17.40 | 2301103 | 18.75 |
| 5 | 2301104 | 17.40 | 2301104 | 18.75 |
| 10 | 2301105 | 17.40 | 2301106 | 18.75 |
| 15 | 2301106 | 18.75 | 2301107 | 20.10 |
| 20 | 2301107 | 18.75 | 2301114 | 20.10 |
| 30 | 2301108 | 18.75 | 2301108 | 20.10 |
| 50 | 2301110 | 18.75 | 2302101 | 20.10 |
| 30–0–30 | | | 2302113 | 20.10 |
| 50–0–50 | | | 2302102 | 20.10 |
| 75‡ | | | 2303107 | 18.75 |
| 100‡ | 2303101 | 17.40 | 2303101 | 18.75 |
| 150‡ | | | 2303105 | 18.75 |
| 200‡ | | | 2303102 | 18.75 |
| 300‡ | | | 2303103 | 18.75 |
| 500‡ | | | 2303104 | 18.75 |

‡External shunt type; price does not include 50 mV shunt.

### DC MILLIAMMETERS

Ranges 40 mA and up are shunted; have approx. 100 mV drop.

| | | | | |
|---|---|---|---|---|
| 1 | | | 4301111* | $18.75 |
| 1 | 4301101 | $17.40 | 4301101† | 18.75 |
| 1.5 | | | 4301104 | 18.75 |
| 2 | | | 4301105 | 18.75 |
| 3 | | | 4301106 | 18.75 |
| 5 | 4301102 | 17.40 | 4301107 | 18.75 |
| 10 | 4301103 | 17.40 | 4301108 | 18.75 |
| 15 | | | 4301102 | 18.75 |
| 20 | | | 4301109 | 18.75 |
| 50 | 4301107 | 17.40 | 4302101 | 18.75 |
| 100 | 4301108 | 17.40 | 4302102 | 18.75 |
| 150 | | | 4302107 | 18.75 |
| 200 | | | 4302103 | 18.75 |
| 300 | | | 4302108 | 18.75 |
| 500 | 4301110 | 17.40 | 4302104 | 18.75 |
| 1–0–1 | 4301111 | 17.40 | 4301110 | 18.75 |
| 10–0–10 | | | 4301112 | 18.75 |
| 50–0–50 | | | 4302110 | 18.75 |
| 100–0–100 | 4301112 | 17.40 | 4302106 | 18.75 |

Approx. ohm resistance: *27; †88.

### DC MICROAMMETERS

| | | | | |
|---|---|---|---|---|
| 20 | | | 5301107 | $30.85 |
| 30 | | | 5301108 | 29.25 |
| 50 | 5301101 | $25.10 | 5301104 | 26.20 |
| 100 | 5301102 | 21.20 | 5301101 | 22.30 |
| 200 | 5301103 | 18.20 | 5301105 | 19.30 |
| 500 | 5301104 | 18.20 | 5301106 | 19.30 |
| 10–0–10 | | | 5301110 | 30.85 |
| 25–0–25 | | | 5301111 | 26.20 |
| 50–0–50 | 5301106 | 21.20 | 5301109 | 22.30 |
| 100–0–100 | 5301107 | 18.20 | 5301102 | 19.30 |
| 500–0–500 | | | 5301103 | 18.75 |

### ★QUANTITY DISCOUNTS

| 1-9 | 10-24 | 25-49 |
|---|---|---|
| List | List −10% | List −15% |

## MODELS 204/304 AC METERS

Mechanism is moving iron AC type, not shielded. **Model 204:** Rated accuracy, ±2% of full-scale. Scale, 1.57″ l. (40 mm), movable iron vane mechanism. Size: 2.68″ dia. (overall) x .31″ front of panel x 2.24″ back of panel. Mtg. hole, 2.20″ dia. **Model 304:** Rated accuracy, ±2% of full-scale. Scale, 2.13″ l. (54 mm), movable iron vane mechanism. Size: 3.50″ dia. (overall) x .36″ front of panel x 2.30″ back of panel. Mtg. hole, 2.75″ dia.

### AC VOLTMETERS

#### 25-125 Hz

Power consumption, 150 VAC range at 115 VAC, 0.65 watt at 60 Hz, 0.65 volt-ampere. Units are normally adjusted for use on frequencies 25 to 125 Hz; however, they may be adjusted for use on 400, 800 or 1600 or any specified frequency up to 2500 Hz for a nominal surcharge.

| Range | Model 204 (2½″) Weston No. 204- | List Price* | Model 304 (3½″) Weston No. 304- | List Price* |
|---|---|---|---|---|
| 1.5 | | | 1301102 | $18.20 |
| 5 | | | 1301104 | 18.20 |
| 10 | 1301103 | $17.40 | 1301106 | 18.20 |
| 15 | 1301106 | 17.40 | 1301107 | 18.20 |
| 30 | | | 1301108 | 18.20 |
| 50 | | | 1301110 | 18.20 |
| 75 | 1301114 | 17.40 | | |
| 100 | 1301115 | 17.40 | 1301111 | 18.20 |
| 130 | | | 1301112 | 18.75 |
| 150 | 1301101 | 17.90 | 1301101 | 18.75 |
| 300 | 1301104 | 17.90 | 1301115 | 18.75 |
| 500 | | | 1301117 | 22.90 |

### AC AMMETERS

Power consumption, 5 ampere range at 5 amps, 0.125 watt at 60 Hz, 0.125 volt-ampere. For use on frequencies as specified.

#### 25-500 Hz

| | | | | |
|---|---|---|---|---|
| 1 | 2301104 | $16.80 | 2301102 | $17.85 |
| 1.5 | | | 2301103 | 17.85 |
| 2 | | | 2301104 | 17.85 |
| 3 | | | 2301105 | 17.85 |
| 5 | 2301101 | 16.80 | 2301101 | 17.85 |
| 10 | 2301107 | 16.80 | 2301107 | 17.85 |
| 15 | 2301102 | 16.80 | 2301108 | 17.85 |
| 20 | 2301108 | 16.80 | 2301109 | 17.85 |
| 30 | 2301109 | 16.80 | 2301110 | 17.85 |
| 50 | 2301103 | 16.80 | 2301111 | 17.85 |

#### 25–500 Hz
#### FOR USE WITH CURRENT TRANSFORMERS

Prices shown do not include Model 605 or Model 607 transformer.

| Range, Amps | Amps Scale | (3½″) Weston No. | List Price* |
|---|---|---|---|
| 5 | 0–100 | 304-2301112 | $17.85 |
| 5 | 0–200 | 304-2301113 | 17.85 |
| 5 | 0–300 | 304-2301114 | 17.85 |

### AC MILLIAMMETERS

| Range | Model 304 (3½″) Weston No. | List Price* |
|---|---|---|
| 50 | 304-4301102 | $17.85 |
| 100 | 304-4301103 | 17.85 |
| 500 | 304-4301101 | 17.85 |

## MODEL 308 THERMO-METERS

### MODEL 308 THERMO-AMMETERS

**Model 308:** Power consumption, 1–4 amps varies from 0.2–0.4 amp, approximately 5 amps and above 0.2 watt per amp. Frequency error less than 2% up to 65 megahertz. Rated accuracy 2% of full scale. Scale, 2.36″ (60 mm). Thermocouple type.

| Range, Amps | Model 308 (3½″) Weston No. | List Price* |
|---|---|---|
| 1 | 308-2301101 | $45.70 |
| 3 | 308-2301104 | 45.70 |
| 5 | 308-2301105 | 45.70 |
| 8 | 308-2301106 | 45.70 |
| 10 | 308-2301107 | 45.70 |
| 15 | 308-2301108 | 45.70 |

### MODEL 308 EXPANDED SCALE THERMO-AMMETERS

| Range, Amps | (3½″) Weston No. 308- | List Price* | Range, Amps | (3½″) Weston No. 308- | List Price* |
|---|---|---|---|---|---|
| 1 | 2302101 | $57.60 | 10 | 2302109 | $57.60 |
| 3 | 2302102 | 57.60 | 15 | 2302110 | 57.60 |
| 5 | 2302103 | 57.60 | 20 | 2302111 | 57.60 |
| 8 | 2302104 | 57.60 | | | |

# WESTON® PRECISION TEST INSTRUMENTS, CURRENT TRANSFORMERS

## SERIES 201/301 ROUND PANEL INSTRUMENTS (CONTINUED)

Pacesetter 3½" panel instruments for longer, better performance. **Features:** Spring-back jewels with locking nuts for fine adjustments; Alnico 5 magnets; Cormag® mechanism fully shielded from electrostatic effects; Bakelite§ cases, sealed against dust. Diecast parts in critical structural members assure complete interchangeability and permanent alignment. Designed for minimum power consumption, minimum response time. Cormag mechanism permits mounting on magnetic or non-magnetic panels without special adjustments. Affords excellent shielding from external magnetic fields and eliminates the possibility of intereffect of instruments in close proximity.

§Bakelite Corp. Trademark.

## MODEL 302 RECTIFIER TYPE AC INSTRUMENTS

For most standard applications. Accuracy within 3% F.S. on waveforms approximating the sine wave at ordinary room temperatures.

### AC VOLTMETERS (1000 OHMS/VOLT)

| Range | Scale Divisions | Weston No. 302- | List Price● |
|---|---|---|---|
| 10 | 50 | 1301103 | $26.70 |
| 30 | 60 | 1301105 | 26.70 |
| 100 | 50 | 1301107 | 26.70 |
| 150 | 75 | 1301106 | 26.70 |
| 300 | 60 | 1301109 | 27.55 |

### AC MICROAMMETER

| Range | Scale Div. | Approx. Resis. | Weston No. 302- | List Price● |
|---|---|---|---|---|
| 100 | 50 | 3500 ohms | 5301101 | $31.70 |

### AC MILLIAMMETERS

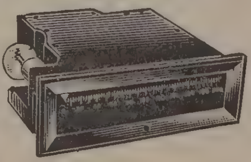
| Range | Scale Div. | Approx. Resis. | Weston No. 302- | List Price● |
|---|---|---|---|---|
| 1 | 50 | 470 ohms | 4301101 | $26.70 |
| 5 | 50 | 150 ohms | 4301103 | 26.70 |

## MODEL 306 DC MICROAMMETERS

DC type external magnet units, not shielded and are applicable for use where high sensitivities, special ballistic characteristics, etc., are needed. Same size and accuracy as Model 301.

| Range | Scale Div. | Approx. Resis. | Weston No. 306- | List Price● |
|---|---|---|---|---|
| 20 | 40 | 1480 ohms | 5301104 | $34.20 |
| 50 | 50 | 1175 ohms | 5301107 | 30.35 |
| 100 | 50 | 660 ohms | 5301102 | 27.85 |
| 200 | 40 | 55 ohms | 5301101 | 27.85 |

## MODEL 1201 FLAT-SCALE EDGEWISE PROJECTED MOVING POINTER METERS



First true, flat scale, edgewise instrument priced comparably to mechanical pointer types. Pointer is projected on the same plane as the scale divisions to eliminate parallax; projection path arranged for an essentially linear scale. Basic mechanism is Cormag® design for inherent self-shielding; unaffected by panel material. All-glass optical system, thermosetting plastic case and 10,000 hour lamp assure trouble-free service. Designed to meet ASA C39.1 specifications. Filters may be placed behind the scale so pointer will change color at a fixed point using up to two colors plus white on a single instrument; standard colors are red, green or amber. **Scale:** 4½". **Accuracy:** 1% F.S. DC (½% available in horizontal types). **Lamp:** GE No. 6 operating at 5 V, 2.86 amps; 10,000 hours min. expected life. **Size:** 5$\frac{21}{32}$" w. x 2$\frac{1}{32}$" h. x 5$\frac{19}{32}$" d., overall.

### DC INSTRUMENTS

| Weston No. 1201- |  |  |  |  |  |
|---|---|---|---|---|---|
| Horiz. | Vertical | Range | Scale Div. | Approx. Resistance | List Price● |
| 1911010 | .......... | 10 V | 100 | 1000 Ω/V | $79.10 |
| 1911020 | .......... | 20 V | 100 | 1000 Ω/V | 79.10 |
| 1911050 | .......... | 50 V | 100 | 1000 Ω/V | 79.10 |
| 4911001 | 4912001 | 1 mA | 100 | 18.8 Ω | 75.60 |
| 4911010 | .......... | 10 mA | 100 | 2.3 Ω | 75.60 |
| 4911020 | .......... | 20 mA | 100 | 5.0 Ω | 75.60 |
| 4911050 | .......... | 50 mA | 100 | 2.0 Ω | 77.45 |
| 5911050 | .......... | 50 μA | 100 | 2300 Ω | 84.00 |
| 5911100 | .......... | 100 μA | 100 | 640 Ω | 81.60 |
| 5911200 | .......... | 200 μA | 100 | 415 Ω | 79.65 |
| 5911750 | 5912750 | 50–0–50 μA | 100 | 640 Ω | 81.60 |

### ●QUANTITY DISCOUNTS

| 1-9 | 10-24 | 25-49 |
|---|---|---|
| List | List –10% | List –15% |

## SERIES 2930 LAB/PRODUCTION BENCH TESTERS

Well known Weston 1900 Series meters mounted in a sloped panel for ease of reading. Spring back jewels with locking nuts for fine adjustment. Large scale is readable at a distance. Color coded for DC and AC (yellow plastic insert for DC, red for AC). Zero corrector. High impact resistant plastic case. Null indicators have knife edge pointer and mirror dot at null. Others have lance pointer. DC testers have self-shielded Cormag® mechanism; AC, rectifier type shielded mechanism. Null indicators have external critical damping resistance of 50K (35K for 2936-4721060). **Accuracy:** ±2%. **Size:** 4.21" w. x 4.73" d. x 3.46" h.

### DC BENCH TESTERS

| Weston Model | Range | Sensitivity | Scale Division | List Price* |
|---|---|---|---|---|
| 2931-1722054 | 150/15/1.5 V | 1000Ω/V | 75 | $45.00 |
| 2931-1722053 | 30/15/3 V | 1000Ω/V | 60 | 45.00 |
| 2931-1722052 | 30/3/1.5 V | 1000Ω/V | 60 | 45.00 |
| 2931-1722051 | 15 V | 1000Ω/V | 75 | 31.00 |
| 2931-9722058 | 50 mV* | .......... | 50 (0–100)†<br>75 (0–150)† | 31.00 |
| 2931-2721057 | 30/3/1.5 amps | .......... | 60 | 67.00 |

### AC BENCH TESTERS

| Weston Model | Range | Sensitivity | Scale Division | List Price* |
|---|---|---|---|---|
| 2932-1722063 | 300/150/30 V | 1000Ω/V | 60 | $51.00 |
| 2932-1722062 | 150/15/3 V | 1000Ω/V | 75 | 51.00 |
| 2934-2722065 | 30 amps | .00056Ω | 60 | 33.00 |
| 2934-2722064 | 5 amps | .016Ω | 50 (0–100)†<br>75 (0–150)† | 33.00 |

### NULL INDICATORS

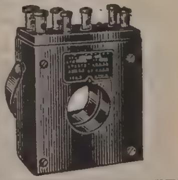
| Weston Model | Scale | μA/Div. | Moving Coil Resis., Ohms | End Scale Sensitivity | List Price* |
|---|---|---|---|---|---|
| 2931-4721059 | 30–0–30 | 2 | 1200, ±20% | 60–0–60μA♯ | $31.00 |
| 2936-4721060 | 30–0–30 | 1 | 2000, ±20% | 30–0–30μA♯ | 43.00 |

*For use with external shunts adjusted for standard 0.065 ohm, 5 ft. shunt leads. †Double scale for use with external accessories (eliminates interpolation problems). ♯±2%.

**Weston Model 187269-901 Two Terminal Assembled Base**—Includes base, terminals, internal leads from terminals to meter. Meter not supplied. List Price........................**$8.00***

## CURRENT TRANSFORMERS

### MODEL 461 CURRENT TRANSFORMERS



Used with AC instruments. Four self-contained primary ranges are brought out to binding posts. A secondary short circuiting switch is provided. Black molded case. **Core Opening:** 2.12" dia. **Size:** 7.97" x 6.63" x 2.75". **Weight:** Type 1, 8 lbs. Type 2, 8.4 lbs.

**Type 1:** Primarily used for ammeter applications.

**Type 2:** Primarily used for wattmeter applications.

**Type 5:** Similar to Type 2 except for additional ranges.

| Ranges in Amperes | Type | Weston No. | List Price* |
|---|---|---|---|
| 800/400/200/100/50/20/10 Pri. to 5 Sec. | 1 | 461-9901001 | $218.00 |
| 800/400/200/100/50/20/10 Pri. to 5 Sec. | 2 | 461-9902001 | 279.00 |
| 1000/500/250/100/50/25/10 Pri. to 5 Sec. | 1 | 461-9901002 | 218.00 |
| 1000/500/250/100/50/25/10 Pri. to 5 Sec. | 2 | 461-9902002 | 274.00 |
| 500/250/100/50/25/10/5/2.5/1/0.5 Pri. to 5 Sec. | 5 | 461-9902003 | 290.00 |

### MODEL 327 CURRENT TRANSFORMERS

Units employ special nickel-alloy cores, making them ideal for laboratory as well as industrial usage. Type 2 differs from Type 1 in that it provides maximum precision. **Size:** 9.93" x 8.38" x 3". Inserted primary opening, 2.85" dia. Weight (approx.), 12.5 lbs.

| Ranges in Amperes | Type | Weston No. | List Price* |
|---|---|---|---|
| 1200/600/400/300/200/100/50/20/10 Pri. to 5 Sec. | 1 | 327-9901001 | $370.00 |
| 1200/600/400/300/200/100/50/20/10 Pri. to 5 Sec. | 2 | 327-9902001 | 436.00 |

### MODEL 539 MINIATURE CURRENT TRANSFORMER

Small, lightweight unit, inexpensive and for use where only moderate accuracy is required with low burden ammeters having a range of one amp. Ordinarily it may not be used with a wattmeter since its phase angle, while satisfactory for current measurements, precludes its use for power measurements. Unit has a secondary short-circuiting switch. **Size:** 5.49" x 4.1" l. x 1.88". Inserted primary opening, 1.5" dia. Weight (approx.), 3 lbs.

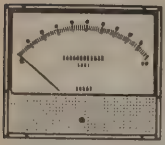
**Weston Model 539-9901001**—200/100/50/20/10/5/2 Pri. to 1 Sec. List Price........................ **$134.00***

### ★QUANTITY DISCOUNTS

| Qty. | Discount | Qty. | Discount | Qty. | Discount | Qty. | Discount |
|---|---|---|---|---|---|---|---|
| 1–5 | None | 6–14 | 5% | 15–24 | 10% | 25 Up | 15% |

# WESTON® PRECISION PANEL INSTRUMENTS

## SERIES 2000 PANEL INSTRUMENTS



Choice of three sizes

- **SNAP-IN COVERS FOR SCALE REPLACEMENT**
- **CORMAG® MECHANISM**
- **FLATTENED SCALE ARC**
- **TAUT-BAND OR PIVOT AND JEWEL MOVEMENT**
- **KNIFE-EDGE POINTER**

Attractive panel meters are styled to complement the appearance of equipment, rather than dominate it. Flattened scale arc gives excellent readability. Convenient snap-in covers permit easy scale replacement; use of a simple tool for replacement guards against finger snap-off of covers. Cormag® mechanism uses specially treated Alnico V magnet for full shielding from magnetic effects and long term stability. Offers the best combination of high torque with a minimum response time and minimum power consumption. Meets ANSI C39.1 standard. Features excellent dust sealing, plus the option of superior moisture-resistant sealing where required in critical environmental conditions. Easily adaptable to external illumination. Pivot and jewel types have spring back jewels. Half bezel is available for rear-of-panel mounting. Zero corrector is accessible from front of panel through bezel; no need to cut separate panel hole.

### SPECIFICATIONS

All models have knife-edge pointer and plain scale; mirror scale available.

| Model | Size | Function | Accuracy, Full-Scale† | Scale Length |
|---|---|---|---|---|
| 2021 | 2½″ | DC | 2% | 2.13″ |
| 2022 | 2½″ | AC Rect. | 3% (60 Hz) | 2.13″ |
| 2031 | 3½″ | DC | 2% | 2.7″ |
| 2032 | 3½″ | AC Rect. | 3% (60 Hz) | 2.7″ |
| 2041 | 4½″ | DC | 2% | 3.7″ |
| 2042 | 4½″ | AC Rect. | 3% (60 Hz) | 3.7″ |
| 2051 | 5½″ | DC | 2% | 4.5″ |
| 2052 | 5½″ | AC Rect. | 3% (60 Hz) | 4.5″ |

‡Except 1% types listed below.

### DIMENSIONS

Depth behind panel, 1.140″ (1.725″ including terminal stud).

| Model | Width | Height | Panel Hole Dia. | Mounting Centers‡ | |
|---|---|---|---|---|---|
| | | | | W. | H. |
| 2021 | 2.800″ | 2.400″ | 2.200″ | 1.880″ | 1.880″ |
| 2022 | 2.800″ | 2.400″ | 2.200″ | 1.880″ | 1.880″ |
| 2031 | 3.500″ | 2.980″ | 2.820″ | 2.250″ | 2.250″ |
| 2032 | 3.500″ | 2.980″ | 2.820″ | 2.250″ | 2.250″ |
| 2041 | 4.530″ | 4.050″ | 2.820″ | 4.000″ | 3.562″ |
| 2042 | 4.530″ | 4.050″ | 2.820″ | 4.000″ | 3.562″ |
| 2051 | 5.630″ | 4.490″ | 2.820″ | 5.250″ | 3.000″ |
| 2052 | 5.630″ | 4.490″ | 2.820″ | 5.250″ | 3.000″ |

‡Four mounting studs, .500″ long.

## PIVOT AND JEWEL METERS

### DC MILLIAMMETERS

| Range | Resis., Ohms | Weston No.* | List Price* | | | |
|---|---|---|---|---|---|---|
| | | | Model 2021 | Model 2031 | Model 2041 | Model 2051 |
| 1 | 85 | 4841001 | $19.00 | $19.60 | $20.95 | # |
| 2 | 16 | 4841002 | # | # | # | # |
| 5 | 9 | 4841005 | # | # | 20.95 | # |
| 10 | 2.2 | 4841010 | 19.00 | 19.60 | # | # |
| 20 | 1.6 | 4841020 | # | # | # | # |
| 50 | 2.0 | 4841050 | 19.00 | 19.60 | 20.95 | # |
| 100 | 1.0 | 4841100 | 19.00 | 19.60 | # | # |
| 200 | 0.5 | 4841200 | 19.00 | # | # | # |
| 300 | 0.33 | 4841300 | 19.00 | 19.60 | 20.95 | # |
| 500 | 0.2 | 4841500 | # | # | 20.95 | # |

### DC AMMETERS

| Range | Approx. Voltage Drop | Weston No.* | List Price* | | | |
|---|---|---|---|---|---|---|
| | | | Model 2021 | Model 2031 | Model 2041 | Model 2051 |
| 1 | 50 mV | 2841001 | # | $19.60 | $20.95 | # |
| 2 | 50 mV | 2841002 | # | # | 20.95 | # |
| 5 | 50 mV | 2841005 | $19.00 | 19.60 | 20.95 | # |
| 10 | 50 mV | 2841010 | # | 19.60 | # | # |
| 20 | 50 mV | 2841020 | # | # | # | ........ |
| 25 | 50 mV | 2841025 | # | # | # | ........ |
| 30 | 50 mV | 2841030 | # | # | # | ........ |
| 50 | 50 mV | 2841050 | # | # | # | ........ |
| 100† | ......... | 8841100 | # | # | 20.95 | ........ |

†50 mV for use with external shunts.

### DC VOLTMETERS

| Range | Ohms/Volt | Weston No.* | List Price* | | | |
|---|---|---|---|---|---|---|
| | | | Model 2021 | Model 2031 | Model 2041 | Model 2051 |
| 2 | 1000 | 1841002 | # | # | # | # |
| 5 | 1000 | 1841005 | $20.10 | # | # | # |
| 10 | 1000 | 1841010 | # | $20.70 | # | # |
| 15 | 1000 | 1841015 | # | # | # | # |
| 25 | 1000 | 1841025 | # | 20.70 | # | # |
| 30 | 1000 | 1841030 | # | # | # | # |
| 50 | 1000 | 1841050 | 20.10 | 20.70 | # | # |
| 100 | 1000 | 1841100 | # | # | # | # |
| 150 | 1000 | 1841150 | # | 20.70 | # | # |
| 200 | 1000 | 1841200 | 20.10 | # | # | # |
| 300 | 1000 | 1841300 | # | # | # | # |
| 500 | 1000 | 1841500 | # | # | # | # |

### AC VOLTMETERS (RECTIFIER TYPE)

| Range | Ohms/Volt | Weston No.* | List Price* | | | |
|---|---|---|---|---|---|---|
| | | | Model 2022 | Model 2032 | Model 2042 | Model 2052 |
| 15 | 1000 | 1841015 | # | # | # | # |
| 30 | 1000 | 1841030 | # | # | # | # |
| 75 | 1000 | 1841075 | # | # | # | # |
| 150 | 1000 | 1841150 | # | $26.70 | # | # |
| 300 | 1000 | 1841300 | # | # | # | # |

*Complete Weston No. consists of Model number (2021, 2032, etc.) followed by suffix indicated in table; e.g., 2021-4841001.
#Non-stock item.

## TAUT-BAND METERS

### DC MICROAMMETERS (2% ACCURACY)

| Range | Resis., Ohms | Weston No.* | List Price* | | | |
|---|---|---|---|---|---|---|
| | | | Model 2021 | Model 2031 | Model 2041 | Model 2051 |
| 50 | 950 | 5842050 | $26.75 | $27.30 | $28.65 | # |
| 100 | 845 | 5842100 | 24.85 | 25.60 | 26.70 | # |
| 200 | 275 | 5842200 | 23.95 | 24.25 | 25.95 | # |
| 500 | 60 | 5842500 | 22.95 | # | 24.50 | # |
| 50–0–50 | 845 | 8888004 | 24.85 | 25.60 | # | # |
| 100–0–100 | 275 | 8888005 | 23.95 | # | # | # |
| 500–0–500 | 16.5 | 8888006 | # | # | # | # |

### DC MICROAMMETERS (1% ACCURACY)

| Range | Resis., Ohms | Weston No.* | List Price* | | | |
|---|---|---|---|---|---|---|
| | | | Model 2021 | Model 2031 | Model 2041 | Model 2051 |
| 100 | 845 | 5812100 | ........ | ........ | $34.75 | $38.05 |
| 200 | 275 | 5812200 | ........ | ........ | 34.20 | 36.65 |

### DC MILLIAMMETERS (1% ACCURACY)

| Range | Resis., Ohms | Weston No.* | List Price* | | | |
|---|---|---|---|---|---|---|
| | | | Model 2021 | Model 2031 | Model 2041 | Model 2051 |
| 1 | 16.5 | 4812001 | ........ | ........ | $30.85 | $32.80 |

### DC VOLTMETERS (1% ACCURACY)

| Range | Ohms/Volt | Weston No.* | List Price* | | | |
|---|---|---|---|---|---|---|
| | | | Model 2021 | Model 2031 | Model 2041 | Model 2051 |
| 50 | 1000 | 1812050 | # | # | $31.95 | # |

## VU METERS

Type A scale stresses the level in "VU" units for monitoring wire lines. Type B scale emphasizes percent use of transmitter output, and is the standard for broadcast service.

| Scale Type | Model 2022 | | Model 2032 | |
|---|---|---|---|---|
| | Weston No. | List Price* | Weston No. | List Price* |
| Type 30 A | 2022-3841001 | $33.10 | 2032-3841001 | $33.60 |
| Type 30 B | 2022-3841002 | # | 2032-3841002 | # |

## #NON-STOCK ITEMS

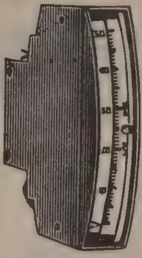
Series 2000 panel meters are available in a variety of ranges in addition to those listed above, as non-stock items. Pivot and jewel meters are available to read DC microamps, AC microamps and AC milliamps. Taut-band meters are available to read DC amps, DC milliamps, AC and DC volts, AC milliamps and AC microamps. Write for complete information and prices.

## ★QUANTITY DISCOUNTS

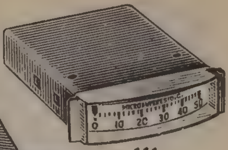
| Lots of 1–9 | Lots of 10–24 | Lots of 25–49 |
|---|---|---|
| List | List –10% | List –15% |

# WESTON® THIN LINE PANEL METERS

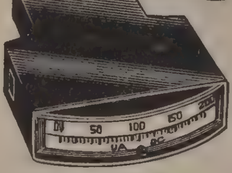
- **COMPLETELY FLAT . . . CAN BE STACKED SIDE-BY-SIDE TO SAVE PANEL SPACE**
- **INLINE POINTER AND SCALE . . . PARALLAX ELIMINATED**
- **NEW SELF-SHIELDED MECHANISM**
- **ILLUMINATION (SELF-CONTAINED) ALSO AVAILABLE**
- **MEETS ASA C39.1 PERFORMANCE**



131



111



121

## MODELS 131 AND 231 EDGEWISE PANEL METERS

**Model 131** is basically a 3½-inch flat edgewise meter offering many benefits not generally offered in this type of meter. To eliminate parallax normally associated with edgewise meters, an inline scale is standard; a red pointer increases readability. For those requiring lighting, self-contained illumination is available as an optional feature; bulbs are removable while meters are mounted in panel—even when stacked side-by-side. Designed to meet ASA C39.1 performance specifications. Incorporates Cormag® mechanism design for shielding purposes. The magnet is inside the moving coil and the resulting inherent shielding allows mounting on magnetic or non-magnetic panels without need for adjustment, as well as the ability to stack meters side-by-side without any interaction. Mechanism also has a shock absorption jewel arrangement to assure long life. For scale presentation approximately twice as wide. **Accuracy:** 2% of FS value for DC; 3% of FS value for AC rectifier type. **Scale Length:** 2.75″; anti-parallax inline scale. **Pointer:** Red lance type. **Movement:** Self shielded thin line Cormag mechanism. Shock mounted jewel arrangement. **Mounting:** Meter can be mounted either horizontally or vertically. Mounting clips fasten to meter behind panel—no screws show on front of panel. For stacking, thru holes are provided so stack can be bolted together. **Dielectric:** 1500 V rms. **Illumination:** Self-contained on request. **Size:** 3.437″ w. x 1.010″ h. x 3.921″ d. overall; panel cut out 2⁹⁄₁₆″ w. x ¹¹⁄₁₆″ h.

**Model 231** is identical to above, but with wide face for improved readability.

**DC INSTRUMENTS**

| No. 131- or 231- | | Range | Scale Div. | Approximate Resistance | List Price* |
|---|---|---|---|---|---|
| Horiz. | Vertical | | | | |
| 1921010 | ......... | 0–10 V | 50 | 5000 Ω/V | $23.00 |
| 1921025 | ......... | 0–25 V | 50 | 5000 Ω/V | 23.00 |
| 1921050 | ......... | 0–50 V | 50 | 5000 Ω/V | 23.00 |
| 1921100 | ......... | 0–100 V | 50 | 5000 Ω/V | 23.00 |
| 1921150 | ......... | 0–150 V | 30 | 5000 Ω/V | 23.00 |
| 1921300 | ......... | 0–300 V | 30 | 5000 Ω/V | 23.00 |
| 4921001 | 4922001 | 0–1 mA | 50 | 38 ohms | 22.00 |
| 4921005 | ......... | 0–5 mA | 50 | 5.2 ohms | 22.00 |
| 4921010 | ......... | 0–10 mA | 50 | 2.3 ohms | 22.00 |
| 4921025 | ......... | 0–25 mA | 50 | 2.0 ohms | 23.00 |
| 4921100 | ......... | 0–100 mA | 50 | 0.5 ohm | 23.00 |
| 4921150 | ......... | 0–150 mA | 30 | 0.33 ohm | 23.00 |
| 4921250 | ......... | 0–250 mA | 50 | 0.20 ohm | 23.00 |
| 4921500 | ......... | 0–500 mA | 50 | 0.1 ohm | 23.00 |
| 5921050 | 5922050 | 0–50 μA | 50 | 2300 ohms | 27.25 |
| 5921100 | 5922100 | 0–100 μA | 50 | 900 ohms | 23.75 |
| 5921200 | ......... | 0–200 μA | 40 | 600 ohms | 22.75 |
| 5921500 | ......... | 0–500 μA | 50 | 134 ohms | 22.50 |
| 5921750 | 5922750* | 50–0–50 μA | 50 | 900 ohms | 23.75 |
| 2921001 | ......... | 0–1 A | 50 | 0.05 ohm | 23.00 |

*Available for Model 131 only.

**AC INSTRUMENTS**

| No. 132- or 232- | | Range | Scale Div. | Approximate Resistance | List Price* |
|---|---|---|---|---|---|
| Horiz. | Vertical | | | | |
| 1931150 | ......... | 0–150 V | 30 | 2000 Ω/V | $28.00 |
| 1931300 | ......... | 0–300 V | 30 | 2000 Ω/V | 28.00 |

## MODELS 121 AND 125 EDGEWISE PANEL METERS

**Model 121** is a 2½″ flat edgewise meter utilizing a true flat Cormag mechanism design for shielding purposes. An inline scale is standard; eliminates parallax normally associated with edgewise meters. Red pointer increases readability. Front mounted zero corrector. **Accuracy:** 2% of FS value for DC; 3% of FS value for AC rectifier type. **Scale Length:** 1.9″; antiparallax inline scale. **Pointer:** Red lance type. **Movement:** Self shielded thin line Cormag mechanism. Shock mounted jewel arrangement. **Mounting:** Either horizontally or vertically. Mounting clips fasten to meter behind panel; no screws show on front of panel. For stacking, thru-holes are provided so stack can be bolted together. **Dielectric:** 2000 V rms. **Size:** 2.880″ w. x 1.010″ h. x 3.921″ d. overall; panel cut out, 2⁹⁄₁₆″ w. x ¹¹⁄₁₆″ h.

**Model 125** is identical, but with wide face for best readability.

**DC INSTRUMENTS**

| No. 121- or 125- | | Range | Scale Div. | Approximate Resistance | List Price* |
|---|---|---|---|---|---|
| Horiz. | Vertical | | | | |
| 1921010 | ......... | 0–10 V | 50 | 5000 Ω/V | $20.75 |
| 1921025 | ......... | 0–25 V | 50 | 5000 Ω/V | 20.75 |
| 1921050 | ......... | 0–50 V | 50 | 5000 Ω/V | 20.75 |
| 1921100 | ......... | 0–100 V | 30* | 5000 Ω/V | 20.75 |
| 1921150 | ......... | 0–150 V | 30* | 5000 Ω/V | 20.75 |
| 1921300 | ......... | 0–300 V | 30* | 5000 Ω/V | 20.75 |
| 4921001 | 4922001 | 0–1 mA | 50 | 39 ohms | 19.75 |
| 4921005 | ......... | 0–5 mA | 50 | 5.2 ohms | 19.75 |
| 4921010 | ......... | 0–10 mA | 50 | 2 ohms | 19.75 |
| 4921025 | ......... | 0–25 mA | 50 | 2 ohms | 20.75 |
| 4921025‡ | ......... | 0–50 mA | 50 | 2 ohms | 20.75 |
| 4921100† | ......... | 0–100 mA | 50 | 5 ohms | 20.75 |
| 4921150 | ......... | 0–150 mA | 30 | .33 ohm | 20.75 |
| 4921250 | ......... | 0–250 mA | 50 | .20 ohm | 20.75 |
| 4921500 | ......... | 0–500 mA | 50 | .10 ohm | 20.75 |
| 5921050 | 5922050 | 0–50 μA | 50 | 2300 ohms | 25.00 |
| 5921100 | 5922100 | 0–100 μA | 50 | 900 ohms | 21.50 |
| 5921200 | ......... | 0–200 μA | 40 | 600 ohms | 20.25 |
| 5921500 | ......... | 0–500 μA | 50 | 134 ohms§ | 20.00 |
| 5921750 | 5922750 | 50–0–50 μA | 50 | 900 ohms | 21.50 |
| 2921001 | ......... | 0–1 A# | 50 | .05 ohm | 20.75 |

*50 for Model 125. †Available for Model 121 only. ‡Model 125 only. §125 ohms for Model 125. #External-shunt types (Model 125) for higher ranges are available; write for information.

**AC INSTRUMENTS**

| No. 122- or 127- | | Range | Scale Div. | Approximate Resistance | List Price* |
|---|---|---|---|---|---|
| Horiz. | Vertical | | | | |
| 1931150 | ......... | 0–150 V | 30 | 2000 Ω/V | $25.50 |
| 1931300 | ......... | 0–300 V | 30 | 2000 Ω/V | 25.50 |

## THIN LINE MODEL 111 SELF-SHIELDED PANEL METERS

Edgewise instrument using a flat Cormag mechanism for inherent shielding; permits mounting on magnetic or non-magnetic panels without adjustment. Can be stacked side-by-side without interaction. Shock absorption jewel arrangement assures long life. Designed to meet ASA C39.1 specifications. Mounts vertically or horizontally (specify) using mounting clips behind panel; no screws show on panel front; thru-holes provided for stacking. Red lance pointer. **Scale:** 1.25″ long. **Accuracy:** 2% FS, DC; 3% FS, AC rectifier type. **Size:** 1.810″ w. x .500″ h. x 2.440″ d. behind panel; fits 1.650″ x .500″ panel cutout.

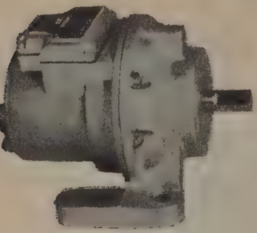
**AC (RECTIFIER TYPE) VOLTMETERS**

| Weston No. 112- | | Range | Scale Div. | Approx. Resistance | List Price* |
|---|---|---|---|---|---|
| Horiz. | Vertical | | | | |
| 1931150 | 1932150 | 150 V | 30 | 2000 Ω/V | $23.25 |
| 1931300 | ......... | 300 V | 30 | 2000 Ω/V | 23.25 |

**DC INSTRUMENTS**

| Weston No. 111- | | Range | Scale Div. | Approx. Resistance | List Price* |
|---|---|---|---|---|---|
| Horiz. | Vertical | | | | |
| 5921050 | 5922050 | 50 μA | 25 | 2300 Ω | $22.50 |
| 5921100 | 5922100 | 100 μA | 20 | 900 Ω | 19.25 |
| 5921200 | 5922200 | 200 μA | 20 | 600 Ω | 18.00 |
| 5921500 | ......... | 500 μA | 25 | 134 Ω | 17.75 |
| 5921750 | 5922750 | 50-0-50 μA | 20 | 900 Ω | 19.25 |
| 4921001 | 4922001 | 1 mA | 20 | 39 Ω | 17.50 |
| 4921005 | ......... | 5 mA | 25 | 5.2 Ω | 17.50 |
| 4921010 | 4922010 | 10 mA | 20 | 2 Ω | 17.50 |
| 4921025 | ......... | 25 mA | 25 | 2 Ω | 18.25 |
| 1921010 | 1922010 | 10 V | 20 | 5000 Ω/V | 18.25 |
| 1921025 | ......... | 25 V | 25 | 5000 Ω/V | 18.25 |
| 1921050 | ......... | 50 V | 25 | 5000 Ω/V | 18.25 |
| 1921100 | ......... | 100 V | 20 | 5000 Ω/V | 18.25 |
| 1921150 | 1922150 | 150 V | 30 | 5000 Ω/V | 18.25 |
| 1921300 | ......... | 300 V | 30 | 5000 Ω/V | 18.25 |

# WESTON® Tachometers



**Model 750**
**Type A**

**Model 750, Type M2**
**With Barbour Stockwell Gear Box**

**Model 758**
**Type AB**

## MODEL 750 DC GENERATOR—TYPE A

Commutator segments are made from specially hardened, noncorrosive alloy for exceptional long life. Self-lubricating brushes are carried in a self-aligning holder. No lubrication required, under normal operation, for 15,000 hours running time or approximately three years. Rigid die-cast dustproof aluminum mounting base and housing. Has ⅜" dia. shaft extension for direct coupling drive, pulley or spur gear and two binding posts. Recommended for general light duty applications. **Max. Speed:** 5,000 rpm. **Torque:** Starting, 1.0 oz.-in.; Running 1.0 oz.-in. at 1,000 rpm. **Voltage Output:** 6 V, ±1% at 1,000 rpm. **Current Drain:** 50 mA, max. **Internal Resistance:** 20 ohms. **Size:** 3" w. x 4.66" d. x 2.87" h. **Weight:** 1.7 lbs. **Mounting:** Base. **Shaft:** ⅜" dia. x .71" lg.

**Weston Model 750-9901000 Type A**—List Price..... **$129.25***

## MODEL 750 DC GENERATOR—TYPE M2

Similar to above but is standard S.A.E. ⅞" screw type steel mounting with 5/16" drive dog. Oil seal has been eliminated to reduce torque burden. Recommended for use with a low torque gear box such as Barbour Stockwell Gear Box above right. For direct coupling drive only. **Size:** 3" w. x 5.61" d. x 2.91" h. **Weight:** 1.8 lbs. **Shaft:** 5/16" dia. x .47" lg. Other specifications see Type A above.

**Weston Model 750-9906001 Type M2**—List Price.... **$156.00***

## MODEL 9933 BARBOUR STOCKWELL GEAR BOXES

Small light-weight gear boxes. Standard S.A.E. tachometer outlets on one side and 5/16" shaft on the other. For use with Model 750 Type M2 Generators where a step-up in speed is required. **Step-Up Ratio:** 1:10. **Starting Torque:** 20 oz.-in.

**Weston Model 9933-9900001**—List Price.............. **$53.50***

## MODEL 758 AC GENERATOR—TYPE AB

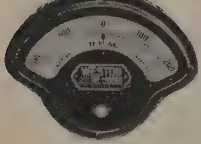
Temperature compensated output is proportional to the speed. No lubrication required under normal operation for 15,000 hours running time or about three years. Max. speed is 5,000 rpm, but may be used up to 10,000 rpm under special conditions. Rigid cast bronze base mounting. Light weight dustproof aluminum alloy housing. Has ½" dia. shaft extension for spur gear, chain and sprocket, pulley, or direct coupling drive, and two binding posts. Recommended for general light duty applications. **Torque:** Starting, 2.5 oz.-in.; running, 2.5 oz.-in. at 1,000 rpm. **Weight:** 2.89 lbs.

**Weston Model 758-9901000 Type AB**—List Price..... **$91.50***

## BINDING POST COVER BOXES

**Weston Model 9933-0143156**—For Model 750 Type A Generator. Has ½" N.P.T. opening suitable for flexible conduit connection. List Price.......................................... **$6.25***

**Weston Model 9933-0143157**—For Model 758 Type AB Generator. Has ½" N.P.T. opening suitable for flexible conduit connection. List Price.......................................... **$6.25***



**Model 269, 271 or 273**

25
50
75
100
125
150
YARDS
PER MINUTE

**Model 919, 921 or 921-RD**

0
200
400
600
800
R.P.M.

**Model 961 or 962-RD**

## AC AND DC TACHOMETER INDICATORS

DC or Rectifier type AC voltmeters calibrated in terms of various units such as rpm, minutes baking time., miles/hr., gallons/min., Hz, etc. No specially calibrated connecting leads are required for connection of normal length. One, two or up to 25, indicators may be operated from the same generator with all giving direct indication simultaneously. Supplied with single range zero left indication. Available in zero right, suppressed zero or with multiple ranges. DC indicators also available in zero center indication. All indicators are equipped with zero correctors and are temperature compensated. Dust and moisture resistant. Enclosed in steel cases except Models 961, 961-RD and 961-FD. Suffix **"DC"** indicates DC type; **"RD"**, AC; **"FD"**, frequency responsive. **Accuracy: 1%** FS, 269-DC, 271-DC, 273-DC, 921-DC; **1½%**, 269-RD, 271-RD, 273-RD, 922-RD; **2%**, 961-DC; **2½%**, 962-RD.

### SWITCHBOARD (FAN SHAPED) INDICATORS

Available in three models: 269, 271 and 273. DC, AC or frequency responsive. Enclosed in drawn steel cases with long easily read scales and are similar in construction, varying only in size and scale length.

### SWITCHBOARD (6" RECTANGULAR) INDICATORS

Models 921 (DC), 921-RD (AC) and 921-FD (Frequency Responsive). Drawn steel cases with black finish. Flush or surface mounting. Easy to read even from a distance. Internal illumination can be provided at a nominal surcharge.

### 4" PANEL INDICATORS

Models 961 (DC), 961-RD (AC) and 961-FD (Frequency Responsive). Flush type rectangular Bakelite* cases especially suitable for small panels. When ordering, specify panel material and thickness.

### MODEL 919 DC RATIO METER

Rectangular 6" drawn steel case matches Model 921 line instruments.

### TACHOMETER INDICATOR MODELS

| Case | Scale Lg. | Wt., Lbs. | DC Voltage | | AC Voltage | | AC Frequency | |
|---|---|---|---|---|---|---|---|---|
| | | | Model | Price* | Model | Price* | Model | Price* |
| Surf. | 4" | 1.5 | 269 | Prices on Request | 269-RD | Prices on Request | 269-FD | Prices on Request |
| Surf. | 5.8" | 3.8 | 271 | | 271-RD | | 271-FD | |
| Surf. | 7.3" | 5.0 | 273 | | 273-RD | | 273-FD | |
| Surf. | 5.1" | 6.0 | 919 | | ........ | | ........ | |
| Surf. | 5.12" | 7.0 | 921 | | 921-RD | | 921-FD | |
| Flush | 5.1" | 6.0 | 919 | | ........ | | ........ | |
| Flush | 5.12" | 7.0 | 921 | | 921-RD | | 921-FD | |
| Flush | 3.17" | 1.0 | 961 | | 961-RD | | 961-FD | |

### ★QUANTITY DISCOUNT SCHEDULE

| Quantity | Tachometer Generators and Accessories | Tachometer Indicators Only |
|---|---|---|
| 1–9 | List Price | Prices and Discounts on Request |
| 10–24 | 10% off (Multiplier .9) | |
| 25–49 | 15% off (Multiplier .85) | |
| 50–99 | 20% off (Multiplier .8) | |

*Registered Bakelite Corp. trademark.

# Kurz-Kasch ELECTRONIC LOGIC TEST EQUIPMENT

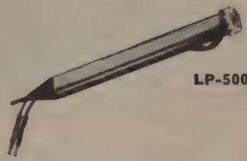
## LOGIC PROBE INTEGRATED CIRCUIT SYSTEMS TESTERS

hirt-pocket size Logic Probes check logic levels in virtually any IC system (DTL, 'TL) quickly and accurately. Provide precise "True" and "Zero" readings through two olor-coded readouts in the probe end or tip. Logic Probes are rugged solid state instruments in attractive chrome-finished steel cases. Input impedance of greater than 50,000 hms at the Logic "1" level prevents excessive loading of the circuit under test. Power derived from the equipment being tested. For use in field-service, inspection, monitoring, roduction line checkout, or engineering lab circuit design applications.

### MODEL LP-500 LOGIC PROBE FOR 4.75 VDC TO 5.5 VDC SYSTEMS

hecks all logic voltage levels from 4.75 VDC to 5.5 VDC; compatible with DTL, TTL nd similar families. Two circular windows in end of probe display readout. **Logic Voltage evel Response:** 0–1 VDC illuminates white readout in logic "0" window; 1–2.4 VDC ives no readout in either window; 2.4 VDC to 5.5 VDC illuminates red readout in gic "1" window. Infinity gives no readout in either window (as in the case of a missing in or non-connected wire). **Probe Power Requirement:** 4.75 to 5.5 VDC. **Input Impednce:** Greater than 150,000 ohms for logic "1" level. **Size:** 9/16" dia. x 5¼" long; 26¾" eads with pin terminals.

**urz-Kasch Model LP-500 Logic Probe**—Net Each........................**$39.90**

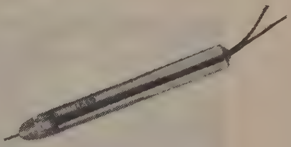


LP-500

### MODEL LP-510 LOGIC PROBE WITH OVERVOLTAGE PROTECTION

or 4.75 VDC to 5.5 VDC logic systems. Features overvoltage protection on input to -50 VDC, or intermittent to −20 VDC. Prevents damage to probe circuits if probe tip ccidentally touches voltages higher than logic level source. Reverse power lead protecion. Compatible with DTL, TTL and similar families. **Logic Voltage Level Response:** -1 VDC gives logic "0" readout (white) at probe tip; 1–2.4 VDC gives no readout; .4 VDC to Vc gives logic "1" readout (red) at tip; infinity gives no readout (as in he case of a missing pin or non-connected wire). **Probe Power Requirement:** 4.75 VDC o 5.5 VDC. **Input Impedance:** Greater than 50,000 ohms for logic "1" level. **Size:** 16" dia. x 6" long; 26¾" leads with pin terminals.

**urz-Kasch Model LP-510 Logic Probe**—Net Each........................**$44.95**

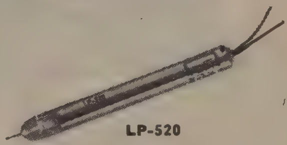


LP-510

### MODEL LP-520 LOGIC PROBE FOR COMPLETE ADVANCED TESTING OF 4.75 VDC TO 5.5 VDC LOGIC SYSTEMS

dvanced Logic Probe offers full logic reading capability, input overvoltage protection, lus high speed pulse detection with separate readout. Three color-coded readouts are ocated at the probe tip for fast, easy testing. Pulse readout illuminates to display high peed pulse trains, or single cycle (positive or negative) pulses of 50 nsec width or greater. or use with all logic voltages from 4.75 VDC to 5.5 VDC; compatible with DTL, TTL nd similar families. Overvoltage input protection is continuous to +50 VDC, intermittent o −20 VDC. Reverse power lead protection. **Logic Voltage Level Response:** 0–1 VDC ives logic "0" readout (white) at probe tip; 1–2.4 VDC gives no readout; 2.4 VDC to c gives logic "1" readout (red) at tip; infinity gives no readout (missing pin or nononnected wire). **Pulse Detection Response:** High speed pulse trains, or single cycle + or −) going-away pulse of 50 nsec width. **Probe Power Requirement:** 4.75 VDC to .5 VDC. **Input Impedance:** Greater than 50,000 ohms for logic "1" level. **Size:** 9/16" dia. x " long; 26¾" leads with pin terminals.

**urz-Kasch Model LP-520 Logic Probe**—Net Each........................**$69.95**

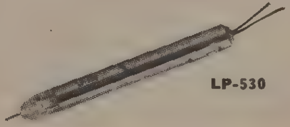


LP-520

### MODEL LP-530 LOGIC PROBE FOR 12-15 VDC LOGIC SYSTEMS

Has all the features for advanced testing of the Model LP-510 above, but for use with 12 VDC to 15 VDC logic circuits. Compatible with DTL, TTL and similar families. Overvoltage input protection is continuous to +50 VDC, intermittent to −20 VDC. Reverse power lead protection. **Logic Voltage Level Response:** 0–1.5 VDC gives logic "0" readout (white) at probe tip; 1.5–10 VDC gives no readout; 10 VDC to Vc gives logic "1" readout (red) at tip; infinity indicates no readout (missing pin or non-connected wire). **Probe Power Requirement:** 12 VDC to 15 VDC. **Input Impedance:** Greater than 150,000 ohms for logic "1" level. **Size:** 9/16" dia. x 6" long; 26¾" leads with pin terminals.

**Kurz-Kasch Model LP-530 Logic Probe**—Net Each........................**$44.95**



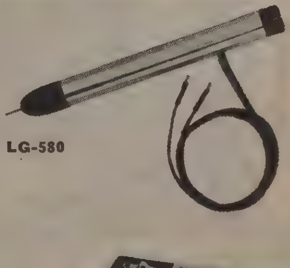
LP-530

### MODEL LG-580 LOGIC GENERATOR FOR DIGITAL CIRCUITS

Shirt-pocket size, all solid state logic (square wave) generator for troubleshooting, testing and inspection of digital circuitry. Rotating the switch at probe tip selects 100 Hz, 1 kHz, 10 kHz, 100 kHz or 1 MHz signals; or, a single pulse can be generated by a pushbutton. Signal injection is made through the metal probe tip to the IC under test. Power is provided by the system under test. For use with all logic systems from 4.75 VDC to 5.5 VDC; compatible with DTL, TTL and similar families. Cannot be damaged by connecting power leads backwards. **Power Requirement:** 4.75 to 5.5 VDC (built-in power regulator). **Output:** Greater than 4.0 volts into 600 ohms (5.0 volt power). **Generator Response:** Symmetrical wave output, with fast rise times in the nanosecond region. **Frequency Stability:** Better than 5% over 4.75–5.5 VDC power source variance. **Mode:** Switch selection of 100 Hz, 1 kHz, 10 kHz, 100 kHz or 1 MHz; or, single pulse of 1 μsec nominal duration, negative going. **Size:** 9/16" dia. x 6½" long; 26¾" dual leads with pin terminals.

**Kurz-Kasch Model LG-580 Logic Generator**—Net Each........................**$79.95**

**Kurz-Kasch Model LG-581 Logic Generator**—Same as Model LG-580 above, except for use with 12–15 VDC systems. Net Each........................**$89.95**

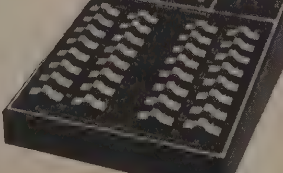


LG-580

### MODEL IC-590 INTEGRATED CIRCUIT TESTER

Completely portable, battery-powered tester for static and dynamic testing of 5 and 15-volt TTL and DTL IC families. Accommodates all 14- and 16-pin dual inline devices. Simple operation simulates operating conditions for both static and dynamic performance. Gives color-coded visual readout for static logic test to each position: White readout for logic "0"; red readout for logic "1" (true). Built-in clock provides both low (2 pps) and high (15K pps) test levels. Used for servicing, incoming inspection, production, quality control and engineering lab applications; ideal for teaching truth table logic relationships. **Voltage:** All 5-volt logic systems from 4.75 VDC to 5.5 VDC. **Connections:** 5-way binding posts to attach pull up resistors or load resistors plus 'scope monitor input and output simultaneously; external leads may be applied to IC under test. **Size:** 8" w. x 10" d.

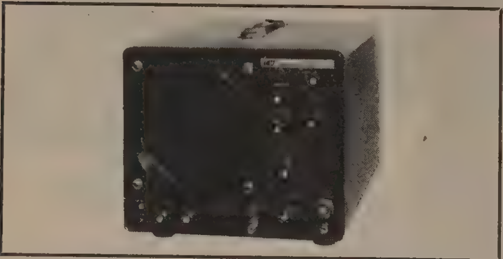
**Kurz-Kasch Model IC-590 Integrated Circuit Tester**—Net Each...........**$169.95**



IC-590

# B&K -PRECISION PROFESSIONAL TEST EQUIPMENT

## NEW MODEL 1460 TRIGGERED SWEEP 5″ OSCILLOSCOPE

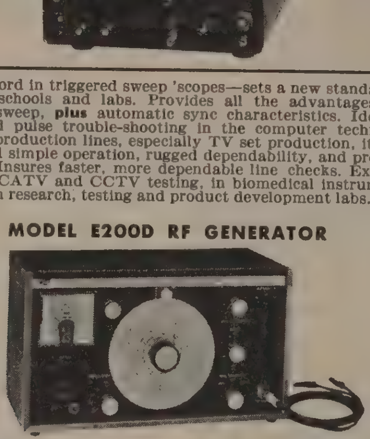


The last word in triggered sweep 'scopes—sets a new standard for industry, schools and labs. Provides all the advantages of a triggered sweep, **plus** automatic sync characteristics. Ideal for digital and pulse trouble-shooting in the computer technology field. For production lines, especially TV set production, it offers speedy and simple operation, rugged dependability, and precision accuracy. Insures faster, more dependable line checks. Excellent for use in CATV and CCTV testing, in biomedical instrumentation, and in research, testing and product development labs. Great for schools: Offers a basic instrument that is extremely easy t operate, yet sophisticated enough for students to learn all th 'scope uses.

**Features:** Super-bright patterns registered on a flat-face 5″ screen Optimized, high accelerating anode voltage eliminates dot blooming. Writing speeds are ultra-fast: Up to 0.1 μsec/cm with 5X magnification. DC amplifier permits measurement of AC and DC signal components. Very high sensitivity provides display on the smallest signal levels in transistor and IC circuits with excellen sync; capable of syncing waveform displays with amplitudes a low as 1 cm peak-to-peak. Design uses only one tube: the CRT all else is solid state for assured reliability. **Vertical Sensitivity:** 10 mV/cm to 20 V/cm, ±5% in 11 calibrated ranges, each with fine adjustment. **Vertical Response:** DC, DC to 10 MHz; AC, 2 Hz to 10 MHz; both, −3 dB. **Rise Time:** 35 nanoseconds. **Overshoot:** 3% or less. **Sweep System:** Automatic and triggered sweep. **Sweep Time:** 0.5 μsec/cm to 0.5 sec/cm (±5%), divided into 19 calibrated ranges (1, 2, 5 steps), each with fine adjustment. **Sweep Magnification:** 5 times, at all speeds; increases maximum sweep to 0.1 μsec/cm. **Horizontal Sensitivity:** 300 mV/cm. **Horizontal Response:** DC to 800 kHz, −3 dB. **Intensity Modulation:** 30 volts peak-to-peak, minimum. **Semiconductors:** 5 FET's, 40 transistors, 14 diodes. **Probe Input Impedance:** Model 1460 is supplied with an exclusive B&K-Precision probe, combining 10:1 and direct probe use; low capacity (18 pF), 10 megohms. **Power Required:** 20 watts, 105–125 VAC, 50/60 Hz; supplied with 3-wire line cord: **Size:** 10″ w. x 17″ d. x 9″ h. Shpg. Wt., 27 lbs.

**B&K-Precision Model 1460 Oscilloscope**—Net Each. . **$389.95**

## MODEL E200D RF GENERATOR



Newest design, solid state RF signal generator features 100% silicon transistor circuitry and zener-regulated power supply. Stable, accurate circuitry is designed for long, trouble-free life. Ideal signal source for use in: Industrial applications; school and science labs; TV trap and bandpass coil alignment; FM-AM receiver alignment; stage-by-stage RF amplifier gain tests; audio signal tracing; etc. Four outputs: Unmodulated RF; 400 Hz modulated RF; externally-modulated RF; and, 400 Hz audio signal. Six individually shielded step attenuators; plus, variable fine output level control. Full shielding eliminates spurious radiation even at outputs of 1 μV. Accuracy is better than 0.1%, made possible with internal crystal calibration. Calibrated meter monitors RF level and % modulation. Wide range coverage provided in 6 bands, 100 kHz to 216 MHz; completely shielded RF output with continuously variable, monitored attenuation calibrated to less than 1 μV (on fundamentals to 54 MHz); built-in crystal calibration for assured frequency accuracy; easy-setting, 2-color 5″ vernier dial with anti-backlash 12:1 gear ratio. D'Arsonval 200 μA meter; with RF cable and 3-wire line cord. **Power Required:** 6 watts, 105–125 VAC, 50/60 Hz. **Size:** 12¾″ w. x 8″ d. x 7¼″ h. Shipping Weight, 16 lbs.

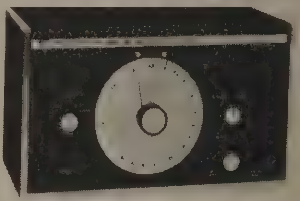
**B&K-Precision Model E200D RF Generator**—Net. . . . **$189.95**

## NEW MODEL 747 100% Gm DYNAMIC TUBE TESTER

Tests 99% of all tubes between the high-speed Jet-Check section and the versatile Programmed section. Both sections test for dynamic mutual conductance. Jet-Check section has 21 pre-wired sockets for testing vast majority of TV-radio tubes in use. Only two settings required. Less popular types are tested in Programmed section. New tubes that cannot be tested in high-speed jet-Check section can be tested here with new tube data provided. One reset lever resets all switches at once. **Shorts and Leakage:** Leakage paths up to 1 megohm will light shorts lamp; meter detects leakage current as low as 0.5 μamp. **Grid Emission:** Checks for gas, grid emission and grid-to-cathode leakage (up to 100 megohms). **Life Test:** Life expectancy test reduces call-backs. **Multi-Section Tubes:** Each section fully tested separately. Dynamic test for voltage regulators, separates good from bad VR's. Patented automatic line voltage compensation. **Power Required:** 105–125 VAC, 60 Hz. **Size:** 20½″ w. x 11½″ d. x 5$\frac{5}{16}$″ h. Shpg. Wt., 12 lbs.

**B&K-Precision Model 747 Dynamic Tube Tester**—Top portion of attache carrying case is not pictured; contains tube charts and power cord storage space. Net Each. . . . . . . . . . . . . . . . **$249.95**

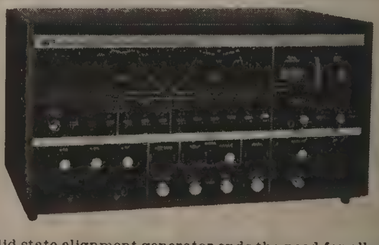
## MODEL E310B SINE/SQUARE WAVE GENERATOR



Improved version of the sine/square wave generator that has been the industry standard for many years. All solid state circuitry includes FET oscillator, all silicon transistors and zener-regulated power supply. Fully shielded, there is no spill-over to other equipment. Highly accurate, low level, calibrated output is very useful in making stage gain checks on amplifiers. Low distortion sine wave output is ideal for testing response of audio amplifiers, modulating RF generators, etc. Extremely fast square wave rise time (less than 100 nsec) is perfect for rapid evaluation of overall performance of amplifiers as well as checking such characteristics as response, phase distortion, frequency distortion, high and low frequency boost or attenuation. Model E310B is also used to evaluate 'scope response, calibrate 'scope vertical attenuator, synchronize pulse generators, and as an ultrasonic signal source. Extended ranges are: Sine wave, 20 Hz to 2 MHz; square wave, 20 Hz to 200 kHz. Constant voltage output provided over each band and band-to-band. **Power Required:** 15 watts, 105–125 VAC, 50/60 Hz; comes with 3-wire line cord. **Size:** 12¾″ w. x 8″ d. x 7¼″ h. Shipping Weight, 11 lbs.

**B&K-Precision Model E310B Sine/Square Wave Generator**—
Net Each. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$119.95**

## MODEL 415 SWEEP/MARKER GENERATOR



Fully solid state alignment generator ends the need for all auxiliary equipment except a VTVM and 'scope. Greatly simplifies and speeds up alignment of TV circuits; ideal also for set production lines as well as servicing applications. Outputs include video sweep, IF sweep, modulated and unomdulated markers, Channels 4 and 10 sweeps, 10.7 MHz sweep. Post-injected IF and RF markers are crystal controlled. Electronic sweep insures linearity and reliability. Visual reproduction of idealized alignment curves are provided on front panel with lighted markers for 'scope waveform reference. Three self-contained, reversible polarity, bias supplies may be used with tube or transistor circuits. Marker Tilt and Marker Amplitude controls permit easy identification of marker position. **Power Required:** 105–125 VAC, 60 Hz. **Size:** 17⅝″ w. x 10⅝″ d. x 9″ h. Shpg. Wt., 25 lbs.

**B&K-Precision Model 415 Sweep/Marker Generator**—With all cables, leads and demodulator probe. Net Each. . . . . .**$399.95**

# B&K -PRECISION PROFESSIONAL TEST EQUIPMENT

## MODEL 1077B TELEVISION ANALYST

### FOR PRODUCTION LINES, CATV AND CCTV

ere is the fastest, simplest way to test every stage of monochrome r color TV receivers, from antenna input terminals to CRT grid. t's also the most efficient instrument for making checks on roduction lines in CATV and CCTV applications. Newly de- gned solid state sweep drive permits checking all sweep circuits, cluding transistorized ones. Generates all signals normally trans- itted by a TV station, plus those produced within a TV chassis, r point-by-point checkings: UHF, VFH, IF signals; positive/ egative composite video signals. Also generates: Keyed color bar attern which modulates the RF output; color rainbow signal; hite dot pattern; cross hatch pattern; standard test pattern; .5 MHz FM-modulated sound channel; 1 kHz tone; vertical and orizontal grid drive signals; vertical and horizontal plate drive ignals; vertical yoke test signal; high level keying pulse; and, ompositive sync pulse signals, positive/negative. Will display ictures on the screens of TV receivers for advertising or other urposes. Can be used as a transmitter for video paging at con- entions, hospitals and other institutions. Will reproduce any ″ x 4″ positive transparency as a picture source. Checks band- idth, resolution, shading and contrast in TV sets; checks per- rmance of community and master TV antenna systems. **IF utput:** 20–48 MHz; 0–70,000 μV min. at 75 ohms. **VHF Output:** hannels 2–6, 0–12,000 μV min. at 75 ohms; Channels 7–13, –6,000 μV at 75 ohms. **UHF Output:** Channels 14–83, 0–1,000 μV in. at 75 ohms. **Power Required:** 105–125 VAC, 60 Hz. **Size:** 18″ w. x 12″ d. x 9¾″ h. Shipping Weight, 31 lbs.

**B&K-Precision Model 1077B Television Analyst**—Complete with all cables and pattern slides. Net Each. . . . . . . . . . . . . . **$399.95**

## MODEL 162 FET/TRANSISTOR TESTER

### BATTERY-POWERED PORTABLE

ccurate, fastest instrument for testing transistors in and out of ircuit. Features high current capability: Up to 1 amp. Special alancing circuit permits balancing circuit impedance as low as ohms for in-circuit Beta test. Three transistor leakage tests: cbo, $I_{ceo}$ and $I_{ces}$. Finds failures missed by other transistor testers, specially "avalanche mode" breakdowns. Tests diodes, uni- unctions, SCR's and Triacs. Provides correct Beta reading from to 5000 and Gm from 0–50,000 micromhos. Front panel sockets rovided for conventional (bipolar) and FET's. Checks gates and 2 of dual-gate FET's separately. Checks $I_{DSS}$, $I_{GSS}$. Program elf-contained instruction guide provides data on Go/No-Go con- itions for Beta and leakage; eliminates bulky transistor reference anuals. Built-in, highly sensitive 4½″ meter. Comes complete ith carrying handle, leads and batteries. **Size:** 9″ w. x 4″ d. x ¼″ h. Shipping Weight, 7 lbs.

**&K-Precision Model 162 Transistor/FET Tester**—
et Each. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$99.95**

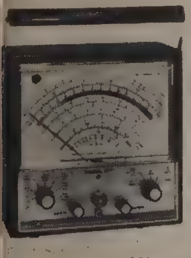
## MODEL FP-3 DYNAFLEX 3-POINT PROBE

ersatile probe provides fast, 1-handed, in-circuit testing. Permits ositive connection to as many as 3 PC board terminals at once. utomatically adjusts to any spacing, 1/32″ to 5/8″. Weight, 8 oz.

**&K-Precision Model FP-3 Dynaflex Probe**—Net Each. . **$9.95**

## MODEL 177 VTVM

### WITH 0.5 VDC FULL-SCALE RANGE

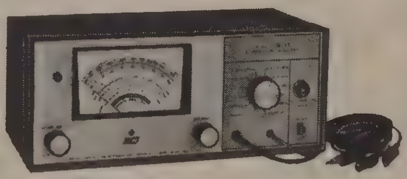


Popular VTVM features a built-in DC supply for resistance ranges—no ohmmeter battery required. Versatile, rugged "old-standby" instrument has input resistance of 11 megohms. Special 0.5 V scale permits solid state circuit measurements. Separate peak-to-peak and RMS scales; special scales on low AC ranges; special dB scale for amplifier gain measurements; zero-center scale for FM alignments. Easy-to-read 7″ mirrored scale offers igh accuracy; 1% precision resistors provided in all critical ircuits. Single, high-impact Cycolac® probe is provided with eavy-duty switch. **Accuracy:** 3% on DC; 5% on AC. **Meter:** 00 μA. **Response:** ±1 dB, 40 Hz to 3 MHz (600-ohm source, -volt range). **DC Volts:** 0–0.5–1.5–5–15–50–150–500–1500 volts, ositive and negative. **AC Volts:** 0–1.5–5–15–50–150–500–1500 olts rms; 0–4–14–40–140–400–1400–4000 volts peak-to-peak. **esistance:** 0–1K–10K–100K ohms; 0–1–10–100–1000 megohms. id-scale: 10, 100, 1K, 10K, 100K ohms; 1, 10 megohms. **Power equired:** 117 VAC, 50/60 Hz. **Size:** 7¼″ w. x 3⅝″ d. x 7⅛″ h. hipping Weight, 8 lbs.

**&K-Precision Model 177 VTVM**—Net Each. . . . . . . . . **$89.95**

Reg. Borg-Warner trademark.

## MODEL 801 IN-CIRCUIT/OUT-OF-CIRCUIT CAPACITOR ANALYST



For quick, accurate capacitor testing, both in-circuit and out-of-circuit. Tests all the following capacitor types: Foil, mica, ceramic, electrolytic, general purpose and temperature-compensating. Checks for leakage, opens, shorts and capacitance. Electrolytics, tested out-of-circuit only, are checked with a circuit that measures "effective capacitance". Unit is charged and discharged under load. The actual power transferred to the load is measured and the capacitance is read directly on the meter scale—no multiplication or interpretation of dial settings is necessary. Open capacitors with values as low as 25 pF are easily located with the sensitive high-frequency signal and resonant ¼-wave transmission line method. Comes complete with all cables. **Power Required:** 105–125 VAC, 60 Hz. **Size:** 12¾″ w. x 6¾″ d. x 5½″ h. Shpg. Wt., 11 lbs.

**B&K-Precision Model 801 Capacitor Analyst**—Net. . . **$119.95**

## NEW MODEL 179 FET-VOM

### 55 RANGES INCLUDING AC CURRENT

The Model 179 is the most recent B&K VOM and is loaded with features that make it a candidate for the "best buy" in test equipment. Features 100% FET solid state circuitry that offers drift-free accuracy, wideband AC response . . . plus all the versatility of a standard VOM. Input impedance, 10 megohms. Input is fully protected from overvoltage transients. Internal voltage regulation assures constant voltages—a must for stable, accurate readings. Easy-to-read 4½″ meter has 80 μA movement. Handy, built-in battery check. Total of 55 ranges include: **DC Volts:** 0–1000 VDC in 8 ranges, plus or minus. Accuracy, 2% typical; 3% max. **DC Current:** 0–300 mA in 8 ranges. Accuracy, 2% typical; 3% max. **AC Volts:** 0–1000 rms in 8 ranges; to 2800 V peak-to-peak. **dBm:** −25.5 to +62 dB in 8 ranges. Accuracy, 3% typical; 4% max. **AC Current:** 0–300 mA rms in 8 ranges. Accuracy, 3% typical; 4% max. Internal voltage drop, 300 mV on all current ranges. **Resistance:** Seven ranges, 10 ohms center scale on Rx1 range. **Size:** 5″ w. x 4⅜″ d. x 7″ h. Case has stay-put handle (stays in position). Shipping Weight, 3½ lbs.

**B&K-Precision Model 179 FET-VOM**—With batteries.
Net Each. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$74.95**

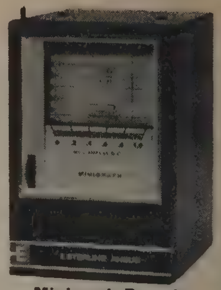
ESTERLINE

# Esterline Angus

## MINIGRAPH RECORDERS
## DIGITAL MULTIMETERS

### THE GO-EVERYWHERE, DO-EVERYTHING MINIGRAPH RECORDER

Minigraph is a miniature recorder of unsurpassed durability and versatility. Designed for use in laboratory, industry, aerospace or education. **Inkless Recording:** A special stylus is firmly positioned against pressure sensitive paper by an impact plate. A cammed assembly activates the impact plate, which, in turn, causes the stylus to write a record consisting of dots. Chart speed varies from ⅛″ to 480″ per hour depending on the gear train and motor drive used. Chart can be manually advanced by a thumbwheel knob on the front of recorder. All charts have 2⅛″ active width with space for an event marker to record in the right margin. An access window exposes the chart for writing notations. **Temperature Recording:** Records temperature between 0–500° F to 0–2000° F or between 0–300° C to 0–1000° C through the use of simple thermocouple probes to be ordered separately. **Taut Band Measurement:** Gives friction-free movement and much more resistant to shock and vibration than pivot or spring movements. Accuracy, ±2%. Full scale response, 1 sec. **OEM Convenience:** Compact size and low cost makes it easy to add recording ability to other equipment. Minigraph recorder nameplate snaps out for private labelling and also conceals zero adjust. **Hook-On Current Transformer:** Two optional hook-on transformers for AC measurements: One for 60 Hz; and another for 50 Hz. Rated at 750 volts and can be used to 1000 Hz. Convenient range dial provides six AC ranges from 5 to 250 amps. Diecast aluminum case has 3M Nextel blue body and charcoal door in a suede-like finish which is impervious to damage. **Size:** 3⅝″ w. x 4⅜″ d. x 5⅝″ h. Wt., approx. 5 lbs. Ordering minigraph is very simple and detailed ordering information is given below, to select a range and speed for any requirement.



Minigraph Recorder

### HOW TO ORDER

**M04** — **A01** — **A4** — **000**

Ⓐ Ⓑ Ⓒ Ⓓ

**M** indicates Minigraph; **04** indicates 0–1 mADC range (see below); **A01** designates 2 rpm, 3 watts, 120 VAC, 60 Hz chart drive motor (see below); **A4** describes a gear train providing 1″/hr. chart speed. The final suffix **000**, in this example, indicates that no other options were chosen.

### Ⓐ RANGES

| Minigraph Type | Range | Net Ea. Base Price* |
|---|---|---|
| M01* | 0–10 μADC, 5700 ohms armature resistance | $130.50 |
| M28 | 5–0–5 μADC, 5700 ohms armature resistance | 135.50 |
| M02* | 0–50 μADC, 5400 ohms armature resistance | 114.50 |
| M03* | 0–100 μADC, 1000 ohms armature resistance | 109.50 |
| M27 | 0.5–0–0.5 mADC, 100 ohms armature resis. | 104.50 |
| M04* | 0–1 mADC, 100 ohms armature resistance | 99.50 |
| M05 | 0–5 mADC | 104.50 |
| M06 | 0–10 mADC | 104.50 |
| M07 | 0–50 mADC | 104.50 |
| M08 | 0–100 mADC | 104.50 |
| M44 | 1–5 mADC, 8 ohms armature resistance | 112.00 |
| M45 | 4–20 mADC, 3 ohms armature resistance | 117.00 |
| M46 | 10–50 mADC, 1 ohm armature resistance | 117.00 |
| M25 | 0–100 mVDC, 10 megohms input impedance | 175.00 |
| M09 | 0–1 VDC, 1000 ohms/volt | 104.50 |
| M24 | 0–1 VDC, 10,000 ohms/volt | 114.50 |
| M10 | 0–5 VDC | 104.50 |
| M11 | 0–10 VDC | 104.50 |
| M12 | 0–50 VDC | 104.50 |
| M13 | 0–100 VDC | 104.50 |
| M23 | 0–250 VDC | 104.50 |
| M14 | 0–500 VDC | 108.50 |
| M15* | 0–5/10/25/50/100/250 A, 60 Hz† | 160.00 |
| M19 | 0–5/10/25/50/100/250 A, 50 Hz† | 160.00 |
| M16* | 0–150 VAC | 110.00 |
| M17 | 0–300 VAC | 110.00 |
| M18 | 0–600 VAC | 110.00 |
| M31 | 0–500° F, includes Type J probe | 150.00 |
| M32 | 0–600° F, includes Type J probe | 150.00 |
| M33 | 0–800° F, includes Type J probe | 150.00 |
| M34 | 0–300° C, includes Type J probe | 150.00 |
| M35 | 0–400° C, includes Type J probe | 150.00 |
| M36 | 0–1000° F, includes Type K probe | 150.00 |
| M37 | 0–1200° F, includes Type K probe | 150.00 |
| M38 | 0–1600° F, includes Type K probe | 150.00 |
| M39 | 0–2000° F, includes Type K probe | 150.00 |
| M40 | 0–500° C, includes Type K probe | 150.00 |
| M41 | 0–600° C, includes Type K probe | 150.00 |
| M42 | 0–800° C, includes Type K probe | 150.00 |
| M43 | 0–1000° C, includes Type K probe | 150.00 |

*Stock item. †Includes hook-on transformer. ‡To calculate chart duration in hours, divide 744 by chart speed; based on 62 ft. of usable chart. §To be used with hook-on ammeter. *Base price includes 1 chart to match range selected, 1 motor (see Chart Drive motor table) and 1 gear train (see gear train table); comes in portable case with feet and flush mounting hardware. •Spare gear trains add **$5.00** for each. ▲Six charts per box.

### Ⓑ CHART DRIVE MOTOR

| Minigraph 1st Suffix | Description | Add to Base Price |
|---|---|---|
| -A01* | 2 rpm, 3 watts, 120 VAC, 60 Hz | * |
| -A02 | 2 rpm, 3 watts, 120 VAC, 50 Hz | * |
| -A03 | 2 rpm, 3 watts, 240 VAC, 50 Hz | * |
| -A07 | 2 rpm, 6 VDC, 24 mA | $35.00 |
| -A06 | 2 rpm, 12 VDC, 20 mA | 35.00 |
| -A08 | 2 rpm, 24 VDC, 10 mA | 40.00 |
| -A09 | 4 rpm, 3 watts, 120 VAC, 60 Hz | 5.00 |
| -A04 | 8 rpm, 3 watts, 120 VAC, 60 Hz | 10.00 |
| -A05 | 10 rpm, 3 watts, 120 VAC, 60 Hz | 10.00 |
| -A10 | 16 rpm, 3 watts, 120 VAC, 60 Hz | 10.00 |

### Ⓒ GEAR TRAINS

| Minigraph 2nd Suffix*• | Chart Speed In./Hr. with Motor Speed‡ | | | | | Dot Density per In. |
|---|---|---|---|---|---|---|
| | 2 rpm | 4 rpm | 8 rpm | 10 rpm | 16 rpm | |
| -A1* | ⅛ | ¼ | ½ | ⅝ | 1 | 14,400 |
| -A2* | ¼ | ½ | 1 | 1¼ | 2 | 7,200 |
| -A3* | ½ | 1 | 2 | 2½ | 4 | 3,600 |
| -A4* | 1 | 2 | 4 | 5 | 8 | 1,800 |
| -A5* | 2 | 4 | 8 | 10 | 16 | 900 |
| -A6* | 3 | 6 | 12 | 15 | 24 | 600 |
| -A7* | 4 | 8 | 16 | 20 | 32 | 450 |
| -A8* | 6 | 12 | 24 | 30 | 48 | 300 |
| -A9* | 10 | 20 | 40 | 50 | 80 | 180 |
| -B1* | 12 | 24 | 48 | 60 | 96 | 150 |
| -B2* | 15 | 30 | 60 | 75 | 120 | 120 |
| -B3* | 30 | 60 | 120 | 150 | 240 | 60 |
| -B4* | 45 | 90 | 180 | 225 | 360 | 40 |
| -B5* | 60 | 120 | 240 | 300 | 480 | 30 |

### Ⓓ OPTIONS

| Minigraph 3rd Suffix | Description | Add to Base Price |
|---|---|---|
| -000* | No option desired | ............ |
| -001 | 6 VDC event marker | $20.00 |
| -002 | 12 VDC event marker | 20.00 |
| -003 | 24 VDC event marker | 20.00 |
| -004 | 120 VAC, 50/60 Hz event marker | 30.00 |
| -005 | 240 VAC, 50/60 Hz event marker | 30.00 |

### REPLACEMENT CHARTS

| Minigraph Number | Ruling | Lgth. Ft. | Net per Box▲, Lots of | | | |
|---|---|---|---|---|---|---|
| | | | 1-2 | 3-5 | 6-16 | 17 Up |
| 69163* | U-8-40 | 63 | $13.50 | $12.90 | $12.00 | $11.40 |
| 69165* | U-12-60 | 63 | 13.50 | 12.90 | 12.00 | 11.40 |
| 69176* | U-10-50 | 63 | 13.50 | 12.90 | 12.00 | 11.40 |
| 69177* | U-15-75 | 63 | 13.50 | 12.90 | 12.00 | 11.40 |
| 69195* | 10-47§ | 63 | 13.50 | 12.90 | 12.00 | 11.40 |

### THERMOCOUPLE PROBES

| Probe No. | Description | Net Each |
|---|---|---|
| 69201-1 | Iron-Constantan Type J | $20.00 |
| 69201-2 | Chromel-Alumel Type K | 25.00 |

### MODEL DM 3550 DIGITAL MULTIMETER

DM 3550

Compact digital multimeter with 21 switch-selectable ranges for measuring DC and AC voltages and current, and resistance. Solid state construction with silicon transistors. diodes and integrated circuits. Other features include: Linear readings, no crowding on AC or resistance scales; accurate readings to 10% over-range; non-blinking panel display; damage proof as cannot be harmed by overload on any range; automatically positioned decimal point; high sensitivity, measures in 10 mV and 10 μA steps on lowest voltage and current ranges. **DC Volts:** 0–2–20–200–1000 V with 1% accuracy; input impedance, 1 megohm. **AC Volts:** 0–2–20–200–700 V rms (maximum limit 1000 V peak-to-peak) with 1.5% accuracy; input impedance, 1 megohm; frequency range, 25 Hz to 10 kHz. **DC Current:** 0–2–20–200–2000 mA with 1.5% accuracy; voltage drop, 2 V. **AC Current:** 0–2–20–200–2000 mA with 1.5% accuracy; voltage drop, 2 V; frequency range, 25 Hz to 10 kHz. **Resistance:** 0–200 ohms (10 mA max. circuit current), 0–2K (1 mA max. circuit current), 0–20K (100 μA max. circuit current), 0–200K (10 μA max. circuit current), 0–2000K (1 μA max. circuit current), with 2% accuracy; +15 V max. open circuit voltage. **Resolution:** Volts, 10 mV; current, 10 μA; resistance, 1 ohm. **Display:** Three digit numeric. **Sample Rate:** Approx. 60 per second. **Power Required:** 7 watts, 120 VAC, 50/60 Hz. **Size:** 6⅞″ w. x 2⅜″ d. x 5¼″ h. Wt., 2½ lbs.

**Esterline Angus Model DM 3550 Digital Multimeter**—High impact plastic case with carrying handle. Leads furnished. Net Each .......... **$195.50**

**Carrying Case**—Vinyl-covered case with removable cover. Net Each .......... **14.50**

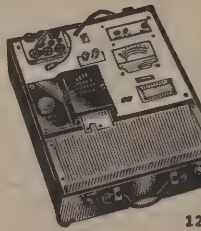
# HICKOK Industrial Test Equipment

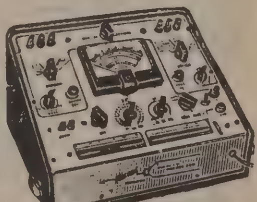
752A

6000A

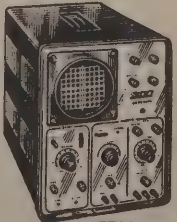
860

539C


123R


870

890A


770A

288AX

## MODEL 752A INDUSTRIAL, COMMUNICATIONS PORTABLE TUBE TESTER

Designed for use in maintaining communications equipment and industrial electronic apparatus. Voltage regulator test circuit tests VR tubes to handbook specifications (including firing point, regulating voltage and current range). Tests all the latest tubes: Compactrons, novars, 5- and 7-pin nuvistors, 10-pin types. All tests are complete—no paralleled elements. Handy-pushbutton test for balanced or matched characteristics on dual-section tubes. Covers 1500 to 30,000 μmhos in 5 ranges. Reads interelement leakage directly on meter (sensitivity to 10 megohms). Illuminated meter, roll chart, socket savers and pin straighteners. Black leatherette case with lead compartment and detachable lid; 18⅜″ x 16¾″ x 7½″ d. Shipping Weight, 27 lbs.

**Model 752A Industrial and Communications Tube Tester**—Net Each................**$475.00**

## MODEL 6000A HIGH SPEED PORTABLE TUBE, TRANSISTOR, DIODE TESTER

Test all the latest tubes, including compactrons, novars, 5- and 7-pin nuvistors, 10-pin types. Tests on new types are complete and accurate: No paralleled elements. Sensitive, instantaneous interelement leakage and shorts test. Three ranges cover 3000 to 15,000 μmhos. Also tests transistors and diodes. Supplied complete with test leads. Red leatherette case with detachable lid; 16¾″ x 11¾″ x 7½″ d. Shipping Weight, 21 lbs.

**Model 6000A Portable Tube, Transistor and Diode Tester**—Net Each................**$297.50**

## MODEL 860 "INJECTO-TRACER" SIGNAL TRACER

Solid state trouble shooter for all AM and FM radios, auto radios and TV sound circuits. Like standard tracers, injects the test signal; but, also picks up, amplifies and detects signals through a tunable amplifier for complete tracing. Covers 240 – 1750 kHz, plus 10.7 MHz IF. Regulated, variable high current power supply to check distortion, oscillator drop-out, etc. Shpg. Wt., 9½ lbs.

**Model 860 "Injecto-Tracer"**—Net Each..........................................**$149.50**

## MODEL 539C INDUSTRIAL AND LABORATORY TUBE TESTER

Portable unit for testing all the latest tubes, including compactrons, novars, 5- and 7-pin nuvistors, and 10-pin types. Tests on new types are complete and accurate: No paralleled elements. Also tests VR tubes and low power thyratrons, "4-digit" types. Voltage regulator tubes are evaluated under actual operating conditions. Includes provision for separate monitoring of plate current. Panel terminals provide access to grid, plate, cathode and heater circuits for direct measurement of voltages and current. Six ranges cover 600 to 60,000 μmhos. Line voltage and grid voltage are metered. Dual leakage readings, either directly on meter or by neon short indicator; sensitivity to 50 megohms. Black leatherette case with lead compartment and detachable lid; 16¾″ x 18⅜″ x 7½″ d. Shipping Weight, 35 lbs.

**Model 539C Tube Tester**—Complete with socket savers. Net Each....................**$625.00**

## MODEL 123R CARDMATIC® AUTOMATIC TUBE TESTER

Laboratory accuracy in a revolutionary card type tube tester. The most accurate portable tube tester available. Code cards make all test settings—test any receiving tube with highest accuracy. All indications are automatic and instantaneous by use of two pushbuttons. Ideal for production line use. Permits special engineering tests to meet any exact tube specifications for special circuit use. **Ranges:** $G_m$ 500–26,000 μmhos; current, 100 μA to 510 mA. 55 watts, 105–125 V, 50–60 Hz. In black leatherette carrying case, 19½″ x 16½″ x 9¼″ d. Shipping Weight, 57 lbs. Includes 500 selected cards, pin straighteners and socket savers.

**Model 123R Cardmatic Tube Tester**—Net Each..........................................**$795.00**
**Model 123R Cardmatic Tube Tester**—Less cards. Shpg. Wt., 52 lbs. Net Each........ **745.00**

## MODEL 870 DYNAMIC BETA TRANSISTOR TESTER

Variable collector voltage and collector current permit tests according to manufacturer's specifications. Tests switching transistors; measures large signal DC beta on power transistors, small signal AC beta on low and medium power transistors. Collector test current variable up to two amperes permits beta measurement on power transistors rated five amperes or more. **Ranges** ($I_{cbo}$): 0–100 μA, 0–1 mA, 0–10 mA. **Beta Ranges:** 0–100, 0–300. Requires 40 watts, 115 VAC, 60 Hz. Black leatherette case 14$\frac{9}{16}$″ x 11¾″ x 7⅞″. Shipping Weight, 22 lbs.

**Model 870 Portable Dynamic Beta Transistor Tester**—Complete with roll chart. Net Ea..**$425.00**

## MODEL 890A DYNAMIC BETA® IN-CIRCUIT TRANSISTOR TESTER

Utilizes unique new test circuit to measure AC beta in or out of circuit with 5% accuracy. Measures these in-circuit parameters: AC beta, $I_c$, $R_{in}$ (transistor input impedance), impedance ohms (base-emitter circuit impedance). Measures AC beta, $I_c$, $R_{in}$ and $I_{cbo}$ out of circuit. Portable, self-contained and fully transistorized. Battery operated. **Size:** 10¾″ x 9″ x 6½″. Shipping Weight, 8 lbs.

**Model 890A Transistor Tester**—Complete with test leads. Net Each..................**$235.00**

## MODEL 770A INDUSTRIAL AND GENERAL PURPOSE 5-INCH OSCILLOSCOPE

Wide-band industrial and general purpose oscilloscope. Built-in square-wave calibrator. Calibrated 4 MHz DC vertical amplifier with 8-step and vernier attenuator. Features: 18 direct reading, calibrated sweep rates from 0.5 sec/div. to 1 μsec/div.; driven or automatic sweep modes; flat-faced, post-accelerated CRT; 5X sweep magnifier; and illuminated, calibrated screen. Size, 11″ x 13¾″ x 17½″. Shipping Weight, 57 lbs.

**Model 770A Oscilloscope**—Net Each..........................................................**$475.00**

## MODEL 677 WIDE BAND 5-INCH OSCILLOSCOPE

AC response, 5 Hz to 4.5 MHz within 3 dB. Pre-set horizontal and vertical sweep positions. Sharp, bright trace with full astigmatic correction; illuminated, calibrated screen. Vertical sensitivity, 40 mV/in. rms; rise time, 0.08 μsec or better. Horizontal response, 5 Hz to 350 kHz within 3 dB; high gain for detailed observation of TV sync waveforms, including color burst. Sweep generator covers 10 Hz to 500 kHz, with pre-set frequencies of 30 Hz to 7875 Hz. **Size:** 9½″ w. x 18½″ d. x 14″ h. Shipping Weight, 36 lbs.

**Model 677 Wide Band Oscilloscope**—With instruction book and test leads. Net Each. .**$269.50**

## MODEL 288AX AM-FM SWEEP AND MARKER GENERATOR

Complete alignment instrument provides signal voltages for servicing AM, FM and TV receivers, plus crystal-controlled 100 kHz and 1000 kHz oscillator provides accurate frequency standard. Eight bands from 35 kHz to 160 MHz FM; 110 kHz to 110 MHz AM; 35–125 kHz ultrasonic band. Built-in decibel meter with range of −10 to +38 dB. External or internal modulation on both AM and FM ranges; internal FM sweep width continuously variable up to 450 kHz; choice of 60 or 400 Hz sweep rate. Audio output, 20–15,000 Hz variable, 400 Hz fixed. **Size:** 16″ w. x 7″ d. x 13″ h. Shpg. Wt., 33 lbs.

**Model 288AX Sweep and Marker Generator**—Net Each..........................................**$415.00**

# Simpson New Digital Systems

INSTRUMENTS THAT STAY ACCURATE

Model 2700

## MODEL 2700 DIGITAL SYSTEM

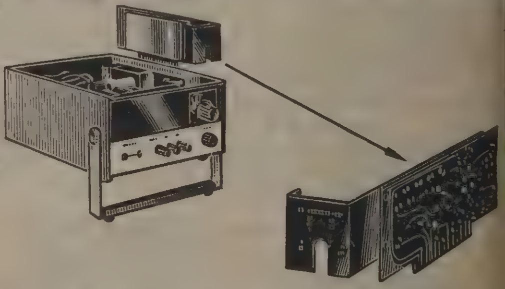
Compact digital voltmeter, built with dependable integrat circuits. Has 4 DC voltage ranges for .0001–999.9 volt measurements. Clear readout is provided by cold gas glow tubes. Fou full-time digits, plus 10% linear overrange. Polarity selectio and indication is fully automatic. Accuracy of readouts withi ±0.05%, ±1 digit. Pushbutton knob on front panel provide instant calibration checks. Convenient fold-down handle hold instrument securely at an easy-to-read angle. Display tim adjustable from 5 new readouts-per-minute, to hold. **Ranges:** .0001–.9999–9.999–99.99–999.9 volts DC. **Input Impedance:** 10.2 megohms on all ranges. **Response Time:** 5 sec max. when switching from 0 to full range value. **Noise Rejection:** (common mode with 1K ohm unbalanced in either lead) 120 dB, DC; 90 dB, 60 Hz, AC. **Noise Rejection:** (common mode) 60 dB, 60 Hz, AC. **Temperature Influence:** Less than .05% change for 20° C change in temperature. **Readout Life Rating:** 200,000 hours. **Power Required:** 11.5 watts, 115/230 VAC ±10%, 50–60 Hz. **Size:** 8¼" w. x 11" d. x 4" h. Weight, 8 lbs.

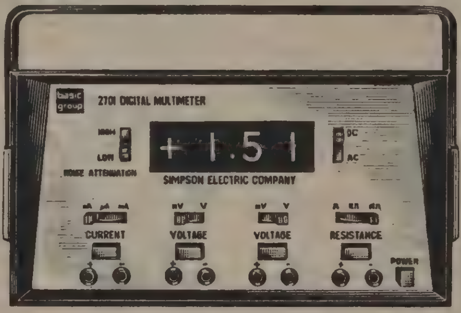
**Simpson Model 2700 Digital System**—Complete with DC voltage range module, test leads and operator's manual. Net...**$615.00**

## PLUG-IN ADAPTER MODULES FOR 2700

Range modules are designed for easy plug-in through top of Model 2700. Its system-engineered design permits the use of simpler, lower cost range modules having a minimum of circuit duplication. Each module clearly indicates the range in use via its own range plate. As listed above, Model 2700 is supplied with the DC voltage range module. Module for AC current will be available soon as accessory item. **Full Details And Price On Request, When Available.**

| Simpson Model | Range | Net Each |
|---|---|---|
| 22901 | Resistance: 1K, 10K, 100K, 10 megohms | $100.00 |
| 22903 | DC Current: 1, 10, 100 mA; 1 A | 100.00 |
| 22902 | AC Volts: 1, 10, 100, 1000 V rms | 150.00 |





Model 2701

## MODEL 2701 DIGITAL VOLT-OHM-MICROAMMETER

Complete digital VOM. Requires no adapters or plug-ins. Pushbutton selection of voltage, current and resistance. Three full time digits with automatic ranging over three decimal places. All solid state construction. **DC/AC Volts:** 0.01–9.99–99.9–999 mV; 9.99–99.9–600 V. **DC/AC Current:** 100–999 nA; 1.00–9.99–99.9–999 μA; 1.00–9.99–99.9–999 mA. **Resistance:** 10.0–99.9–999–9.99K–99.9K–999K ohms; 1.0–9.99–99.9–999 megohms. **Accuracy:** DC volts and current, ±1.0% of reading, ±0.2% of FS. AC volts and current, ±1.5% of reading, ±0.2% of FS. Resistance: ±0.5% of reading 10–999K ohms, ±1.0% 1.00–9.99 megohms, ±2.5% to 99.9 megohms, ±10% to 999 megohms; ±0.2% of FS. **Operating Temperature:** −10° C to +35° C. **Response Time:** Without filter, 1 sec; with filter, 4 sec. **Power Required:** 60 watts, 105–130 VAC, 60 Hz. **Size:** 10" w. x 10" d. x 5½" h. Weight, approx. 14.3 lbs.

**Simpson Model 2701 Digital VOM**—Complete with leads and operator's manual. Net Each..........................**$835.00**

## DIGITAL ELECTRONIC COUNTERS

Solid state, integrated circuits digital counters measure average frequency, (up to 32 MHz), time interval, period, and frequency ratio, plus totalizing pulses over a selected time period. Front panel switch allows a fast, complete, and automatic check of the counter's logic circuits on front panel. Seven time bases are switch selected. The internal clock is crystal controlled for accuracy. Overrange, gate time and decimal point indications are fully automatic. Readouts provided by cold gas glow tubes rated at 200,000 hour life. **Accuracy:** ±0.001%, ±1 digit, over temperature range of +15° C to +55° C. **Frequency:** 5 Hz–32 MHz. **Period:** 100 μsec to 0.2 seconds. **Time Bases:** 0.00001, 0.0001, 0.001, 0.01, 0.1, 1.0, 10.0 secs. **Display Time:** From 0.2 sec to hold. **Input Impedance:** Channel A, 1 meg shunted by 30 pF; Channel B, 500K shunted by 30 pF. **Input Sensitivity:** Channel A, 0.1 V rms max., 5 Hz–32 MHz; Channel B, 0.1 V rms, 200 Hz–2 MHz, 0.3 V rms, 5–200 Hz. **Max. Input Voltage:** 230 V rms on 0.1–1.0 V range. **Power Required:** Approx. 20 watts, 115/230 VAC, ±10%, 50–60 Hz. **Size:** 8¼" w. x 11" d. x 4" h. Weight, 8 lbs.

| | Model 2725A | Model 2726 |
|---|---|---|
| Frequency Ratio | 0.001 to 1.99999 x $10^5$ | 0.001 to 1.999999 x $10^6$ |
| Time Interval | 100 μsec to 1.99999 x $10^5$ | 100 μsec to 1.999999 x $10^6$ |
| Totalization | 0 to 1.99999 x $10^5$ counts | 0 to 1.999999 x $10^6$ counts |
| No. of full time digits | 5 | 6 |
| Net Each | $525.00 | $575.00 |

Model 2726

Model 2725A

## ACCESSORIES FOR SERIES 2700 MODELS

| Simpson Model | Description | Net Each |
|---|---|---|
| 22915 | Rack mounting kit with panel, 5¼" x 19" | $20.00 |
| 22925 | As above, but dual rack mounting kit | 25.00 |
| 6531 | 100 amps DC shunt for Model 2701 | 15.00 |
| 0238 | Replacement probe for Models 2724, 2725 | 7.85 |
| 7511 | Replacement leads for Models 2700, 2701 | 3.25 |

# Simpson Test Equipment

INSTRUMENTS THAT STAY ACCURATE

## MODEL 2785 R-L-C BRIDGE

Precision multi-purpose bridge for measuring capacitance, inductance, resistance and "Q". Null indications are accurate and no critical adjustments needed. Built-in 1 kHz oscillator; input jack provided for external oscillator to allow measurements at other frequencies. Wide-range versatile instrument with long slide-rule dial and sensitive galvanometer. **Accuracy:** ±1%, resistance and capacitance ranges except for 1 ohm, 10 megohms, 1000 μF; ±1.5%, inductance ranges except for 10 μH, 100 H; ±5%, Tan-d and Q measurement ranges. **Resistance:** 0.05–1, 0.5–10, 5–100, 50–1K, 500–10K, 5K–100K, 50K–1 meg, 500K–10 megohms. **Capacitance:** 5 pF–100 pF; 50 pF–1 nF; 500 pF–10 nF; 5 nF–100 nF; 50 nF–1 μF; 500 nF–10 μF; 5 μF–100 μF; 50 μF–1000 μF. **Inductance:** 0.5 μH–10 μH; 5 μH–100 μH; 50 μH–1 mH; 500 μH–10 mH; 5 mH–100 mH; 50 mH–1 H; 500 mH–10 H; 5 H–100 H. **Tan-d and Q:** Tan-d x 0.01, Tan-d x 1, Q x 1. **Power Required:** Two 9 volt batteries, NEDA No. 1603 or Burgess No. D6 or equivalent. **Size:** 11 13/16" w. x 6 11/16" d. x 8 5/8" h. Weight, 12 lbs. with batteries.

**Simpson Model 2785**—With test leads, batteries and manual. Net Each.............................. **$350.00**

## MODEL 2795 ELECTRONIC MULTIMETER

Advanced design, precision multi-function instrument offers high input impedance, negligible voltage drop and circuit breaker overload protection. Stable, drift-free amplifier eliminates the need for zero adjustments. Adjustments for capacitance and resistance are made at full scale without shortening leads. Power is supplied by internal batteries with an electronic chopper which provides AC needed for capacitance measurements. **Features:** Quick reset, front panel pushbutton; taut band suspension; anti-parallex mirror scale; separate scales for AC/DC voltage and current, resistance, capacitance, temperature and dB measurements. **Accuracy:** ±1% of full-scale AC/DC; ±1.0% of full-scale resistance and capacitance, ±4.0% of reading at mid-scale; ±1% per 10° C from 0–50° C temp. range. **AC/DC Volts:** 0–1–3–10–30–100–300 mV; 0–1–3–10–30–100–300–1000 volts. **AC/DC Current:** 0–1–3–10–30–100–300 μA; 0–1–3–10–30 mA; 0–0.1–0.3–1–3 amps. **Resistance:** 0.2–500 ohms (10 ohms center); 2–5K ohms (100 ohms center); 20–50K ohms (1K ohms center); 0.2K–500K ohms (10K ohms center); 2K–5 megohms (100K ohms center); 20K–50 megohms (1 megohm center). **Capacitance:** 5–2000 μF (100 μF center); 0.5–500 μF (10 μF center); 0.05–50 μF (1 μF center); 5 nF–5 μF (100 nF center); 0.5–500 nF (10 nF center); 0.05–50 nF (1 nF center). **Temperature:** ±18° C from ambient; ±180° C from ambient. **Decibels:** −80 to −58; −80 to −48; −60 to −38; −50 to −28; −40 to −18; −30 to −8; −20 to +42; −10 to +12; −0 to +22; +10 to +32; +20 to +42; +30 to +52; +40 to +62. **Size:** 5.04" w. x 3.94" d. x 8.07" h. Weight, 52.8 oz.

**Simpson Model 2795**—With test leads, batteries and manual. Net Each.............................. **$230.00**

## MODEL 202 ACCU-LOG VOM

The first VOM with consistent accuracy, anywhere on the scale. Special quasi-logarithmic scale gives "percent of reading" accuracy anywhere on the readout scale, yet permits easy zero adjustment with linear portion at the low end. No need to keep readings at the high end of the scale, or worry about "full-scale" accuracy. Other features include: two low power ohmmeter ranges, overload protected taut-band movement, 7" anti-parallax mirror scale. **Accuracy:** ±2% of reading DC; ±3% of reading AC; ±3° of arc on resistance ranges. **Sensitivity:** 20,000 ohms/volt DC, 5000 ohms/volt AC. **AC Volts:** 1–11, 10–110, 30–330 and 100–1100 VAC. **DC Volts:** 0.03–0.33, 0.1–1.1, 1–11, 10–110, 30–330, and 100–1100 VDC. **DC Current:** 0.01–0.11, 0.1–1.1, 1–11, 10–110, and 100–1100 mA. **Resistance:** Rx1K (7000 ohms center scale); Rx10K (70K center); Rx100K (700K center). **Low Power Resistance:** Rx1 (4 ohms center); Rx10 (40 ohms center). **Size:** 7 3/4" w. x 3 3/4" d. x 6 3/4" h.

**Simpson Model 202**—With test leads, batteries and manual. Net Each.............................. **$100.00**

## MODELS 256 AND 257 MULTI-TESTERS

### MODEL 256 MULTI-TESTER

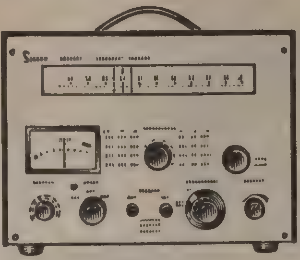
Compact tester has built-in capacitance and high megohm ranges. The high votage necessary is supplied from an external source (line voltage for AC). Overload circuit breaker protects all ranges except 100 volts and higher. Sensitivity of 25,000 ohms/volt DC, 2000 ohms/volt AC. **Accuracy:** ±1.0% DC, ±1.5% AC. **DC Volts:** 0–0.1–0.5–2.5–10–25–100–250–500–1000–5000. **AC Volts:** 0–0.5–2.5–10–25–100–250–500–1000–5000. **DC Current:** 0–100 μA; 0–0.5–2.5–10–50 mA; 0–0.25–1–5 amps. **AC Current:** 0–0.5–2.5–10–50 mA; 0–0.25–10–50 amps. **DC Resistance:** Rx1 (30 ohms center scale), Rx1K, Rx10K, Rx1 meg (with external 100–130 V DC supply). **AC Resistance:** Rx1 meg (1 megohm center scale), with external 100–240 VAC supply. **Capacitance:** 100 pF to 20,000 pF; 2000 pF to 5 μF; external AC supply needed. **Decibels:** −34 to −4, −20 to +10, −8 to +22, 0 to +30, +12 to +42, +20 to +50, +26 to +56. **Output Ranges:** 0.1 μF capacitor in series with AC voltage ranges, 10–250 VAC. **Size:** 4 5/16 w. x 3 5/16 d. x 9 5/16" h.

**Simpson Model 256**—With test leads, batteries and manual. Net Each.............................. **$105.00**

### MODEL 257 MULTI-TESTER

Similar to Model 256, with 100,000 ohms/volt DC sensitivity (20,000 ohms/volt AC). **Accuracy:** ±1.5% DC, ±2.5% AC. **DC Volts:** 0–0.1–0.5–2.5–10–25–100–250–1000–5000. **AC Volts:** 0–10–50–250–1000. **DC Current:** 0–10–50–250 μA; 0–1–5–25–100 mA; 0–1 amp. **DC Resistance:** Rx1 (30 ohms center scale), Rx1K, Rx100K, Rx10 meg (external 100–140 VDC supply needed). **AC Resistance:** Rx1 meg (1 meg center scale); external 100–240 VAC supply needed. **Capacitance:** 2000 pF to 5 μF (external 100–240 VAC supply needed. **Decibels:** −8 to +22, +6 to +36, +20 to +50. **Output Ranges:** 0.1 μF capacitor in series with AC voltage ranges, 10–250 VAC. **Size:** 4 5/16" w. x 3 5/16" d. x 9 5/16" h.

**Simpson Model 257**—With test leads, batteries and manual. Net Each.............................. **$95.00**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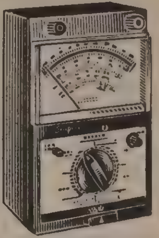
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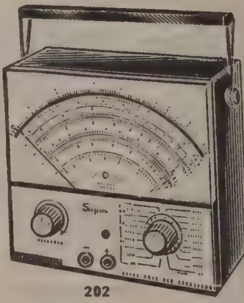
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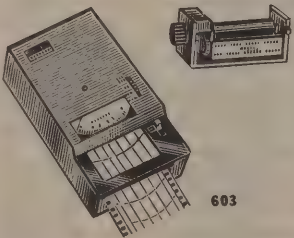
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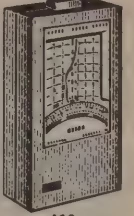

413

## MODEL 413 TEMPERATURE RECORDER

Portable temperature recorder uses inkless pressure-sensitive paper that will not smudge, blur or fog with age. Uses no batteries, no external power and no ink. Precision clock motor operates for more than a month on one winding. Records accurately under conditions of shock or temperature extremes and gives instantly maximum and minimum temperature reached. Can be packed in shipping crates and will give a written record of perishables in transit or in storage. **Accuracy:** ±1.5% of full-scale. **Response Time:** 15 minutes for 50% temp. change; 40 minutes for 90% change. **Recording Range:** 120° F full-scale span; see below for specific ranges. **Chart Speeds:** 24, 48 or 96 mm/day selectable with interchangeable gears. **Size:** 3.6" w. x 1.8" d. x 6.5" h. Weight, 2.2 lbs.

**Simpson Model 413**—With 2 rolls of chart paper, gears for 3 chart speeds, plastic bag and manual. Specify recording range: +30° to +150° F, 0 to +120° F, or −30° to +90° F. Net. . **$130.00**

## MODEL 603 MINIATURE CHART RECORDERS

Compact recorders use inkless pressure-sensitive paper for accurate, dependable recording of a single variable. Available to measure AC voltage, AC current, DC voltage or DC current. Specially formulated chart paper will not fog or blur with age, assuring clear and accurate permanent records. Records with an impression every two seconds on 3" wide chart, 63′ long. Uses rugged, shockproof taut-band movement. Meter also provides continuous readings of measured value. Four built-in chart speeds are switch selected (available in high, low or intermediate speed ranges). Built-in event indicator. For panel-mounting or portable operation. **Accuracy:** DC models, ±2.5% of full-scale; AC models, ±4.0% of full-scale. **Event Channel Response Time:** 10 msec nominal. **Chart Speeds:** 1½, 6, 12 and 18" per hour. **Power Required:** 115 VAC, 60 Hz. **Size:** 7½" x 4 3/16" x 2 25/32". Wt., 2½ lbs.

| Range | Net Each | Range | Net Each |
|---|---|---|---|
| 0–50 DC μA | $107.00 | 0–15 DC Volts | $ 97.00 |
| 0–100 DC μA | 102.00 | 0–50 DC Volts | 97.00 |
| 0–250 DC μA | 98.00 | 0–150 DC Volts | 96.00 |
| 0–1 DC mA | 90.00 | 0–5 AC Amps | 120.00 |
| 0–5 DC mA | 97.00 | 0–5 AC Volts | 102.00 |
| 0–50 DC mA | 97.00 | 0–150 AC Volts | 102.00 |
| 0–500 DC mA | 97.00 | 0–300 AC Volts | 104.00 |
| 0–5 DC Amps | 98.00 | 100–130 AC Volts | 105.00 |
| 0–50 DC mV | 93.00 | | |

**Write for accessories on above models.**

# Simpson Strip Chart Recorders

INSTRUMENTS THAT STAY ACCURATE

## NEW MODELS 2750, 2755, 2761 AND 2762 MINIATURE STRIP CHART RECORDERS

Strip chart recorders mount in less panel space than a 4½″ meter. Use specially formulated paper which requires no ink. Will record continuously for over a month at 20 mm per hour, using a single roll of chart paper. **Chart Speeds:** 20 mm (0.79″) and 120 mm (4.72″) per hour switch selectable. Quick-change gear boxes are available to provide other speeds. **Chart Paper:** Pressure sensitive, 2.6″ wide x 50′ long. **Take-Up Reel:** Built-in, automatic motor driven. **Motor Drive:** Synchronous, 3 VA, 90–160 VAC, 60 Hz. Supplied complete with two rolls of chart paper, panel mounting bracket, 60-inch three-wire line cord, test leads (Models 2761 and Model 2762) and manual. **Size:** 3¾″ square by 9⅛″ deep. Weight, 4 lbs. approximate.

### MODEL 2750 MINIATURE CHART RECORDERS

Miniature single or dual-channel recorders available with AC and DC voltage, AC and DC current ranges: and as 0–1 mA/0–1 mA dual channel unit. **Accuracy:** ±1.5% of full scale. **Impression Rate:** 3 seconds.

| Range | Net Each | Range | Net Each |
|---|---|---|---|
| 0–10 DC microamps* | $167.00 | 0–0.4/25 DC millivolts‡ | $250.00 |
| 0–50 DC microamps* | 153.00 | 0–50 DC millivolts | 142.00 |
| 0–100 DC microamps | 147.50 | 0–5 AC amps | 153.00 |
| 0–500 DC microamps | 142.00 | 93.5–126.5 AC volts§ | 175.00 |
| 0–1 DC milliamps | 140.00 | 0–150 AC volts | 148.00 |
| 0–1/0–1 DC milliamps† | 165.00 | 0–300 AC volts | 148.00 |

*Impression rate: 6 seconds. †Dual channel; impression rate: 6 seconds; 10 times on one channel, 2 times on other channel. ‡Adjustable. §Segmental scale.

### MODEL 2755 10-CHANNEL EVENT RECORDERS

Provides continuous recording of ten separate events. Records any variable that can be converted to an electrical value. **Accuracy of Recording:** 10 msec nominal pen response. **Impression Rate:** Continuous. **Power per Solenoid:** 1.2 watts except AC model, 2.2 VA.

| Voltage | Voltage | Net Each |
|---|---|---|
| 10 channels, 6 VDC | 10 channels, 24 VDC | $175.00 |
| 10 channels, 12 VDC | 10 channels, 115 VAC, 60 Hz | 175.00 |

### MODEL 2761 TEMPERATURE RECORDER

Three built-in temperature ranges which are switch selected. **Temperature Range:** −50° F to +50° F; +50° F to +150° F; +150° F to +250° F. **Accuracy of Recording:** ±2° F over range of 0° to 120° F; ±3° F over balance of range. **Impression Rate:** 3 sec.
**Simpson Model 2761 Temperature Recorder**—Net Ea. **$190.00**

### MODEL 2762 TEMPERATURE RECORDER

Dual channel features same range recorded on both channels, 2 inputs; two ranges switch selectable. **Temperature Range:** −40° F to +60° F; +50° F to +150° F. **Accuracy of Recording:** ±2° F. **Impression Rate:** 6 seconds; ten times on one channel, two times on the other channel.
**Simpson Model 2762 Temperature Recorder**—Net Ea. **$210.00**

### ACCESSORIES FOR 2750, 2755, 2761 AND 2762

| Simpson No. | Description | Net Each |
|---|---|---|
| 22392 | Portable carrying handle | $ 6.35 |
| 22395 | Plastic window for direct paper feedout | 2.00 |
| 22301 | Gear unit for 30/180 mm per hour speeds | 7.50 |
| 22302 | Gear unit for 60/160 mm per hour speeds | 7.50 |
| 22303 | Gear unit for 100/600 mm per hour speeds | 7.50 |
| 22304* | Gear unit for 300/1800 mm per hour speeds | 7.50 |
| 22305* | Gear unit for 600/3600 mm per hour speeds | 7.50 |

### ACCESSORIES FOR 2761 AND 2762 ONLY

| | | |
|---|---|---|
| 00789 | Free air temperature probe | $12.00 |
| 00790 | Surface temperature probe | 9.00 |
| 00010 | 15-foot thermistor lead | 9.00 |
| 00216 | 30-foot thermistor lead | 10.00 |
| 00415 | 50-foot thermistor lead | 11.00 |
| 00416 | 100-foot thermistor lead | 14.00 |
| 00417 | 150-foot thermistor lead | 18.00 |

*For use with Model 2755 recorders only.

### CHART PAPER FOR 2750 AND 2755 RECORDERS

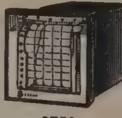
Box of 10 50-ft. rolls.

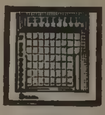
| Simpson No. for | | Calibration | Net, Box of 10 Rolls |
|---|---|---|---|
| 2750 | 2755 | | |
| 22310 | 22380* | 20 mm per hour, 30 divisions | $18.00 |
| 22311 | ......... | 20 mm per hour, 50 divisions | 18.00 |
| 22312 | 22381* | 30 mm per hour, 30 divisions | 18.00 |
| 22313 | ......... | 30 mm per hour, 50 divisions | 18.00 |
| 22314 | 22382* | 60 mm per hour, 30 divisions | 18.00 |
| 22315 | ......... | 60 mm per hour, 50 divisions | 18.00 |
| 22316 | 22383* | 100 mm per hour, 30 divisions | 18.00 |
| 22317 | ......... | 100 mm per hour, 50 divisions | 18.00 |

*2755 paper has 10 channel markings instead of 30 divisions.

### CHART PAPER FOR 2761 AND 2762 RECORDERS

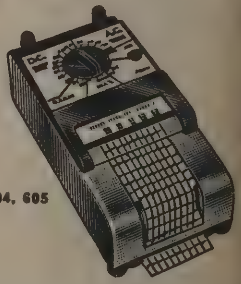
| Simpson No. for | | Calibration | Net, Box of 10 Rolls |
|---|---|---|---|
| 2761 | 2762 | | |
| 23237 | 23241 | 20 mm per hour | $18.00 |
| 23238 | 23242 | 30 mm per hour | 18.00 |
| 23239 | 23243 | 60 mm per hour | 18.00 |
| 23240 | 23244 | 100 mm per hour | 18.00 |


2750


2755

MINIATURE RECORDERS USE JUST 3¾″ x 3¾″ OF PANEL SPACE

COMPACT AND MULTI-RANGE RECORDERS


604, 605

## MODEL 604 AND 605 MULTICORDER® MULTI-RANGE STRIP CHART RECORDERS

Volt-amp-milliamp-microamp recorders for permanent record of range and measured value. Inkless design leaves fast sequential impression on pressure-sensitive strip chart, at any of 3 built-in speeds; virtually maintenance-free. Low-cost paper has hard wax surface, will not fog or blur with age. High torque meter movement has shockproof taut-band suspension and moving coil system. Rugged, compact, accurate and easy-to-operate on a wide band of ranges and functions; chart shows range in use as the value is recorded. Makes an impression every 2 seconds with chart speeds of 1″, 3″ or 12″ per hour, driven by self-contained synchronous motor or by external means. Paper is 2.6″ wide, on 50′ roll with 50 divisions for Model 604, 30 divisions for Model 605. **Accuracy:** ±1.5% of full-scale, indication; ±2.5% of full-scale, recording. **Power:** 115 VAC, 60 Hz with grounded cord supplied. **Size:** 9¾″ x 4¾″ x 4″. Wt., 5½ lbs.

### MODEL 604 MULTICORDER®

Offers 22 switch-selected ranges, with 20,000 ohms/volt DC sensitivity, 5000 ohms/volt AC. **DC Millivolts:** 0–100–500. **DC Volts:** 0–2.5–10–25–100–250–500. **AC Volts:** 0–10–25–100–250–500. **DC Current:** 0–50–250 μA; 0–1–5–25–100–250 mA; 0–1 amp. **AC Current:** 0–200 μA. With test leads, chart paper and manual.
**Simpson Model 604 Recorder**—Net Each ........... **$200.00**

### MODEL 605 MULTICORDER®

Has 24 ranges, with 666 ohms/volt sensitivity on AC and DC. **DC Millivolts:** 0–12–30–60. **DC Volts:** 0–3–15–60–300–600. **AC Volts:** 0–6–30–150–300–600. **DC Current:** 0–600 μA; 0–1.5–3–6–30–150 mA; 0–1.2–6 amps. **AC Current:** 0–3–15–60–300 mA; 0–1.2–6 amps. With test leads, chart paper and manual.
**Simpson Model 605 Recorder**—Net Each ........... **$215.00**

### MODEL 604 AND 605 ACCESSORIES

| Simpson No. | Description | Net Each |
|---|---|---|
| 02611 | Vinyl carrying case | $27.00 |
| 00682 | Gear unit for 30/60/90″ per hour speed | 30.00 |
| 02612 | Chart paper for 604 (Box of 10, 50 divisions) | 19.50 |
| 02614 | Chart paper for 605 (Box of 10, 30 divisions) | 19.50 |
| 06526 | 0–5 DC amp shunt, 604 only | 15.00 |
| 06527 | 0–25 DC amp shunt, 604 only | 15.00 |
| 06528 | 0–50 DC amp shunt, 604 only | 15.00 |
| 06529 | 0–120–300–600 DC amp shunt, 605 only | 20.00 |
| 06531 | 0–100 DC amp shunt* | 15.00 |

*When used with 604; 0–12–30–60 when used with 605.

### CURRENT TRANSFORMERS FOR MODEL 605

| Simpson No. | Ranges | | Turns Ratio | Accuracy | Net Each |
|---|---|---|---|---|---|
| | Pri. Amps | Sec. mA | | | |
| 02461 | 600/120/30 | 300/60/15 | 2,000:1 | ±3%, 45–65 Hz | $25.55 |
| 02462 | 600/120/30 | 60/15/3 | 10,000:1 | ±1%, 45–65 Hz | 40.70 |

# Simpson Test Equipment

NSTRUMENTS THAT STAY ACCURATE

## MODEL 458 7" COLORSCOPE

n ideal scope for servicing color TV. On wide band, frequency
esponse is ±1 dB to 4.5 MHz. Faithfully displays color burst fre-
uency; sensitivity, 40 mV rms/inch of vertical deflection. On
arrow band frequency response is flat, ±2 dB, 10 Hz to 300 kHz
ith sensitivity greater than 15 mV rms/inch of vertical deflec-
ion. Good square wave response for accurate representation of
ync pulses and composite wave-form pattern for trouble-shooting
ideo, sync and sweep circuits. Horizontal sweep, to 250 kHz, for
xpansion of high frequency wave-form and color burst. Vernier
nd compensated decimal step attenuator. Provision for intensity
nodulation of CRT. Calibration, 1 V p-p. **Size:** 11" x 16½" x
4½". Shipping Weight, 38 lbs.

**impson Model 458**—With manual. For 105–125 AC, 50–60 Hz. Net Each .......... $\$420^{00}$

**impson Model 458 Dual**—For 220/110 volts. Net Ea. **$430.00**

## MODEL 739 PROBE KIT

or use with Model 458 (above) only. Four color-coded probes
nd connecting cable. Probes include: 0740 voltage doubler (blue);
741 low input capacitance (yellow); 0742 100:1 voltage divider
red); 0743 dual direct-resistive—isolation (green). In plastic roll.

**impson Model 739**—With manual. Net Each........**$50.00**

## MODEL 466 HANDISCOPE®

mall, portable 'scope with a 5" screen for practically any TV-radio
ervice job. **Frequency Response:** Vertical Amplifier: 15–100,000
Iz, ±1 dB; 6 dB down at 250 kHz; usable to 1 MHz. Horizontal
mplifier: 15–20,000 Hz, ±1 dB; 6 dB down at 100 kHz. **Maxi-
num Deflection Sensitivity:** Vertical, 30 mV rms/inch; horizon-
al, 0.7 V rms/inch. **Z-Axis Sensitivity:** 20 V rms (voltage required
o extinguish beam). **Calibrating Voltage:** (At 117.5 VAC) 1 V
-p, ±10%. **Input Ratings:** Voltage, 400 V peak; resistance, 0.1
neg (at attenuation x 1), 0.5 meg (at attenuation x 100); capaci-
ance, 40 pF (at attenuation x 1), 35 pF (at attenuation x 100).
**awtooth Sweep Range:** 15–80,000 Hz. **Power Consumption:**
At 117.5 VAC) 50 watts, ±10%. **Size:** 7⅞" x 12¼" x 16⅛".
Net Weight, 19 lbs.

**impson Model 466**—With input cable and manual. For 110 VAC, 50–60 Hz. Net Each.............. $\$190^{00}$

**impson Model 466 Dual**—For 220/110 VAC Net...**$214.00**

## MODEL 388-3L THERM-O-METER

Measures the temperature of gases, air, solids or liquids; over a
ange of from −50° F to +1000° F. Combined Fahrenheit and
Centigrade scale. Thermocouple (iron-constantan) sensing ele-
nent. **Accuracy:** ±1½ scale divisions. **Size:** 7 15/16" x 6" x 2 15/16".
**Simpson Model 388-3L**—For three probes. With Adjust-A-Vue
andle, one 0190 general purpose 8' probe, internal bat-
ery, and instruction manual. Wt., 4 lbs. Net Each.... $\$84^{00}$

## MODEL 389-3L THERM-O-METER®

Dual-range temperature tester permitting an accuracy of ±2° F. Dial has combination Centigrade and Fahrenheit scales. **Ranges:** − 50° F to + 100° F; + 100° F to + 250° F. **Accuracy:** ± 2° F. Supplied in three-lead model only. **Size:** 7 15/16"x6"x2 15/16". Wt., 4 lbs. **Simpson Model 389-3L**—With internal battery, manual, and one Model 0010 15' thermistor type lead; additional probes are available. Net Each............................ $\$79^{00}$

## MODEL 385-3L TEMPERATURE METER

Compact instrument ideal for measuring temperatures from −50° F to +70° F under conditions where fast, accurate readings are important. Thermistor sensing element. Large 3" meter. **Accuracy:** ± 1° F, center scale; ± 2° F at ends. **Size:** 3" x 5⅞" x 2½". Net Weight, 1½ lbs.
**Simpson Model 385-3L**—For three probes. Complete with one Model 0010 15' thermistor type lead, and manual. Net Each.............................. $\$45^{00}$

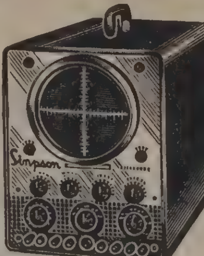
## TEMPERATURE TESTER ACCESSORIES

| For 385-3L or 389-3L | | | For 388‡ or 388-3L | | |
|---|---|---|---|---|---|
| **Model** | **Description** | **Net Ea.** | **Model** | **Description** | **Net Ea.** |
| 0789 | Free air T probe | $12.00 | 0496 | 8' service lead | $10.00 |
| 0010 | 15' therm. lead | 9.00 | 0190 | Gen. purpose thermocouple | 7.50 |
| 0216 | Same, 30 ft. | 10.00 | | | |
| 0415 | Same, 50 ft. | 11.00 | 0187 | Surface temp. thermocouple, 1000° F max. | 12.00 |
| 0416 | Same, 100 ft. | 14.00 | | | |
| 0417 | Same, 150 ft. | 18.00 | | | |
| 0790 | Surface T probe | 9.00 | 5262 | Ever-Redy vinyl case† | 14.00 |
| 8073 | Ever-Redy Case* | 12.00 | | | |

## ACCESSORIES FOR OTHER TESTERS

| Model | For Instrument‡ | Description | Net Ea. |
|---|---|---|---|
| 8463 | 269-3, others | Comb. test prods with allig. clips and elbow terms. | $ 3.25 |
| 0173 | 269 Series 1 | 16 kV high voltage probe | 17.00 |
| 0181 | 269 Series 1 | 40 kV high voltage probe | 17.00 |
| 0172 | 262 Series 1, 2 | 16 kV high voltage probe | 17.00 |
| 0180 | 262 Series 1, 2 | 40 kV high voltage probe | 17.00 |
| 5262 | 269-3, others | Ever-Redy vinyl case | 14.00 |

*Leather, 385-3L only. †For 388, 388-3L or 389-3L. ‡Former Simpson models not now available.



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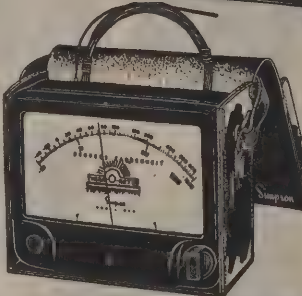
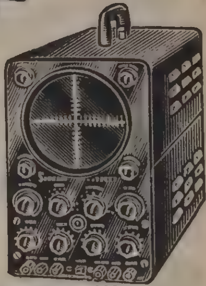


388-3L



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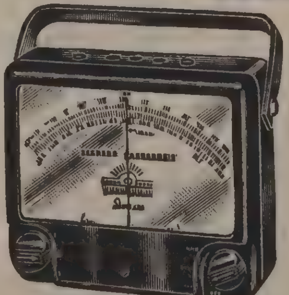


389-3L

385-3L

## VOM AND VTVM ACCESSORIES

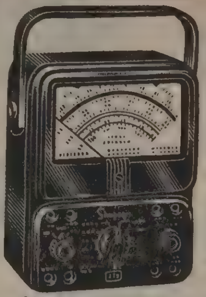
| Model | For Instrument | Description | Net Ea. |
|---|---|---|---|
| 0146 | 262-3 | 16 kV high-voltage probe | $17.00 |
| 0145 | 262-3 | 40 kV high-voltage probe | 17.00 |
| 0158 | 263 | Comb. 30 kV (10K ohms/V) and 15 kV (20K ohms/V) probe | 17.00 |
| 0507 | 260-6, others | 10 kVDC high-voltage probe | 17.00 |
| 0508 | 260-6, others | 25 kVDC high-voltage probe | 17.00 |
| 0509 | 260-6, others | 50 kVDC high-voltage probe | 17.00 |
| 0115 | 260-6, others | Comb. test prods, removable alligator clips, elbow terminals | 3.25 |
| 0505 | 260-6, others | 5 kVAC high-voltage probe | 4.50 |
| 0506 | 260-6, others | 5 kVDC high-voltage probe | 4.50 |
| 0119 | 269-2, -3 | 16 kVDC high-voltage probe | 17.00 |
| 0157 | 269-2, -3 | 40 kVDC high-voltage probe | 17.00 |
| 5262 | 269-3, others | Ever-Redy vinyl case | 14.00 |
| 1613 | 262-3, others | Sponge-lined vinyl case | 14.00 |
| 0067 | 303-1 | DC probe | 5.50 |
| 0068 | 303-1 | AC probe | 5.50 |
| 0069 | 303-1 | Ground lead | 2.25 |
| 0073 | 303-1, -2 | High frequency probe | 11.75 |
| 0074 | 303-1 | 30 kVDC high-voltage probe | 17.00 |
| 0805 | 260-5, others | Ever-Redy vinyl case | 14.00 |
| 5379 | 303-1 | Roll top safety case | 13.00 |
| 0731 | 311-1 | High frequency probe | 17.00 |
| 0732 | 311-1, -2 | High voltage probe | 17.00 |
| 0733 | 311, 303-2 | Ground lead | 2.25 |
| 7594 | 311-1, -2 | DC-AC/Ohms probe | 12.00 |
| 0100 | 466, 715 | Input cable | 4.00 |
| 0150 | 312, 303-2 | AC/DC ohms probe | 11.75 |
| 0152 | 312 | High frequency probe | 11.75 |
| 0155 | 312 | 30 kVDC high-voltage probe | 17.00 |
| 0577 | 312, 313, 202 | Vinyl case with storage space | 17.00 |
| 1565 | 312, 313, 202 | Sponge-lined vinyl case | 17.00 |
| 7509 | 383A | Test lead assembly | 3.25 |
| 0740 | 458 | Voltage doubler probe | 18.00 |
| 0741 | 458 | Low capacitance probe | 18.00 |
| 0742 | 458 | 100:1 voltage divider | 19.00 |
| 0743 | 458 | Direct-resistive dual purpose | 15.00 |

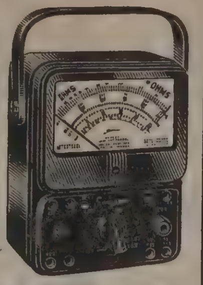
# Simpson Test Equipment, Cases

INSTRUMENTS THAT STAY ACCURATE

### 260® VOM'S WITH TAUT BAND METER MOVEMENT

- **260 series 6**
- **260-6M with mirror scale**
- **260-6P with push-button overload protection**
- **261-2 with ±1.5% DC accuracy and mirror scale**
- **250 with 50 mV drop for solid-state circuits**
- **255 with temperature range**
- **270-4 with ±1.25% DC accuracy, temperature compensation, mirror scale**


**260-6M, 261-2, 270-4 with Mirror Scale**


**260-6P with Pushbutton Overload Protection**

**650**

**653, 661**

**657**

**652**

**150**

**Features:** Self-shielding annular taut band meter movement; increased linearity and stability; input protected with internal 1-amp fuse; greater repeatability; mirror scale with a knife-edge pointer on three models. **Other Features:** Polarity reversing switch for easier, faster DC measurements; no lead reversing. Easy-to-read scales with black and red spread-out for faster, more positive reading. Less circuit loading; AC voltage range sensitivity of 5,000 ohms/volt. Adjust-A-Vue handle for prop-up convenience. Available in roll-top case. Come complete with leads and manual **AC Volts (5,000 ohms/V):** 0–2.5–10–50–250–500–1000 volts (0.1 μF capacitor in series through 250 volts). **DC Volts (20,000 ohms/V):** 0–.25–1–2.5–10–50–500–1000 volts. **DC Current:** 0–50 μA (250 mV drop); 0–1–10–100–500 mA; 0–10 A (250 mV drop). **dB Scale (1 mW-600 ohms):** −20 to +10; −8 to +22; +6 to +36; +20 to +50. **Resistance:** 0–2K ohms–200K ohms–20 megs (Rx1–x100–x10K); 12, 1200 and 120K ohms centers, respectively. **Scale Length:** 4.2". **Size:** 5¼" x 7" x 3⅛". Shpg. Wt., 6 lbs. With test leads (banana plug, alligator clip) and manual.

## 260-6, 260-6M, 260-6P

Lowest priced models of the series, features good accuracy with full range coverage. Choice of scale: 260-6 comes with standard scale; 260-6M has mirror scale. **Accuracies:** AC volts ±3% F.S., 0–2.5 to 0–1000. DC volts ±2% F.S. through 1000. DC current ±1.5% F.S. through 50 μA; ±2% 0–1 mA to 0–10 A. Resist., ±2.5° of arc, Rx1; ±2.0°, Rx100 and Rx10,000.

**Simpson 260-6**—With standard scale. Net Each........................**$65.00***
**Simpson 260-6M**—With mirror scale. Net Each........................**67.00***
**Simpson 260-6P**—Same as 260-6, but features protective overload circuit with reset button that pops out when an overload is present. Net Each.....**$97.00***

## MODEL 261-2 HIGH ACCURACY VOM

With mirror scale, knife-edge pointer and special calibration circuit to increase accuracy. Diode overload protection prevents movement burnout even on 200,000% overload. **Accuracies:** AC volts ±3% F.S., 0–2.5 to 0–1000; ±4% F.S., 0–5000. DC volts ±1.5% F.S. through 1000; ±2.5%, 0–5000. DC current ±1.0% F.S., 0–50 μA; ±1.5%, 0–1 mA to 0–10 amps. Resistance ±2.0° of arc, Rx1; ±1.5°, Rx100 and Rx10,000.

**Simpson Model 261-2**—Net Each...................................**$73.00***

## MODEL 270-4 HIGH ACCURACY VOM

Features self-shielded annular meter movement with taut band; temperature compensated circuitry. Mirror scale with knife-edge pointer. **Accuracies:** AC volts ±2.0% F.S., 0–2.5 to 0–1000. DC volts ±1.25% F.S. through 1000. DC current ±0.75% F.S., 0–50 μA; ±1.25% F.S., 0–1 mA to 0–10 amps. Resistance ±1.5° of arc, Rx1; ±1.0°, Rx100 and Rx10,000.

**Simpson Model 270-4**—Net Each...................................**$78.00***
***For Roll-Top Case Version**—Add suffix **RT** (i.e., 260-6M**RT**). Add.... **6.00**

## MODEL 250 50-mV DROP VOM

Same as 260-6 except as follows: **AC/DC Volts:** Added ranges of 0–0.050 VDC; 0–500 VAC/DC. **Current:** Same but 50 mV drop on all ranges, plus 250 mV drop on 0–50 μA range only (±1% F.S. accuracy). Diode protected.

**Simpson Model 250**—With standard scale. Net Each....**$70.00**

### ACCESSORIES FOR ABOVE VOM'S

| Model | Description | Net Each | Model | Description | Net Each |
|---|---|---|---|---|---|
| 0248† | Roll-top case only | $13.00 | 1818 | Leather carrying case | $12.00 |
| 0507† | 10 kV high-voltage probe | 17.00 | 0805 | Ever-Redy vinyl case | 14.00 |
| 0161† | 10 kV high-voltage probe | 17.00 | 0549 | Same, but with storage | 20.00 |
| 0508† | 25 kV high-voltage probe | 17.00 | 0574 | Snap-on probe case, 0549 | 6.00 |
| 0509† | 50 kV high-voltage probe | 17.00 | 0163‡ | 5' thermocouple lead | 6.00 |
| 0505 | 5 kVAC safety probe | 4.50 | 7500† | Banana plugs; allig. clips | 2.75 |
| 0506 | 5 kVDC safety probe | 4.50 | 7538† | Banana plugs; test prods | 3.25 |

†Also used with older 260-3 VOM. ‡For Model 255 only.

## "ADD-A-TESTERS"
## 260 ADAPTER SERIES

Converts Simpson 260 VOM family (250, 255, 26 261, 270-3) into nine different testers with a qualit previously found only in individual pieces of tes equipment. Just plug in one adapter, and you hav added another application; no complicated connec tions. Take only ½ to ⅓ storage space of individua testers. Each combination of Add-A-Tester and 250, 255, 260, 261, 270-3 is self-contained and self powered. All adapters provide for normal usage o basic tester without disconnecting adapter. Canno be used with roll-top cased models.

### MODEL 650 TRANSISTOR TESTER

**Beta Ranges:** 0–10–50–250, (F.S.). **Beta Accuracy:** Adapter, ±3%; with 250, 255 or 260, ±5% (nominal); with 261 or 270, ±4% (nominal). **Ico Range:** 0–100 μA. **Ico Accuracy:** Adapter, ±1%; with 260, ±3% (F.S.); with 261 or 270, ±2% (F.S.).

**Simpson Model 650 Adapter**—Net Each..**$44.00**
**Simpson Model 7545 Test Lead**—Net Ea... **1.75**

### MODEL 651 DC VTVM

**Voltage Ranges:** 0–.5/1.0/2.5/5.0/10/25/50/100/250/500. **Accuracy:** ±1%; with 250, 255 or 260, ±3% (F.S.); with 261 or 270, ±2% (F.S.). **Input Impedance:** More than 10 megs, all ranges.

**Simpson Model 651 Adapter**—Net Each..**$52.00**
**Simpson Model 733 Ground Lead**—Net... **2.25**

### MODEL 652 TEMPERATURE TESTER

**Temperature Range:** −50° F to +100° F; +100° F to +250° F. **Accuracy:** ±2° (nominal) with 250, 255, 260, 261 or 270. **Sensing Element:** Thermistor. Three lead positions provided.

**Simpson Model 652 Adapter**—Net Each..**$49.00**
Centigrade Scale, add.................. **1.95**

### MODEL 653 AC AMMETER

**Ranges:** 0–0.25/1/2.5/12.5/25 amps. **Accuracy:** Adapter, ±2%; with 250, 255, 260, 261 or 270, ±3% F.S. **Frequency Range:** 50–3,000 Hz.

**Simpson Model 653 Adapter**—Net Each..**$30.00**

### MODEL 654 AUDIO WATTMETER

**Load Ranges:** 4, 8, 16, 600 ohms. **Wattage:** Continuous—25 watts (8, 600 ohms); 50 watts (4, 16 ohms). Intermittent—50 watts (8, 600 ohms); 100 watts (4, 16 ohms). **Accuracy:** Adapter, ±5%; with 250, 255 or 260, ±10% (nominal); with 261 or 270, ±7% (nominal). **Direct Reading Scale:** From 17 microwatts to 100 watts.

**Simpson Model 654 Adapter**—Net Each..**$34.00**

### MODEL 655 MICROVOLT ATTENUATOR

**Ranges:** 2.5 microvolts to 250,000 microvolts, continuously variable in decade steps. **Frequency:** DC to 20 kHz. **Accuracy:** Adapter, ±½ dB; with 250, 255, 260, 261 or 270, ±1 dB.

**Simpson Model 655 Adapter**—Net Each.**$30.00**

### MODEL 656 BATTERY TESTER

Checks all radio and hearing aid batteries up to 90 volts at the manufacturer's recommended load, or any external load. **Accuracy:** Adapter, ±1%; with 250, 255 or 260, ±3% (F.S.); 261 or 270, ±2% (F.S.).

**Simpson Model 656 Adapter**—Net Each..**$30.00**

### MODEL 657 MILLIOHMMETER

Ideal for accurate measurements of low resistance windings in meters, generators and transformers; ammeter and milliammeter shunts; and contact resistance in switches and relays. **Ranges:** 0–0.1/0.25/0.5/1.0 ohm. **Accuracy:** Adapter, ±½%; with 260, ±2% (F.S.); with 261 or 270, ±1½% (F.S.).

**Simpson Model 657 Adapter**—Net Each..**$54.00**

### MODEL 661 DC AMMETER

Dependable, portable DC ammeter for use in testing automotive accessories and electrical systems, DC supplies, industrial DC control systems, welding, etc. **Range:** 0–1/2.5/5/10/25 amps. **Accuracy:** Adapter, ±½%; with 250, 255 or 260, ±2% (F.S., nominal); with 261 or 270, ±1½% (F.S., nominal).

**Simpson Model 661 Adapter**—Net Each..**$33.00**

### MODEL 150 CLAMP-ON AMMETER

AC ammeter adapter permits current measurement without breaking circuit. Plugs into any VOM on this page. Reads on 0–2.5 VAC scale. **Ranges:** 0–5–10–25–50–100–250 amps AC.

**Simpson Model 150**—Net Each........**$30.00**

## MODEL 255 WIDE TEMP., 50-mV DROP VOM

Same as 260-6 except as follows: **AC/DC Volts:** Added 0–0.05 V and 0–1 VDC ranges. **Current:** 0–50 μA (50 and 250 mV drop; ±1% F.S. accuracy); 0–1–10–100–500 mA (50 mV drop); to 250 amps AC using adapter. No dB scale. **Temp. Range:** +100° F to +1050° F. With leads, prods and 5' thermocouple lead. Diode protected.

**Simpson Model 255**—With standard scale.
Net Each..............................**$90.00**

### METER SAFE/GUARD

Use with Series 1, 2, 3 or 4 Simpson 260 or any other 20,000 ohms/volt VOM. Installs instantly to prevent damage to meter movement regardless of polarity with currents up to 200 mA, AC or DC.

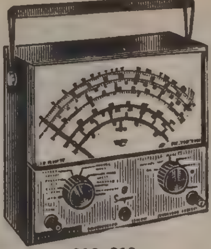
**Simpson Model 12621**—Net Each........**$2.10**

# Simpson Test Equipment

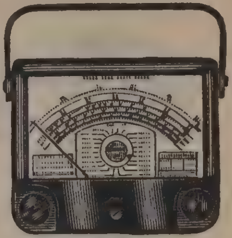
INSTRUMENTS THAT STAY ACCURATE

229

208, 209


312, 313

262-3, 269-3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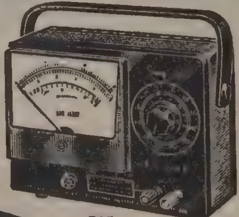
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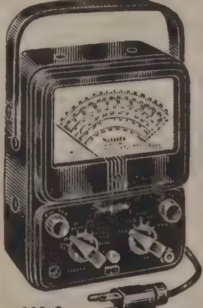

303-2

311-3

## NEW MODEL 229 AC LEAKAGE TESTER

Tests 120 VAC appliances and equipment for current above the human "threshold of perception". Measures as low as 5 µA, detects shorts and near shorts. Overload protection. **Ranges:** 0–0.3–1–3–10 mA; 0–150 volts; battery test. **Accuracy:** ±2% at 60 Hz. **Input Impedance:** 1500 ohms, shunted by shaping network; 500K on voltage ranges. **Size:** 5¼" w. x 3⅛" d. x 7" h. Weight, 3 lbs.

**Simpson Model 229**—With test leads and manual. Net Each.............................................. **$90.00**

## MODEL 208 AC-DC HAND-SIZE VOM

Separate voltage and current inputs permit combined measurements using two sets of leads. Built-in AC current ranges; 10,000 ohms/volt sensitivity. Illuminated scale, light-up continuity checker. **Accuracy:** ±1½% DC, ±2½% DC. **AC Volts:** 0–12–60–300–600. **DC Volts:** 0–0.6–3–12–60–300–600. **Ohms:** Rx1 (128 ohms center scale), Rx100. **AC Current:** 0–0.6–6–30–120–600 mA; 0–3 amps. **DC Current:** 0–0.6–6–30–120–600 mA; 0–3 amps. **Size:** 6" x 3⅝" x 1¹¹⁄₁₆". Net Weight, 18 oz.

**Simpson Model 208**—With test leads and manual. Net. **$72.50**

## MODEL 209 AC-DC HAND-SIZE VOM

Same as Model 208, but 1666 ohms/volt. **AC Volts:** 0–12–60–300–600. **DC Volts:** 0–3–12–60–300–600. **AC and DC Current:** 0–6–30–120–600 mA; 0–3–12 amps. **Ohms:** Rx1 (43.9 ohms center), Rx100. **Size:** 6" x 3⅝" x 1¹¹⁄₁₆". Weight, 18 oz.

**Simpson Model 209**—With test leads and manual. Net. **$68.00**

## MODEL 313 SOLID STATE AC-DC VOM

Portable instrument with VTVM features, VOM convenience. Operates for over 300 hours on 9-volt transistor battery, with high accuracy and high impedance. Rugged design with self-shielding movement, shock-proof and overload-protected. Fully protected voltage ranges. Reliable FET transistor input, 7" scale. Battery test position. Frequency and temperature compensation assure high accuracy of ±3% full-scale, AC and DC. **AC Volts:** 0–0.3–1–3–10–30–100–300–1000; 10-meg input impedance. **DC Volts:** 0–0.3–1–3–10–30–100–300–1000; 11-meg input impedance. **Response:** ±0.5 dB, 20 Hz to 100 kHz on ranges to 3 volts; 20 Hz to 20 kHz on ranges to 100 volts. **Ohms:** Rx1, x10, x100, x1K, x10K, x100K, x1M; 10-ohm center. **DC Current:** 0–0.1–1–10–100–1000 mA. **Size:** 7¾" x 6¾" x 3¾". Weight, 4¾ lbs.

**Simpson Model 313**—With leads, probe, manual. Net. **$125.00**

## IMPROVED MODEL 269-3 AC-DC VOM

Self-shielded Taut-Band movement with spring-backed jewels; stops damage to pivots due to shock and vibration. External battery compartment for easy replacement. Input protected by 1.5-amp fuse. **AC Volts:** 0–3–8–40–160–400–800 at 5K ohms/volt and ±3% accuracy. **DC Volts:** 0–1.6–8–40–160–400–800–1600 (±2%)–4000(±3%) at 100K ohms/volt. **Output Ranges:** 0.1 µF capacitor in series thru 160 VAC. **Ohms:** 0–200–20K–200K; 0–2–20–200 megs; 12 ohms center scale. **DC Current:** ±2% accuracy 0–16–160 µA; 0–1.6–16–160 mA, 0–1.6–8 amps. **dB:** −12 to +45.5 dB; four ranges. **Size:** 6" x 7¼" x 3". Net Weight, 4 lbs.

**Simpson Model 269-3**—With test leads, 4000 VDC probe extension and manual. Net Each.................... **$98.00**

## MODEL 263 AC-DC DUAL SENSITIVITY VOM

Overlapping ranges for greater accuracy; ±1½% DC and ±3% AC, full scale. Diode overload protection against burnout (even on 200,000% overload). External battery compartment for easy replacement; takes 1½-volt alkaline type for greater stability on low ohms scale. **AC Volts:** 0–2.5–7.5–30–150–750 at 10K ohms/volt; 0–5–15–60–300–1500 at 5K ohms/volt. **DC Volts:** 0–.15–.75–3–7.5–30–75–300–750–3000 at 20K ohms/volt; 0–.3–1.5–6–15–60–150–600–1500–6000 at 10K ohms/volt. **Output Ranges:** 0.1 µF capacitor in series thru 300 VAC. **Ohms:** 0–500–5K–50K–500K, 0–5–50 megs; 4.5 ohms center scale. **DC Current:** All ranges ±1½% accuracy. At 150 mV, 0–75 µA, 0–.75–7.5–75–750 mA and 0–7.5 amps; at 300 mV, 0–150 µA, 0–1.5–15–150 mA and 0–1.5–15 amps. **dB:** −20 to +75.5 dB, ten ranges. **Size:** 6" x 7¼" x 3". Net Weight, 4 lbs.

**Simpson Model 263**—With test leads and manual. Net.. **$97.00**

## MODEL 262-3 AC-DC VOM

Compact design covers 33 ranges on easy-to-read 7" scale with repetitive accuracy. Diode overload protection. Self-shielded meter movement and spring-backed jewels. **AC Volts:** 0–3–8–40–160–400–800 at 5K ohms/volt and ±4% accuracy. **DC Volts:** 0–1.6–8–40–160–400–1600–4000 at 20K ohms/volt and ±3% accuracy. **Output Ranges:** 0.1 µF capacitor in series thru 160 VAC. **Ohms:** 0–500–5K–50K–500K; 0–5–50 megs; 4.5 ohms center scale. **DC Current:** ±3% accuracy, 0–80–160 µA; 0–1.6–16–160 mA; 0–1.6–8 amps. **dB:** −12 to +45.5 dB; four ranges. **Size:** 6" x 7¼" x 3". Net Weight, 4 lbs.

**Simpson Model 262-3**—With test leads; manual. Net.. **$83.00**

**ACCESSORIES LISTED ON ANOTHER SIMPSON PAGE**

## MODEL 312 VTVM

Up to 40% less circuit loading then conventional VTVM's; input resistance 16 megs instead of the usual 11. Easy-to-read 7" scale. Ideal for solid state tests with ½-volt range. **Accuracy:** ±3% FS, AC and DC; ±3° arc, resistance. **Frequency Response:** ±3%, 15 Hz to 3 MHz, thru 150 VAC; ±1 dB, 10 kHz to 250 MHz with RF probe; usable to 40 V rms. **DC Volts:** 0–0.5–1.5–5–15–50–150–500–1500 (16 megs imped.). **AC Volts:** 0–1.5–5–15–50–150–500–1500 V rms (1 meg min. imped.); 0–4–14–40–140–400–1400–4000 V p-p. **Resistance:** R x1, x10, x100, x1K, x10K, x100K, x1M; 10-ohm center. **Power:** 105/125 VAC, 50/60 Hz. **Size:** 7¾" w. x 6¾" h. x 3¾" d. Weight, 4¾ lbs.

**Simpson Model 312**—With probe and manual. Net Ea.. **$95.00**

## MODEL 715 AC VTVM

High sensitivity VTVM for the audio field. **Accuracy:** ±5% of full scale. **Sensitivity:** 10 mV full scale on lowest range. **Frequency Response:** ±1 dB, 10–400,000 Hz. **Input Impedance:** 1 meg minimum at 1 kHz shunted by 25 pF. **Internal Multipliers:** ±1% precision resistors. **Volts:** 0–0.01–0.03–0.1–0.3–1–3–10–30–100–300 rms. **dB:** Total range, −52 to +52 dBm. **Zero dBm:** 1 mW in 600 ohms. **Scale:** −12 to +2 dB. **Input Power Required:** 110–125 V rms, 50–60 Hz at 10 watts. **Size:** 7½" x 5½" x 3". Wt., 3¾ lbs.

**Simpson Model 715**—Complete with manual and shielded input cable. Net Each...................... **$84.00**

## MODEL 303-2 AC-DC VTVM

Features easy-to-read 4½" scale. **AC Volts:** 0–1.2–12–60–300–1200 (±5% FS). **DC Volts:** 0–1.2–12–60–300–1200 (±3% FS). **AF Volts:** 0–1.2–12–60. Frequency flat to 100 kHz on the three low AC ranges. **RF Volts:** 20 V max.; frequency 20 kHz to 100 MHz with RF probe. **Ohms:** 0–1K–100K; 0–1–10–1,000 megs (centers at 10, 1K, 10K, 100K and 10 megs, respectively). **dB:** −20 to +63; 5 ranges. **Input Power Required:** 105–125 VAC, 50–60 Hz. **Size:** 5¼" x 7" x 3⅛". Net Weight, 4 lbs.

**Simpson Model 303-2**—Complete with VDC probe, VAC-ohm probe, ground lead and manual. Net Each.. **$92.00**
**Simpson Model 303-2RT**—In roll top case. Net Each.. **$97.00**
**Simpson Model 303-2 Dual**—For 220/110 volts. Net... **98.00**

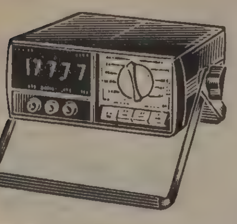
## MODEL 311-3 AC-DC VTVM

High 22 meg DC input impedance reduces circuit loading. **AC Volts:** 0–1.5–5–15–50–150–500–1,500 rms (±5% FS). **Peak-To-Peak Volts:** 0–4–14–40–140–400–1,400–4,000. **DC Volts:** Same ranges as AC (±3% FS). **AF Volts:** Same ranges as AC (30 Hz to 110 kHz, ±5%). **RF Volts:** 0–1.5–5–15–50–150 with probe (50 Hz to 100 MHz, 0–150 V rms). **Frequency Response:** ±5% to 100 kHz; to 250 MHz with probe. **Ohms:** 0–1K–10K–100K; 0–1–10–100–1,000 megs (centers at 10, 100, 1K, 10K, 100K, 1 meg and 10 megs, respectively). **Input Power Required:** 105–125 VAC, 50–60 Hz. **Size:** 7½" x 5⅝" x 4½". Weight, 5 lbs.

**Simpson Model 311-3**—With AC-DC ohms probe, ground lead and manual. Net Each.................... **$91.00**

# WESTON® DIGITAL TEST INSTRUMENTS

## MODEL 1242 DIGITAL AC/DC MULTIMETER



Full 4½-digit (±19999 display) bipolar digital multimeter is less than 3″ high, fits in a standard attache case. Features dual-slope integration for excellent accuracy and long term stability, with 25 ranges for measuring AC and DC voltage, AC and DC current, and resistance. Housed in high-impact, shock-resistant case; weighs only 4½ lbs. Carrying handle serves as an adjustable tilt stand for any viewing angle. Can be bench or rack mounted without additional parts. All input circuits are protected from overloads by resistor-diode networks, fuses, or both. Fuses are replaceable from outside case, using fuse removal tool at end of each locking knob on handle. Fully recessed controls, with single range selector and feather-touch function switches. Has out-of-range indication with illuminated arrow, and automatic polarity indication.

RANGES: **DC Volts:** 0–0.1–1–10–100–1000 V with ±0.05% reading accuracy, ±1 digit; input impedance, 10 megs except 0.1 V range, 100 megs and 1 V, 1000 megs. **AC Volts:** 0–100 mV, 0–1–10–100–500 V with ±0.2% reading accuracy ±0.05% full-scale for 60 Hz to 10 kHz; ±0.25% reading ±0.05% full-scale to 40 Hz; ±0.5% reading ±0.15% full-scale to 20 kHz; input impedance, 1 megohm. **DC Current:** 0–100 μA and 0–1–10–100 mA with ±0.15% reading accuracy ±1 digit; 0–1 A with ±0.2% reading accuracy ±1 digit; voltage drop, 0.1 V. **AC Current:** 0–100 μA and 0–1–10–100 mA with ±0.35% reading accuracy ±0.05% full-scale; 0–1 A with ±0.4% reading accuracy ±0.05% full-scale; voltage drop, 0.1 V; frequency range, 40 Hz to 10 kHz. **Resistance:** 0–1000 ohms (±0.15% reading accuracy ±1 digit); 0–10K–100K ohms (±0.1% reading ±1 digit); 0–1 meg (±0.25% reading ±1 digit); 0–10 megs (±0.5% reading ±1 digit).

SPECIFICATIONS: **Operating Temperature:** 10° to 40° C. **Overrange:** 100% except 1000 VDC and 500 VAC ranges. **Common Mode Rejection:** Greater than 80 dB at 60 Hz with 1000 ohms unbalance. **Normal Mode Rejection:** 40 dB at 60 Hz. **Readings:** 10 per second (non-blinking display). **Humidity:** 85% at 36° C. **Vibration:** 5–10 Hz for 1 hour at 0.4 G; 10–50 Hz for 11 msec at 2 G. **Shock:** 50 G on three axes. **Power Required:** 115 or 230 VAC (+15%, −10%), 50–60 Hz, 8.5 W. **Size:** 7″ w. x 7.9″ d. x 3″ h. Weight, 4½ lbs.

**Weston Model 1242 Digital Multimeter**—List Price. . **$595.00***

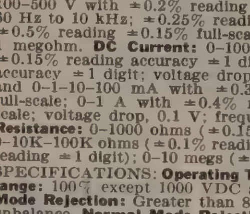
**Weston Model 9740 Leather Carrying Case**—For Model 1242 or 1243. List Price. . . . . . . . . . . . . . . . . . . . . . . . **$19.50***

## MODEL 1243 BCD DIGITAL MULTIMETER

Has all the features of Model 1242, plus an isolated 8421 BCD output, in parallel form, compatible with T²L logic, at rear of instrument. Input data, polarity, overrange and decimal point information, as well as functions and ranges set up the range switch, are made available as a binary code output.

**Weston Model 1243 Digital Multimeter**—List Price. . **$695.00***

## MODEL 4440 PORTABLE DIGITAL MULTIMETER



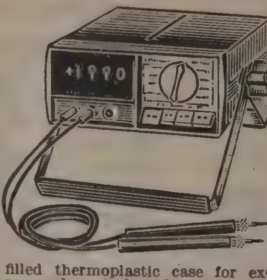
Solid-state portable 3½-digit multimeter for field use. Lightweight and shockproof, in hi-impact molded plastic case. Self-contained rechargeable battery pack provides 8–12 hours of continuous operation; maintains accuracy over a broad temperature range. Offers 17 ranges, covering 200 mV to 1000 V AC/DC, 200 ohms to 2 megs, plus AC/DC current. Features include: non-blinking LED readouts; dual-slope high-impedance bipolar A/D converter for excellent accuracy and long term stability; a single MOS LSI plug-in IC chip provides for all logic circuits; auto-polarity; automatic blanking of unused digits to conserve battery life; overload protection with externally replaceable fuses. Circuit is designed to blank all unneeded figures except "1" in the thousands place (plus polarity sign and decimal, which blink in overrange) preventing the possibility of incorrect readings in overrange condition. Front panel range switch includes Battery Test position, in which all segments of LED readouts flash intermittently for checking logic or LED segment failures. Supplied with four nickel cadmium "C" cells and battery charger which plugs into 117 VAC outlet; can be operated from standard carbon "C" batteries.

RANGES: **DC Volts:** 0–199.9 mV (50 megohms input impedance); 0–1.999 V (500 megs); 0–19.99–199.9–999 V (10 megs); accuracy, ±0.3% of reading ±1 digit. **AC Volts:** 0–199.9 mV, 0–1.999–19.99–199.9–999 V with accuracy of ±0.5% of reading ±3 digits; input impedance, 10 megohms; frequency range, 40 Hz to 10 kHz (40 Hz to 2 kHz on 1000 V range). **DC Current:** 0–100 μA with accuracy of ±5 digits. **AC Current:** 0–100 μA with accuracy of ±0.7% ±3 digits. Options available for current ratings to 1 amp. **Resistance:** 0–199.9–1999–19.99K–199.9K ohms; 0–1.999 megohms; accuracy of ±0.5% of reading, ±3 digits; voltage drop, 0.2 V except 2 V for 1.999K and 1.999 meg.

SPECIFICATIONS: **Display:** ±1999 non-blinking; 0.19″ character size. Leading zero blanking; least significant digit never blanked; moving decimal point. **Conversion Rate:** Approx. 4 per second. **Common Mode Rejection:** 80 dB. **Normal Mode Rejection:** 35 dB. **Temperature:** 15° to 35° C (10° to 50° C with derated accuracy). **Power Required:** Rechargeable or standard "C" batteries, or 115 VAC, 50–400 Hz. **Size:** 5.45″ w. x 7.25″ d. x 2.25″ h. Weight, less than 2½ lbs.

**Weston Model 4440 Digital Multimeter**—List Price. . **$285.00***

## MODEL 1240 DIGITAL AC/DC MULTIMETER



Compact digital multimet with 26 ranges for measuri DC and AC voltage and c rent, and resistance. Straigh forward control layout i cludes a single range select and feather-touch functio switches. Completely portabl weighs only 4 lbs. Less tha 3″ high, to fit in standa attache case for portable us All circuits are protecte against overload either throug a resistor-diode network, o by fuses. 200 mV range allow use of many Weston tran ducers (DC shunts, etc.) Superior mechanical feature include: high-impact glass filled thermoplastic case for excellent shock resistance; full recessed controls; adjustable tilt stand that serves as carryin handle; fuse replacement without opening case; potential for rac mounting without extra parts; optional plug-in battery pack tha fits standard attache case. Includes out-of-range indication wit flashing light, plus automatic polarity indication.

The heart of the digital multimeter circuitry is a high-impedanc bipolar A/D converter operating on the dual-slope principle. Ha a basic range of 200 mV; achieves its high impedance by mean of potentiometric feedback around its integrator. All other range and functions are first converted to this basic DC range by th A/D converter. AC is converted to DC by an average-sensing rm calibrated converter assembly. Current is measured by voltag drop across a precision ring shunt network. Resistance is measured by passing a scaled constant current through the unknown and measuring DC voltage across it.

RANGES: **DC Volts:** 0–0.2–2–20–200–1000 V with ±0.1% reading accuracy, ±1 digit; input impedance, 10 megs except 0.2 V, 100 megs and 2 V, 1000 megs. **AC Volts:** 0–200 mV; 0–2–20–200–500 V with 0.5% reading accuracy, ±1 digit; input impedance, 1 megohm; frequency range, 40 Hz to 10 kHz (1% accuracy for 10 kHz to 20 kHz). **DC Current:** 0–200 μA (±0.25% accuracy, ±1 digit); 0–2–20 mA (±0.2% accuracy); 0–200 mA, (±0.3% accuracy); 0–2 amps (±0.5% accuracy); voltage drop, 0.2 V nominal. **AC Current:** 0–200 μA (±0.75% reading accuracy, ±1 digit); 0–2–20 mA (±0.7% accuracy); 0–200 mA (±0.8% accuracy); 0–2 amps (±1% accuracy); voltage drop, 0.2 V nominal; frequency range, 40 Hz to 10 kHz. **Resistance:** 0–200–2K–20K–200K–ohms, 0–2 megohms (±0.5% reading accuracy, ±1 digit); 0–20 megohms (1 to 2% reading accuracy).

SPECIFICATIONS: **Temperature Range:** 10° to 40° C. **Common Mode Rejection:** 80 dB at 60 Hz with 1000 ohms unbalance. **Normal Mode Rejection:** 35 dB at 60 Hz. **Readings:** 5 per second (non-blinking display). **Temperature Influence:** ±0.005% reading per °C. **Humidity:** 85% at 36° C. **Vibration:** 5–10 Hz for 1 hour at 0.4G; 10–50 Hz for 11 msec at 2G. **Shock:** 50G on 3 axes. **Power Required:** 115 or 230 VAC (+15%, −10%), 50–400 Hz, 6 watts nom. **Size:** 7″ w. x 7.9″ d. x 3″ h. Weight, 4 lbs.

**Weston Model 1240 Digital Multimeter**—List Price. **$394.50***

**Weston Model 9740 Leather Carrying Case**—For Model 1240 or 1241. List Price. . . . . . . . . . . . . . . . . . . . . . . . **$19.50***

**Weston Model 9740-270520 Power Supply**—Rechargeable battery-powered supply for Models 1240, 1241 and 1250. Provides up to 6 hrs. use. In leather case. Battery not supplied (see below). List Price. . . . . . . . . . . . . . . . . . . . . . . . **$99.50***

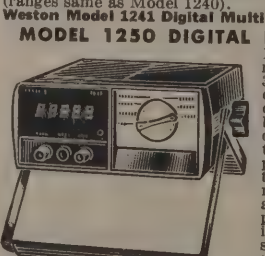
**Weston Model 9740-270145 Battery**—For above. Standard Globe gel/cell; 12 volts. List Price. . . . . . . . . . . . . . . . . . **$30.00***

## MODEL 1241 DIGITAL MULTIMETER

Similar to Model 1240, but reads only DC current and resistance (ranges same as Model 1240).

**Weston Model 1241 Digital Multimeter**—List Price. **$289.00***

## MODEL 1250 DIGITAL FREQUENCY COUNTER



Low-cost digital counter has full range coverage from 5 Hz to 32 MHz, with all solid state circuitry including LED readouts. Features include non-blinking readout, automatic decimal positioning, automatic trigger lever for wide range input without adjustment, crystal time base oscillation, and automatic blanking of zeros to left of actual reading. Rugged thermoplastic glass filled case has carrying handle that converts to a tilt stand. Four gate times give full-scale readings of 10 kHz, 100 kHz, 10 MHz and 32 MHz. Has 1 MHz output frequency that can be used as source frequency to troubleshoot circuits on a "closed loop" basis. Can be used with external 1 MHz time base standard instead of self-contained crystal. **Frequency Ranges:** 9999.9 Hz (10 kHz) with 10 second gate; 99999 Hz (100 kHz) with 1 second gate; 9999.9 kHz (10 MHz) with 10 msec gate; 32,000 kHz (32 MHz) with 1 msec gate. **Accuracy:** ±1 count ±time base stability. **Time Base Stability:** ±10 ppm/10° C to 40° C reference temp. of 25° C after 30 minutes; 1 ppm/month. **Operating Temperature:** 10° C to 40° C. **Input Impedance:** 1 megohm shunted by 30 pF. **Input Sensitivity:** 200 mV for lower frequencies; 150 mV rms for higher frequencies (50 V max. rms or DC). **Power Required:** 115 or 230 volts, 50/60 Hz, 10 watts. **Size:** 7″ w. x 7.9″ d. x 3″ h. Weight, 4 lbs.

**Weston Model 1250 Frequency Counter**—List Price. . **$395.00***

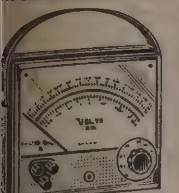
**Weston Model 9740 Leather Case**—List Price. . . . . . . . **19.50***

### ★QUANTITY DISCOUNTS

| Qty. | Discount | Qty. | Discount | Qty. | Discount |
|---|---|---|---|---|---|
| 1–4 | None | 5–9 | 5% | 10 Up | 15% |

# WESTON® PRECISION TEST INSTRUMENTS

## MODELS 911-912 PORTABLE MULTI-RANGE TESTER



**Combination Portable/Panel Instrument.**
**±1% Accuracy on Most DC Ranges, Horizontal Mounting.**
**Large 7.2″ Mirrorback Scale.**
**Cormag® Self-Shielding Mechanism, with Spring-Back Jewels.**
**Long-Life Components, Including Weston Vamistor® Precision Metal-Film Resistors.**
**Rugged Compact Case.**
**No Special Adapters Necessary for Panel Mounting.**
**Large, Sure-Grip Knob on Range Switch.**

Moderately-priced, multi-range instrument designed as a portable unit which is easily converted to a panel or switchboard mounting assembly. All that need be done for panel mounting is to unscrew the rubber feet, remove the steel case, and mount. Clear, plastic front permits natural illumination to blanket the scale. Marking graduations are clearly definable; the knife-edge pointer and mirror scale, along with a mechanism accurate to 1% of full scale, provides fast, easy, and accurate readings. Unit is self-shielded with Cormag mechanism. **Accuracy:** ±1% of full scale on DC voltmeters and milliammeters (±2% of full scale on 300 and 1000 VDC); ±2% full scale on rectifier type AC voltmeters 10–300 volts; ±3% of full scale on rectifier type AC voltmeters for 1000 V range and the 3 V range above mid-scale. **Case Design:** Clear plastic front; heavy-duty, gray-finished steel case. Handle may be swung under instrument so that it may be tilted for easy reading. **Binding Post:** Screw type with captive heads for use with all types of leads. Triangular base allows greater torque when attaching leads. Spaced, ¾″ for plug-type leads. Cross hole is located so that fine wire will not be cut. **Size:** 7½″ x 6½″ x 2⅜″.

**Weston Model 911 DC Voltmeter**—Ranges, 1000/300/100/30/10/3/1 VDC. 20,000 ohms/volt. List Price.... $98.00*

**Weston Model 911 DC Ammeter**—Ranges, 10/3/1 amps; 300/100/30/10 milliamps. 10 amp range has 100 mV drop; 10 mA range 50 mV drop. These are suggested ranges for use with external shunts. List Price.................... $98.00*

**Weston Model 911 DC Milliammeter**—Ranges, 100/30/10/3/1/.3/.1 milliamps. 100 mA range 500 mV drop; 0.1 mA range 250 mV drop. List Price.................... $98.00*

**Weston Model 912 AC Voltmeter**—Ranges, 1000/300/100/30/10/3 VAC. 5,000 ohms/volt. List Price.. $112.00*

**Weston Model 912 AC Ammeter**—Ranges, 5/2/1 amps; 500/200/100/50 mA. Accuracy: 2% FS. 60–400 Hz, sine. List..**$112.00***

## MODEL 749 AC POCKET CLAMP VOLT-AMMETER

Designed particularly for the electrician, serviceman, engineer and motor repair shop. Contains six current ranges and three voltage ranges quickly readable from any angle on one, large-size scale. Supplied complete with carrying case, voltage test leads with insulated battery clips and three accessory probes. Accurate within ±3%. **Size:** 7½″ x 3″ x 1¼″. Approx. Wt., 14 oz. Accommodates conductors up to 1″ round or 1¾″ x ⅜″ rectangular. Large, smooth-action trigger; positive action range selector switch; shatterproof wrap-around plastic window; only one scale for all ranges; bright red pointer for easy reading (scale length, 2.36″). Uses new shock-mounted core magnet mechanism. Fully insulated for 750-volt service. Sturdy carrying case with convenient lead compartment. Precision-ground face provides positive jaw contact. Lightweight, compact, handfitting design, easily slipped into pocket. Satin-finish black Bakelite* case.

**Weston Model 749**—Ranges 300/150/60/30/15/6 amps AC; 600/300/150 VAC. Complete with carrying case, leads, and three accessory probes. List Price.................. $60.75*

**Weston Model 9886 Plug-In Adapter**—Provides a single or 10-loop conductor for current measurements. Rated 250 volts AC, measures current to 25 amperes on "Direct Reading"; up to 10 amperes for "Amperes Divided by 10" connection. List..**$7.00***

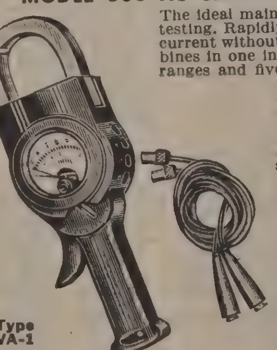
## MODEL 779 PORTABLE ANALYZER

Model 779 is an ultra-sensitive 26-range portable analyzer. It covers 5 DC voltage ranges at a sensitivity of either 1000 or 20,000 ohms per volt. Fully AC temperature compensated. Precision resistors throughout the circuit. Servicemen and technicians find it ideal for measurement of tube circuits, as in electronic receivers, transmitters and electronic control equipment: For television and wire communications systems; power level in decibels in high fidelity and other audio equipment, public address systems, telephone or speech lines; maintenance of electronic control and alarm systems; checking leakage of condensers; measuring resistance in all types of circuits. A highly useful instrument because of its compact size and portability. It is supplied in a sturdy oak case designed to withstand heavy wear. The oak cover is removable. Convenient carrying handle. Standard leads. **DC Voltage:** 2.5, 10, 50, 250 and 1000 volts. **AC Voltage:** 2.5, 10, 50, 250 and 1000 volts. **DC Current:** 0.1, 1, 10, 50 and 250 mA and 1 and 10 amps. **Decibels:** −14 to +2 substantially flat to 10,000 Hz; −2 to +14 substantially flat to 10,000 Hz; +12 to +28 substantially flat to 10,000 Hz; +26 to +42 substantially flat to 3000 Hz; +38 to +54 substantially flat to 1000 Hz, (6 milliwatts, 500 ohms, zero level). **Ohms:** 0–3000, 0–30,000, 0–300,000 and 0–30 megohms. **Accuracy:** AC, ±3%; DC ranges, ±2%, 1,000 volt range ±3%; ohms, ±2% of arc length. **Size:** 6⅜″ x 9⅛″ x 4⅞″. Wt., 6 lbs.

**Weston Model 779 Type 8 Analyzer**—List Price.... $277.00*

**Weston Model 779 Type 9**—Same as above, but has an impedance of 600 ohms when looking into a 1 V range. List..**$288.00***

## MODEL 633 AC CLAMP VOLT-AMMETER



**Type VA-1**

The ideal maintenance tool for on-the-job testing. Rapidly measures AC voltage and current without breaking the circuit. Combines in one instrument three AC voltage ranges and five AC current ranges, completely covering voltages and current most frequently encountered. Dependable magnetic circuit; rugged Bakelite* case; non-shatterable glass; easily read double scale; pear-shaped pointer; adjustable pointer stop; six-position range and selector switch; safety-type trigger. 1000/250/100/25/10 amperes full scale; 700/350/175 volts full scale. Flexible leads supplied. Well damped movement. Complete instrument insulated for 750-volt use. For conductors up to 2″ in diameter.

**Weston Model 633**—Type VA-1. List Price.... $175.50*

**Clamp Ammeter Type A**—Similar to above except not provided with voltage features or regularly equipped with adjustable pointer stop.

**Type A-1**—500/250/100/50/25/10 amps. List Price.. $166.00*
**Type A-2**—1000/500/250/100/25/10 amps. List Price **$166.00***
**Type A-3**—2000/1000/500/250/100/50 amps. List... **166.00***
**9958**—50′ cable, plug and receptacle. List Price..... **93.25***

*Registered Bakelite Corp. trademark.

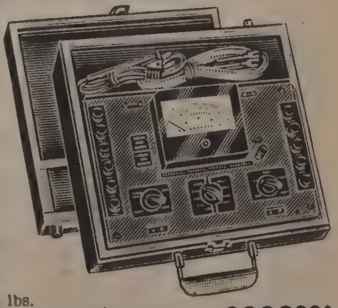
## MODEL 639 AC INDUSTRIAL ANALYZER (NOT ILLUSTRATED)

Accurate self-contained power analyzer for use in general industrial testing and installation work. Measures AC current and voltage in single or polyphase circuits, as well as power factor in 3 phase balanced circuits. Uses 4″ by 4½″ instruments. Voltmeter, ammeter and power factor meter accurate to 1%. Wattmeter within 2%. For measuring instantaneous current surges such as motor starting currents, the ammeter has an adjustable pointer stop. Scale Length: 3.5″. Size: 18⅛″ w. x 6⅞″ d. x 10⅞″ h. Weight, 32 lbs.

**Weston Model 639-9900002 Type 2**—3-phase, 3-wire. **Voltage:** 600/300/150 v. **Current:** 125/25/5 amps. **Watts:** 100/50/25/20/10/5/4/2/1 kw. **Power Factor:** .30 lag through unity to .80 lead. **Frequency:** 25–125 Hz. List Price.......**$1224.00**

## MODEL 785 (TYPE II) INDUSTRIAL CIRCUIT TESTER

### 28 PRACTICAL SELF-CONTAINED RANGES



**DC Volts**—100 mv direct for use with external shunts and 1/10/50/200/500/1000 volts (20,000 ohms per volt). Accurate within ±2% to 500 volts, ±3% at 1000 volts.

**AC Volts**—5/15/30/150/300/750 volts (1000 ohms per volt). Accurate within ±3%.

**DC Current**—50 microamperes, 1/10/100 ma, 1/10 amps. Accurate within ±2%. Higher ranges and full scale reading with 100 mv external shunts.

**AC Current**—.5/1/5/10 amperes. Accurate within ±3% on 60 cycles. Higher ranges with external current transformers.

**Resistance**—3000/30,000/300,000 ohms, 3/30 megohms, full scale. 25/250/2,500/25K/250K ohms center scale. Self-contained batteries. Accurate within ±2% of linear arc length. **Size:** 13″ x 12½″ x 5½″. Approx. weight, 13½ lbs.

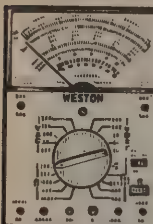
**Weston Model 785-9900008 Wood**—In polished wood carrying case. List Price.......................... $288.00*

**Weston Model 785-9900008**—In steel case for bench use. List Price........**$252.00***

**★QUANTITY DISCOUNTS: LOTS OF 1–5, LIST; 6–14, 5%; 15–24, 10%; 25 UP, 15%**

# WESTON® PRECISION TEST INSTRUMENTS

## SERIES 660 "DROP-PROOFED" VOM'S



Rugged VOM's offer all the features of the most advanced instruments, plus "drop-proofed" protection; warranteed in writing to work even after accidentally dropped five feet. Compact size (7″ x 5″ x 2¼″) with custom ruggedized self-shielded taut-band mechanism, diode-protected meter movement, unique pluggable circuit board assemblies, external fuse replacement, single range switch, flush controls, self-storing handle. Temperature compensated; polarity reversal switch. Can be recalibrated without removing from case. Special calibrated scales for dB measurement. Input terminals spaced for double banana jacks. Weight, less than 2 lbs. **Sensitivity:** 20,000 ohms/V DC, 5000 AC. RANGES: **DC Voltage:** 0–250 mV, 0–2.5–10–50–250–500–1000–5000 V. **AC Voltage:** 0–2.5–10–50–250–500–1000–5000 V. **Output Volts:** 0–2.5–10–50–250 VAC. **DC Current:** 0–50 μA, 0–1–10–100–500 mA, 0–10 A. **Resistance:** 0–2K–20K–200K ohms, 0–2–20 megs. **Decibels:** Five ranges, −10 to +56 dB (1 mW on 600-ohm line).

**Weston No. 660-2714010 VOM**—Has 1% precision resistors in critical circuits for accuracy of 2% DC (1.5% on 50 μA range) and 3% AC. List Price .......... **$68.00**

**Weston No. 661-2714020 High Accuracy VOM**—Mirror scale and ½% precision resistors for 1% DC and 2% AC accuracy. List Price .......... **$76.50**

**Weston No. 662-2714030 Overload-Protected VOM**—Built-in temperature compensation and an externally resettable overload relay, plus full overload protection and 1% resistors (2% DC and 3% AC accuracy). Any circuit can be overloaded to 220 V AC or DC (except 10 A DC range), or to 1000 V on higher ranges. Can be used in extreme environments. List Price .......... **$101.50**

**Weston No. 663-2714040 High Accuracy, Overload-Protected VOM**—Has ½% precision resistors and mirror scale for 1% DC and 2% AC accuracy, plus the overload protection of Model 662 (described above). List Price .......... **$110.00**

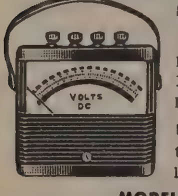
## MODEL 666 SOLID STATE CIRCUIT TESTER

Series 660 VOM for semiconductor troubleshooting in the field. Offers 10-megohm input impedance, plus special ohm ranges with low voltage drops for semiconductor testing. Overload protected; withstands 220 V AC or DC without permanent damage. Frequency compensated. Differential pair FET input to high gain IC operational amplifier. **Accuracy:** 2% on DC volts, 3% on AC volts and DC current, 4% on AC current. **Sensitivity:** 10 megs DC, 10 megs (100 pF) AC, current circuit 100 mV drop. RANGES: **DC and AC Voltage:** 0–100–300 mV, 0–1–3–10–30–100–300–1000 V. **DC and AC Current:** 0–1–10–100 μA, 0–1–10–30 mA. **Resistance** 7 normal, 7 low power ranges. **Decibels:** −40 to +62.
**Weston No. 666-2714060 Tester**—List Price .......... **$132.50**

## SERIES 660 ACCESSORIES

| Weston No. | Description | List* |
|---|---|---|
| 9970-0271958 | Standard leather carrying case | $16.00 |
| 9970-0272160 | Super leather case; velvetine lining | 19.50 |
| 9970-0272028 | Protective cover flap (not for 666) | 4.50 |
| 9970-0271962 | High voltage probe (less resistor) | 19.00 |
| 9970-0271959 | 900-meg resistor for probe (50 kV) | 4.75 |
| 9970-0271960 | 495-meg resistor for probe (25 kV) | 4.75 |
| 9970-0272890 | 990-meg resistor for probe (50 kV) | 4.75 |

## MODELS 901 AND 904 INSTRUMENTS



Scale, 5½″. Size, 7½″ x 7¼″ x 3⅝″.

**Model 901 DC Instruments:** Self-shielded, permanent magnet, moving coil operation. Rated accuracy, 0.25% F.S. Weight, 3¾ lbs. approx.

**Model 904 AC Instruments:** Movable iron type. Accuracy, 0.5% F.S. Weight, 4¾ lbs. approx.

## MODEL 901 DC INSTRUMENTS

| Weston No. 901- | Meter | Range | * | List Price* |
|---|---|---|---|---|
| 2904001 | DC Amps | 50 mV/20/5/2 amps | 100 | $255.00 |
| 1905001 | DC Volts† | 750/300/150/75/30/15/3 | 150 | 281.00 |
| 4905001 | DC Milliam. | 1K/500/200/100/50/20/10 | 100 | 265.00 |
| 4905002 | DC Milliam. | 100/50/20/10/5/2/1 | 100 | 265.00 |

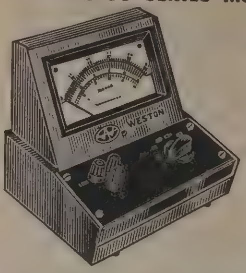
*Scale division. †5000 ohms/volt.

## MODEL 904 AC INSTRUMENTS

| Weston No. 904- | Meter | Range | ‡ | List Price* |
|---|---|---|---|---|
| 2905001 | AC Amps | 200/100/50/20/10/5/2 | 100 | $342.00 |
| 2905002 | AC Amps | 50/20/10/5/2/1 | 100 | 332.00 |
| 2901001 | AC Amps | 5 amps | 100 | 241.00 |
| 1904005 | AC Volts | 750/300/150* | 150 | 248.00 |
| 1906001 | AC Volts | 750/300/150/75/30/15/7.5/3 | 150 | 381.00 |
| 1903001 | AC Volts | 300/150 | 150 | 230.00 |
| 1904003 | AC Volts | 600/300/150* | 150 | 248.00 |
| 1904005 | AC Volts | 750/300/150* | 150 | 248.00 |
| 4902001 | AC Milliam. | 150/75 | 150 | 273.00 |
| 4902003 | AC Milliam. | 300/150 | 150 | 273.00 |

*Non-locking key on high range, which is for intermittent duty only. ‡Scale division.

## MODEL 80 SERIES MULTI-RANGE ANALYZERS



All the most desired features fo the bench operator: Extra-easy-to-read, maximum operating convenience, portability, ruggedness and unusually high accuracy. Scales and operating deck are slanted for ideal viewing from standing or seated position. Single switch selects both function and range settings. Large 5½″ meter is refractive type with anti-parallax scale. Both fuse and diode circuitry provided to protect against overloads. Polarity reversing switch operates even under load. Provision for self-storage of leads. Rack mount version also available. Models with prefix **80-** come with test leads; models with prefix **81-** or **82-** come without leads, but have 5-way binding posts spaced for double banana plugs. **Size:** Rack mount version Type R, 19″ w. x 3½″ d. x 5⁷⁄₁₆″ h.; all others, 8⅛″ w. x 6⅝″ d. x 7⅜″ h. Wt., 3 lbs., approx.

**Weston No. 80-9008001 VOM**—Scale length, 4.9″. Accuracy 1% DC thru 250 V; 2% DC, 1 kV and 5 kV; 1.5% AC thru 500 V; 2.5% AC 1 kV and 5 kV; 1% of linear scale, ohms. DC Volts: 0.25/1/2.5/10/25/50/100/250/1 kV/5 kV at 20,000 ohms per volt. AC Volts: 2.5/10/50/250/500/1 kV/5 kV at 5,000 ohms per volt. DC Current: 50 μA, 1/10/100 mA, 1/10 amps. Ohms: 2K to 20 meg full scale in 5 ranges; 20–200K, center scale. DB: −10 to +10. List Price .......... **$105.00***

**Weston No. 80-9008002 Type R VOM**—Rack mount version of above, without 5 kV ranges. List Price .......... **$111.00***

**Weston No. 81-9008102 DC Voltmeter**—Accuracy 1%, except 2% on 1000 V range. Scale has 50 divisions. DC Volts: 0.25/1/2.5/5/10/25/50/100/250/1000 at 20,000 ohms per volt. List .. **$87.00***

**Weston No. 81-9008101 DC Milliammeter/Ammeter**—Accuracy 1%. Scale in 100 and 60 divisions. mADC: 10/30/100/300 with 10 mA range having 50 mV drop so meter can be used with external shunts. Amps: 1/3/10. List Price .......... **$87.00***

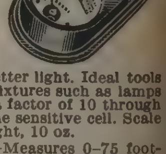
**Weston No. 81-90081003 DC Micro/Milliammeter**—Accuracy 1%. Scale in 100 and 60 divisions. mADC: .1/.3/1/3/10/30/100. List Price .......... **$87.00***

**Weston No. 82-9008201 AC Voltmeter**—Accuracy 1.5%. Rectifier type. Uses film resistors and germanium diodes to hold temperature and frequency influence to 1% for change of 10° C and 25–2,000 Hz; ranges below 250 V are useable to 15 kHz. Scale has 50 divisions. Volts: 2.5/10/50/250/500/1000 at 5000 ohms per volt. List Price .......... **$90.00***

**Weston No. 82-9008202 AC Milliammeter/Ammeter**—Accuracy 2%, 60–400 Hz; 1.5% frequency influence, 25–1,000 Hz. Usable to 5 kHz. Loss from 0.5 VA for low ranges and up to 1.5 VA for 5-amps range at 60 Hz. Scale has 100 divisions. Ranges: 50/100/200/500 mA; 1/2/5 amps. Rectifier-type transformer. List. **$90.00***

**Weston No. PN-250753 Model 9959 Case**—Leather carrying case with handle for all portable Model 80 instruments. List. **$12.25***

## MODEL 703 SIGHTMETERS



A light measuring instrument for checking lighting in offices, etc. Indicate instantly the true foot-candle rating of lighting when equipped with Viscor® color filters since they have the same color-response as the human eye. These units are pocket-size and anyone may use them. Place them on a table, desk, chair, etc., or hold them in your hand in whatever position desired. Indicates instantly whether or not the light is adequate for a particular seeing task. They are invaluable aids for the promotion of better sight through the use of better light. Ideal tools in the sale of home lighting equipment and fixtures such as lamps and reflectors. Range may be extended by a factor of 10 through the use of the special multiplier disc over the sensitive cell. Scale length, 1.43″. **Size:** 4⅝″ x 2⅝″ x 1⁵⁄₁₆″. Weight, 10 oz.

**Weston Model 703 Type 3A Sightmeter**—Measures 0–75 foot-candles. Less filters. List Price .......... **$86.00***

**Weston Model 703 Type 6A Sightmeter**—Measures 0–75 foot-candles; complete with Viscor filter. List Price ...... **$107.00***

**Weston Model 703 Type 7 Sightmeter**—Sightmeter described, with a range of 0–100 foot-candles, including the Viscor and cosine correction filters for accurate readings. List Price.... **$114.00***

**Weston Model 703 Type 8 Sightmeter**—Measures 0–30 foot-candles and comes with Viscor filter. List Price ..... **$110.75***

**Weston Model 703 Type 51 Sightmeter**—Measures 0–150 foot-candles. With ultraviolet-transparent quartz filter, black background scale with fluorescent characters and pointer. List Price .......... **$158.00***

**Weston Model 9924 Multiplier Disc**—For use with Type 3A and Type 6A Sightmeters. Merely snaps in place and reduces light reaching cell to 1/10. List Price .......... **$5.50**

**Weston Model 9959 (No. 74472) Carrying Case**—Carrying case of fine leather for use with above meters. List Price ........ **$5.50**

## MODEL 614 FOOT-CANDLE METERS

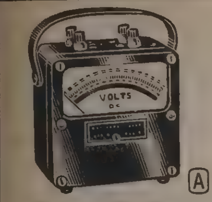
Ideal for general commercial lighting surveys where wide ranges of light values exist. Fully self-contained, no outside power or batteries required. **Scale Length:** 2.37″. **Size:** 7⅝″ x 3⅜″ x 2¼″. Weight, 1 lb., 13 oz.

**Weston No. 614-9960001**—Viscor filtered 0–60/120/600 foot-candles; for visual correction for color. List Price.... **$277.75***

**Weston No. 614-9960002**—Viscor and cosine correction filtered 0–100/250/500 foot-candles; for visual correction for color and direction. List Price .......... **$285.25***

**★QUANTITY DISCOUNTS: LOTS OF 1–5, LIST; 6–14, —5%; 15–24, —10%; 25 UP, —15%**

# WESTON® PRECISION TEST INSTRUMENTS



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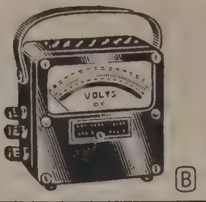

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## MODEL 931 DC INSTRUMENTS (FIG. A)

Compact, light weight and accurate within ½ of 1%. Hand calibrated mirror scales and knife-edge pointers eliminate parallax errors. Scale length 4.04″. Self-shielded permanent magnet moving coil. Size, 5¼″ x 5″ x 3¼″. Approx. Weight, 2 lbs.

### DC VOLTMETERS
### 1000 OHMS/VOLT

| Weston No. 931- | Range | Scale Division | List Price* |
|---|---|---|---|
| 1901003 | 50 | 100 | $134.00 |
| 1901002 | 150 | 150 | 134.00 |
| 1905003 | 30/7.5/3 | 150 | 156.00 |
| 1905002 | 75/30/7.5 | 150 | 156.00 |
| 1905001 | 150/15/3 | 150 | 156.00 |
| 1905005 | 300/150/3 | 150 | 156.00 |
| 1905006 | 750/300/150 | 150 | 156.00 |

### 5000 OHMS/VOLT

| Weston No. 931- | Range | Scale Division | List Price* |
|---|---|---|---|
| 1906002 | 75/30/7.5 | 150 | $174.00 |
| 1906004 | 150/15/3 | 150 | 174.00 |
| 1906006 | 300/150/3 | 150 | 174.00 |
| 1906005 | 500/100/10 | 100 | 174.00 |
| 1906001 | 750/300/150 | 150 | 174.00 |

### DC MILLIAMMETERS

| Weston No. 931- | Range | Scale Division | List Price* |
|---|---|---|---|
| 4904005 | 3/0.3/0.03 | 150 | $171.00 |
| 4904004 | 15/1.5/0.15 | 150 | 171.00 |
| 4904003 | 150/15/1.5 | 150 | 153.00 |
| 4904002 | 1500/150/15 | 150 | 153.00 |
| 4904001 | 3000/300/30 | 150 | 153.00 |

### DC MICROAMMETERS

| Weston No. 931- | Range | Scale Division | List Price* |
|---|---|---|---|
| 5901003 | 100 | 100 | $153.00 |
| 5902002 | 30 | 150 | 174.00 |
| 5902003 | 100 | 100 | 174.00 |
| 5902001 | 200 | 100 | 153.00 |

## DC AMMETERS (SELF-CONTAINED TO 50 AMPS)

Scale Division: 100 (150 for ranges of 1.5, 3 A and their multiples).

| Weston No. 931- | Range, Amps | List Price* | Weston No. 931- | Range, Amps | List Price* |
|---|---|---|---|---|---|
| 2902007 | 5/0.5/0.05 | $157.00 | 2902013 | 50/5/0.5 | $157.00 |
| 2902008 | 5/2.5/0.5 | 157.00 | 2902002 | 50/10/2 | 157.00 |
| 2902006 | 10/1/0.1 | 157.00 | 2902001 | 50/20/5 | 157.00 |
| 2902009 | 10/5/1 | 157.00 | 2902004 | 50/25/10 | 157.00 |
| 2902003 | 15/3/1.5 | 157.00 | | | |

## MODEL 432 DC AND SINGLE-PHASE AC WATTMETERS (FIG. A)

Electrodynamometer accurate within ½ of 1%. Power consumption: Potential circuit at 115 volts, 60 Hz, 1.2 watts, 1.2 volt-amperes; current circuit at 5 amperes, 60 Hz, 0.65 watt, 0.68 volt-ampere. Scale 4.04″ l. Scale Division: 75, unless otherwise noted. Size, 5¼″ x 5″ x 3¼″. Weight, 3¼ lbs., approx.

### DC AND SINGLE PHASE 25-125 Hz

| Weston No. 432- | Volts | | Amps | | Watts | | List Price* |
|---|---|---|---|---|---|---|---|
| | Nor. | Max. | Nor. | Max. | High | Low | |
| 9901001 | 150/75 | 200/100 | 1 | 1.5 | 150 | 75 | $296.00 |
| 9901005 | 150/75 | 200/100 | 5 | 7.5 | 750 | 375 | 296.00 |
| 9901002 | 300/150 | 400/200 | 1 | 1.5 | 300 | 150 | 296.00 |
| 9901006 | 300/150 | 400/200 | 5 | 7.5 | 1.5 kw | .75 kw | 296.00 |
| 9901008 | 300/150 | 400/200 | 10 | 15 | 3 kw | 1.5 kw | 296.00 |
| 9901010† | 300/150 | 400/200 | 20 | 30 | 6 kw | 3 kw | 296.00 |
| 9901011 | 300/150 | 400/200 | 50 | 75 | 15 kw | 7.5 kw | 296.00 |
| 9902005 | 150/75 | 200/100 | 10/5 | 15/7.5 | 1500/750 | 750/375 | 296.00 |
| 9902003* | 200/100 | 260/130 | 5/2.5 | 7.5/3.75 | 1000/500 | 500/250 | 296.00 |
| 9902004 | 300/150 | 400/200 | 5/2.5 | 7.5/3.75 | 1500/750 | 750/375 | 296.00 |
| 9902007 | 300/150 | 400/200 | 10/5 | 15/7.5 | 3/1.5 kw | 1.5/.75 kw | 296.00 |

### DC AND SINGLE PHASE 25-1000 Hz

| Weston No. 432- | Volts Nor. | Volts Max. | Amps Nor. | Amps Max. | Watts High | Watts Low | List Price* |
|---|---|---|---|---|---|---|---|
| 9902013 | 300/150 | 400/200 | 5/2.5 | 7.5/3.75 | 1500/750 | 750/375 | $321.00 |
| 9901015 | 300/150 | 400/200 | 5 | 7.5 | 1.5 kw | .75 kw | 321.00 |

Scale Div.: *100; †60.

## MODEL 433 AC INSTRUMENTS (FIG. B)

Movable iron type, horizontal operation, shielded from external magnetic fields. Well compensated for temperature changes. **Power Consumption:** 150 V range at 115 volts, 60 Hz, 2.5 watts, 2.5 VA. **Rated Accuracy:** .75%. **Frequency Coverage:** Alternating current at frequencies from 25 to 1000 Hz available. **Self-Contained Ranges:** Single, double and triple up to 750 volts. **Range Extension:** Higher ranges obtained with multipliers or by using Model 311 Potential Transformer in connection with a 150 volt range. **Size:** 3¼″ x 5″ x 5¼″. Weight, 2½ lbs., approx.

### AC VOLTMETERS
### 25-125 Hz

| Weston No. 433- | Range | Approximate Resistance, Ohms | Scale Div. | List Price* |
|---|---|---|---|---|
| 1901005 | 150 | 5300 | 150 | $145.00 |
| 1901008 | 250 | 18,200 | 125 | 145.00 |
| 1902011 | 10/5 | 24/12 | 100 | 147.00 |
| 1903001 | 20/10 | 116/58 | 100 | 147.00 |
| 1903002 | 30/15 | 336/168 | 150 | 147.00 |
| 1903004 | 60/30 | 850/425 | 150 | 147.00 |
| 1903007 | 150/75 | 5300/2680 | 150 | 147.00 |
| 1903009 | 300/150 | 22,000/11,000 | 150 | 147.00 |
| 1905001 | 450/300/150 | 33,000/22,000/11,000 | 150 | 173.00 |
| 1906002† | 600/300/150 | 44,000/22,000/11,000 | 150 | 173.00 |
| 1906003† | 750/300/150 | 55,000/22,000/11,000 | 150 | 173.00 |

†Has extension on case for additional resistance.

### 25-1000 Hz

| Weston No. 433- | Range | Approximate Resistance, Ohms | Scale Div. | List Price* |
|---|---|---|---|---|
| 1901007 | 150 | .................... | 150 | $165.00 |
| 1903008 | 150/75 | .................... | 150 | 168.00 |
| 1903010 | 300/150 | .................... | 150 | 168.00 |
| 1906001 | 600/300/150 | .................... | 150 | 193.00 |
| 1907001‡ | 750/300/150 | .................... | 150 | 237.00 |

‡Includes necessary external Model 9990, Type 52 resistance box.

### AC AMMETERS

Similar to Fig. A in appearance. **Power Consumption:** 5 amps range at 5 amps, 60 Hz, 0.50 watt 0.52 VA. Single, double and triple ranges cover frequencies 25–500 Hz. Higher frequency coverage available. Triple range instruments have internal current transformer. All have two binding posts, double and triple range instruments have range selector switch. For ranges above 50 amps, Model 461 Current Transformer, Type 1 with 5 amps instrument is recommended. Adjustable pointer stop is available for use where starting current is higher than normal load; add **$14.00** to list price.

### 25-500 Hz

| Weston No. 433- | Range | Approximate Resistance, Ohms | Scale Div. | List Price* |
|---|---|---|---|---|
| 2901001 | 1 | 0.48 | 100 | $136.00 |
| 2901002 | 5 | 0.020 | 100 | 136.00 |
| 2901005 | 15 | 0.0038 | 150 | 136.00 |
| 2903004 | 2/1 | 0.12/0.48 | 100 | 157.00 |
| 2903001 | 5/2.5 | 0.02/0.08 | 100 | 157.00 |
| 2903005 | 10/5 | 0.0083/0.028 | 100 | 157.00 |
| 2903006 | 20/10 | 0.004/0.0108 | 100 | 157.00 |
| 2906002 | 3/1.5/0.75 | 0.18/0.43/0.59 | 150 | 216.00 |
| 2906001 | 5/2.5/1 | 0.13/0.26/0.37 | 100 | 216.00 |
| 2906005 | 10/5/1 | 0.030/0.070/0.37 | 100 | 216.00 |
| 2906006 | 10/5/2.5 | 0.030/0.060/0.075 | 100 | 216.00 |
| 2906007 | 15/7.5/1.5 | 0.023/0.044/0.19 | 150 | 216.00 |
| 2907001 | 20/5/2 | 0.040/0.19/0.30 | 100 | 216.00 |
| 2908001 | 30/7.5/3 | 0.0090/0.036/0.040 | 150 | 216.00 |
| 2909001 | 50/20/5 | 0.0084/0.0011/0.020 | 100 | 216.00 |
| 2909002 | 50/20/10 | 0.0073/0.0080/0.010 | 100 | 216.00 |

### AC MILLIAMMETERS

Double ranges cover 25–1000 Hz. Double range instruments have range selector switch. Frequency span to 2500 Hz within ¾% accuracy possible.

### 25-500 Hz

| Weston No. 433- | Range | Approximate Resistance, Ohms | Scale Div. | List Price* |
|---|---|---|---|---|
| 4903005 | 150/75 | 30/120 | 150 | $155.00 |
| 4903002 | 300/150 | 6.4/26 | 150 | 155.00 |
| 4903006 | 500/250 | 1.6/6.6 | 100 | 155.00 |

### 25-1000 Hz

| Weston No. 433- | Range | Approximate Resistance, Ohms | Scale Div. | List Price* |
|---|---|---|---|---|
| 4903001 | 100/50 | .................... | 100 | $163.00 |
| 4903003 | 500/250 | .................... | 100 | 163.00 |

### ★QUANTITY DISCOUNTS

| 1-5 | 6-14 | 15-24 | 25 Up |
|---|---|---|---|
| List | List −5% | List −10% | List −15% |

**NOTE: ONLY THE MOST COMMON RANGES ARE LISTED. OTHER RANGES AND MODELS ON REQUEST.**

# Sams Technical Books

### REFERENCE DATA FOR RADIO ENGINEERS (5TH EDITION)

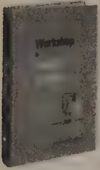
Fifth edition is the result of five years revision and compilation by an extremely diverse group of practicing engineers, professors, and industry and government experts under the direction of H. P. Westman, editor, and the ITT staff. In addition to new data on all the basic phases of radio and electronics, the 45 chapters contain material on seven subject areas not covered in the fourth edition, including microminiature electronics, space communication, navigation aids, reliability and life testing, internal telecommunication recommendations, switching networks and traffic concepts, and quantum electronics.
**Sams No. 20678**—Price Each.......................................................$20.00

### AUDIO CYCLOPEDIA (2ND EDITION)

**By Dr. Howard M. Tremaine.** New, revised second edition offers the most complete coverage of every phase of the audio art. New and updated entries make it a valuable audio reference library which contains the latest information available in the audio world. Easy-to-read and easy-to-use volume includes coverage on stereo, acoustics, motion picture projection equipment, optical-film recording, studio techniques and many other related subjects.
**Sams No. 20675**—Price Each.......................................................$29.95

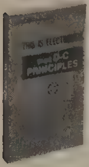
### COMPUTER DICTIONARY AND HANDBOOK (COMPLETE, UNABRIDGED EDITION)

**By Charles J. Sippl.** The most comprehensive reference available covering all phases of computers and their applications. This expanded version of the Computer Dictionary contains more than 8,500 definitions, acronyms and abbreviations; the most complete source for professional use. Authoritative and unabridged, suitable for reference use in libraries, schools, and by anyone whose work or professional interest involves computer functions.
**Sams No. 20104**—Price Each.......................................................$12.95



### WORKSHOP IN SOLID STATE

**By Harold E. Ennes.** Provides a rapid, practical and effective transition from vacuum tube circuitry to solid-state circuitry. The material was originally constructed for use in training broadcast engineers and technicians; therefore, broadcast circuitry and applications are emphasized.
**Sams No. 20735**—Price Each..............$9.95



### THIS IS ELECTRONICS (4 VOLUMES)

**By the Training Department, ITT Educational Services, Inc.** Four volumes provide the reader with a good foundation in electronics, dealing in detail with this expansive, advancing field that now embraces almost all our industries. They introduce the reader to electronics in a gradual manner; the topics are short, understandable, and presented in an orderly sequence. All volumes are 5½" x 8¾"; soft bound.

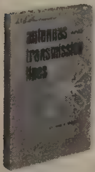
**Basic DC Principles (Volume 1).**
**Sams No. 20657**—Price Each............................$ 5.95

**Basic AC Principles (Volume 2).**
**Sams No. 20727**—Price Each............................6.95

**Circuits (Volume 3).**
**Sams No. 20759**—Price Each............................6.95

**Applications (Volume 4).**
**Sams No. 20760**—Price Each............................5.95

**Complete Set of Four "This is Electronics" Volumes.**
**Sams No. 20761**—Price Each............................23.50



### ANTENNAS AND TRANSMISSION LINES

**By John A. Kuecken.** Fills the gap between highly mathematical and non-mathematical theory pertaining to antennas and transmission lines. However, some knowledge of elementary calculus and vector algebra is desirable. Divided into three parts, beginning with theory discussion on standing waves, array sources and wave interference. Other topics covered include lumped circuits, waveguides, hybrid conjunctions, reactive elements, half-space, radio-range prediction, and many other important areas.
**Sams No. 20716**—Price Each..............$7.95

### RTL COOKBOOK

**By Don Lancaster.** Concerned with digital integrated circuits. Helps the electronics experimenter to understand and intelligently use the low-cost digital IC's now readily available for practical, everyday electronics projects. Also shows the reader the concept of digital IC's—how they work, how to use them, and how to design with them.

**Sams No. 20715**—Price Each..............$5.50

### TRANSISTOR SPECIFICATIONS MANUAL (3RD EDITION, REVISED)

Contains the electrical and physical parameters for virtually all of the transistors now in use.
**Sams No. 20707**—Price Each..............................$4.25

### HANDBOOK OF ELECTRONIC TABLES AND FORMULAS (3RD EDITION)

A one-stop source for all charts, tables, formulas, laws, symbols and standards used in electronics.
**Sams No. 20648**—Price Each..............................$5.50

### PRACTICAL DESIGN WITH TRANSISTORS

**By Mannie Horowitz.** Offers the circuit designer a direct approach to the design of a wide variety of solid-state circuits. Covers biasing, feedback and high-frequency considerations, along with various methods of coupling. Also includes the latest semiconductor developments, especially concerning new applications of field effect transistors.
**Sams No. 20659**—Price Each..............$5.95

### SEMICONDUCTOR HANDBOOK

**By Robert B. Tomer**—All-inclusive, modern sourcebook of industrial semiconductor data in one comprehensive, lavishly illustrated volume. Covers thermoelectricity, energy conversion, power inverters, converters, high-power audio, modulators, micro-modules, high-power RF, thin-film circuits, integrated circuits, high density packaging; plus grown-junction, alloyed-junction, drift, MADT, mesa, planar and epitaxial mesa transistors.
**Sams No. 20620**—Price Each..............$5.75

### CLOSED CIRCUIT TV FOR ENGINEERS AND TECHNICIANS

**By Leonard C. Showalter.** Intended as both a reference and a textbook for those who operate, maintain and design closed-circuit television systems. The material should also prove useful to those engaged in the technical aspects of television broadcasting and educational television. The reader should have a fundamental knowledge of electronics, but no advanced mathematics is required.
**Sams No. 20606**—Price Each..............$8.95

### CONTROL INSTRUMENT MECHANISMS

**By John E. Warren.** A discussion of the mechanical and pneumatic principles that govern all pneumatic control instrumentation. Covers the principles of instrument components rather than the specific instruments themselves. Color is used liberally in illustrations to emphasize force arrows, inputs, outputs and circuit paths.
**Sams No. 20596**—Price Each..............$9.95

### ELECTRICAL AND ELECTRONIC SIGNS AND SYMBOLS

**By Robert G. Middleton.** Describes and explains basic signs and symbols appearing on schematics, abstract diagrams, graphs, mathematical formulas, and other forms of representation.
**Sams No. 20633**—Price Each..............................$4.50

### MODERN DICTIONARY OF ELECTRONICS (3RD EDITION)

**By Rudolf F. Graf.** Now contains approximately 16,500 terms, all directly associated with the science of electronics.
**Sams No. 20600**—Price Each..............................$9.95

### SLIDE RULE IN ELECTRONICS

**By Don Carper.** Teaches the use of the slide rule for electronics mathematics.
**Sams No. 20532**—Price Each..............................$4.25

### ELECTRICAL MOTOR CONTROLS AND CIRCUITS

**By David Fuchs and Stephen Garstang.** A comprehensive handbook for installers and maintenance technicians, covering automatic and semiautomatic control circuits.
**Sams No. 20163**—Price Each..............................$5.75

# *David* **Clark** COMPANY *INCORPORATED* HEADSET/MICROPHONE COMMUNICATION SYSTEMS

## SOUND POWER HEADSET/MICROPHONES

Reliable Navy sound power system, refined into a versatile and economical communications system for industry. No external power needed; your voice supplies all the power to operate these highly efficient, maintenance-free headset/microphones. Two-wire hookup. Satisfactory communications between two headsets for 30 miles or more can be obtained, using #19 AWG wire; up to 10 headset/microphones can be used for shorter distances. **Receiver:** Power output, 4.1 μW at 500–2500 Hz; 7.5 μW at 1000 Hz. Impedance (loaded), 1480 ohms at 500–2500 Hz; 950 ohms at 1000 Hz. DC coil resis., 62 ohms. **Transmitter:** Power output, 4.0 μW at 500–2500 Hz; 6.9 μW at 1000 Hz. Imped., 540 ohms at 500–2500 Hz; 320 ohms at 1000 Hz. DC coil resis., 32 ohms. Headset/microphones include two-cond. 30″ cords, PJ-055 plugs.

### MODEL 15SM-A HEADSET/MICROPHONE

Headset with noise-shielded microphone uses sound power elements fabricated to government specifications. Provides reliable, distinct, clear communications in medium to high noise areas (up to 130 dB). Push-to-talk switch on microphone shield. Up to 10 units can be interconnected, using only your voice for power.

**David Clark Model 15SM-A**—Net Each.............**$120.00**

**David Clark Model 15S-A Headset**—Less mike. Net.. **93.75**

### MODEL 800SM-A NOISE SHIELDED

Same outstanding features as Model 15SM-A, but in behind-the-head configuration, allowing the user to wear safety headgear. No modification or attachment is necessary.

**David Clark Model 800SM-A**—Net Each...........**$120.00**

### MODEL 10SB-A WITH ACOUSTIC BOOM

Durable acoustic boom is used to backload receiver; eliminates boom mounting of a heavy microphone element. Lightweight boom easily adjusts in all planes. Symmetrical design can be worn with boom on either side of the head. For noise to 100 dB.

**David Clark Model 10SB-A**—Net Each............**$115.00**

### MODEL 800SB-A WITH ACOUSTIC BOOM

Same behind-the-head design as Model 10SB-A. No push-to-talk switch is required, permitting hands-free operation. Can be worn with safety caps or hats; ideal for construction sites and other applications with noise levels up to 100 dB.

**David Clark Model 800SB-A**—Net Each...........**$115.00**

### MODEL 720SB-A LIGHTWEIGHT HEADSET/ MICROPHONE WITH ACOUSTIC BOOM

Low profile for long-term wearing comfort and high clarity communications in noise levels up to 80 dB.

**David Clark Model 720SB-A**—Net Each.............**$66.25**

### MODEL 710SB-A SINGLE EAR

Lightweight, single ear headset/microphone with acoustic boom. Provides quality communication in noise environments of 70 dB and below, with wearing comfort for prolonged periods of use.

**David Clark Model 710SB-A**—Net Each..............**$41.00**

### SOUND POWER ACCESSORIES

For complete sound power system installations. All plugs and jacks on headset/microphones and accessories mate with each other.

**David Clark Type SXJ-409 Jumper Cord**—Makes a complete two-man communication system. Headsets plug directly into #88 jack at each end of cord. 12-ft., Net Each..................**$11.15**
25-ft., Net Each......**$15.10**; 50-ft., Net Each...... **22.70**
100-ft., Net Each.................................. **38.00**

**David Clark Type SX-334 Extension Cord**—Has #88 phone jack on one end, PJ-055 phone plug on the other. Two-cond. neoprene jacketed for extended flex life and abrasion resistance.
12-ft., Net Each.....**$11.65**; 25-ft., Net Each......**$15.65**
50-ft., Net Each..... **23.30**; 100-ft., Net Each..... **38.65**

**David Clark Type J-2 Jack Plate**—Jacks with weatherproof covers, mounted on standard outlet faceplate. Color-coded pigtails for easy installation. Net Each..........................**$7.25**

**David Clark Type J-6 Junction Box**—Heavy-duty, 2″ x 4″ x 2″, with jacks for up to six headset/microphones. Net Each .**$45.00**

## INTERCOM MODULES

Easy installation by non-technical personnel. Two twisted pair (one pair shielded) required between modules.

### HEADSET STATIONS

**David Clark Model 3S-V with Volume Control**—Standard headset station for single-ended, talk line installations. Term. strip for wiring handset or hand-held mike. Net Each..........**$41.75**

**David Clark Model 2S-V with Volume Control**—Used with broadcast or telephone line amplifiers and balanced talk line installations. Includes isolation transformer. Net Each........**$32.75**

**David Clark Model 3S**—Same as 3S-V, but without volume control. Net Each.................................**$30.75**

### AMPLIFIERS

**David Clark Model 2LA-500 Line Amplifier**—For installations with 2 to 8 headset stations (Model 3S-V). Input, 1000 ohms. Output, 500 mW. Voltage gain, 26 dB. Net Each......**$37.00**

**David Clark Model 3PA-2 Amplifier**—For installations with more than 10 stations. Input, 40K ohms. Output, 2 watts. Voltage gain, 28 dB. Net Each.............................**$62.75**

**David Clark Model 3PA-V2**—Same as 3PA-2, but with volume control. Net Each..............................**$71.25**

### POWER SUPPLY

**David Clark Model 2PS-24**—Well regulated, for intercom use. On-off switch, pilot light; fused. Input, 110 VAC, 60 Hz. Output, 24 VDC. Ripple, 0.1%. Cur., ⅓ amp max. Net Each....**$98.00**

### HANDSET STATION

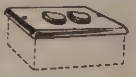
**David Clark Model 3HS**—For connecting a handset to talk line and listen line of intercom system. Attaches to rear of a plate-mounted handset hanger assembly, such as Soundolier "WE" or "WB" series. Net Each..............................**$25.50**

### SOUND POWER SYSTEM

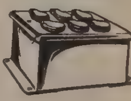
15SM-A

800SB-A

710SB-A



J-2



J-6

### HIGH IMPEDANCE

10BB

720HB

C4016

### INTERCOM MODULES

3S-V

2LA-500

2PS-24

## HIGH IMPEDANCE HEADSET/MICROPHONES

For flexible, reliable hands-free communication in high noise level environments. Noise-canceling carbon microphone has 300–4000 Hz response; output, 10 dBm re-10 dynes/cm² at ¼″; 100 ohms impedance. Dynamic earphone has 100–5000 Hz response; sensitivity, 95 dB in 6 cc coupler; 600 ohms, circuit impedance. (Models 720HB and 710HB have dynetic earphone, described below.)

### MODEL 15BM NOISE SHIELDED

For maximum intelligibility in extremely noisy areas, up to 135 dB. Tear-drop shaped microphone shield allows fingertip control of push-to-talk switch. 30″, 3-cond. cord with PJ-051 plug.

**David Clark Model 15BM**—Net Each..............**$115.50**

**David Clark Model 800HM**—Same as 15BM but for use with safety headgear. 30″ cord, PJ-051 plug. Net Each....**$115.50**

**David Clark Model C1017G-03**—Same as 15BM, but microphone shield strap assembly and related hardware, plug jack and plug connectors in microphone line, are eliminated. Reinforced cords, grommets. Microphone shield hangs securely, ready for periodic use. 30″ cord, PJ-051 plug. Net Each................**$90.75**

### MODEL 10BB WITH BOOM MICROPHONE

Headset with boom microphone for medium noise areas (up to 120 dB). Two hinge points plus symmetrical mounting permits infinite adjustment of boom. 30″, 3-cond. cord, Switchcraft #267 plug.

**David Clark Model 10BB**—Net Each..................**$96.75**

**David Clark Model 10B-A**—Headset only, with 30″, 2-cond. cord and PJ-055 plug. Net Each..........................**$62.00**

**David Clark Model 800HB**—Same as 10BB, for comfortable wearing with most types of safety headgear. Net Each.....**$96.75**

**David Clark Model 800H-A**—Headset only. Net Each.. **62.00**

### MODEL 720HB LIGHTWEIGHT

Designed for long hours of wearing comfort. Hinged boom for infinite adjustment. Noise capability to 100 dB. Dynetic earphone has 100–5000 Hz response; sensitivity, 114 dB in 6 cc coupler. 150 ohms imped. With 30″, 3-cond. cord, Switchcraft #267 plug.

**David Clark Model 720HB**—Net Each...............**$77.00**

**David Clark Model 710HB**—Single ear version of 720HB headset/microphone; noise capability, 85 dB. Net Each........**$62.50**

### HEADSET/MICROPHONE SYSTEM ACCESSORIES

**David Clark Type ASP-124 Extension Cord**—Three-conductor cord with PJ-051 plug and Switchcraft #838 jack. For headset with carbon microphone and push-to-talk switch.
12-ft., Net Each.....**$12.25**; 25-ft., Net Each......**$16.50**
50-ft., Net Each..... **24.50**; 100-ft., Net Each..... **40.75**

**David Clark Type C4016 Push-to-Talk Assembly**—For headsets with carbon boom mikes (10BB, 800HB, 720HB, 710HB). Lock-down plug prevents accidental disconnect. Three-cond. coil cord with Switchcraft #298 plug, Switchcraft #12B jack.
6-ft., Net.**$23.50**; 12-ft., Net.**$46.75**; 25-ft., Net.**$67.50**

# PROFESSIONAL MICROPHONES AND HEADPHONES

C-12A
C-451E
C-24
D-1000TS
D-24E
D-707TS,
D-707E
D-109
D-190TS,
D-190E,
D-190ES
D-200E,
D-200TS
D-110
D-202E
D-160E
D-224E
D58E
D-900E
K-180
K-60
K-36

## CONDENSER MICROPHONES

**AKG Model C-12A**—Studio condenser microphone with selective omnidirectional/cardioid/figure-8 and six intermediate directional patterns. Response, ±2 dB, 20–20,000 Hz. Sensitivity, −44 dB. Impedance, 50/200 ohms. Cardioid front-to-back ratio, 20 dB. Distortion, 0.3%. Size, 3 15/16″ x 1 9/16″ x 1¼″. System Net Weight, 9 lbs. With anti-shock stand adapter, power supply with built-in pattern selector, cables, case. Net Each........**$399.00**

**AKG Model C-24 Stereo Twin**—Same as C-12A except with two coaxially mounted elements. Adjustable for base angle, XY or MS stereo techniques with remote control of nine variable pickup patterns. Sensitivity, −39 dB. Size, 10 1/16″ x 1 11/16″. System Net Weight, 29 lbs. With power supply, pattern selector, stand adapter, cables, case. Net Each..............**$885.00**

**AKG Model C-451E**—All FET condenser modular microphone features interchangeable omni, cardioid, selectable 3-pattern, shotgun capsules. Easily powered from your amplifier without separate power supply. Basic C-451E combination includes cardioid capsule, preamplifier, stand adapter, windscreen. Accessory modular capsules, optional power supplies and wiring information for direct amplifier powering available on request.
Net Each....................**$179.00**

## CARDIOID DYNAMIC MIKES

**AKG Model D-1000TS**—Cardioid dynamic for professional performers. Supplied with switch for changing tonal response from bass to medium to sharp. Frequency response, ±3 dB, 40–16,000 Hz. Sensitivity, −53 dB (200 ohms). Size, 6″ x 1 7/16″. Weight, 9½ oz. Comes with on-off switch, high-impedance transformer, phone jack, cable and case. Net Each..**$75.00**

**AKG Model D-1000E**—Same, but low impedance. Net Each..........**$60.00**

**AKG Model D-24E**—Famous, professional-quality, cardioid dynamic microphone with revolutionary design for a wide variety of applications. 0–10 dB bass attenuation switch. Frequency response, ±2.5 dB, 30–18,000 Hz. Sensitivity, −53 dB. Impedance, 60 or 200 ohms (specify). Cardioid front-to-back ratio, 18 dB. Size, 6½″ x 1 9/16″. Net Weight, 6 oz. Includes stand adapter, cable, case. Net Each.**$160.00**

**AKG Model D-707TS**—Popular, budget-priced version of D-24E. For high quality music, vocalist use and recording. Response, ±3.5 dB, 50–15,000 Hz. Sensitivity, −52 dB. High impedance. With on/off switch. Cardioid front-to-back ratio, 15 dB. Size, 6″ x 1 7/16″. Net Weight, 4 oz. Includes stand adapter, cable, case.
Net Each.....................**$49.50**

**AKG Model D-707E**—Low impedance.
Net Each.....................**$39.50**

**AKG Model D-190TS**—Cardioid dynamic microphone provides clean and effortless sound transmission over 40–15,000 Hz, ±3 dB. Sensitivity, −53 dB (200 ohms). Size, 6¼″ x 1½″. Weight, 6 oz. Comes with on-off switch, high-impedance transformer, phone jack, cable and case. Net..**$65.00**

**AKG Model D-190E**—Same as D-190TS, but low impedance and without on-off switch. Net Each.............**$50.00**

**AKG Model D-190ES**—Same as D-190E/D-190TS, but with built-in on/off switch and low impedance only. Net...**$55.00**

## LAVALIER MICROPHONES

**AKG Model D-109**—Miniature lavalier dynamic for inconspicuous use. Professional fidelity with low frequency compensation for speech use against the chest. Adjustable mask for high frequency control. Frequency response, ±5 dB, 30–15,000 Hz. Sensitivity, −56 dB. Impedance, 200 ohms. Size, 2¾″ x 5/8″. Net Weight, 1.5 oz. Includes neck cord, cable, case. Net Each...............**$49.00**

**AKG Model D-110**—Lavalier dynamic with independently suspended system, internally cushioned to virtually eliminate handling and cable noise. Frequency compensated for chest use and natural speech reproduction. High output for improved signal-to-noise ratio. Same performance specifications as D-109 except: Size, 3 1/16″ x 23/32″. Weight, 2.75 oz. Includes neck cord with tie clip, cable, case. Net Ea..**$80.00**

## D-200 SERIES TWO-WAY CARDIOID MICROPHONES

**AKG Model D-200E**—Unique AKG design gives professional condenser mike performance from dynamic cardioid. Two coaxially mounted elements with 500 Hz crossover network like two-way speaker system. Response, ±3 dB, 30–15,000 Hz. Sensitivity, −55 dB. Imp., 200 ohms. Cardioid front-to-back ratio, 18 dB. Size, 7 5/16″ x 1 5/8″. Net Wt., 8 oz. Includes stand adapter, cable, case. Net Each..**$69.00**

**AKG Model D-200TS**—High impedance. With on/off switch. Net Each...**$84.00**

**AKG Model D-202E**—Same two-way cardioid dynamic design as D-200E, except with 0–20 dB at 50 Hz bass attenuation switch, response of ±2 dB, 30–15,000 Hz, and cardioid front-to-back ratio of 20 dB. Lgth., 8½″. Net Wt., 9.5 oz.
Net Each.......................**$130.00**

**AKG Model D-202E with Boom Mount**—Same as D-202E except with special elastic boom suspension, front and rear windscreens. Net Each............**$190.00**

**AKG Model D-224E**—Extended response, two-way cardioid dynamic for exacting applications. Response, ±2 dB, 20–18,000 Hz. Sensitivity, −55 dB. Impedance, 200 ohms. Cardioid front-to-back ratio, 20 dB. Size, 7¾″ x 15/16″. Net Wt., 9.5 oz. Includes stand adapter with shock mounting, cable, case. Net Each..............**$185.00**

## OMNI-DIRECTIONAL DYNAMIC MIKES

**AKG Model D-160E**—Professional mike for wide variety of applications. Features removable wire mesh windscreens which permits attenuation of response characteristics. Frequency response, ±3 dB, 50–15,000 Hz. Sensitivity, −55 dB. Impedance, 200 ohms. Size, 7¼″ x 1 3/8″. Weight, 7.5 oz. Includes stand adapter, 15′ cable, case. Net Each..................**$60.00**

## SPECIAL PURPOSE MIKES

**AKG Model D-58E**—Anti-noise differential dynamic for close-range voice use in noisy areas. Cancels unwanted sound. Use close to PA speakers. Response, ±3 dB, 70–12,000 Hz. Sensitivity, −58 dB. Imp., 60 or 200 ohms (specify). Noise rejection, 25 dB. Size, 1 5/8″ x 13/16″. Net Wt., 1.1 oz. With connector, case. Net Ea...**$43.00**

**AKG Model D-900E**—Dynamic shotgun microphone with high directivity, combining gradient and interference principles. Incorporates two-position (−7 and −20 dB at 50 Hz) bass roll-off switch to eliminate effects of poor acoustics, low frequency boom rumble or wind noise. Matte charcoal gray finish renders it inconspicuous for stage or TV use. Response, ±3 dB, 40–13,000 Hz. Sensitivity, −50 dB (200 ohms). Size, 26⅛″ x 1¼″. Weight, 17 oz. Comes with 3-pin XLR type connector, stand adapter and zippered bag.
Net Each.......................**$149.00**

## STEREO HEADPHONES

**AKG Model K-180**—For ultimate experience in headphone listening. Subjectively controllable sound which permits adjustment of auditory volume between ear entrance and headphone driver to individual physiological acoustic taste. Response, 16–20,000 Hz. Impedance matches 4–600 ohms. Net Wt., 21 oz. Includes coil cord and prewired plug. Net....**$69.00**

**AKG Model K-60**—Famous "humanized" deluxe professional dynamic stereo headphones. Scientifically designed transducers are compensated for ear response characteristics when coupled to headphones. Reproduction equals the best studio loudspeaker systems. Response, 20–20,000 Hz. Imp., matches 4–600 ohms. Net Weight, 11 oz. Includes ear cushions, prewired plug.
Net Each........................**$39.50**

**AKG Model K-120**—Top-value dynamic stereo headphones. Same "humanized" 20–20,000 Hz frequency response as deluxe K-60. Matches 4–600 ohms impedance. Includes ear cushions, prewired stereo plug. Net Each...............**$22.50**

**AKG Model K-36**—Headphone/microphone set. Combines specifications of K-120 and D-58E above. Net Wt., 17 oz.
Net Each.........................**$49.50**

**We stock a complete line of accessories for AKG microphones. Contact us for information on AKG table and floor anti-shock stands, windscreens, standard and shock-mounted adapters, etc.**

SHURE

# UNIDIRECTIONAL PA AND RECORDING MICROPHONES

548
548S
548SD
545
545SD
545L
565SD
55SW
580SA/SB
585SAV/SBV
585SA/SB
588SA/SB

## UNIDIRECTIONAL DYNAMIC MICROPHONES

### "UNIDYNE IV" WIDE-RANGE CARDIOID MICROPHONES

Latest model in Shure's world-famous Unidyne family features ultra-high quality, super-rugged construction and unusually smooth, wide-range response for both voice and music. Has superb feedback and "boom" suppressing characteristics. Easily serviced in the field. Specially cushioned, reinforced cartridge. Cannon connectors. **Frequency Response:** 40–15,000 Hz. **Polar Pattern:** Uniform cardioid. **Impedance:** 25–200 ohms or high. **Output Level:** Low impedance, −57 dB; high, −55 dB. **Size:** 1 9/16″ dia. x 6⅛″ lg. With 15-ft. shielded cable. Shpg. Wt., 1 lb. 15 oz.

**Shure Model 548**—For stand or hand use. Includes swivel adapter, Net Ea.... **$69.00**

**Shure Model 548S**—Similar, but mounted on lifetime swivel that also contains on-off switch. Size, 1 9/16″ dia. x 5 7/16″ lg. Net Each.................................. **$72.00**

**Shure Model 548SD**—Same, but has built-in long life magnetic reed on-off switch and solderless impedance change feature. For stand or hand use. Net Each........ **$72.00**

**Shure Model 549**—Professional, stage version. Dual 30–50 and 150–250 ohm impedance, with combination impedance selection/on-off switch. Output level, −56 dB at 50 and 200 ohms. Built-in vibration-isolation shock mount. Special "storage" packaging. Size, 1 9/16″ dia. x 5 7/16″ lg. Less cable. Net Each.............................. **$105.00**

### "UNIDYNE III" WIDE-RANGE CARDIOID MICROPHONES

The finest moderately priced dynamic cardioid microphone available, for wide range reproduction of voice and music. Acoustical design approaches theoretical ideal uniform cardioid pattern. Ideal for fine quality PA systems, tape recording, etc. Reduces or eliminates feedback and background noise in adverse acoustical conditions. Striking modern design is highly flexible for stand or hand use. **Frequency Response:** 50–15,000 Hz. **Polar Pattern:** Uniform cardioid. **Impedance:** 25–200 ohms or high. **Output Level:** Low impedance, −57 dB; high, −55 dB. **Size:** 1¼″ dia. x 5¾″ long. With 15-ft. 3-conductor shielded cable except 544, 7-ft. 2-cond. Shpg. Wt., 2¼ lbs.

**Shure Model 545**—Net Each............................................ **$57.60***

**Shure Model 545S**—Same, but with on-off switch on swivel assembly. Net.. **61.20***

**Shure Model 545SD**—Same, but has built-in long life magnetic reed on-off switch and solderless impedance change feature. For stand or hand use. Impedance, 25–200 ohms or high. Size, 1¼″ dia. x 6⅛″ lg. With 15-ft., 2-cond. shielded cable. Net Each... **$61.20**

**Shure Model 544**—Same, but for gooseneck mounting. Net Each............ **54.60**

**Shure Model 544-G6**—Same as above, but mounted on 6″ flexible gooseneck with mounting flange. Net Each............................................ **$56.40**

**Shure Model 544-G12**—Same, but on 12″ gooseneck. Net Each.............. **57.00**

**Shure Model 544-G18**—Same, but on 18″ gooseneck. Net Each.............. **57.60**

### MODEL 545L "UNIDYNE III" DYNAMIC CARDIOID LAVALIER

Small and strikingly handsome lavalier microphone reproduces the human voice with remarkable fidelity. Favorite choice for singers and entertainers. **Frequency Response:** 50–15,000 Hz. **Polar Pattern:** Uniform cardioid. **Impedance:** Low, for 25–200 ohm input. **Output Level:** −57 dB. **Size:** 1¼″ dia. x 5⅛″ long. With 20-ft., 2-cond. cable.

**Shure Model 545L Lavalier Microphone**—Net Each........................ **$48.00***

### MODEL 546 "UNIDYNE III" SHOCK MOUNTED DYNAMIC CARDIOID

Top-of-the line version of the Unidyne family, especially recommended for critical theater sound systems, PA and recording applications. Features special vibration-isolation shock mount of live rubber. **Frequency Response:** 40–15,000 Hz. **Polar Pattern:** Uniform cardioid. **Impedance:** Dual (50 or 150 ohms). **Output:** −56 dB. **Size:** 1¼″ dia. x 5 1/16″ long. 20-ft. 2-cond. cable. Shipping Weight, 3⅝ lbs.

**Shure Model 546 "Unidyne III" Cardioid Microphone**—Net Each........... **$93.00**

**Shure Model 547**—Stage version. Includes storage case. Less cable. Net Ea... **93.00**

### "UNISPHERE I" DYNAMIC CARDIOID MICROPHONES

All the features of the famous Unidyne series for difficult PA applications, plus special filter assemblies that effectively control explosive breath sounds ("pop") and minimizes wind noise. Provides superb feedback control and uniform cardioid pattern. Excellent reproduction of voice and music, indoors or outdoors, without external windscreen. **Frequency Response:** 50–15,000 Hz. **Polar Pattern:** Uniform cardioid. **Impedance:** Dual. Models 565, 565S, 565SD: 25–200 ohms or high; Model 566, 30–50 or 150–250 ohms. **Output Level:** Models 565, 565S, 565SD: Low, −57 dB; high, −54.5 dB. Model 566, −55 dB. **Size:** 2″ dia. x 6½″ long. **Cable:** Models 565, 565S: 15-ft., 3-conductor shielded; Model 565SD, 15-ft., 2-conductor shielded; Model 566, 18-ft., 2-conductor. Shipping Weight, 2¾ lbs.

**Shure Model 565**—For stand or hand use. Net Each...................... **$64.80***

**Shure Model 565S**—Same, with on-off switch on swivel assembly. Net Each... **67.80**

**Shure Model 565SD**—Same, but has built-in long life magnetic reed on-off switch and solderless impedance change feature. For stand or hand use. Net Each........ **$67.80**

**Shure Model 566**—Same, but frequency response, 40–15,000 Hz and with built-in vibration-isolation shock mount of life rubber with swivel. Net Each.............. **$99.00**

### MODEL 55S "UNIDYNE II" DYNAMIC CARDIOID MICROPHONE

Extremely rugged microphone, world-famous for faithful sound reproduction. Especially suited for PA and theater sound systems, and recording applications. Used by leading sound specialists, performers and public speakers, indoors and outdoors. **Frequency Response:** 50–15,000 Hz. **Polar Pattern:** Uniform cardioid. **Impedance/Output Level:** Low (30–50 ohms), −55.5 dB; medium (150–250 ohms), −56.5 dB; high, −55.5 dB. **Size:** 2 3/16″ w. x 3 1/16″ d. x 7⅜″ h. With 15-ft. cable. Wt., 3⅛ lbs.

**Shure Model 55S "Unidyne II" Dynamic Microphone**—Net Each.......... **$57.00***

**Shure Model 55SW**—Same, but with on-off switch. Net Each.............. **58.80***

**Shure Model 556S**—With rubber vibration-isolation shock mount, swivel. Net. **93.00**

### MODEL 580 "UNIDYNE A" DYNAMIC MICROPHONE

Offers unidirectional problem-solving features at a moderate price. Provides quality reproduction and feedback control in economy PA systems. Shock-mounted element, built-in on-off switch. **Frequency Response:** 50–13,000 Hz. **Polar Pattern:** Cardioid. **Output Level:** Model 580SA, −56.5 dB; 580SB, −57 dB. **Size:** 1 13/16″ dia. x 6⅝″ long.

**Shure Model 580SA**—High impedance. Non-detachable 15-ft. cable. Net Ea... **$42.00**

**Shure Model 580SB**—Low impedance (25–200 ohms). Net Each............ **42.00**

### MODEL 585 "UNISPHERE A" DYNAMIC CARDIOID MICROPHONE

Features ball-type styling and special filters for protection from wind and breath sounds, plus excellent feedback control. Especially ideal for use under poor acoustical conditions, and where cost is an important factor. Complete with shock-mounted cartridge, on-off switch, swivel adapter. **Frequency Response:** 50–13,000 Hz. **Polar Pattern:** Uniform cardioid. **Output Level:** Model 585SA, −56.5 dB; 585SB, −57 dB. **Size:** 2 1/16″ dia. x 6¾″ long. With 15-ft. cable. Shipping Weight, 2¼ lbs.

**Shure Model 585SA**—High impedance. Net Each............................ **$45.00***

**Shure Model 585SB**—Low impedance (25-200 ohms). Net Each............ **45.00**

**Shure Model 585SAV**—Same as 585SA, but with built-in volume control. Net.. **49.80**

**Shure Model 585SBV**—Same as 585SAV except low impedance. Net Each.... **49.80**

### MODEL 588 "UNISPHERE B" UNIDIRECTIONAL DYNAMIC MICROPHONE

Same features as above Model 585SA/SB. For use hand-held or on a stand indoors or outdoors. Complete with adjustable swivel adapter; built-in on-off switch and Cannon XLR-3-11C connector on microphone end. **Frequency Response:** 80–13,000 Hz. **Polar Pattern:** Cardioid. **Output Level:** 588SA, −59.0 dB; 588SB, −60.0 dB. **Size:** 2⅛″ dia. x 6 15/32″ lg. With 15-ft. cable. Weight, 12 oz.

**Shure Model 588SA**—High impedance. Net Each........................... **$39.00**

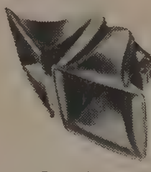
**Shure Model 588SB**—Low impedance (25–200 ohms). Net Each............ **39.00**

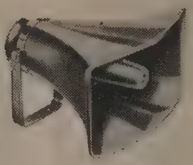
***Available in gold finish; add $6.00 to price shown, and suffix "G" to model number.**

# UNIVERSITY® SOUND TRUMPETS AND DRIVERS

Directional

Radial


Cobreflex


CLH

SH

ID-20

ID-30

ID-30T

ID-40A

ID-40T

ID-60

ID-60T

ID-75

## DIRECTIONAL MODELS

These models, designed to concentrate acoustic energy in a relatively narrow angle of sound dispersion, are incomparable for applications requiring maximum penetration of distance and noise. Rigid adherence to time-proven design formula achieves peak attainable conversion efficiency, resulting in higher sound pressure output and greater utilization of amplifier power. Five trumpet sizes satisfy every need. The GH has very low cut-off for finest reproduction of music. LH is excellent for general use where music quality, voice intelligibility and penetration are important considerations. The PH has wider dispersion and may be used for both music and voice where cost is a factor. The SMH is ideal for speech and for covering wider areas with good penetrative qualities. All models take any University driver unit; have positive-lock, serrated swivel "U" mounting bracket. The Model SH is exceptionally compact for use in limited spaces; handles all drivers up to 75 watts; features patent Omni-lok swivel bracket.

## RADIAL MODELS

Economical and efficient, these models provide uniform horizontal dispersion in all directions from a single projector. Fewer loudspeakers needed to cover an area. Using University drivers, they give as much as 500% more output than radials using cone speakers. Especially popular for high-ceilinged factories, hangars, church interiors and towers, warehouses, etc. Rugged, weather-resistant; ideal as well in installations subject to high humidity and dust-laden atmosphere. Model RLH has longest air column for maximum low frequency response. RPH has higher cut-off; is suitable for music and speech in general purpose uses. RSH is for good speech at lower cost.

## WIDE-ANGLE REFLEX TRUMPETS

**Cobreflex®**—Unmatched for ruggedness and high speech articulation in fixed or mobile applications requiring coverage of areas having greater width than depth. "Dual Exponential Flare" design . . . two one-piece all diecast aluminum combination air column/bell castings form integrated, indestructible and scientifically perfect twin wide-angle reflex trumpet. Takes any University driver unit; use singly or in clusters. Adjustable positive-lock "U" mounting bracket.

**Model CLH**—The CLH combines longest air column length and wide-angle bell designed for maximum low frequency response and compact low silhouette dimensions. Omni-directional positive-lock mounting bracket permits speaker to be placed where most convenient and rotated horizontally and vertically for optimum projection. Dispersion can be literally tuned to avoid echo and reverberation, or used to specifically include elusive "dead spots". CLH is perfect, too, for multi-speaker cluster arrays; can be "stacked" in any configuration, for any sound distribution pattern. Uses any University driver.

**Model L30-1**—Horn stacking kit clamps the bell rims of above wide angle trumpets. Order one kit per two horns. Shpg. Wt., 6 oz. Net Each............**$2.60**

| Univ. Model | GH | LH | PH | SMH | SH | RLH | RPH | RSH | Cobreflex | CLH |
|---|---|---|---|---|---|---|---|---|---|---|
| Low Cut-off* | 85 Hz | 120 Hz | 150 Hz | 200 Hz | 350 Hz | 120 Hz | 140 Hz | 180 Hz | 200 Hz | 120 Hz |
| Distribution | 65° | 75° | 85° | 95° | 100° | 360° | 360° | 360° | 120° x 60° | 120° x 60° |
| Air Column | 6½ ft. | 4½ ft. | 3½ ft. | 2½ ft. | 1½ ft. | 5 ft. | 4 ft. | 3 ft. | 2½ ft. | 4½ ft. |
| Horn Length | 28" | 19" | 15¾" | 12" | 7" | 18½" | 13¾" | 11" | 10¼" | 20" |
| Bell Dia. | 31" | 25¾" | 20⅜" | 16¼" | 8¾" | 28⅛" | 25⅛" | 19" | 18½" x 9¼" | 21½" x 11½" |
| Shpg. Wt. | 22 lbs. | 16½ lbs. | 11¾ lbs. | 8¼ lbs. | 2¾ lbs. | 25 lbs. | 19 lbs. | 13 lbs. | 10¼ lbs. | 13¼ lbs. |
| Net Each | $65.85 | $42.30 | $30.63 | $26.30 | $28.25 | $64.97 | $46.20 | $43.32 | $31.73 | $37.80 |

*Low frequency limit based on capability of driver unit; if horn cut-off is higher than rated low frequency limit of driver, horn will be determining factor.

## DELUXE HIGH EFFICIENCY COMPRESSION DRIVERS

Fulfill every requirement of power, performance and price. Offer unusually wide response. Feature breakdown-proof mechanisms and full weatherproof protection. Exclusive acrylic finish for long-lived beauty in all weather.

### MODEL ID-20

Ideal for low-cost, medium power speech and music systems. Wide range with high efficiency. Power rated, 20 watts.

### MODEL ID-30/ID-30T

For use wherever maximum speech intelligibility is essential. Maintains "balance" when used with high cut-off frequency trumpets. Model ID-30T identical, but with built-in line matching transformer for 70-V line tapped at 30/15/10/5/2.5/1.25 watts. Impedance taps at 167/335/500/1000/2000/4000 ohms. Power, 30 watts IPM.

### MODEL ID-40A/ID-40T

For critical PA and industrial requirements. Provides extra power to penetrate high noise level areas. Model ID-40T is identical, but with built-in line matching transformer for 70 volts with taps at 40/20/10/5/2.5 watts. Impedance taps are 45/122/250/500/1000/2000 ohms. Power rated, 40 watts IPM.

### MODEL ID-60/ID-60T

Meets highest standards for power handling capacity. Maximum sensitivity with widest frequency response. Rugged lifetime construction. Model ID-60T is a deluxe version with extended high and low ranges for highest continuous-duty conversion efficiency. It has built-in line matching transformer with 70-V line tapped at 60/30/20/10/5/2.5 watts. Impedances are 16/80/165/250/500/1000/2000 ohms. Power rated, 60 watts IPM.

### MODEL ID-75

Super power version for electronic siren and special purpose, high-power PA applications. Rugged convex/concave diaphragm design results in greater power handling capacity and dependability. Power rated, 75 watts.

| Univ. Model | ID-20 | ID-30 | ID-30T | ID-40A | ID-40T | ID-60 | ID-60T | ID-75 |
|---|---|---|---|---|---|---|---|---|
| Response, Hz | 120–6500 | 85–7500 | 85,–7500 | 80–12,000 | 80–12,000 | 70–12,000 | 70–12,000 | 150–7000 |
| Power, Watts | 20 | 30 | 30 | 40 | 40 | 60 | 60 | 75 |
| Imped., Ohms | 16 | 16 | Variable | 16 | Variable | 16 | Variable | 16 |
| Dimensions | 3½" x 3¾" | 4⅛" x 3¾" | 4⅛" x 6" | 4½" x 4⅞" | 5" x 6¼" | 4<sup></sup>11/16" x 5" | 6¾" x 6¾" | 4¼" x 3¾" |
| Shpg. Wt., Lbs. | 2½ | 3 | 4 | 4¼ | 5¼ | 5¾ | 6¾ | 5 |
| Net Each | $18.15 | $23.05 | $33.50 | $28.00 | $39.20 | $40.60 | $50.40 | $40.14 |

# FANON TELEPHONE INTERCOM SYSTEMS AND PA AMPLIFIERS

## TELEPHONE-TYPE INTERCOM SYSTEM

### SERIES 88 SELECTIVE TELEPHONE INTERCOM SYSTEM

Selective-talking, selective-ringing internal telephone system provides multiple conversation lines (100% trunkage) without a costly central switchboard. Can be used in all-master systems, master-remote systems, or any combination. To make a call, just pick up handset, press selector button of desired station (or several for conference calls) and press "ring" button that sounds a pleasant tone at called station(s). Provides excellent voice quality, with carbon transmitter and dynamic receiver capsules. Pushbutton station selector switches are nylon-based with silver contacts bonded and crimped to the slide. High reliability with heavy duty, self-cleaning silver contacts for hook switch, encapsulated in dust-free container to assure positive contact. Each station is 8¾" x 4½" x 3½", with changeable name inserts in each station button. Beige with gold anodized metal trim; made of high impact Cycolac®. For desk or wall use, with kink-proof coiled cord. Can be used for paging, with PR-12 paging relay. Cable Required: All-master system, two conductors more than total number of masters; master-remote, four conductors more than number of remotes (#22 AWG unshielded).

**Fanon Model 8811 11-Station Master**—10 station selector switches. Net Each...**$40.50**
**Fanon Model 8807 7-Station Master**—Six station selector switches. Net Each... **34.50**
**Fanon Model 8801 Remote Station**—With button to signal master. Net Each... **26.25**
**Fanon Model PSA-88 Power Supply**—One needed for every 12 phones. Net Ea... **21.50**
**Fanon Model PR-12 Paging Relay**—For paging from master station. Net Each.. **22.50**
**Fanon Model PR-13 Paging/Talkback Relay**—Permits paging from master, plus replies from speakers at distant locations (speakers not included). Net Each.........**$44.95**
**Fanon Model EB-881 Loud Buzzer**—For use in noisy areas. Net Each....... **2.25**

8807
Master

### SERIES 77 COMMON-TALK, SELECTIVE-RING INTERCOM SYSTEM

Solid-state intercom features push-pull amplifier with good distortion characteristics, an extremely effective anti-sidetone circuit, transmit and receive speakers, pleasant "beep" tone signal, plus smart, modern styling. Can be used in all-master systems, master-remote systems, or intermixed. Each phone is 9¼" x 3" x 3½", in beige styrene, for desk or wall use. Cable Required: Three wires, plus one wire for each station.

**Fanon Model 7713 13-Station Master**—Net Each...............................**$32.50**
**Fanon Model 7707 7-Station Master**—Net Each............................... **29.00**
**Fanon Model 7701 Remote Station**—With button to call master. Net Each... **24.00**
**Fanon Model PS-77 AC Power Supply**—6 V output; handles 13 stations. Net... **21.50**
**Fanon Model PR-7 Paging Relay**—For paging from master station. Net...... **22.50**

### "PAGE-ALL" PAGING TELEPHONE INTERCOM SYSTEM

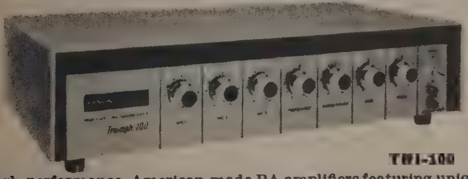
Perfect communication system for establishments with a high degree of personnel movement: Large stores, offices, supermarkets, warehouses, etc. Localized paging through each phone eliminates annoying "blasting" over PA system. Any phone in the system can initiate a page call; when party being called picks up a handset, paging stops automatically and conversation can proceed. System consists of one APS-5 transistorized amplifier/power supply, plus up to 20 PT-7 paging telephone units. Features push-pull amplifier with good distortion characteristics, effective anti-sidetone circuits, transmit and receive speakers in handset. Phones are 9¼" x 3" x 3½", for desk or wall use. High impact styrene. Requires 6-conductor cable. Higher power amplifier can be added to system for use in very large or noisy areas.

**Fanon Model PT-7 Paging Telephone**—Up to 20 can be used. Net Each........**$27.00**
**Fanon Model APS-5 Amplifier/Power Supply**—One needed per system. Net Ea. **58.50**

7713 Master

PT-7

## "TRIUMPH" SERIES SOLID STATE PA AMPLIFIERS



TRI-100

High-performance, American-made PA amplifiers featuring unique engineering advances for peak sound quality, plus total reliability. Available in 15 to 100 watt models, with a full range of "add-on" accessories for custom installations. All-silicon solid-state devices have wide safety-margin ratings to prevent damage to output transistors. Resettable SCR safety circuits (in TRI-50 and TRI-100) give added protection from shorting. Continuous duty, heavy duty components; printed circuit construction. Separate master volume, bass and treble controls (except TRI-15). Accept all types of Programming: Phono, tape deck, tuner, mikes, telephone lines, intercoms, PBX, paging, etc., with simultaneous mixing of all inputs. Can feed tape recorders, boosters, speakers, telephone lines, etc., simultaneously. High microphone sensitivity, with low hum and noise and undistorted power. Constant voltage outputs, balanced and unbalanced. Two speaker plug-in sockets, plus screw terminals. Adjustable setting markers for all controls. Vinyl-clad metal cabinets withstand wear and scuffing. **Inputs and Impedances:** Microphone (and TMP-1), 100K ohms; TML-1 and TLX-1 low-Z mike, 50–200 ohms; radio/phono, 300K ohms; TWM-1 line input, 500/600 ohms. **Input Sensitivity:** Hi-Z mike, 5 mV; low-Z mike (with TLX-1), 0.5 mV; phono, radio, music/telephone lines (TWM-1), 0.4 volt.

### MODEL TRI-35 35-WATT AMPLIFIER

**Power Output:** 35 watts at 5% distortion, at 1000 Hz. **Frequency Response:** ±2 dB, 100–8000 Hz. **Hum and Noise:** Mike, −63 dB; phono, −67 dB. **Tone Controls:** Bass, +8 to −10 dB at 100 Hz; treble, +3 to −10 dB at 10 kHz. **Output Impedances:** 4, 8, 16 ohms; 25-volt balanced/unbal. at 18 ohms; 70-volt balanced/unbal. at 140 ohms. **Controls:** 2 Mike; Radio/Phono; Volume; Treble; Bass; Power. **Semiconductors:** 10 transistors, 2 diodes. **Power Consumption:** 60 watts maximum. **Size:** 14¾" x 9" x 3½". Shipping Weight, 10¾ lbs.

**Fanon Model TRI-35 Amplifier**—Net Each..........**$89.95**

### MODEL TRI-15 15-WATT AMPLIFIER

**Power Output:** 15 watts at 5% distortion, at 1000 Hz. **Frequency Response:** ±2 dB, 100–8000 Hz. **Hum and Noise:** −65 dB. **Tone Control:** Single control, +3 to −8 dB. **Output Impedances:** 4, 8, 16 ohms; 25-volt balanced/unbal. at 42 ohms; 70-volt balanced/unbal. at 325 ohms. **Controls:** 1 Mike; Radio/Phono; Tone; Power. **Semiconductors:** 5 transistors, 2 diodes. **Power Consumption:** 28 watts max., 105–125 VAC. **Size:** 14¾" x 9" x 3½". Shipping Weight, 8¾ lbs.

**Fanon Model TRI-15 Amplifier**—Net Each..........**$59.95**

### MODEL TRI-100 100-WATT AMPLIFIER

**Power Output:** 100 watts at 5% distortion, at 1000 Hz. **Frequency Response:** ±2 dB, 100–10,000 Hz. **Hum and Noise:** Microphone, −65 dB; phono, −64 dB. **Tone Control::** Bass, +8 to −10 dB at 100 Hz; treble, +6 to −12 dB at 10 kHz. **Output Impedances:** 4, 8, 16 ohms; 25-volt balanced/unbalanced at 6.25 ohms; 70-volt balanced/unbalanced at 49 ohms. **Controls:** 3 Mike; Radio/Phono; Master Volume; Treble; Bass; Power Switch. **Semiconductors:** 13 transistors, 3 diodes. **Power Consumption:** 180 watts maximum, 105–125 VAC, 50–60 Hz. **Size:** 16" x 11" x 4½". Shipping Weight, 12¾ lbs.

**Fanon Model TRI-100 Amplifier**—Net Each........**$146.25**

### MODEL TRI-50 50-WATT AMPLIFIER

**Power Output:** 50 watts at 5% distortion, at 1000 Hz. **Frequency Response:** ±2 dB, 100–8000 Hz. **Hum and Noise:** Mike, −68 dB; phono, −70 dB. **Tone Controls:** Bass, +8 to −10 dB at 100 Hz; treble, +6 to −12 dB at 10 kHz. **Output Impedance:** 4, 8, 16 ohms; 25-volt balanced/unbal. at 12.5 ohms; 70-volt balanced/unbal. at 98 ohms. **Controls:** 2 Mike; Radio/Phono; Volume; Treble; Bass; Power. **Semiconductors:** 10 transistors, 3 diodes. **Power Consumption:** 107 watts maximum. **Size:** 16" x 11" x 4½". Shipping Weight, 11¾ lbs.

**Fanon Model TRI-50 Amplifier**—Net Each.........**$125.95**

### ACCESSORIES

**Fanon Model TPP-1 Priority Page Control**—Automatically cuts out normal program source, in favor of one mike for special announcements. Controlled by mike switch. Net Each....**$6.75**

**Fanon Model TMP-1 2-Channel Microphone Preamp**—Provides two additional high-impedance mike inputs with separate volume controls. Mounts on front panel of amplifier as integral element; connectors mount on rear panel. Net Each............**$17.95**

**Fanon Model TML-1 Preamp**—Same as TMP-1, for low-Z. Net Each.........................................**$29.95**

**Fanon Model TLX-1 Low-Impedance Microphone Adapter**—For 50-ohm unbal. or 200-ohm balanced lines. Net Each....**$10.50**

**Fanon Model TWM-1 Telephone Line Matching Adapter**—Adapts amplifier for wired music reproduction, with 500–600 ohm balanced line. Mounts within amplifier. Net Each.....**$ 7.50**

**Fanon Model 3600 Phono Top**—4 speed. Net Each.... **29.95**

**Fanon Model ASC-10 Area Speaker Selector**—Permits selection of any of 10 speakers for program or paging. Net Each.**$22.50**

**Fanon Model S-2 Portable Dual Speaker Case**—Holds 15, 25 or 35-watt amplifier; includes two 12" speakers. Net Each.**$65.95**

**Fanon Model ARM-2 Rack Panel**—For any amp. 7" high. Net Each.........................................**$22.50**

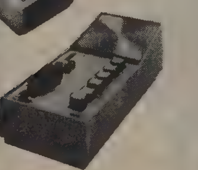
**FANON**

# HOME AND OFFICE INTERCOMS, PORTABLE MEGAPHONES

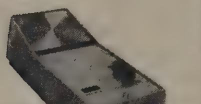
FIW-2

FIC-3

FI-13


DPI-7

DPI-13


DPR

FTA-4

MV-20S

MV-3, MV-4S, MV-8S, MV-16S

## NEW SOLID STATE INTERCOMS

### DELUXE TWO-CHANNEL WIRELESS INTERCOM SYSTEM

Basic two-station, two-channel wireless intercom provides instant communication. No installation, just plug into AC outlets on the same power line. Add extra stations to system anytime. Portable, move from room-to-room. Channel A, 160 kHz, channel B, 225 kHz, operate independently for privacy. Lock-out filter prevents cross-talk. Compact, vertical styling. On-off-volume control and talk-listen-dictate switch. Employs 4 transistors, 2 diodes. Size, 9½″ x 4″ x 2½″.

**Fanon Model FIW-2 Deluxe Two-Channel Intercom System**—Net Each............**$59.95**
**Fanon Model FIW-1 Deluxe Single Station**—Net Each............................**30.00**

### TWO-STATION WIRED INTERCOM SYSTEM

Master and one remote station. A third station can be added and selectively called. Third station may be either an indoor remote, outdoor remote or special staff station that can select either master or remote permitting baby-sitting or answering the door from either master or staff. Remotes may be used in either private or non-private position with complete hands-free ease. Cable Required: Master-to-remote, 3 wires; master-to-staff, 4 wires plus one shielded wire. Size, 9½″ x 4″ x 2½″ except outdoor remote, 3¾″ x 2″ x 1½″.

**Fanon Model FIC-3 Two-Station Wired Intercom System**—Net Each..............**$34.95**
**Fanon Model FIC Indoor Remote Station**—Net Each..............................**12.25**
**Fanon Model FID Outdoor Remote Station**—Net Each.............................**8.55**
**Fanon Model FIS Special Staff Station**—Net Each...............................**30.85**

### DUAL-PURPOSE MULTI-STATION MASTER SYSTEMS

Choice of 7-station or 13-station masters that can be used in all-master or master-to-remote system. Selector positions provided on master can be connected to PA system for paging or hands-free reply from a system speaker; requires PR-15 paging relay accessory. Vertical styling for desk or wall mounting. Cable Required: One wire per system, plus one wire per master in master-to-master system; in master-to-remote system, loop arrangement, same as all-master or "Star" system, 3 wires to each remote from master. Size, 9½″ x 4″ x 2½″.

**Fanon Model FI-7 Dual-Purpose 7-Station Master**—Use with up to six other master or remote stations. One selector position connectable for paging using PR-15 relay accessory Net..**$34.65**

**Fanon Model FI-13 Dual-Purpose 13-Station Master**—Same, but for use with up to 12 other stations. Two selector positions permit use with PR-15 relays for paging/talkback amplifier systems. Net Each............**$43.50**

**Fanon Model FIR Remote Station**—Same size and styling as masters. Can be private on non-private; release switch on privacy permits continued conversation without switching at remote. Net Each............**$10.75**

**Fanon Model PR-15 Paging/Talkback Relay**—Mounts at amplifier position, connecting to selector on FI-7 or FI-13. Requires one wire from master, plus one shielded cable. Net..**$22.25**

**Fanon Model TPA Telephone Amplifier**—For hands-free use of phone with above masters. Amplifies call throughout the room. Connects to master, using its speaker and amplifier system. Phone lies on cradle; talk-listen pushbutton releases the standby button on the master. Size, 9½″ x 4″ x 2½″. Net Each............**$11.50**

## DPI SERIES INTERCOMS

Solid state, versatile, professional intercom system permitting master-to-master or any combination of masters and remotes. The balanced line design eliminates crosstalk and noise, and reduces audio loss. More than 1 watt power output for normal station-to-station conversations with a reserve power output of 4 watts for paging into noisy or outdoor locations; talk-back power automatically reduces to normal level. Features a private-non private switch for masters, and remotes; monitor signal light to show that you are being called or eavesdropped when you are in the non-private position; stand-by light to remind master to depress stand-by switch after completion of conversation, thus enabling the master to receive incoming calls; and a light to indicate whether the line you are calling is busy. Remotes or horns in the system can reply "hands-free", but can not originate calls; masters can talk "hands-free" when in the non-private position. Requires one pair plugs, plus one pair for every station in the system. **Frequency Response:** 400-5,000 Hz at 3 dB. **Signal-to-Noise:** 50 dB. **Sensitivity:** 0.5 mV input for full output. **Audio Output:** 4 watts at 5% distortion music wave form. **Speaker:** 3½″ with Alnico V magnet, 13 ohms impedance. **Size:** 9½″ x 4″ x 3¼″. Weight, 2 lbs. **Power Supply:** U/L Approved; high impact polystyrene housing; input, 8 watts, 117 VAC, 60 Hz; output, 12 VDC at 400 mA; size, 2½″ x 2⅜″ x 1¾″; weight, 5 oz.

### MODEL DPI-7 INTERMIX MASTER

Permits master-to-master or any combination of masters and remotes, including paging horns in up to seven stations. Comes with a large terminal box to facilitate installaton and a power supply unit.

**Fanon Model DPI-7 Intermix Master**—Net Each............**$55.50**

### MODEL DPI-13 INTERMIX MASTER

Identical to DPI-7 system except it permits master-to-master or intermix in up to 13 stations. Comes with a larger terminal box to facilitate installation and a power supply unit.

**Fanon Model DPI-13 Intermix Master**—Net Each............**$69.85**

### MODEL DPR REMOTE STATION

Provided with private, non-private switches for use with DPI-7 and DPI-13. A remote cannot originate a call. Similarly, any paging horn used with the system cannot originate a call.

**Fanon Model DPR Remote**—Net Each............**$14.95**

### ACCESSORIES

**Fanon Model ACJ-2 All-Call Adaptor Kit**—For use with model DPI-7. Provides an all-station call by merely depressing one button.
Net Each............**$1.65**

**Fanon Model ACJ-4 All-Call Adaptor Kit**—For use with model DPI-13. Provides an all station call by merely depressing one button.
Net Each............**$2.95**

## MODEL FTA-4 TRANSISTORIZED TELEPHONE AMPLIFIER AND SPEAKER

Frees hands while telephoning; fills room with sound for conferences. Adjustable volume. Complete with four transistors, one nine-volt battery. Size: 10″ x 4½″ x 3″. Shpg. Wt., 4 lbs.

**Fanon Model FTA-4**—Net Each............**$14.95**

## PORTABLE TRANSISTORIZED MEGAPHONES

High output megaphones for greatest range and rugged, heavy-duty use. Compact and lightweight sound power. Each has separate volume control, press-to-talk switch and handy carrying strap. Batteries are not included.

| Model | Output | Range | Size | Construction | Weight | Net Each |
|---|---|---|---|---|---|---|
| **MV-3** | 1.5 watts | 200 yd. | 9″ x 13″ | Aluminum | 5 lbs. | **$31.95** |
| **MV-4S*** | 4 watts | 300 yd. | 7¼″ x 13″ | Aluminum | 5 lbs. | **46.95** |
| **MV-8S*** | 8 watts | 600 yd. | 7″ x 14″ | Aluminum | 5 lbs. | **63.50** |
| **MV-16S*** | 12 watts | 800 yd. | 9″ x 14″ | Aluminum | 6 lbs. | **70.95** |
| **MV-20S†** | 16 watts | 1000 yd. | 9″ x 15″ | Aluminum | 9 lbs. | **86.95** |
| **MVS-10†‡** | 8 watts | 600 yd. | 10⅛″ x 7½″ x 3½″ | Cabinet | 9½ lbs. | **70.95** |

*Equipped with switch for siren alert signal. †Complete self-contained PA system with carrying case and coil-cord dynamic microphone. Has built-in siren alarm and detachable microphone. ‡With phono and tape inputs.

# FANON HOME AND OFFICE INTERCOMS, PORTABLE CB TRANSCEIVERS

## MODELS EC-2A, EC-3A AND EW-3A TWO STATION INTERCOMS

Three-transistor intercom operates on a standard 9-volt transistor battery (Eveready No. 216 or equivalent). Patented signal circuit permits remote to call master even when system is turned off. Complete with 50′ cable and plug-in connectors to jacks on units. High-impact, plastic case in ivory color. Size, 3″ w. x 4″ d. x 2″ h.

**Fanon Model EC-2A Intercom**—Net Each....................$ 9.95
**Fanon Model EC-3A**—Similar to EC-2A but operates on 117 VAC. Net Each. 13.50
**Fanon Model EW-3A Two-Station Economy Wireless Intercom**—Net Each... 24.95

## CLASSIC SERIES INTERCOMS

### IN-600 MASTER-TO-MASTER STATION INTERCOM

Up to five stations; permits conference calls or two separate conversations simultaneously. IC circuitry permits up to 500-ft. between first and last station. Press-to-talk switch with lock position; pilot light. Features plug-in connectors for "instant installation". Case ivory/brown with wood grain accents. Size, 7″ x 3½″ x 2″. Wt., 5 lbs.

**Fanon Model IN-600 Intercom**—With 50-ft. cable and plugs. Net Each......$29.95
**Fanon Model 6C-50 Cable with Plugs**—For use with IN-600. 50-ft. lg. Plug together for desired length. Wt., 2 lbs. Net Each....................$9.50

### IN-505 TWO-CHANNEL WIRELESS INTERCOM SYSTEM

Features high-power IC circuitry design for extended range and sensitivity; filter circuit to minimize background line noise; talk-listen switch with lock position; on/off volume pilot light. System can be expanded by using additional IN-500 single stations. Operates on 117 VAC. Size, 7″ x 3½″ x 2″. Ivory/brown with wood grain accents.

**Fanon Model IN-505 Two-Channel Intercom System**—Wt., 3 lbs. Net Each....$31.95
**Fanon Model IN-500 Single Station**—To expand the IN505 System. Wt., 2 lbs. Net Each.................... 16.95

### IN-302 HIGH-OUTPUT TWO-STATION INTERCOM SYSTEM

System consists of one IN-500, above, and one remote station with provision for one additional remote. Master can be signalled by remotes even when system is "off". Supplied with 50-ft. cable. Wt., 3 lbs.

**Fanon Model IN-302 Two-Station Intercom**—Net Each....................$19.95

### IN-404 "STARTER SET" THREE-STATION INTERCOM SYSTEM

System consists of one IN-400 Master and two IN-2 remotes. Features IC circuity for greater output and sensitivity. Master accepts up to four indoor or outdoor remotes and can call one or several rooms simultaneously. Operates on 117 VAC. Size, 7″ x 3½″ x 2″. Ivory/brown with wood grain accents. Wt., 6 lbs.

**Fanon Model IN-404 Three-Station Intercom**—Net Each....................$32.95

### IN-302 AND IN-404 ACCESSORIES

**Fanon Model IN-1 Remote**—Outdoor remote with "beep" call signal. Has 50-ft. cable. Wt., 2½ lbs. Net Each....................$8.50
**Fanon Model IN-2 Remote**—Same as IN-1 but for indoor use. Net Each....... 8.50
**Fanon Model 2C-100 Cable with Plugs**—100-ft. lg. Wt., 1 lb. Net Each........ 3.75

## CITIZENS' BAND TRANCEIVERS

Precision-made, high performance CB transceivers for top coverage in the 27 MHz band. Deliver excellent transmission and reception results for each model in their class.

| Fanon Model | No. of Channels | Transis-tors | Power Input | Case Type | Accessories | Net per Pair |
|---|---|---|---|---|---|---|
| FCB-303 | 1 | 3 | 80 mW | Styrene | Batteries | $11.95 |
| FCB-606 | 1 | 6 | 100 mW | Styrene | Batteries | 17.95 |
| T-061-2 | 1 | 6 | 100 mW | Plastic | Handstrap | 29.95 |
| T-091-2 | 3 | 9 | 100 mW | Plastic | Handstrap, earphones | 34.95 |

## CB TRANSCEIVERS WITH IC'S

### 5-WATT POWER DELUXE SERIES

Professional units for commercial or personal use offer new styling and performance in 2-way radio communication. Features include: FET front end, IC, 16 transistors, 15 diodes; ultra-selective dual conversion superheterodyne receiver; full 5-watt input at 100% modulation; double PI network for optimum RF output; AGC (Automatic Gain Control) prevents overdriving of strong signals and boosts weak signals; slide type controls for squelch and volume; delta tuning peaks the receiver (except T-808); S/RF meter to monitor incoming signals and outgoing power; 2½″ PM dynamic speaker and separate microphone; heavy-duty 54″ telescopic antenna; weatherproof jacks for earphone, external speaker, antenna, microphone, and power. Rugged diecast aluminum cabinet comes with handstrap, shoulder strap and earphone. Operates on 10 alkaline "AA" penlight cells or 12 Ni-cad batteries (not supplied); battery packs are detachable. Size, 2″ x 3½″ x 10¾″. Weight, 3½ lbs.

**Fanon Model T-1000 "Triumph"**—As above, equipped for 23-channel operation. Net Each....................$144.95
**Fanon Model T-909 "Tempest"**—Similar to above, except that it operates on any six of 23 CB channels, one set of plug-in crystals for channel 15 included; 11 transistors and 13 diodes; single conversion superheterodyne receiver with tuned RF amplifier. Net.$89.95
**Fanon Model T-808 "Tornado"**—Same as Model T-909, except for slide controls, battery-saver circuit and delta tuning. Net Each....................$79.95

### EXTENDED RANGE 3 AND 6 CHANNEL TRANSCEIVERS

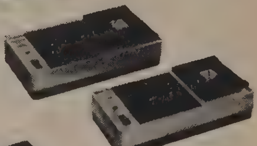
Sleek and sharp units offer utmost dependability and top quality voice communication. Features include: FET front end and IC; superheterodyne receiver with tuned RF amplifier; crystal controlled transmitter for maximum RF output; AGC prevents overdriving of strong signals and boosts weak signals; variable squelch control; separate speaker and dynamic microphone; battery strength meter with test button; earphone jack. High-impact plastic cabinet with earphone and adjustable hand strap. Operates on 8 alkaline "AA" penlight cells or Ni-cad rechargeable batteries (not supplied). Size, 2″ x 3″ x 9⅜″. Weight, 1½ lbs.

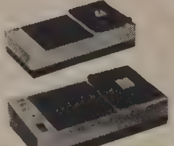
**Fanon Model T-404 "Tourney"**—Operates on 3 channels, one set of plug-in crystals for channel 15 installed. Built-in call tone. Power input, 100 mW. Net Each......$29.95
**Fanon Model T-404-2**—Pair of Model T-404 above. Net Each.............. 59.95
**Fanon Model T-505 "Thruster"**—3-channel operation, 500 mW with external power jack for 12 VDC. Net Each....................$39.95
**Fanon Model T-606 "Tracker"**—6-channel operation, 1 watt input; with automatic noise limiter and external antenna jack. Net Each....................$49.95
**Fanon Model T-707 "Trailmaster"**—Power input, 2 watts; similar to Model T-606, but with delta tuning that peaks the receiver. Net Each....................$59.95

## ACCESSORIES FOR CB TRANSCEIVERS WITH IC'S

| Fanon Model | Description | Net Each |
|---|---|---|
| CAT-1 | Carrying case for T-707, -606, -505, -404, -404-2 | $ 2.25 |
| CAT-2 | Carrying case for T-1000, -909, -808 | 4.15 |
| AUC-2 | Auto lighter adapter for all models except T-404, -404-2 | 5.25 |
| CHB-4A | Adapts T-1000, -909, -808 for 115 VAC; recharges batteries | 26.95 |
| CHB-3 | Adapts T-707, -606, -505 for 115 VAC use | 17.25 |
| NCA-1A | Sealed Ni-cad battery pack, with built-in recharger for T-707, -606, -505, -404, -404-2 | 22.25 |
| NCA-2 | Same as NCA-1A for T-1000, -909, -808 | 34.50 |
| EAC-1 | External antenna adapter for all models except T-505, -404, -404-2 | 5.25 |
| RB-12 | Pkg. 12 "AA" Ni-cad batteries for T-1000, -909, -808 | 26.25 |
| XTAL- | Set of transmit and receive plug-in crystals for all IC transceivers except T-1000; specify channel -1 thru -23 | 5.95 |

EC-3A, EC-2A, EW-3A


IN-505


IN-302

IN-400, IN-600

IN-1

IN-2

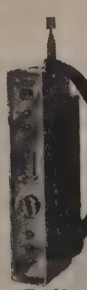
6C-50

FCB-303, FCB-606

T-061-2

T-091-2

T-1000


T-909

T-808

T-404

T-505

T-606

T-707

# TELEPHONE ANSWERERS, CASSETTE TAPES

## DORO 311 AUTOMATIC TELEPHONE ANSWERING SYSTEM

Advanced design automatic telephone answerer utilizes two cassette cartridges: One for transmitting outgoing, pre-recorded, up to 20-second messages on an endless loop tape; the other for receiving incoming messages from callers with no required cut-off time. Message receiving time on incoming calls is not limited, a unique feature that helps avoid loss of "the big ones" and important, longer messages. Perfect for home or business. Features multiple, plug-in printed circuit boards which can be replaced in minutes, simplifying service. Records two-way telephone conversations; conforms to FCC regulations. Earphone attachment permits private listening. Incoming call monitor permits screening of incoming calls. Unit automatically shuts off within 10 seconds after call is completed; voice induction device automatically hangs up phone, ready for next incoming call. Built-in message counter for incoming calls indicates number of calls received. Has automatic end-of-tape shutoff. Also has safety cut-off which automatically shuts off recorder in event of telephone line failure or tape malfunction. Cassette recorder takes standard C60 snap-in cassettes. Can be used separately for dictation or recording and playback of your favorite music. Built-in speaker has crisp, clear replay. Pushbutton control panel includes record, rewind, fast-forward and play; two-way record button, volume control, and on-off switch. Installs in minutes; requires no re-wiring. With dynamic remote control microphone and tape cassettes. Durable, compact case in contemporary design.

**Doro 311 Telephone Answering System**.......**Price on Request**

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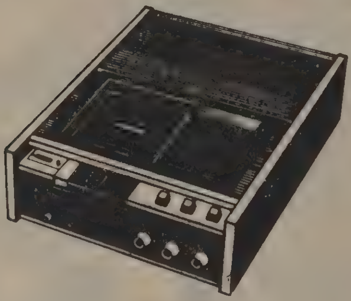
## CROWN TELEPHONE VALET



### MODEL CTA-4400 DELUXE TELEPHONE VALET®

Complete integrated cassette recorder and telephone answering service automatically answers calls with prerecorded 20-second message and records caller's message on built-in cassette recorder. Prerecorded message on endless-loop tape may be easily changed using built-in mike. Can also be used to take dictation or play background music. Cassette recorder is usable separately; uses standard C-60 and C-90 snap-in cassettes. Solid state unit has 20-transistor, 4-diode circuit; AC bias, double track recording. Message receiving time is approximately 45 sec. Includes dynamic remote control microphone, blank C-60 cassette, patch cord-earphone and induction box cradle for desk type telephones. Installs easily in minutes; requires no re-wiring. Has simple precision pushbutton controls. In walnut cabinet. **Frequency Response:** 100 Hz–10 kHz. **Power:** Waiting time or operation, 20 watts; 117 VAC, 50/60 Hz. **Size:** 10$\frac{1}{16}$" w. x 12$\frac{13}{16}$" d. x 3$\frac{5}{16}$" h. Shipping Weight, 9.7 lbs.

**Crown Model CTA-4400 Deluxe Telephone Valet**—
List Price.......................................**$199.95**

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## NORELCO BLANK CASSETTE TAPES BY H. H. SMITH

Tape cassettes are manufactured in accordance with International Philips Cassette Standards. Each is equipped with: Steel pins, Delrin® guide rollers, low friction pads, and high-efficiency magnetic shield brackets to assure long-term, quiet, reliable operation.
®Registered DuPont trademark.

### NORELCO CHALLENGER SERIES

High standard quality tape at a budget price. For general recording applications: voice, background music, talking letters, etc. 90-day guarantee. In cardboard box.

| H. H. Smith No. | Recording Time | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-11 | 12-72 | 73 Up |
| 7006 | 60 minutes | $1.19 | $1.07 | $1.00 |
| 7009 | 90 minutes | 1.69 | 1.49 | 1.40 |
| 7012 | 120 minutes | 2.19 | 1.93 | 1.81 |

### NORELCO "100" SERIES

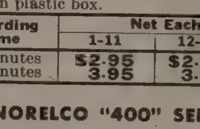
High quality tape for general recording: Voice, background music, classroom lectures, dictation, audio-visual applications. Lifetime guarantee. In plastic box.

| H. H. Smith No. | Recording Time | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-11 | 12-72 | 73 Up |
| 7106 | 60 minutes | $1.45 | $1.24 | $1.16 |
| 7109 | 90 minutes | 2.15 | 1.84 | 1.73 |
| 7112 | 120 minutes | 2.95 | 2.46 | 2.31 |

### NORELCO "200" SERIES

Low noise, high quality cassettes with lifetime guarantee. For fine music recording with all regular equipment, and for treasured speeches and recitations. In plastic box.

| H. H. Smith No. | Recording Time | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-11 | 12-72 | 73 Up |
| 7203 | 30 minutes | $1.55 | $1.31 | $1.23 |
| 7206 | 60 minutes | 1.95 | 1.64 | 1.54 |
| 7209 | 90 minutes | 2.95 | 2.44 | 2.29 |
| 7212 | 120 minutes | 3.95 | 3.32 | 3.12 |



### NORELCO "300" SERIES

High output, low noise tape with extended frequency and dynamic range. For semi-professional recording of symphonies and operas, chamber music, electronic rock; for use on better equipment. Lifetime guarantee. In plastic box.

| H. H. Smith No. | Recording Time | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-11 | 12-72 | 73 Up |
| 7306 | 60 minutes | $2.95 | $2.33 | $2.19 |
| 7309 | 90 minutes | 3.95 | 3.27 | 3.07 |

### NEW NORELCO "400" SERIES
### CHROMIUM DIOXIDE TAPE

Available in plastic box. High output, low noise, high coercivity tape features wide frequency and dynamic range. Lifetime guarantee. Perfect for professional recording of symphonies, operas and electronic rock music. Recommended for use on professional equipment with switchable bias.

| H. H. Smith No. | Recording Time | Net Each, Lots of | | |
|---|---|---|---|---|
| | | 1-11 | 12-72 | 73 Up |
| 7406 | 60 minutes | $3.45 | $2.30 | $2.18 |
| 7409 | 90 minutes | 3.96 | 3.09 | 2.90 |

### HEAD CLEANING CASSETTE

Non-abrasive. In plastic box.
**H. H. Smith No. 7015**—Net Each............................**$1.95**

# SHURE STEREO DYNETIC® PHONO CARTRIDGES

## MODEL V-15 TYPE II IMPROVED SUPER-TRACK STEREO DYNETIC CARTRIDGE

Radically new concept in cartridges—analog computer designed—heralds an epoch of increased high fidelity performance. All recordings sound better; high velocity distortion is non-existent. V-15 Type II Improved Super-Track cartridge maintains contact between the stylus and record groove at tracking forces from ¾ to 1½ grams throughout and beyond the audible spectrum at the highest velocities encountered in quality recordings. It utilizes a bi-radial elliptical stylus, protected by an ingenious "flip-action" built-in stylus guard. The V-15 Type II is manufactured and tested under the Shure Master Quality Control Program. **Frequency Response:** 20–25,000 Hz. **Channel Separation:** Over 25 db at 1 kHz; over 17 db, 500–10,000 Hz. **Output:** 3.5 mV per channel at 1 kHz at 5 cm/sec. (Output from each channel within 2 db.) **Impedance:** 47,000 ohms per channel, recommended. **Tracking Force:** ¾ to 1½ grams. **Inductance:** 720 mH. **DC Resistance:** 630 ohms.

**Shure Model V-15 Type II Improved Stereo Dynetic Cartridge**—Has Model VN15E bi-radial, .0007″ x .0002″ elliptical stylus with diamond tip. Net Each........................**$67.50**

**Shure Model V-15II-7**—As above, but with .0007″ spherical stylus. Net Each........................................**$62.50**

## MODEL M75E HI-TRACK STEREO DYNETIC CARTRIDGE WITH ELLIPTICAL STYLUS

Another in the new generation of Shure cartridges. Delivers high trackability with light tracking forces, is surprisingly modest in cost. Model M75E features a retractile stylus to prevent record damage; bi-radial elliptical stylus configuration. Manufactured and tested to stringent Shure standards. **Frequency Response:** 20–20,000 Hz. **Channel Separation:** Over 25 db at 1 kHz. **Output:** 5.7 mV per channel at 1 kHz at 5 cm/sec. **Impedance:** 47,000 ohms per channel, recommended. **Tracking Force:** ¾ to 1½ grams. **Inductance:** 720 mH. **DC Resistance:** 630 ohms. **Stylus:** N75E elliptical with diamond tip; frontal radius, .0007″; side contact radii, .0002″.

**Shure Model M75E**—With diamond stylus. Net Each..**$39.95**

**Shure Model M75-6 Hi-Track Stereo Dynetic Cartridge**—For upgrading systems with older turntables that track at heavier forces (1½ to 3 grams). Same as M75E when tracking at 2 grams but: Output, 5.9 mV per channel at 1 kHz at 5 cm/sec; stylus, conical diamond, .0006″ radius. Net Each......................**$24.50**

## MODEL M55E 15° STEREO DYNETIC CARTRIDGE

Designed for use with the finest manual turntable arms and the latest automatic turntables. Capable of tracking at 2 grams or less. Professional elliptical diamond stylus at new 15° tracking angle gives distortion-free, scratch proof quality. **Frequency Response:** 20–20,000 Hz. **Channel Separation:** Over 25 db at 1 kHz; 20 db at 10 kHz; 15 db at 20 kHz. **Output:** 6.6 mV per channel at 1 kHz at 5 cm/sec. (Output from each channel within 2 db.) **Compliance:** 25 x $10^{-6}$ cm/dyne. **Impedance:** 47,000 ohms per channel, recommended. **Tracking Force:** ¾ to 2 grams. **Inductance:** 720 mH. **DC Resistance:** 630 ohms. **Stylus:** N55E elliptical, diamond tip; frontal radius, .0007″; side contact radii, .0002″.

**Shure Model M55E**—With diamond stylus. Net Each..**$29.95**

## MODEL M7/N21D STEREO DYNETIC CARTRIDGE

Features the highest compliant N21D tubular stylus. Plays monophonic or stereophonic records. Fits four-lead and three-lead stereo record changer and transcription arms. **Frequency Response:** 20–20,000 Hz. **Channel Separation:** Over 20 db at 1 kHz. **Compliance:** 9 x $10^{-6}$ cm/dyne. **Tracking Force:** Less than 2½ grams.

**Shure Model M7/N21D Stereo Dynetic Cartridge**—Net.**$17.95**

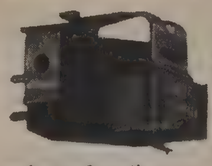
## MODEL M3D STEREO DYNETIC CARTRIDGE
### FOR ARMS TRACKING AT OVER 2½ GRAMS

SHURE
STEREO DYNETIC
M3D

Plays stereophonic and monophonic records. Fits four-lead and three-lead stereo record changer and transcription arms. **Frequency Response:** 20–15,000 Hz. **Channel Separation:** Over 20 db. **Compliance:** 4 x $10^{-6}$ cm/dyne. **Output:** 5 mV per channel. **Tracking Force:** 3 to 6 grams.

**Shure Model M3D**—With .0007″ diamond stylus. Net Each.....**$15.75**

## M91 SERIES OF HIGH TRACKABILITY, EASY-MOUNT STEREO DYNETIC CARTRIDGES



These easy-to-mount, magnetic stereo cartridges deliver high trackability at light tracking forces—yet are surprisingly modest in cost. Each includes a retractile stylus to prevent record damage, and a bi-radial elliptical stylus configuration.

Special clip-on, easy-mount design cuts cartridge mounting time in half. Just mount the specially designed retaining clip in the tone arm head—there's plenty of room for your fingers and screwdriver . . . Then connect your leads and simply snap the cartridge into the retaining clip. Alignment is positive and precise. Stylus replacement is greatly simplified, too.

All Series M91 cartridges described below are manufactured and tested under Shure's critical quality control program.

### MODEL M91E HI-TRACK ELLIPTICAL
### ¾ TO 1½ GRAMS TRACKING

Offers design parameters for trackability second only to the incomparable Model V-15 Type II. **Frequency Response:** 20–20,000 Hz. **Channel Separation:** Over 25 dB at 1000 Hz. **Output:** 5.0 mV per channel at 1000 Hz at 5 cm/sec. **Impedance:** 47,000 ohms per channel, recommended. **Tracking Force:** ¾ to 1½ grams. **Inductance:** 720 mH. **DC Resistance:** 630 ohms. **Stylus:** N91E elliptical with diamond tip; frontal radius, .0007″; side contact radii, .0002″.

**Shure Model M91E Stereo Dynetic Cartridge**—Net Ea..**$49.95**

### MODEL M92E HI-TRACK ELLIPTICAL
### ¾ TO 1½ GRAMS TRACKING

Designed for use in finest quality manual and automatic turntables. **Frequency Response:** 20–20,000 Hz. **Channel Separation:** More than 25 dB at 1000 Hz. **Output:** 6.2 mV per channel at 1000 Hz at 5 cm/sec. **Impedance:** 47,000 ohms per channel, recommended. **Tracking Force:** ¾ to 1½ grams. **Inductance:** 720 mH. **DC Resistance:** 630 ohms. **Stylus:** N92E elliptical with diamond tip; frontal radius, .0007″; side contact radii, .0002″.

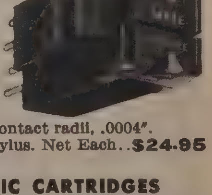
**Shure Model M92E Stereo Dynetic Cartridge**—Net Ea..**$44.95**

### MODEL M93E HI-TRACK ELLIPTICAL
### 1½ TO 3 GRAMS TRACKING

Provides outstanding performance in turntables that track in the 1½- to 3-gram range. **Frequency Response:** 20–20,000 Hz. **Channel Separation:** More than 25 dB at 1000 Hz. **Output:** 6.2 mV per channel at 1000 Hz at 5 cm/sec. **Impedance:** 47,000 ohms per channel, recommended. **Tracking Force:** 1½ to 3 grams. **Inductance:** 720 mH. **DC Resistance:** 630 ohms. **Stylus:** N93E elliptical with diamond tip; front radius, .0007″; side contact radii, .0004″.

**Shure Model M93E Stereo Dynetic Cartridge**—Net Ea..**$39.95**

## MODEL M44E STEREO 15° DYNETIC CARTRIDGE



Brings the advantages of bi-radial elliptical stylus and 15° tracking to turntables that track 1¾ to 4 grams. **Frequency Response:** 20–20,000 Hz. **Channel Separation:** Over 25 db at 1 kHz; 20 db at 10 kHz; 15 db at 20 kHz. **Output:** 9.3 mV per channel at 1 kHz at 5 cm/sec. (Output from each channel within 2 db.) **Compliance:** 15 x $10^{-6}$ cm/dyne. **Impedance:** 47,000 ohms per channel, recommended. **Tracking Force:** 1¾ to 4 grams. **Inductance:** 720 mH. **DC Resistance:** 630 ohms. **Stylus:** N44E elliptical, diamond tip; frontal radius, .0007″; side contact radii, .0004″.

**Shure Model M44E**—With diamond stylus. Net Each..**$24.95**

## M44 STEREO 15° DYNETIC CARTRIDGES

Three cartridges which combine quality with economy; feature 15° tracking with conical styli. **Frequency Response:** 20–20,000 Hz. **Channel Separation:** Over 25 db at 1 kHz. **Output:** At 1000 Hz at 5 cm/sec: Model M44-7, 11 mV per channel; Model M44-5, 7 mV per channel; Model M44C, 9.3 mV per channel. **Impedance:** 47,000 ohms per channel, recommended. **Inductance:** 720 mH. **DC Resistance:** 630 ohms.

**Shure Model M44-5**—For light tracking, ¾ to 1½ grams. With .0005″ N44-5 diamond stylus. Net Each..............**$21.95**

**Shure Model M44-7**—For heavier tracking, 1½ to 3 grams. With .0007″ N44-7 diamond stylus. Net Each..............**$19.95**

**Shure Model M44C**—For heaviest tracking, 3 to 5 grams. With .0007″ N44C diamond stylus. Net Each..............**$17.95**

# Scotch® BRAND RECORDING TAPES, CASSETTES, 8-TRACK CARTRIDGES, REELS AND CLIPS

## RECORDING TAPES AND ACCESSORIES

### NO. 206 HIGH OUTPUT, LOW NOISE

Finest reel to reel tape available for mastering use. "Posi-trak" backing; 1½-mil polyester base.

| Scotch Number | Playing Time | Reel | List Price | Net Each, Lots of | |
|---|---|---|---|---|---|
| | | | | 1-11 | 12 Up |
| 206-¼-R60 | 60 min. | 7" plastic | $6.75 | $4.49 | $4.04 |

### NO. 207 HIGH OUTPUT, LOW NOISE

Same as No. 206, but has 1-mil polyester base.

| | | | | | |
|---|---|---|---|---|---|
| 207-¼-R90 | 90 min. | 7" plastic | $8.55 | $5.69 | $5.12 |

### NO. 201 DYNARANGE®

Provides increased signal-to-noise ratio. For mastering and sub-mastering uses; superb fidelity at slow speeds. Anti-static treated; 1½-mil plastic base.

| Scotch Number | Lgth., Ft. | Reel | List Price | Net Each, Lots of | |
|---|---|---|---|---|---|
| | | | | 1-11 | 12 Up |
| 201-¼-600 | 600 | 5" plastic | $ 2.80 | $2.05 | $1.84 |
| 201-¼-1200 | 1200 | 7" plastic | 4.10 | 3.08 | 2.77 |
| 201-¼-2500H | 2500 | NAB hub | 9.55 | 6.36 | 5.72 |
| 201-¼-2500RO* | 2500 | 10½" metal | 12.55 | 8.38 | 7.54 |

### NO. 202 DYNARANGE EXTRA STRENGTH

Same as No. 201 but with 1½-mil polyester backing for added strength; resists extreme temperature and humidity.

| | | | | | |
|---|---|---|---|---|---|
| 202-¼-600 | 600 | 5" plastic | $ 2.85 | $2.09 | $1.88 |
| 202-¼-1200 | 1200 | 7" plastic | 4.75 | 3.50 | 3.15 |
| 202-¼-2500H | 2500 | NAB hub | 9.55 | 6.36 | 5.72 |
| 202-¼-2500RO* | 2500 | 10½" metal | 12.55 | 8.38 | 7.54 |

### NO. 203 DYNARANGE EXTRA LENGTH, EXTRA STRENGTH

Same recording characteristics as No. 201, plus 1-mil polyester backing for 50% more recording time.

| | | | | | |
|---|---|---|---|---|---|
| 203-¼-900 | 900 | 5" plastic | $ 4.05 | $ 2.97 | $ 2.68 |
| 203-¼-1800 | 1800 | 7" plastic | 6.85 | 5.05 | 4.54 |
| 203-¼-3600H | 3600 | NAB hub | 14.65 | 9.75 | 8.78 |
| 203-¼-3600RO* | 3600 | 10½" metal | 17.65 | 11.77 | 10.60 |

### NO. 111 STANDARD LENGTH

For all general recording needs. Base, 1½-mil plastic. Colored 5" and 7" reels available; specify red, blue, green, yellow or clear (standard).

| | | | | | |
|---|---|---|---|---|---|
| 111-¼-150 | 150 | 3" plastic | $ 0.85 | $0.55 | $0.49 |
| 111-¼-600 | 600 | 5" plastic | 2.70 | 1.77 | 1.60 |
| 111-¼-1200 | 1200 | 7" plastic | 4.00 | 2.67 | 2.40 |
| 111-¼-2500H | 2500 | NAB hub | 8.10 | 5.39 | 4.85 |
| 111-¼-2500RO* | 2500 | 10½" metal | 11.10 | 7.42 | 6.67 |

### NO. 150 EXTRA STRENGTH, EXTRA LENGTH

Extra tough 1-mil polyester backing. Super potent oxide for greater response, crisper tones.

| | | | | | |
|---|---|---|---|---|---|
| 150-¼-900 | 900 | 5" plastic | $ 3.60 | $2.40 | $2.16 |
| 150-¼-1800 | 1800 | 7" plastic | 6.20 | 4.11 | 3.70 |
| 150-¼-3600H | 3600 | NAB hub | 11.75 | 7.82 | 7.05 |
| 150-¼-3600RO* | 3600 | 10½" metal | 14.80 | 9.86 | 8.87 |

### NO. 175 ALL PURPOSE, HEAVY DUTY

Heavy duty coating on 1½-mil Tenzar® base; lasts 15 times longer than ordinary tapes. For language lab use.

| | | | | | |
|---|---|---|---|---|---|
| 175-¼-600 | 600 | 5" plastic | $ 2.50 | $1.68 | $1.51 |
| 175-¼-1200 | 1200 | 7" plastic | 3.85 | 2.58 | 2.32 |
| 175-¼-2500H | 2500 | NAB hub | 8.45 | 5.63 | 5.07 |
| 175-¼-2500RO* | 2500 | 10½" metal | 11.35 | 7.55 | 6.80 |

### NO. 131 LOW PRINT

Minimizes print-through to a point below noise level of most professional machines. Has 1½-mil plastic backing.

| | | | | | |
|---|---|---|---|---|---|
| 131-¼-600 | 600 | 5" plastic | $ 2.95 | $1.96 | $1.76 |
| 131-¼-1200 | 1200 | 7" plastic | 4.55 | 3.02 | 2.72 |
| 131-¼-2500H | 2500 | NAB hub | 9.55 | 6.36 | 5.72 |
| 131-¼-2500RO* | 2500 | 10½" metal | 12.60 | 8.38 | 7.54 |

### NO. 138 LOW PRINT, EXTRA STRENGTH

Same magnetic and recording characteristics as No. 131 but with extra tough 1½-mil polyester base.

| | | | | | |
|---|---|---|---|---|---|
| 138-¼-1200 | 1200 | 7" plastic | $ 5.25 | $3.50 | $3.15 |
| 138-¼-2500H | 2500 | NAB hub | 9.55 | 6.36 | 5.72 |
| 138-¼-2500RO* | 2500 | 10½" metal | 12.60 | 8.38 | 7.54 |

### NO. 102 STANDARD LENGTH, EXTRA STRENGTH

Especially suited for irreplaceable recordings on long term storage; 1½-mil polyester base, unaffected by temperature and humidity.

| | | | | | |
|---|---|---|---|---|---|
| 102-¼-600 | 600 | 5" plastic | $ 2.80 | $1.86 | $1.67 |
| 102-¼-1200 | 1200 | 7" plastic | 4.40 | 2.91 | 2.63 |
| 102-¼-2500H | 2500 | NAB hub | 8.80 | 5.87 | 5.28 |

### NO. 156 EXTERNALLY LUBRICATED

Coated on one side (single play) for continuous loops. Externally lubricated; 1-mil polyester base.

| | | | | | |
|---|---|---|---|---|---|
| 156-¼-1800 | 1800 | 7" plastic | ...... | $4.14 | $3.76 |

### NO. 282 SANDWICH TAPE, EXTRA STRENGTH

Micro-thin protective plastic coating over oxide eliminates oxide rub-off; reduces head wear. Unaffected by temperature and humidity. Base, 1½-mil polyester. Specify blue, clear, green, red or yellow reels.

| Scotch Number | Lgth., Ft. | Reel | List Price | Net Each, Lots of | |
|---|---|---|---|---|---|
| | | | | 1-11 | 12 Up |
| 282-¼-600 | 600 | 5" plastic | $2.50 | $1.68 | $1.51 |
| 282-¼-1200 | 1200 | 7" plastic | 3.85 | 2.58 | 2.32 |

### "LIVING LETTERS" TAPES

Three tape lengths on 3" reels. Plastic container doubles as re-useable mailer or storage unit.

| | | | | | |
|---|---|---|---|---|---|
| 111-¼-150LL | 150 | 3" plastic | $1.05 | $0.72 | $0.65 |
| 200-¼-300LL | 300 | 3" plastic | 2.05 | 1.46 | 1.31 |
| 290-¼-600LL | 600 | 3" plastic | 2.95 | 1.99 | 1.79 |

### NO. 200 DOUBLE LENGTH, DOUBLE STRENGTH

Provides twice the playing time of conventional tapes. High potency oxide on ½-mil tensilized polyester backing.

| | | | | | |
|---|---|---|---|---|---|
| 200-¼-1200 | 1200 | 5" plastic | $ 5.85 | $ 3.87 | $ 3.49 |
| 200-¼-2400 | 2400 | 7" plastic | 10.05 | 6.68 | 6.02 |
| 200-¼-4800RPS | 4800 | 10½" EIA† | 22.65 | 15.11 | 13.60 |

### NO. 290 TRIPLE LENGTH

For maximum recording time on given size reel. Ideal for recording meetings, etc.; ½-mil tensilized polyester backing.

| | | | | | |
|---|---|---|---|---|---|
| 290-¼-1800 | 1800 | 5" plastic | $ 7.40 | $4.92 | $4.43 |
| 290-¼-3600 | 3600 | 7" plastic | 11.99 | 7.99 | 7.19 |

### NO. 23 AND 24 PLASTIC LEADER AND TIMING TAPE

For identification of ends of tape and selections within roll.

| Scotch Number | Length | List Price | Net Each, Lots of | |
|---|---|---|---|---|
| | | | 1-11 | 12 Up |
| 23W-¼-1000 | ¼" x 1000' | $4.50 | $3.00 | $2.70 |
| 24W-¼-100 | ¼" x 100' | .90 | .60 | .54 |
| 24Y-¼-100 | ¼" x 100' | .90 | .60 | .54 |

### NO. PRST-7 SELF-THREADING REEL

Handy plastic reel for instant, fumble-free threading. Threads all tape thicknesses, with or without leaders. Each reel comes with plastic collar and labels.

| | | | | |
|---|---|---|---|---|
| PRST-7 | 7" plastic reel | $1.50 | $1.00 | $0.90 |

### NO. 12-¼-10 END-OF-REEL TAPE CLIP

Clips onto tape end and fits into reel, preventing spilling. Tapered, smooth edges can't harm tape. Card of 10 clips.
List per Card, **49c.** Net per Card, Lots: 1-11, **33c**; 12 Up, **29c**

## CASSETTES FOR CASSETTE RECORDERS

Tensilized polyester "Posi-Trak" backing. Mailer refers to white opaque plastic postal approved mailing container. Album refers to plastic case with gold-colored bottom and clear plastic hinged top. "Posi-Trak" Backing: .5 mil, S-C-30 and S-C-60; .3 mil, S-C-90; .25 mil, S-C-120.

### HIGH ENERGY CASSETTES

Provides reel to reel quality in cassette form; 3–5 dB signal-to-noise ratio increase on all recorders. The ultimate in sound. If recorder has a bias switch, high energy cassette should be used on standard bias setting. Comes in cassette album-only. Posi-Trak backing.

| Scotch Number | Playing Time | List Price | Net Each, Lots of | |
|---|---|---|---|---|
| | | | 1-11 | 12 Up |
| S-C-30 HE | 15 min. each side | $3.20 | $2.39 | $2.15 |
| S-C-60 HE | 30 min. each side | 3.70 | 2.79 | 2.51 |
| S-C-90 HE | 45 min. each side | 5.35 | 3.99 | 3.59 |

### EXTENDED RANGE CASSETTES

"Posi-Trak" backing, Dynarange low noise. Excellent sound reproducing quality for all recorders. Specify mailer or album when ordering; same price. S-C-120 available in album only.

| | | | | |
|---|---|---|---|---|
| S-C-30 | 15 min. each side | $2.25 | $1.69 | $1.52 |
| S-C-60 | 30 min. each side | 2.65 | 1.99 | 1.79 |
| S-C-90 | 45 min. each side | 4.00 | 2.99 | 2.69 |
| S-C-120 | 60 min. each side | 5.35 | 3.99 | 3.59 |

### HIGHLANDER® CASSETTES

Low noise; brilliant sound; fully guaranteed. In clear plastic box. Available in dispensers of 12 or in carded form at same price (each). Suffix indicates length: -30, 30 minutes.

| Highlander Number | List Price | Net Each | Highlander Number | List Price | Net Each |
|---|---|---|---|---|---|
| H-C-30 | $1.39 | $0.79 | H-C-90 | $2.49 | $1.59 |
| H-C-60 | 1.69 | .99 | H-C-120 | 3.79 | 2.69 |

### 8-TRACK CARTRIDGES

Excellent quality. Guaranteed jam proof cartridges.

| Scotch Number | Playing Time | List Price | Net Each, Lots of | |
|---|---|---|---|---|
| | | | 1-11 | 12 Up |
| S-8TR-40 | 40 minutes | $2.95 | $2.17 | $1.97 |
| S-8TR-80 | 80 minutes | 3.40 | 2.53 | 2.27 |

*Standard NAB type; also available on 10½" plastic reel with 3" NAB center hole (**RPL**) or with 5⁄16" EIA center hole (**RPS**) at same price. †Plastic with 5⁄16" EIA center hole. **Empty reels and boxes available.**

# Scotch® BRAND Video Tapes and Accessories

## SERIES 360 VIDEO TAPE

Longitudinally oriented video tape has many outstanding advantages: Heavy duty binder system, long wearing oxide, improved signal-to-noise ratio, excellent audio and video output characteristics, low dropout count, highly conductive coating, extended head life, and new back treatment prevents interlayer slippage, scratching and attraction of foreign debris.

### TAPE WIND A

| Scotch Number* 360- | Play Time Min. | For use with Recorders | Reel Size | Reels/ Carton | Net Each 1-9* |
|---|---|---|---|---|---|
| **1-1500-R139** | 31 | Ampex 4900, 5000, 6000, 7000 Series | 1″ x 8″ | 5 | $ 44.95 |
| **1-3000-R97B** | 62 | | 1″ x 9¾″ | 5 | 59.95 |
| **1-1250-R91B** | 32 | Sony EV-200/300 | 1″ x 8″ | 5 | 39.00 |
| **1-2460-R91B** | 63 | | 1″ x 8″ | 5 | 59.95 |

### TAPE WIND B

| Scotch Number* 360- | Play Time Min. | For use with Recorders | Reel Size | Reels/ Carton | Net Each 1-9* |
|---|---|---|---|---|---|
| **B-2-300-VRB** | 16 | Ampex VR-1500, VR-1560, VR-660B Series | 2″ x 6½″ | 12 | $ 19.70 |
| **B-2-600-VRB** | 32 | | 2″ x 6½″ | 12 | 31.00 |
| **B-2-900-VRB** | 48 | | 2″ x 8″ | 2 | 52.32 |
| **B-2-1200-VRB** | 64 | | 2″ x 8″ | 2 | 62.35 |
| **B-2-1800-VRB** | 96 | | 2″ x 10½″ | 2 | 87.43 |
| **B-2-2400-VRB** | 130 | | 2″ x 10½″ | 2 | 110.15 |
| **B-2-4800-VRB** | 260 | | 2″ x 12½″ | 2 | 205.57 |
| **B-2-700-VSRB** | 33 | Sony PV-120 Series | 2″ x 7″ | 2 | 45.00 |
| **B-2-1350-VSRB** | 64 | | 2″ x 7″ | 2 | 70.00 |
| **B-2-2000-VSRB** | 94 | | 2″ x 7″ | 2 | 95.00 |
| **B-2-1800-VSRB** | 63 | Sony PV-100 | 2″ x 7″ | 2 | 84.50 |

## SERIES 461 VIDEO TAPE

High energy longitudinally oriented video tape represents a significant improvement over all other types of helical video tape. Greatly improved signal-to-noise ratio, excellent head life characteristics, time proven conductive back treatment prevents physical damage and attraction of contaminants.

### TAPE WIND A

For portables (7½ ips); Sony, Panasonic, Concord, Norelco.

| Scotch Number* | Playing Time Minutes | Reel Size | Reels/ Carton | Net Ea., Lots of 1-9* |
|---|---|---|---|---|
| **461-½-845-R130B** | 20 | ½″ x 4⅝″ | 5 | $17.00 |
| **461-½-1200-R148B** | 30 | ½″ x 5⅛″ | 5 | 26.00 |

For EIAJ-1 standard (7½ ips) recorders. Sony, Apeco, GE, B & H, Shibaden, Concord, Panasonic NV7/8200, Craig, Diamond Power.

| Scotch Number* | Playing Time Minutes | Reel Size | Reels/ Carton | Net Ea., Lots of 1-9* |
|---|---|---|---|---|
| **461-½-1250-R86B** | Approx. ½ to 1 hour | ½″ x 7″ | 5 | $25.00 |
| **461-½-1800-R86B** | | ½″ x 7″ | 5 | 35.00 |
| **461-½-2400-R86B** | | ½″ x 7″ | 5 | 46.00 |

For IVC 600-800; Ampex 4900, 5000, 6000, 7000 Series; B & H; RCA; GPL; Concord; Panasonic.

| Scotch Number* | Playing Time Minutes | Reel Size | Reels/ Carton | Net Ea., Lots of 1-9* |
|---|---|---|---|---|
| **461-1-1075-R139B** | Approx. ½ to 1 hour | 1″ x 8″ | 5 | $40.00 |
| **461-1-1500-R139B** | | 1″ x 8″ | 5 | 46.00 |
| **461-1-2150-R139B** | | 1″ x 8″ | 5 | 53.00 |

For Concord and Panasonic.

| Scotch Number* | Playing Time Minutes | Reel Size | Reels/ Carton | Net Ea., Lots of 1-9* |
|---|---|---|---|---|
| **461-1-2800-R104B** | 64 | 1″ x 8½″ | 5 | $69.00 |

For Ampex 4900, 5000, 6000, 7000; Craig 6403; Diamond Power, Shibaden SV727.

| Scotch Number* | Playing Time Minutes | Reel Size | Reels/ Carton | Net Ea., Lots of 1-9* |
|---|---|---|---|---|
| **461-1-2400-R97B** | Approx. 1 to 1½ hours | 1″ x 9¾″ | 5 | $60.00 |
| **461-1-3000-R97B** | | 1″ x 9¾″ | 5 | 69.00 |
| **461-1-3600-R97B** | | 1″ x 9¾″ | 5 | 80.00 |

For Sony EV200/300.

| Scotch Number* | Playing Time Minutes | Reel Size | Reels/ Carton | Net Ea., Lots of 1-9* |
|---|---|---|---|---|
| **461-1-1250-R91B** | 32 | 1″ x 8″ | 5 | $58.00 |
| **461-1-2460-R91B** | 63 | 1″ x 8″ | 5 | 69.00 |

### TAPE WIND B

For Ampex VR-1500, VR-1560 and VR-660B.

| Scotch Number* | Playing Time Minutes | Reel Size | Reels/ Carton | Net Ea., Lots of 1-9* |
|---|---|---|---|---|
| **461B-2-300-VRB** | 16 | 2″ x 6½″ | 12 | $ 23.00 |
| **461B-2-600-VRB** | 32 | 2″ x 6½″ | 12 | 36.00 |
| **461B-2-900-VRB** | 48 | 2″ x 8″ | 2 | 60.00 |
| **461B-2-1200-VRB** | 64 | 2″ x 8″ | 2 | 72.00 |
| **461B-2-1800-VRB** | 96 | 2″ x 10½″ | 2 | 100.00 |
| **461B-2-2400-VRB** | 130 | 2″ x 10½″ | 2 | 127.00† |
| **461B-2-4800-VRB** | 260 | 2″ x 12½″ | 2 | 236.00† |

For Sony PV Series.

| Scotch Number* | Playing Time Minutes | Reel Size | Reels/ Carton | Net Ea., Lots of 1-9* |
|---|---|---|---|---|
| **461B-2-700-VSRB** | 33 | 2″ x 7″ | 2 | $ 52.00† |
| **461B-2-1350-VSRB** | 64 | 2″ x 7″ | 2 | 80.00† |
| **461B-2-2000-VSRB** | 94 | 2″ x 7″ | 2 | 109.00† |

*For 1″ wide reels R97, R104 or R139 to be delivered in Cycolac plastic shipping and storage container add **C87** to Scotch No. and delete letter **B**; i.e., 461-1-3600-R97**C87**; add-on charge is **$4.00.** For 2″ wide helical tape on VR reels to be delivered in Cycolac plastic container insert **C88** at end of Scotch No. and delete letter **B**; i.e., 461B-2-1200-VR**C88**; add-on charge is **$5.50.** †Lots of 1–19.

## SERIES 462 VIDEO TAPE

Same characteristics as Series 461 video tape above. Tensilized polyester backing improves time base stability.

### TAPE WIND A

For IVC recorder.

| Scotch Number* | Playing Time Minutes | Reel Size | Reels/ Carton | Net Ea., Lots of 1-9* |
|---|---|---|---|---|
| **462-1-1075-R139B** | 31 | 1″ x 8″ | 5 | $ 41.00 |
| **462-1-2150-R139B** | 62 | 1″ x 8″ | 5 | 54.00 |
| **462-1-7500-IRHB** | 210 | 1″ x 12½″ | 2 | 250.00 |

*For 1″ wide tapes using R139 reels to be delivered in Cycolac containers add **C87** to Scotch No. and delete letter **B**; i.e., 462-1-2150-R139**C87**; add-on charge is **$4.00.** If to be delivered in a round clear styrene plastic storage case insert **IC** to Scotch No., delete letter **B**; i.e., 462-1-2150-R139**IC**; add-on charge is **$3.25** per reel.

## SERIES 361 VIDEO TAPE

Longitudinally oriented video tape offer the same features as Series 360 video tape.

### TAPE WIND A

For Roberts 1000, 1050 and Akai 100.

| Scotch Number* | Playing Time Minutes | Reel Size | Reels/ Carton | Net Ea., Lots of 1-9* |
|---|---|---|---|---|
| **361-¼-1200-PR-5** | 20 | ¼″ x 5″ | 12 | $ 8.50 |
| **361-¼-2400-R137B** | 40 | ¼″ x 7″ | 5 | 18.95 |

For portables (7½ ips); Sony, Panasonic, Concord and Norelco LDL 100.

| Scotch Number* | Playing Time Minutes | Reel Size | Reels/ Carton | Net Ea., Lots of 1-9* |
|---|---|---|---|---|
| **361-½-450-R130B** | 10 | ½″ x 4⅝″ | 5 | $10.25 |
| **361-½-1200-R148B** | 30 | ½″ x 5⅛″ | 5 | 22.95 |
| **361-½-845-R130B** | 20 | ½″ x 4⅝″ | 5 | 14.95 |

For all EIAJ-1 standard recorders (7½ ips): Concord VTR 6/900, Panasonic NV 7/8200, Craig 6401 or Diamond Power.

| Scotch Number* | Playing Time Minutes | Reel Size | Reels/ Carton | Net Ea., Lots of 1-9* |
|---|---|---|---|---|
| **361-½-1250-R86B** | 32 | ½″ x 7″ | 5 | $21.95 |
| **361-½-1800-R86B** | 45 | ½″ x 7″ | 5 | 30.00 |
| **361-½-2400-R86B** | 64 | ½″ x 7″ | 5 | 39.95 |

For IVC 600-800, Bell & Howell, RCA, GPL and Chester.

| Scotch Number* | Playing Time Minutes | Reel Size | Reels/ Carton | Net Ea., Lots of 1-9* |
|---|---|---|---|---|
| **361-1-1075-R139B** | 31 | 1″ x 8″ | 5 | $34.55 |
| **361-1-2150-R139B** | 62 | 1″ x 8″ | 5 | 45.30 |

For IVC-900.

| Scotch Number* | Playing Time Minutes | Reel Size | Reels/ Carton | Net Ea., Lots of 1-9* |
|---|---|---|---|---|
| **361-1-7500-IRHB** | 210 | 1″ x 12½″ | 2 | $213.00 |

For Concord and Panasonic.

| Scotch Number* | Playing Time Minutes | Reel Size | Reels/ Carton | Net Ea., Lots of 1-9* |
|---|---|---|---|---|
| **361-1-1400-R139B** | 32 | 1″ x 8″ | 5 | $42.93 |
| **361-1-2800-R104B** | 64 | 1″ x 8½″ | 5 | 59.95 |

For Craig 6403, Diamond Power and Shibaden SV727.

| Scotch Number* | Playing Time Minutes | Reel Size | Reels/ Carton | Net Ea., Lots of 1-9* |
|---|---|---|---|---|
| **361-1-2400-R97B** | 64 | 1″ x 9¾″ | 5 | $52.32 |
| **361-1-3600-R97B** | 96 | 1″ x 9¾″ | 5 | 69.50 |

*For 1″ wide tapes for recorders using R97, R104 or R139 reels desired to be delivered in Cycolac† plastic shipping and storage containers add **C87** to Scotch Number and delete letter **B**; i.e., 361-1-3600R97**C87**; add-on charge is **$4.00.**
†Reg. Borg-Warner TM.

## SERIES 363 VIDEO TAPE

Same magnetic characteristics as Series 360 and 361. Has thin ½-mil treated backing for long play requirements.

### TAPE WIND A

For portables (7½ ips): Sony, Panasonic, Concord and Norelco LDL 1000.

| Scotch Number | Playing Time Minutes | Reel Size | Reels/ Carton | Net Ea., Lots of 1-9* |
|---|---|---|---|---|
| **363-½-1550-R148B** | 40 | ½″ x 5⅛″ | 5 | $32.50 |
| **363-½-1150-R130B** | 20 | ½″ x 4⅝″ | 5 | 21.50 |

For all EIAJ-1 standard recorders (7½ ips): Concord VTR 6/900, Panasonic NV 7/8200, Craig 6401 or Diamond Power.

| Scotch Number | Playing Time Minutes | Reel Size | Reels/ Carton | Net Ea., Lots of 1-9* |
|---|---|---|---|---|
| **363-½-3000-R86B** | 80 | ½″ x 7″ | 5 | $49.95 |

## VIDEO TAPE REELS AND ACCESSORIES

| Scotch Number | Description | Size | Per Ctn. | Net Ea.* |
|---|---|---|---|---|
| **R139B-1-8** | Empty reel in box | 1″ x 8″ | 5 | $ 8.95 |
| **R91B-1-8** | Empty reel in box | 1″ x 8″ | 5 | 16.50 |
| **R104B-1-8½** | Empty reel in box | 1″ x 8½″ | 5 | 10.95 |
| **R97B-1-9¾** | Empty reel in box | 1″ x 9¾″ | 5 | 8.95 |
| **IRHB-1-12½** | Empty reel in box | 1″ x 12½″ | 2 | 17.00 |
| **VRB-2-8** | Empty reel in box | 2″ x 8″ | 2 | 17.00 |
| **VRB-2-10½** | Empty reel in box | 2″ x 10½″ | 2 | 17.00 |
| **VRB-2-12½** | Empty reel in box | 2″ x 12½″ | 2 | 17.00 |
| **VSRB-2-7** | Empty reel in box | 2″ x 7″ | 2 | 16.50 |
| **VB-1-8½** | Empty box | 1″ x 8½″ | 5 | 1.53 |
| **VB-1-10½*** | Empty box | 1″ x 10½″ | 5 | 1.53 |
| **VB-2-8** | Empty box | 2″ x 8″ | 2 | 1.53 |
| **VB-2-10½** | Empty box | 2″ x 10½″ | 2 | 1.53 |
| **VSB-2-7** | Empty box | 2″ x 7″ | 2 | 1.60 |
| **VSB-1-8** | Empty box | 1″ x 8″ | 5 | 2.40 |
| **IC-1-10½** | Empty round plastic styrene case | 1″ x 10½″ | 8 | 4.73 |
| **C88-2-14** | Empty blue Cycolac container | 2″ x 14″ | 2 | 13.25 |
| **C87-1-10½** | | 1″ x 10½″ | 5 | 11.00 |
| **VRB-2-6½†** | Empty plastic reel in box | 2″ x 6½″ | 12 | 2.75 |
| **R137B-¼-7** | Empty reel in vinyl box | ¼″ x 7″ | 5 | 3.00 |
| **R130B-½-4⅝** | Empty reel in vinyl box | ½″ x 4⅝″ | 5 | 3.35 |
| **R86B-½-7** | Empty reel in vinyl box | ½″ x 7″ | 5 | 3.00 |
| **VB-¼-7** | Empty vinyl box | ¼″ x 7″ | 5 | 2.60 |
| **VB-½-4⅝** | Empty vinyl box | ½″ x 4⅝″ | 5 | 2.50 |
| **VB-½-7** | Empty vinyl box | ½″ x 7″ | 5 | 2.50 |
| **392-¼-66‡** | Splicing tape, 0.5 mil§ | ¼″ x 66′ | 12 | 3.25 |
| **392-½-66‡** | Splicing tape, 0.5 mil§ | ½″ x 66′ | 12 | 4.87 |
| **393-¼-66‡** | Splicing tape, 0.25 mil§ | ¼″ x 66′ | 12 | 3.25 |
| **393-½-66‡** | Splicing tape, 0.25 mil§ | ½″ x 66′ | 12 | 4.87 |
| **621-⁷⁄₃₂-66#** | Splicing tape No. 621 | ⁷⁄₃₂″ x 66′ | 12 | 3.25 |
| **621-½-66#** | Splicing tape No. 621 | ½″ x 66′ | 12 | 4.87 |

*To be used when purchasing empty boxes for 1″ x 8½″ or larger NAB reels. †Sold in minimum order quantities of 12. ‡Recommended for all video splicing requirements and are mandatory for use on all controlled wind video tapes. §Aluminized. #Use prefix **620-** for Series **462** tape.

**★LARGER QUANTITY DISCOUNT ON REQUEST**

# TDK DIGI-PACK COMPUTER CASSETTES

TDK DIGI-PACK
HR

- **DESIGNED FOR DIGITAL RECORDING APPLICATIONS WITH MINICOMPUTERS AND TERMINALS**
- **MEETS ALL SPECIFICATIONS OF FIRST DRAFT ISO PROPOSAL ON MAGNETIC TAPE CASSETTES**
- **100% ERROR-FREE; CERTIFIED FREE OF DROPOUTS OR DROPINS**
- **HIGH RESOLUTION**
- **UNIVERSAL INTERCHANGEABILITY**
- **EXCELLENT DURABILITY**
- **VERY LOW SKEW ERROR**
- **LOW HEAD WEAR**

The first cassette device designed expressly for digital recording applications in conjunction with minicomputers and terminals, and manufactured under controlled conditions in high volume. Compact Digi-Pack Cassettes offer certified error-free tape with precision construction for skew-free operation; meet all specifications of the first draft ISO proposal on magnetic tape cassettes. Universal interchangeability; meet requirements of new mini transports designed for terminal equipment.

Suitable for all digital recording applications in which the designer chooses to use a Philips compatible cassette. Manufactured from precision components to assure flawless operation and long life; assembled in clean rooms to reduce contamination to an absolute minimum. Digi-Pack Cassettes use a special computer grade of TDK's famous SD (Super Dynamic) tape, which has become the standard for comparison in the audio tape cassette field. Also available without ISO certification.

## SPECIFICATIONS

MAGNETIC TAPE: **Color:** Black. **Backing Material:** Polyethylene terephthalate. **Tape Width:** 3.81 mm (+0, −0.05). **Tape Thickness:** 20.0 μm maximum. **Backing Thickness:** 12.0 μm nominal. **Coating Thickness:** 6.0 μm nominal. **Tape Length:** 86 meters (+4, −0). **Tensile Strength:** 5% elongation, 0.60 kg (0.40 at BOT/EOT) minimum; ultimate, 1.20 kg (0.80 at BOT/EOT) minimum. **Residual Elongation:** 0.2% maximum. **Surface Electrical Resistance:** 5.0 x $10^{10}$ ohm/square maximum. **Layer-to-Layer Adhesion:** None. **Coercivity:** 320 oersteds nominal. **Remanance:** 1,200 gauss nominal. **Squareness Ratio:** 0.8 nominal. **Average Signal Amplitude:** 100% (+25%, −10%) maximum. **Dropouts:** None (no playback signal less than 50% of reference signal amplitude). **Drop-ins:** None (no playback signal exceeding 10% of reference signal amplitude).

ENVIRONMENT: **Operating Temperature:** 10° to 45° C (50° to 113° F). **Operating Wet Bulb Temperature:** Less than 26° C (79° F). **Storage Temperature:** 4° to 40° C (39° to 104° F). **Relative Humidity:** 20% to 80%, operating and storage.

LEADER: **Material:** Polyethylene terephthalate. **Width:** 3.81 mm (+0, −0.05). **Thickness:** 38.0 μm nominal. **Length:** 300 mm (±30); defined as the distance from the cassette face to the beginning of the magnetic tape (measured perpendicular to the cassette face) when the leader tape is pulled out of the cassette through the opening nearest to the empty reel. **Tensile Strength (Ultimate):** 1.50 kg minimum. **Tape-to-Leader Splice:** There shall be no damage to the splice when subjected to a longitudinal force of 0.2 kg.

CASSETTE: **Color:** White or black. **Dimensions and Mechanical Characteristics:** Model HR-1600 meets all specifications of First Draft ISO Proposal Magnetic Tape Cassettes (January, 1971).

MARKERS: Magnetic tape is provided with a BOT and an EOT marker consisting of a hole 1.8 mm long (+0.1, −0) x 0.6 mm wide (±0.05). Distance of marker centers from physical beginning of tape and end of tape is 350 mm (±30). Distance between tape centerline and marker centerline is no less than 0.1 mm.

## TEST METHODS

Tests are carried out at temperature of 21° to 25° C and 40–60% relative humidity, with 24-hour conditioning before testing. **Reference Tape:** TDK Type 6FK-OL2213. **Reference Signal Tape:** TDK Type 6FK-OL2213S. Optimum playback head alignment does not differ by more than 3 minutes from vertical on cassette support plane. Density of continuous information, 31.5 bpmm.

| Method | Parameter | Test Description |
|---|---|---|
| **MC-11** | Tape Width | Measured with an optical comparator at an arbitrary point |
| **MC-12** | Tape Thickness | Ascertained by taking 10 layers of tape and measuring combined thickness with micrometer having micron vernier, then dividing measured reading by 10 |
| **MC-13** | Tape Length | Measured with rotary-type meter gauge |
| **MC-21** | Tensile Strength | Sample of tape 100 mm long is placed in standard tensile tester and subjected to jaw separation rate of 50 mm/minute until it breaks |
| **MC-22** | Residual Elongation | Sample of tape 1000 mm long is suspended vertically against a scale calibrated in millimeters. A 200-gram load is applied to free end for 60 seconds, then removed, and tape is allowed to relax for 60 seconds. A 5-gram load is then attached and the difference in length between a mark on the tape, measured before and after the loading, is noted |
| **MC-23** | Surface Electrical Resistance per Square | Measured using metal electrodes and two 100-gram weights, with 500 VDC (±50 V) applied. Surface electrical resistance per square is equal to 0.38 times resist. obtained by this method |

| Method | Parameter | Test Description |
|---|---|---|
| **MC-31** | Coercivity, Remanance Squareness Ratio | Obtained from B-H loop measurements produced when 10 or more layers of tape are magnetized along length of tape, in magnetic field of at least 1000 Oe. |
| **MC-51** | Average Signal Amplitude (average peak output over at least 4000 flux transitions) | Tape is recorded with test recording current (200–220% of current required to produce reference field, which is the minimum field causing a signal output equal to 95% of maximum signal output at 63 ft ppm in reference tape), then played back on a system which has been calibrated by the reference tape recorded under the same conditions. Average signal amplitude of test tape is expressed in percent of the reference signal amplitude |
| **MC-61** | Dropouts and Dropins | Test is carried out in the in-contact condition (oxide side of tape in physical contact with magnetic head) and over the entire tested area, extending from 250 mm before the BOT marker to 250 mm beyond the EOT marker. Output signal is measured on the same relative pass for both reference tape and tape under test |

## MODELS AND PRICING

**Model HR-1600**—Computer cassette meeting and exceeding ISO specifications under controlled testing described above, and totally certified with a minimum of 1600 BPI.

**Model BR-1600**—Same tape certification as above but in standard Philips package that does not meet ISO specifications.

**Model UR-1600**—Tape without ISO certification, in a standard cassette case.

| TDK Model | Net Each, Lots of | | | |
|---|---|---|---|---|
| | 1-20 | 21-100 | 101-500 | 501 Up |
| **HR-1600** | $12.00 | $10.50 | $9.00 | $8.00 |
| **BR-1600** | 9.00 | 7.90 | 6.75 | 6.00 |
| **UR-1600** | 7.50 | 6.55 | 5.65 | 5.00 |

# TDK CASSETTE AND REEL-TO-REEL TAPES

## TYPE EC ENDLESS TAPE CASSETTES

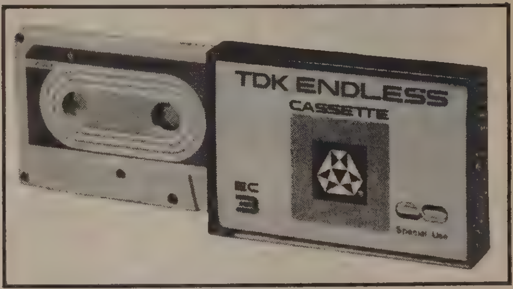
- **FOR REPEAT-MESSAGE APPLICATIONS:**
  - **ADVERTISING**
  - **BACKGROUND MUSIC**
  - **TELEPHONE ANSWERING**
  - **SLEEP LEARNING**
  - **CONTROL DEVICES**
- **AVAILABLE IN STANDARD 1-, 3- AND 6-MINUTE MESSAGE LENGTHS**
- **HIGH PERFORMANCE AND DURABILITY**
- **LOW WOW AND FLUTTER**
- **NO DAMAGE FROM ACCIDENTAL REVERSAL**
- **HIGH RELIABILITY OPERATION**
- **NO REWINDING**

Unique, patented endless-loop cartridge is directly usable in most conventional cassette players and recorders. No rewinding; moves in one direction only. Special construction prevents damage even when the reverse function is accidentally activated. Reliable and durable, with high-performance tape backing and magnetic coating. Cassettes are designed to survive many hours of total, accumulated usage. Available in lengths for one, three or six-minute recordings (recording time is doubled to two, six and twelve minutes in equipment in which the magnetic head shifts after the full recorded length is used on the first half of the tape, to use the remaining half strip); other lengths available on special order.

**Note:** Use and application of EC cassettes is limited by agreement with Philips to exclude use as standard cassettes for home entertainment purposes. Prospective users are therefore required to sign a "Letter of Agreement" describing intended applications, and are expected to cooperate in preventing the resale of EC cassettes for excluded applications.

### PRICING

| TDK Model | Message Length | Net Each, Lots of | | | |
|---|---|---|---|---|---|
| | | 1-19 | 20-99 | 100-499 | 500 Up |
| EC-1 | 1 minute | $4·75 | $4·00 | $3·20 | $2·00 |
| EC-3 | 3 minutes | 5·00 | 4·20 | 3·35 | 2·50 |
| EC-6 | 6 minutes | 5·50 | 4·60 | 3·70 | 2·75 |



### SPECIFICATIONS

PERFORMANCE: **Operating Bias:** 110% maximum. **Sensitivity:** +3, −1 dB at 333 Hz; −1.5 dB minimum at 8,000 Hz. **Uniformity:** 1 VU maximum at 333 Hz; 2 VU maximum at 8,000 Hz. **Signal-to-Noise Ratio:** 50 dB. **Print Through:** 50 dB. **Harmonic Distortion:** 5% maximum. **Erase Effect:** 60 dB.

PHYSICAL PROPERTIES: **Color:** Brown. **Base Material:** Polyester. **Total Thickness:** 18 μm typical (backing, 12 μm; coating, 5 μm; lubricant, 1 μm). **Width:** 3.81 mm (0.15″). **Static Tensile Strength:** 400 grams for 2% elongation. **Breaking Strength:** 1.2 kg. **Residual Elongation:** 0.2% maximum for 200 grams. **Resistance:** $10^{11}$ ohms maximum for 5 cm.

MAGNETIC PROPERTIES: **Magnetic Material:** Gamma ferric oxide. **Coercive Force:** 270 oersted. **Remanent Flux Density:** 900 gauss.

### TEST CONDITIONS

**Electromagnetic Characteristics:** Tested at tape speed of 1⅞ ips (4.8 cm/sec); head gap of 2 μm; reference tape is BASF PES-18 (Batch No. 277581). Bias current is held at a level giving the peak output current at 3000 Hs with the reference tape; input is held at level which provides output 10 dB below saturation level at 333 Hz with the reference tape. **Magnetic Properties:** Tested in field strength of 1000 oersteds (60 Hz BH tracer). **Resistance:** Tested under 1000 VDC. **Static Tensile Strength and Breaking Strength:** Tested by "Tensilon" UTM-III tester with 100 mm specimen and 50 mm/sec pulling speed.

### CASSETTE RECORDER REQUIREMENTS

For optimum performance with endless cassettes, recorders should meet the following requirements: **1.** Pinch roller should meet the capstan with a width of at least 4 mm, to eliminate wow-producing slippage. **2.** Tape driving force should be 35 grams minimum between pinch roller and capstan. **3.** Rewinding hub torque should be 35 grams minimum. **4.** Revolutions at playing should be 50–80 rpm without load.

## TYPE SD (SUPER DYNAMIC) HIGH FIDELITY TAPE CASSETTES

Blank cassettes with gamma ferric oxide tape offer great dynamic range, high output level, low distortion and minimum noise. Frequency response from 30–20,000 Hz. No shedding or head wear; jamproof cassette construction. Ideal for high fidelity recording applications.

**Gamma Ferric Oxide Tape:** The minute particles of magnetic oxide on SD tape are only 0.4 micron long (4/10 the average length of those on standard tapes), with improved width-to-length ratio.

**Extended Frequency Range:** The shorter oxide particles provide superior recording of high frequencies, with a range from 30 to 20,000 Hz. With properly adjusted bias, SD tape is flat to 10,000 Hz, whereas conventional tapes begin to drop off at about 5,000 Hz. Even with standard bias, SD tape helps compensate for high-frequency deficiencies of older or inexpensive recorders, providing typically 5 to 10 dB greater output for frequencies above 10,000 Hz.

**Dense, Uniform Coating:** The higher resolution contributes to better frequency response, and also reduces noise. Micro-polishing then produces a mirror-smooth oxide surface, contributing to the noise-reducing property and minimizing recorder head wear.

**High Output Level:** Higher efficiency of gamma ferric oxide provides a higher output level for a given input signal, by several decibels. This higher level, combined with lower noise level, means a vastly better signal-to-noise ratio.

**Computer-Grade Lubrication and Oxide Binder:** Cassettes contain special lubricant to prevent jamming and sticking. Binder for the oxide coating is formulated of special resins for superior performance, minimizing static charges for a quiet, noise-free background; reducing cross-modulation; and preventing oxide shedding which can result in "dropouts."

**Greater Physical Uniformity:** Thickness of binder and oxide coating is controlled to within 1/1000 mm (.004″) to improve contact with recorder head and reduce signal dropouts. Special slitting equipment assures accurate width and linearity.

**Cassettes:** High reliability cassettes use more than 20 parts to insure peak performance; the assembled cassette goes through its own series of rigid inspections. Features include flanged guide rollers and steel pins, high-quality beryllium copper spring with all-felt pressure pad, permalloy shield plate, sealing screws, precision hubs with securely-gripping clamps, chemically-impregnated silicone laminated liner sheet, "record" tab to prevent accidental erasure and re-recording.

All SD cassettes are supplied in plastic box.

| TDK Model | Playing Time | List Price | Net Each |
|---|---|---|---|
| C-30SD | 30 minutes | $2.50 | $1·69 |
| C-60SD | 60 minutes | 3.00 | 1·99 |
| C-90SD | 90 minutes | 4.40 | 2·99 |
| C-120 | 120 minutes | 5.95 | 3·99 |

## REEL-TO-REEL TAPE

Open reel tape on high-tolerance, precision-feed reels designed for easy loading with tape-end hole.

### DELUXE LOW NOISE TAPE

| TDK Model | Length, Feet | Tape Thickness | List Price | Net Each |
|---|---|---|---|---|
| 100-7 | 1200 | 2 mil | $3.50 | $2·50 |
| 150H-7* | 1200 | 1.5 mil | 5.55 | 3·59 |
| 150-7 | 1800 | 1.5 mil | 7.70 | 4·99 |
| 200-7 | 2400 | 1 mil | 7.75 | 5·00 |

*Comes on large, low-torque hub reel.

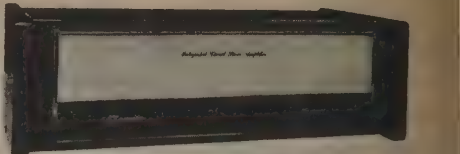
### TYPE SD (SUPER-DYNAMIC) HIGH FIDELITY TAPE

Super Dynamic, high output, low noise tape with outstanding frequency response, no dropouts or shedding, mirror-smooth surface. Same as tape in SD cassettes described above.

| TDK Model | Length, Feet | Tape Thickness | List Price | Net Each |
|---|---|---|---|---|
| 1200SD | 1200 | 1.5 mil | $5.55 | $3·59 |
| 1800SD | 1800 | 1.5 mil | 7.70 | 4·99 |

# STEREO HI-FI AMPLIFIERS, PROFESSIONAL RECORDERS

DC-300


D-150

## MODEL DC-300 STEREO POWER AMPLIFIER

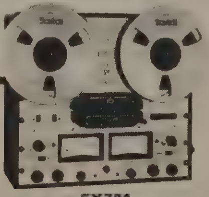
Will drive any speaker system to maximum output with almost unmeasurable distortion; performance approaches the perfection of a "straight wire with gain." Unique DC coupling between stages allows completely linear gain-bandwidth, excellent phase response, instantaneous overload recovery; frequency response is essentially flat from DC to beyond audibility. Amplifier is short- and mismatch-proof; protected by VI limiting, thermal breakers and overall power circuitry fusing. Each channel has two separate regulated power supplies for complete isolation and stability; all four powered from a heavy 1-kW transformer with thoroughly heatsinked, high-current diodes and massive computer-grade filter capacitors. Chassis is made of aluminum for maximum heat conduction with minimum weight; heat sinks are thermally joined with chassis, thereby using the entire amplifier as a heat sink. Has front-panel input level controls and power on-off switch with pilot light; non-interacting DC balance controls mounted behind screwdriver access holes behind front-panel access door; slide switches mounted on sides allow two modes of VI limiting, one for high-hysteresis loads. Inputs are ¼″ phone jacks; outputs are color-coded binding posts and ¼″ phone jacks; AC line cord has 3-prong grounded plug on 5′ cord. Bright anodized brushed aluminum front panel finish with black anodized front extrusion, access door and chassis. **Power Output:** Per channel at clipping point, 190 watts rms into 8 ohms, 340 watts into 4 ohms; 420 watts IHF total into 8 ohms, 800 watts IHF total into 4 ohms. **Frequency Response:** ±0.1 dB, 0–20 kHz at 1 watt into 8 ohms; ±0.6 dB, 0–100 kHz. **Power Response:** ±1 dB, 0–20 kHz at 150 watts rms into 8 ohms. **IM Distortion:** 60 and 7,000 Hz mixed 4:1; less than 0.1%, 0.01–150 watts rms into 8 ohms; typically below 0.05%. **Harmonic Distortion:** Below 0.25%, 20–20,000 Hz, either channel, at 150 watts output; below 0.15%, 20–20,000 Hz, either channel, at 75 watts output. **Damping Factor:** Greater than 200. **Hum and Noise:** 100 dB below 150 watts rms output, unweighted, 20–20,000 Hz; typically 110 dB below. **Input Sensitivity:** 1.75 V ±2% for 150 watts into 8 ohms (26 dB gain, ±0.1 dB). **Input Impedance:** 100K nominal, 10K at full gain. **Load Impedance:** 4 ohms or greater; stable with all speaker loads; stable with al capacitors less than 1 µF and all capacitors if isolated by 1 ohm. **Power Required:** 500 watts max., 40 watts idle, 117, 125, 234 or 250 VAC ±10%, 50–400 Hz. **Size:** 19″ w. (rack mount) x 9¾″ d. x 7″ h. Weight, 40 lbs.

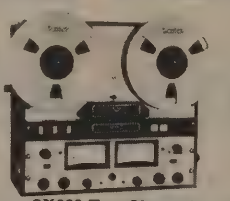
**Crown Model DC-300 Stereo Power Amplifier**—Less cabinet. Net Each . . . . . . . . . . . . . . . . . . . . . . . . . . **$685.00**
**Crown Model 7C Walnut Cabinet**—Net Each . . . . . . . **37.00**

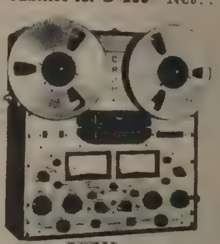
## MODEL D-150 STEREO POWER AMPLIFIER

High power amplifier is ideal for home use as well as for studio monitoring applications. Compact unit will mount in 16¾″ x 5″ opening; optional walnut cabinet also available. Amplifier is short- and mismatch-proof; unique VI limiting is instantaneous with no thumps or cutout. Each channel has its own regulated power supply to assure isolation and stability; no program delay and minimum when unit is switched on. Wideband stable circuit design uses a linear IC dual op-amp; amplifier is completely stable with any load, 4–16 ohms. Inputs are standard ¼″ phone plugs; dual binding post speaker outputs. **Power Output:** Per channel, typically 90 watts rms at 8 ohms, 140 watts rms at 4 ohms; 200 watts total IHF at 8 ohms, 350 watts IHF total at 4 ohms. **Frequency Response:** ±0.1 dB, 20–20,000 Hz at 1 watt; ±1 dB, 4–100,000 Hz at 1 watt. **Power Response:** ±1 dB, 5–20,000 Hz at 75 watts into 8 ohms, one or both channels driven. **IM Distortion:** Less than 0.1% from 0.01 watt to full output; typically 0.05%. **Hum and Noise:** 100 dB below 75 watts output; typically 115 dB below. **Damping Factor:** Greater than 200 from 0 to 1 kHz at 8 ohms. **Input:** 25K nominal; 1.2 V input for rated output. **Power Required:** 250 watts (at 150 watts total output), 117 VAC, 60 Hz. **Size:** 17″ w. x 9″ d. x 5¼″ h. Weight, 16 lbs.

**Crown Model D-150 Power Amplifier**—Net Each . . . . **$429.00**
**Crown Model 5-D Walnut Cabinet for D-150**—Net . . **33.00**


SX700
Two Channel


SX800 Two Channel


CX700
Two Channel with
Four Play Head

Designed for commercial, industrial, educational and other applications. All-aluminum construction. Solid state circuitry utilized in all models. Large, easy-to-read VU meters for quick-glance audio frequency, and bias level indications. Hysteresis motors provided for constant operating speed. Plug-in, printed circuit modules for each circuit function in CX models.

## SX700 SERIES STEREO RECORDERS

Two speed, solid state stereo recorder features simplified electronics. Accommodates reels up to 10½″; exclusive patented electromagnetic braking system. Available with either 4 or 2-track capacity. Features pushbutton solenoid operation, straight line threading, hysteresis synchronous motor, two Hi-Z mike and line inputs per channel, A-B monitor switch, separate output control for each channel, two 5″ VU meters. Stop and operate modes remotely controlled optional. **Frequency Response:** (4-track) ±2 dB, 20–25,000 Hz at 7½ ips; ±2 dB, 20–15,000 Hz at 3¾ ips. **Signal-to-Noise Ratio:** 60 dB, at 7½ ips; 55 dB, at 3¾ ips. **Flutter and Wow:** NAB standards, 0.09% rms at 7½ ips; 0.18% rms at 3¾ ips. **Timing Accuracy:** ±0.2% at 7½ ips. **Tape and Reel Size:** 1 or 1½ mil tape in 5″–10½″ reels. **Inputs:** Two 100,000-ohm mike or line inputs per channel; −66 dB, or −25 dB sensitivities. **Outputs:** +4 dBm into 600-ohm unbalanced load; two front panel stereo headphone jacks.

**Crown Model SX-724**—Quarter-track stereo. Net Ea. . **$995.00**
**Crown Model SX-722**—Two-track stereo. Net Each . . . **995.00**
**Crown Model SX-724-P4C**—Quarter-track stereo with four-channel play. Net Each . . . . . . . . . . . . . . . . . . . . . . . . . . **$1425.00**
**Crown Model SX-744**—Four channel record and playback. Net Each . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . **$1895.00**

## SX800 SERIES

Uses SX electronics (see SX700 stereo series).

**Crown Model SX811**—Full track mono. Net Each . . **$1395.00**
**Crown Model SX812**—Half track mono. Net Each. . **1395.00**
**Crown Model SX822**—Two track stereo. Net Ea. . . . **1495.00**
**Crown Model SX824**—Four track stereo. Net Ea. . . . **1495.00**
**Crown Model SX-824-P4C**—Quarter-track stereo with four-channel play. Net Each . . . . . . . . . . . . . . . . . . . . . . . . . . **$1925.00**

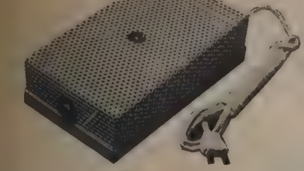
## CX700 SERIES TAPE RECORDERS

Three speed, monophonic or stereo recorders and players. Nonmagnetic capstan drive and three-motor, electromagnetic braking system. Pushbutton transport can be remoted for Stop and Operate modes optional. Two unbal. line inputs/channel may be extended to two mike inputs per channel by adding CX-2 microphone preamplifiers. Treble and bass equalization controls for each channel for special effects. Switch to monitor: Source, tape output or source-plus-tape function. Separate output controls, front panel bias adjust and interlocked play-record and bias switch for each channel. Dual 5″ VU meters. **Frequency Response:** ±2 dB, 40–25,000 Hz at 15 ips; ±2 dB, 20–20,000 Hz at 7½ ips; ±2 dB, 20–10,000 Hz at 3¾ ips. **Signal-to-Noise Ratio:** 60 dB, at 15 ips; 60 dB, at 7½ ips; 55 dB, at 3¾ ips. **Flutter and Wow:** NAB standards, 0.06% at 15 ips; 0.09% at 7½ ips; 0.18% at 3¾ ips. **Timing Accuracy:** Within ±0.2% at 7½ ips. **Tape and Reel Size:** 1 or 1½ mil tape in 5″–10½″ reels. **Inputs:** 100,000 ohms, −25 dB line inputs; with CX-2 added, 350,000-ohm mike inputs; and, with Cannon connector strip, 50–250 ohm balanced mike inputs. **Outputs:** 5,000 ohms unbalanced; with addition of CX-6 amplifier, up to +12 dBm output unbal.; and, with Cannon connector strip 600 ohms bal.

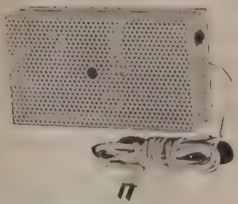
**Crown Model CX-711 Recorder**–Full-track mono. Net. **$995.00**
**Crown Model CX-712 Recorder**—½-track mono. Net. **995.00**
**Crown Model CX-722 Recorder**–½-track stereo. Net. **1295.00**
**Crown Model CX-724 Recorder**–¼-track stereo. Net. **1295.00**
**Crown Model CX-724-P4C**—Quarter-track stereo with four-channel play. Net Each . . . . . . . . . . . . . . . . . . . . . . . . **$1725.00**
**Crown Model CX-744**—Four channel in line. Net . . . **2300.00**
**Crown Model SP711 Player**—Full track mono. Net. **545.00**
**Crown Model SP712 Player**—½-track mono. Net. . . **545.00**
**Crown Model SP722 Player**—½-track stereo. Net. . **595.00**
**Crown Model SP724 Player**—¼-track stereo. Net. . **595.00**
**Crown Model SP744 Player**—Four channel in line or any single channel. Net Each . . . . . . . . . . . . . . . . . . . . . . . . . . . **$880.00**

# PYROTECTOR INCORPORATED

# SMOKE AND HEAT DETECTORS



30-255



30-296-3-UL

36-266

## SMOKE SENTINELS™

### MODEL 30-255 SMOKE AND HEAT DETECTOR

The Smoke Sentinel provides an early warning of smoke detection that can prevent fatal fires in your home. Wakes you if asleep, warns you of the presence of smoke and fire, helps you detect the fire while it's smoldering, before it reaches you and your family. This highly sensitive smoke and fire detector device is designed to alarm when either abnormal smoke accumulation or high temperature is detected. Fires do their worst work at night, a time when all the family is asleep. The fatal facts about home fires proves it isn't the flames, it's the smoke that kills. Without an early warning to wake you, smoke inhalation can prove fatal. The Smoke Sentinel is designed to detect smoke by the use of a sharp light beam in a darkened chamber. When smoke enters the chamber it passes through the light beam which reflects on a photoconductive cell which reacts by signalling an alarm. The horn continues to alarm as long as smoke remains in the smoke chamber. When the smoke chamber is clear, unit automatically resets itself to normal operation. Besides detecting smoke, this model has a thermostat designed to activate an alarm when temperatures reach 135° F, a safety feature in the event of a fast-burning or flash fire when smoke build-up is usually minimal. For added protection and security the Smoke Sentinel may be installed in various areas of the home to provide multiple warning signals. Effective when placed on wall close to ceiling in sleeping area, living room, kitchen and basement. Installation is quick and easy. The back of each unit is designed with a single screw slot to hang the unit on the wall. Furnished with 9′ white extension cord and plug. Plugs into ordinary wall socket. Alarm horn is contained within each unit. Beacon light, which also serves as pilot light has lamp life of 25,000 hours, or three-year rated life. Spare bulb is furnished with unit. Housed in compact, durable case finished in white enamel. For 115 VAC.

**Smoke Sentinel Model 30-255**—Net Each............... **$75.00**

### MODELS 30-296 SMOKE AND HEAT DETECTORS

Smoke and heat detector works night and day to protect you, your family and your home from the dangers of fire and smoke. Designed for high sensitivity and reliability this detector will set off an alarm when the presence of either abnormal smoke accumulation or high temperature is detected in your home. Small fires which can smolder for hours are as dangerous as big fires. This unit gives you early warning and provides the time and opportunity to detect the smoke and fire before it reaches you, and most important, wakes you at night (during the hours most house fires occur) when smoke inhalation during sleep can be fatal. Smoke is detected by the unit through the operation of a completely darkened enclosure which is provided with a sharp light beam. Smoke particles entering the enclosure cause the light beam to reflect light onto the surface of a photoconductive cell. The reflected light caused by the smoke decreases the resistance of the cell and sets off the alarm. Self-supervising device, will provide audible indication of beacon lamp failure. Factory calibrated to automatically initiate an audible alarm before the smoke obscuration in the area reaches a value of 4% per foot maximum. Includes a thermostat for heat detecting which sounds alarm when temperatures reach 135° F or more in the event of a fast-burning or flash fire where smoke build up is not present. Easy to install as single or multiple station installations. Designed to be mounted on the walls or rooms or hallways near the sleeping areas as well as stairways, living areas, kitchen and basement. A multiple installation will provide several alarm stations in the event of fire. Mounts easily by use of a single screw slot located in back of baseplate. Unit mounts on wall 6″ to 12″ from ceiling. Plugs into ordinary wall socket. Furnished with 9-ft. white extension cord and plug. Durable, attractive case finished in white enamel. Pilot lamp offers 25,000 hours lamp life; spare bulb furnished. For 115 VAC. UL Listed. Size, $4\frac{3}{4}$″ x 8″ x $2\frac{1}{4}$″.

**Smoke and Heat Detector Model 30-296-1-UL**—Net.. **$100.00**

**Smoke and Heat Detector Model 30-296-3-UL**—Utilizes the same outstanding features as Model 30-296-1 with the added safety feature of a power-off alarm which automatically sets off a signal in cases where power failure is experienced. Net Each.. **$120.00**

### MODEL 30-2011 MK I SMOKE DETECTOR

Here is low-cost fire insurance for you, your family and your home. The MK I Smoke Detector protects 24 hours a day, its electric "eye" always alert to sound an alarm when it detects smoke, even while you sleep. A small trace of smoke is all that is needed. The unit is carefully adjusted at the factory so that normal amounts of smoke that may exist in a home will not cause the MK I to alarm. The detector is designed around a darkened chamber. When smoke enters the chamber it passes through a sharp light beam which reflects on a photoconductive cell which reacts by signalling an alarm. The MK I is the result of extensive development of fire detection equipment in use in military, aircraft and industrial applications. Factory calibrated to sound an alarm before the smoke obscuration reaches a density of 4% per foot in the protected area. Protects you against the hazard of dense smoke and poison gases which develop from slow, smoldering fires. Smoke rises to the ceiling then fills each room from the ceiling downward. The MK I is designed to be mounted on the wall 6″ to 12″ from ceiling to give you early warning, wake you if asleep, before the smoke reaches you. Most fatalities of house fires are from suffocation by smoke inhalation from fires at night when most people are asleep. The early warning MK I "sees" the smoke and signals an alarm before the smoke can reach you in dangerous quantities. The smoke detection alarm system may be installed economically in several locations in the home for greater protection and security. Effective in sleeping areas, stairwells, kitchen and basement. The bulb which creates the light beam has a lamp life of 25,000 hours. Also serves as pilot light. Spare bulb is furnished with each unit. Includes 9-ft. white extension cord and plug. Plugs into ordinary wall socket. Compact case finished in white enamel. For 115 VAC. Size, $4\frac{5}{16}$″ x $6\frac{3}{16}$″ x $1\frac{15}{16}$″.

**MK I Smoke Detector Model 30-2011**—Net Each..... **$50.00**

### MODEL 36-266 SELF-CONTAINED VENTILATING DUCT SMOKE DETECTOR

Fast and effective smoke warning is provided by this smoke detector designed for installation in ducts of ventilating, air conditioning and hot air heating systems. Highly recommended for use in homes, auditoriums, hospitals, hotels, churches, schools, apartment buildings, clubs, institutions and any building equipped with ventilation ducts where the detection of smoke before heat build-up is important to increase the warning time and reduce the hazard to life and property. As well as saving lives, early smoke warning can save records and property in libraries, vaults, laboratories, factories and offices, computer and other equipment installations. The Ventilating Duct Smoke Detector is mounted directly in the return air ducts of the ventilating system and connected into the building fire alarm system or other supplementary controls to provide an audible alarm. The unit is self-contained and equipped with a trouble relay and an alarm relay which may be connected to external trouble alarm devices. The detector is supervised through trouble signals at the control panel and a key operated test switch permits transmission of test signals. The detector alarm system utilizes a photoconductive cell which is triggered by means of light reflection and refraction when smoke obscuration reaches a density of 2% to 4%. The smoke detector is not adjustable. It is factory calibrated to prevent over-sensitivity. Normal products of combustion present in the building will not activate the smoke detection device. Does not emit radiation. One of the most effective, reliable warning systems ever developed. Gives you positive protection and ample warning to save lives and property. Without a warning alarm the hazard of smoke inhalation is increased when one is asleep. It has been demonstrated that your sense of smell goes to sleep when you do and smoke and gas inhalation dulls the senses further resulting in fatality not from fire but from suffocation. The smoke detector works for you day and night, ever on guard to detect smoke, to sound an alarm. The smoke detector can be engineered to control evacuation signals, shut-offs for ventilating fans or blowers, emergency lights, sprinkler systems, door releases, etc. The unit is housed in a sheet metal cabinet and furnished with a rubber gasket to seal the detector housing to the duct. Power supply to the detector is 115 VAC, 60 Hz, single phase taken directly from the power mains or from the main fire alarm control panel alarm supply. Complete installation instructions and wiring diagram included. UL Listed. Size, $6\frac{5}{8}$″ x $2\frac{3}{16}$″ x $7\frac{5}{8}$″.

**Duct Smoke Detector Model 36-266 Type I**—
Net Each.......................................... **$140.00**

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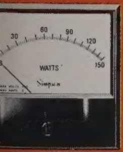

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